**Teagle-Funded Assessment Project**

# The Senior Capstone: Transformative Experiences in the Liberal Arts

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Allegheny College, Augustana College,

Washington College, The College of Wooster

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# The Senior Capstone: Transformative Experiences in the Liberal Art

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## Introduction

### Purpose of the Grant

The four private liberal arts colleges in the Teagle Capstone study (Allegheny College, Augustana College, The College of Wooster, and Washington College, referred to here as the "Teagle Capstone Colleges") have capstone experiences that are required of all students.[1] This is a significant commitment on the part of our institutions, our faculty and staff, and, of course, our students. But it is a commitment made with the firm belief that these experiences provide distinctive benefits above and beyond those of a traditional course.

It is this context that provided the motivation for and structure of our project. From the beginning, the goal has been for each institution to develop a deeper understanding its own capstone program, including the departmental and institutional resources required, the learning and developmental gains for students, and the impact on capstone mentors. Of course, we were also keen to learn about the capstone as experienced by those who participate in it. What leads to a successful capstone experience? What leads to an unsuccessful experience? What do the answers to these two questions suggest about where we should make changes? In short, the project sought to determine if our belief in the value of a required capstone experience is justified? As the remainder of this report will detail, the answer is a resounding "Yes!", with acknowledgements that each institution could make changes that would lead to even stronger capstone programs.

Studying the practices and measuring selected outcomes of our capstone programs has had multiple benefits for our institutions and, we hope, will be of value in contributing to ongoing conversations about capstones as a "high impact" educational experiences. As the benefits of capstones entail significant commitments of resources we also consider questions of costs, efficiency, and best practices for capstone programs.

Because of the potential sensitivity of presenting data in the fine detail provided below, the Teagle Capstone Colleges are identified by aliases: Red, Tan, White, and Yellow. Three of the institutions had a universal capstone requirement in place for the three graduating classes, while Tan College is only currently implementing a universal senior capstone program and did not have it in place for these classes.

### Research and Analytic Questions

The project sought to answer the following questions, both generally in terms of capstones required of all seniors and more specifically in term of the capstone program implementations on the campuses of the four participating institutions. The data and analysis presented in this report provides our answers to these questions.

1. What is the impact of the capstone experience on outcomes leading to lifelong learning? What is the perceived impact one, five and five-plus years after graduation?

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[1] Each institution has its own name for the senior experience, so the use of 'capstone' here is a convenience. The experience seniors have on our campuses goes beyond that of a traditional "capstone course".

Specifically we wished to determine the degree to which the capstone experience contributed to the following learning and developmental outcomes.

Being able to plan and conduct an intellectually demanding project
- Creative and critical thinking/problem solving skills
- Independence in thought, action and initiative
- Tolerance for obstacles, ambiguities; perseverance
- Time management skills
- Leadership/teamwork
- Acceptance of responsibility

Developing an understanding of one's self and one's interests and capabilities
- Career path clarification and commitment
- Development of an interest in research
- Development of an interest in higher level cognition
- Growth of intellectual self-confidence
- Critical reflection on one's own perspective

Understanding of the nature of research and how knowledge is constructed
- More sophisticated understanding of research practice in a discipline
- More sophisticated epistemological understanding of how things are known
- Awareness of the interrelationship of knowledge
- Valuing different points of view

2. How does the capstone experience benefit the student and the faculty mentor?
3. What are the similarities and the differences in how our capstone programs are formulated?
4. What resources (programs, structures, and personnel) are our colleges providing to support their capstone programs? What is the opportunity cost of our capstones?
5. How do faculty, students, and other college constituencies perceive and experience the capstone?
6. How do students experience the capstone? What is the range of capstone experiences for our students, and what are the conditions and practices that result in the most positive capstone experiences?

**Research Methodology**

This project applied quantitative and qualitative methods in three phases. In the first phase we used surveys to gather mostly quantitative summary measures, pre- and post-capstone from the student and the student's mentor, supplemented by textual analysis of responses to open-ended questions about the student's and mentor's capstone experiences. These findings were used to guide the second phase, which involved a more in-depth qualitative study consisting of focus groups with students, faculty and others involved with our institutions' capstone programs. The third phase consists of "closing the loop" by using the project data to identify

campus projects that would improve our capstone programs. The projects are described in this report. Implementation of these projects must await discussion on each campus.

**Acknowledgments**

We are very grateful for the generous support of this project from the Teagle Foundation, without which this project would not have been possible. In addition, we are appreciative of the permissions granted from the Higher Education Research Institute, National Survey of Student Engagement, and Center of Inquiry in the Liberal Arts to use selected items from their national surveys, and to the Higher Education Data Sharing consortium for the use of their Alumni Survey. Many individuals contributed their time and expertise to this project as listed on the roster of participants, and a large part of any success achieved has come from the fusing of their talent and efforts. These include faculty, deans, and institutional research/ assessment directors, and project consultants. Particular thanks are due to faculty steering committee chairs for guiding the campus efforts, to the Institutional Research/Assessment directors for the huge task of managing the surveys and assembling the data for our databases, to the consultants on the project, Dr. David Lopatto, Grinnell College, and Dr. Charles Blaich, Center of Inquiry in the Liberal Arts, Wabash College, for their expert advice, to Bruce Colwell for leading the focus groups at the four campuses and to Dr. Timothy Arbisi-Kelm for the initial textual analysis of the open-ended comments of seniors and mentors. Finally, special thanks go to Allegheny College and College of Wooster for so ably hosting our two project workshops.

## Participant List - Planning Grant through Completion

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## PART 1: PROJECT RESULTS

The first two narratives in this section are general statements about the results of the project that draw on the data and other material in Part 2 and Parts 4 to 8. They are somewhat redundant as the first is a statement of results for internal use and presumes some familiarity with the background material in other sections, while the second is a restatement of the results for a general audience. The third item is a list of possible improvement projects suggested by the results of the study.

Capstone Project – Synthesis of Findings

The Capstone as a High Impact Practice

Potential Improvement Projects

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# Capstone Project – Synthesis of Findings

## INTRODUCTION

Here we provide a synthesis of our findings from the qualitative and quantitative data collected from the senior and mentor pre- and post-capstone surveys completed in 2009/10 and 2010/11 (this includes statistical analysis of the numerical survey results and content analysis of answers to open-ended questions), reports of focus groups of students, faculty and support staff at each campus, and results of surveys of alumni in classes two, five, and ten years out. The detailed project data summarized here is available in Parts 4 to 8 of this report.

This summary also incorporates thoughts from the discussions held at the fall 2011 meeting attended by the project consultants, the project co-directors, and the campus working groups, including the chief academic officers, institutional research or educational assessment directors, faculty steering committee chairs, and faculty members from the four schools. Notes from that discussion are included in the appendices (Part 10).

This summary is a starting point for answering the project questions and responses that were posted on-line as preparation for the fall 2011 conference. Those questions concerned three key areas:

1. What are the costs, including opportunity costs, for students, faculty, and our institutions? How significant are they? Do the costs outweigh the benefits? "Costs" here is intended as a broad term incorporating not just monetary costs, but also such things as time, effort, stress, missed alternate opportunities, etc.
2. Are there material differences by capstone type or type of student? (GPA, gender underrepresented, minority, low-income family, first-generation, academic division, major)
3. What are the implications for practice: What are the good or essential features driving the benefits? What makes for good preparation? What makes for good mentoring? What policies, structures and practices for the capstone on each of our campuses maximize benefits while minimizing costs?

The discussion below of these questions makes brief references to supporting data, such as survey items and scales. Changes in pre/post survey scales are reported with a "+" or "-" to indicate the direction of change. Only differences by student groups that were especially notable are mentioned. Further details on the breakdowns by school, GPA group, major, and gender are given in the tables of results for our surveys. Differences by socio-economic status were generally not significant and, therefore, not commented on below. To distinguish between faculty and student scales, "Fac" has been added to the references to faculty scales. In the presentation below of items as bulleted lists, the evidence from the data has been cited in parentheses.

## WHAT ARE THE COSTS AND BENEFITS FOR STUDENTS, MENTORS, DEPARTMENTS, AND INSTITUTIONS?

This cost/benefit question is broken down below based on the impacts of capstones on students, mentors, academic departments, and the institution. An attempt has been made to list items in descending order of perceived significance, but this is largely subjective.

### Student Costs and Benefits

#### Student Costs – Based on Part 5, Table Q1-1.

The list of student costs below is primarily based on the analysis of student responses to a survey question asking the student to describe positive or negative aspects of their capstone as presented in Part 5, Table Q1-1. A review of the response topics leads to a judgment that most students would endorse the capstone as producing beneficial outcomes exceeding their "costs" from investing time and effort or forgoing other opportunities. Of the nearly 2,600 coded units for the responses, 62.5% were positive, 37.5% were negative. Below are negative areas that would be considered "costs" (as opposed to, for instance, complaints about capstone structures or facilities):

- Stress (capstones with comment– 11%; some stress may come from simply needing to work harder on capstone projects - "worked harder on their capstone than on a regular course", m=4.37 out of 5; 84% of seniors agreed or strongly agreed that the capstone was more stressful than a regular course)
- Opportunity costs – time to work on regular courses, other educational opportunities, co-curricular activities, or other personal interests and activities, including time to apply for graduate school or jobs (capstones with comment– 7%)
- Failure to achieve goals – Despite the effort expended the student fell short of achieving one or more goals mentioned – improving a skill, career preparation, self-understanding, etc. (capstones with comment – 3%). Whether this is considered more a cost or a lack of benefit, either way it tips the cost/benefit balance towards the cost side.

The three areas above were the dominant themes in student negative comments relating to "costs", as evidenced by the percentage of the 1,150 capstones with any comment on that topic. The percentages given here are of capstone for which the student provided a comment, *not* the total number of capstones. It is not clear to what degree commented capstones are representative of *all* capstones.

The time requirements for capstones are generally higher than for a regular course. Students report working about 14 hours/week on their capstones and many capstones are scheduled for multiple terms, have higher credit hour loads than regular courses, and some include summer research. While the high expectations, duration, and time requirements contribute to the benefits of capstones (NSSE and the Wabash National

Study, for instance, document the benefits of “time-on-task”), they are not without costs, for students as indicated above.

Stress, in particular, was explicitly noted for about 11% of student capstones for which there was a comment relating to the positive / negative aspects of capstones; a percentage high enough to indicate this is a significant part of the capstone experience for many students. Some specific stress-related issues that emerged in the comments include unclear capstone policies or guidelines, delays in obtaining resources (such as library materials), delays in getting feedback from the mentor, or interruptions due to student or family health problems. Clear policies and expectations for capstones, and a good working relationship with the adviser can mitigate some student stress. There is some evidence in the correlations with expecting stress that concern about avoiding failure is particularly stress-inducing for lower GPA students, while for higher GPA stress tends to come more from the perceived challenge of the capstone.

That the capstone is done independently by each student, requiring greater responsibility for success or failure, and is also a high stakes requirement for graduation makes it a source of greater stress than a typical course. Some campuses may add to this through an ethos of an expectation that the capstone is akin to master’s level work. On balance, the evidence suggests that the stress is manageable for most students and overcoming the challenge is often a source of pride. There were 14 capstones, about 1%, where the student appeared to report extreme or debilitating stress, another 2% reported a level of stress high enough to significantly interfere with other courses or activities. On the other hand, in many cases when stress was mentioned by students as a negative aspect of their capstone, they added a disclaimer that it was worth it and a natural part of the experience.

The opportunity costs from working on capstones rather than time on other courses, co-curricular activities, or personal activities was noted by about 7% of seniors as another significant “cost”. Data from our alumni survey, however, does not generally indicate our seniors are less involved in co-curricular activities, but does point to study abroad as a notable area where there may be a trade-off with capstones. Comparative data from the alumni survey relating to the level of activity in various areas as an undergraduate (not necessarily as seniors) suggests that in comparison to peer institutions, our graduates are significantly more involved in independent study and faculty research, significantly less involved in study abroad, modestly less involved in intramural sports and religious groups, but about as involved in many other activities, including student government, intercollegiate athletics, performing arts/music, political organizations, community service, social fraternities and sororities, and internships. Alumni agree that the capstone was more intellectually challenging than a regular course (68%), and that they developed more academically through their capstone than through a regular course (56%). On balance, our data (particularly alumni data) suggest that the benefits outweigh the opportunity costs for most students, but the opportunity costs may be significant for students with interests in other valuable opportunities, notably study abroad.

The third area on the list, expending effort without achieving a goal, is somewhat an imposed construct in that the original student comments only noted not achieving a goal as a negative feature of the capstone. For purposes of this cost/benefit analysis this is being interpreted as a "cost" because of the effort expended with the student asserting a lack of benefit.

**Student Benefits**

The benefits described here are items students attributed to their capstone experience in survey comments or were observed in survey scale changes, and are generally above or beyond benefits students gain from "regular" courses. Mentor reports of developmental benefits were generally consistent with student reports.

Although there are overlaps among the categories, we believe that the distinction used below between academic, personal, and professional benefits is generally useful.

**Academic benefits**

- interest in lifelong learning (+Needcognlite; +IntelEngagement, pos. influence on interest in ideas, m=4.26 out of 5)
- learning effectively on one's own (58% "very much" from alumni survey; learning effectively on my own, m=4.32 out of 5; CapcontDev (a post measure only) m=4.11 out of 5; +ExhibitScholarlySkills; +RatingAcadAbil; +RatingIndepVoice, +FacIntelEngagement)
- research – enjoyment/interest in research (+ResearchOrient, 6% of comments for student question Q3)
- research – development of research skills (CapContDev m=4.11, +FacEffProjMgt)
- critical thinking skills development – analysis, synthesis, problem solving (53% "very much" from alumni survey; CapContDev m=4.11; +FacCrThinkSkills)
- communication skills development – writing and oral presentation skills (57% "very much" for writing from alumni survey; CapContDev m=4.11; +FacCommSkills)
- ability to think creatively (45% "very much" from alumni survey)
- project management skills for an academic project (+ProjMgt; +FacEffProjectMgt)
- general disciplinary knowledge; learning a lot (CapSuccessful m=4.03 out of 5)
- becoming "expert" in an the area of the project and presenting findings to others in an "expert" role (noted in student comments)
- integration of ideas, using multiple perspectives Data suggests this benefit is less broad than hypothesized. While true of some capstones, integration of ideas, except for multi-disciplinary capstones, appears to be limited to ideas within the discipline. General use of multiple perspectives was reported during to be less during the capstone than during courses in the prior year. ( – (decline) for MultPerspectives)

Academic benefits are an area of significant growth for students. The numerical scales of our surveys of seniors show that the vast majority of students report that the capstone was a positive experience for them overall and that they developed a variety of academic skills during the capstone. They report using many academic skills more during

the capstone than during regular courses, including research skills, critical thinking, and communication skills. A scale that reflects exhibiting academic skills during the capstone was a strong correlate of students' rating the capstone as successful. Students reported gaining an enjoyment of research and of effortful intellectual work in general (Need for Cognition Lite scale). Their ratings of their own academic abilities also increased. Although some capstones require the student to integrate ideas across disciplines or to consider diverse perspectives, our evidence is that most capstones are narrowly defined in-depth experiences in the discipline rather than integrative.

Perhaps surprisingly, of all the above benefits, student comments noted project management with the most frequency. Students often associated the gains in project management with the capstone being a large scale, challenging project executed largely by the student (independence). Also, the capstone seems to provide many students with benefits associated with becoming an "expert" in their chosen topic area, including a sense of pride, accomplishment, and enjoyment from presenting findings as both discoverer and expert.

Developing an interest in lifelong learning is both an academic and personal benefit, but is listed here because of its academic importance. Lifelong learning is augmented by development of skills and interests, both of which have been noted above. Additionally there are gains in self-confidence and self-authorship, as noted below.

Disciplinary knowledge in the project area is certainly developed during a typical capstone, and gaining knowledge was cited as a positive aspect of the capstone, but, somewhat surprisingly, when students were asked to comment on what would be of value to them after graduation, disciplinary knowledge was cited much less frequently than more general practical and developmental benefits, the most cited being project and time management, writing skill development, development of research skills and career/graduate school preparation. These are skills that are readily most transferable to a wide range of tasks.

**Personal development benefits**

- learning to manage a large project (planning, organizing, administering) (64% "very much" from alumni survey – largest percentage among items asked; most frequently cited in item count for senior comments; +ProjMgt; +FacEffProjectMgt)
- better self-understanding of interests and abilities (89% "agree" from alumni; +RatingAcadAbil; +RatingIndepVoice; 4.4% of student comments to pos/neg aspects; generally strong reports of better self-understanding in student comments to the open ended question of what they learned about themselves as a result of the capstone experience.)
- establishing a positive relationship with a faculty mentor (alumni survey comments – third most cited benefit)
- independence – self-reliance, self-direction (+ evidenced independent thinking; + RatingAcadAbil; + confidence in own opinions)
- confidence in one's intellectual and personal abilities (47% capstone contributed "very much" from alumni; + RatingAcadAbil; + RatingLeadCollabSkills; +ProjMgt; +ExhibScholarlySKills; high CapSuccessful)

- persistence (+ faculty item: persists when faced with conceptual and practical difficulties)
- independent voice and motivation – understanding that effort can be rewarding (+ FacIntelEngagement)
- developing or enhancing time-management skill (+ ProjMgt, + FacEffProjectMgt)
- leadership skills, including presentation skills, social confidence (+ RatingCollabSkills)

Key features of the capstone are the independence, challenge, and self-authorship requirements, which drive the above list of benefits. The scale and duration of the project is part of this, as is acting independently and taking personal responsibility for the project (with macro level mentor guidance, of course, but not, generally, micromanagement), the actual experience of conducting inquiry or research (managing the project, solving problems, persisting through difficulties), and taking a personal position and explaining it in a coherent manner in a thesis and/or large paper and through oral presentations.

Establishing a positive relationship with the mentor is listed because alumni comments indicate the student/mentor relationship is a very significant component of the capstone experience, and when positive, they feel it is an ongoing benefit. Indeed, alumni, when asked about what aspect of the capstone experience had the most beneficial impact on them, cited a positive relationship with the mentor as the third most frequent category, after project management and a sense of accomplishment. On the other hand, seniors' comments on what they thought would be most valuable to them after graduation mentioned the relationship with the mentor in only about 1% of the comments. Clearly, alumni, looking back, have a different perspective. In contrast, seniors' comments on the mentor relationship were noted predominantly in response to the question about the positive/negative aspects of the capstone experience, which suggests that, instead of a long term benefit, seniors view the mentor relationship more narrowly in terms of the direct help they received for their capstone. In that regard, 16% of comments reported positively on the mentor: the mentor was great overall, helpful, supportive, showed interest in the student's project and gave good feedback. Unfortunately, in about 11% of comments, other students felt their mentor was unhelpful, unavailable, gave poor feedback, had unclear expectations, or was uninterested.

**Career/Professional Benefits**

- better understanding of one's skills, abilities and interests (89% "agree", from alumni), and as a consequence, more informed career or graduate school choices (career/grad school clarification as benefit, 9% of comments, Q2 from senior survey)
- preparation for graduate school or employment (77% "agree" from alumni survey; CapSuccessful m=4.02; better prepared m=3.92; 12% of comments, student Q3)
- graduate school admission or employment hiring advantage (from mentor recommendations or using the capstone product as part of a portfolio)
- publications/products that demonstrate abilities or that launches a career

We originally hypothesized that the capstone experience would contribute significantly to seeking more advanced degrees and careers involving higher academic skills. Our data suggests, however, that students have largely made these decisions prior to the capstone and that significant changes occurred only for a minority of students. Helping "clarify my career or graduate school objectives" had a relatively low mean of 3.56. Also rather than a shift toward more advanced degrees, some churning occurs, with some students raising advanced degree expectations while others lowered them, producing little net overall change in percentages. Nonetheless, this is the positive result if the churning that goes on is due, as seems reasonable, to students' more informed appraisals of their interests and abilities as a result of their research experiences.

Several specific career/graduate school benefits were noted in student comments - the 1:1 mentoring common with capstones makes the mentor a more powerful advocate for the student when writing letters of recommendation; some students are able to use their capstone product as part of a portfolio presented for graduate school admission or hiring interviews; and publications or contacts made during the capstone may also be of value.

**Overall Cost/Benefit for Students**

By way of a summary assessment, our analysis notes a number of benefits and costs for students that are particularly tied to the unique character of a capstone and we believe suggests that the benefits for students are substantial, and outweigh the extra costs relative to regular courses. A fundamental point is that the goals faculty have set and the benefits from the capstone reported by students are generally *different* than those for a regular course, expanding beyond disciplinary expertise with a greater emphasis on personal development. The evidence for this is strong from our seniors and faculty, and is also corroborated by our alumni survey: 51% of alumni thought their capstone was more valuable than additional courses in the major (36% as valuable, 13% less valuable), 64% more valuable than more courses outside the major, and 56% more valuable than more participation in co-curricular activities. While these percentages are favorable for the capstone, they are not as high as expected, suggesting that cost/benefit analysis should be an ongoing consideration as capstone policies and structures are considered. (It is possible that alumni were somewhat confused by the question's wording. To avoid a positive bias toward the capstone we used an inverted question form. For each of several other educational opportunities (X), we asked alumni, "Was X more or less valuable than your capstone?"; rather than a perhaps more natural wording, "Was your capstone more or less valuable than X?", where the lead comparative item was consistently the capstone.)

On another issue, our student data supports the use of capstones as a universal requirement. The breadth of benefits noted above are achievable and reported by all types of students, including students in all academic divisions and of all GPA levels. In particular, students' ratings of their capstone as successful and of the capstone's contribution to development were only weakly correlated with pre-capstone college GPAs (0.06 and 0.04, respectively). Some comments suggested that capstones gave

weaker students an opportunity to blossom. Conversely, some students who performed well in regular courses struggled with their capstone.

**Mentor Costs and Benefits – Part 6, Table Mentor Q1**

Our data source for most of these items is the mentor responses to Q1 on the mentor post-capstone survey, which asks about the positive or negative aspects of the capstone for the mentor, and which is discussed in Part 6 with reference to the tally of response topics in Table Mentor Q1. Below, where relevant, we give counts of the number of times a topic occurred in that count. For reference, even though the question was about the positives/negatives for the mentor, of the 1,923 coded units, only 641 were coded as relating to the mentor's experience directly. The rest were comments about the student or the student's project. Of the 641 about their own experience, 440 (69%) were positive.

**Mentor Costs**

- frustration from the additional work and the emotional toll that accompanies mentoring students who are poorly prepared, unmotivated, and/or unresponsive to feedback (10-12% of capstones)
- workload (n=39), particularly if the capstone was outside the mentor's area of expertise (n=22) or not reflected adequately in institutional load formulas (n=8). Numerical results from a GLM suggest that the extent alignment of the capstone with the mentor's area of expertise varied by school and academic division. For two schools the alignment appeared greater for the natural science.
- time/effort to develop mentoring skills required of capstones
- time from research, other duties – an underlying issue is faculty identity and what faculty members believe is part of their duties and what will contribute to a successful career
- stress from feeling responsible for the student's performance and the quality of the product; high stakes of not passing a student

**Mentor Benefits**

- exposure to new knowledge/ideas (n=199)
- pleasure of working 1-1 or generally collaborating with students (n=140)
- enjoyment of seeing students develop (n=42)
- development of advising/mentoring skills (n=38)
- advancing the mentor's own research projects (n=15)
- continuing professional academic relationships with students as alumni (not mentioned on this survey, but a benefit that might be anticipated from the indicated development of student/mentor relationships)

The summary conclusion from the comments of mentors in our surveys and focus groups is that the great majority of faculty members support the capstone program because they see it as a positive experience for students. When given the opportunity to

comment, mentors were more inclined to comment on student success (or problems) than they were on how the capstone affected them personally.

After removing comments about the student, mentor comments on how the capstone affected them as the mentor are mixed with 69% positive and 31% negative. The two top positives are the experience of working individually with students and exposure to new knowledge or ideas. The workload issue is an enduring problem, however, and a significant subtheme was the burden of having to learn about a topic outside their area of expertise. Also, while mentors enjoy working with the majority of their advisees, mentors are frustrated with the quality of work or the effort/motivation in 10-12% of capstones. Specific areas of frustration include students who lacked skill in writing, critical thinking, or project management, who missed meetings, didn't respond to feedback, didn't meet project deadlines, or needed to be micromanaged.

## Academic Department Costs and Benefits

### Departmental Costs

- opportunity cost of the loss of regular courses in the major to make room for the capstone
- administration, monitoring, and assessment efforts
- space, equipment, and supplies

### Departmental Benefits

- feedback on students providing a more informed assessment of the curriculum
- getting to know majors individually
- gives focus/rational for courses in the major; motivates majors
- encourages peer interactions among majors (more or less, depending on structure)

The administrative costs, although certainly a consideration, did not emerge as issues in our focus groups and probably are seen as routine departmental business. On the other hand, to know majors individually and assess their performance on the capstone is significant in helping departments assess and revise their curriculum and pedagogy.

## Institutional Costs and Benefits

### Institutional Costs

- higher dollar cost per credit hour than regular courses (data from two schools estimates this at about double)
- higher faculty time per student credit hour (PostFac35, mean and median total hours per week per student about 3 and 2, respectively)
- increased need for facilities and extra support services, e.g. library, information technology, writing centers, peer mentors, student workspace, lab space, equipment, specialized software.
- direct financial support for individual student projects (e.g., through a grant program)
- general administrative overhead

- mentor training time and costs
- cost of celebrations
- opportunity costs associated with defining the institutional culture and focusing limited resources. These may include how students are recruited, and how they are prepared in general education and departmental curricula. Trade-offs may be needed with other desirable programs such as internships, foreign study, and student co-curricular activities.

A universal capstone requirement necessitates a major commitment of resources largely because capstones are based on customizing the experience for individual students, which is generally more costly in terms of faculty time and support services. Moreover, to the extent the capstone is a major component of the undergraduate degree, it may take both institutional, faculty, and student time and resources away from other opportunities.

**Institutional Benefits**

- provides a focus/goal for the general education curriculum - motivates preparatory work on writing, critical thinking, literature searches, and learning research and time management techniques, etc.
- culminating, senior-level feedback on students - assessment of the general curriculum as well as the departmental curriculum.
- helps some students gain graduate school admission through recommendations and capstone products. Documented by several student comments.

There are a few institutional costs or benefits we speculate are possible, but that our data does not provide evidence for. These might be investigated in further research:

- Does it increase student satisfaction with college or instruction in general? This was not evident in our data generally. Instead, satisfaction generally started high and remained high, but didn't increase from pre- to post-capstone. For Tan, which is new to capstone mentoring, satisfaction had a small decline. Student comments on the relationship with the mentor are strongly positive, but negative for about 10-12% of capstones. Our alumni satisfaction measures are a bit higher compared to HEDS peer colleges, but not at a statistically significant level.
- Is it a fund raising advantage among alumni or in seeking grants? Inconclusive. Our alumni reported contributing to the annual fund *less* frequently than HEDS peers, but this may be due to transitory effects such as being more likely to still be in graduate school versus employed full-time.
- Is it an admissions advantage? The capstone may be an admissions incentive for some students, particularly high academic profile students, but it may be a disincentive for others. Our admissions offices vary in the prominence they give the capstone in recruiting and the answer may depend on the institution and its admissions market.

- Does it increase alumni loyalty for prospective student referrals? (On the alumni survey, 76% of alumni indicated they identify "strongly" or "very strongly" with their alma mater, but the impact of this of the capstone is impossible to disaggregate.)
- Does it result in higher graduation/retention rates? (This is not a question we can answer from our data, again because of the inability to disaggregate the capstone effect. The most recent 6-year graduation rates, per IPEDS, are: Red-77%, Tan-77%, Yellow- 78%, White-76% (two year average).)
- Does it help in faculty recruitment? This is unknown, and the impact may vary by school.
- Does it enhance academic reputation? This was not a question we gathered data on directly, but student reports of successfully using their capstone product in job or graduate school admission applications would suggest the capstone would have a long-term positive impact on the institution's academic reputation.
- Does it require a lower student/faculty ratio? While capstones are faculty intensive, our student faculty ratios are not below average for schools of our type. Per IPEDS, they are: Red-12 to 1, Tan-12 to 1, Yellow-12 to 1, White-13 to 1.

What is the "sweet spot" for the cost/benefit analysis of capstones at the institutional level? The question is significant at the institutional level because the financial costs for supporting capstones, in terms of faculty and support services expenditures, are substantial and higher per credit hour than regular courses. Moreover, the cost/benefit question is complicated by trade-offs with other institutional options. What our study shows, however, is that there are significant and distinct benefits to students that are derived from capstone experiences and that substantial student developmental gains can be achieved in a variety of ways. This suggests there is the potential for cost-conscious institutions to achieve a significant portion of the educational benefits for students with even small capstone programs that incorporate the right features, as discussed below.

## WHAT ARE THE IMPLICATIONS FOR GOOD PRACTICE?

In this section, the above data considerations, along with some of the collective wisdom of the faculty and administrators participating in the conferences and discussions is used to draw some general implications for the practice of capstones. Many considerations are based on a consideration of comments from students and mentors. Before listing recommendations, we look below at several preliminary questions. Items are not necessarily in order of perceived importance.

### WHAT ASPECTS OF THE CAPSTONE EXPERIENCE LEAD TO THE EDUCATIONAL BENEFITS FOR STUDENTS AND ARE UNIQUE TO THE CAPSTONE OR ARE MORE PROMINENT IN IT THAN IN A REGULAR COURSE? WHICH ARE THE KEY FEATURES THAT A CAPSTONE PROGRAM MIGHT INCORPORATE?

- an individualized, independent, research, inquiry or creative project; practicing (not studying) the discipline; becoming "expert" on a topic

- 1:1 mentoring (modeling behavior, individualizing instruction/feedback, providing recommendations/championing)
- a large project scale in scope and/or duration (management and accomplishment benefits)
- a high level of challenge; high institutional expectations for effort, time-on-task, and performance
- projects reflecting individual student interests or abilities
- self-direction/independence/freedom of action; taking personal responsibility or ownership of the project
- projects that elicit originality, problem solving, persistence
- a significant paper, thesis or performance that integrates core liberal arts skills of writing and critical thinking
- presentation of the project to others in a significant way (e.g. oral defense, oral presentation, poster session, publication)
- supportive peer interactions with other students

The above describes what we think are the "gold standard" capstone characteristics that our data suggests led to the best results for students. They are emphasized to varying degrees within our current programs and are not absolutes. In particular, 1:1 mentoring is indicated as a goal but, since it is costly, options that leverage 1:1 faculty mentoring using support services or group meetings are often used. For instance, among techniques used by the four institutions are capstone-specific preparatory courses to cover prerequisite skills and, often, to prepare the capstone proposal. Less than half of capstones use 1:1 mentoring exclusively (CapType34), and the majority include a combination of 1:1 mentoring and group meetings. Some student comments about capstone courses or seminars taken simultaneously with working on the project suggest that they are most helpful to students if substantial class time deals with shared attention to individual student projects rather than a general topic.

### WHAT ARE THE CHARACTERISTICS OF THE TYPES OF CAPSTONE PROJECTS THAT CAN LEAD TO THE MOST BENEFIT FOR THE STUDENT?

- large scale, but feasible given the student's background and the time and resources available; generate data the student can present, not simply be cookbook; have built-in difficulties that can be faced by the student after building some confidence; be multifaceted (c.f. Lopatto, p 17)
- requires project and time management (planning, organization, sustained effort)
- of personal interest to the student, something they help select and can own
- generates knowledge (new overall or for student)
- includes a public presentation
- requires significant writing in the style of discipline
- is challenging
- requires core liberal arts skills – close reading, writing, critical thinking, quantitative reasoning

- uses disciplinary methods, requires consideration of theoretical aspects of the discipline, requires critical thinking in the style of the discipline
- has opportunity for peer interaction around common problems or to give peer reactions/feedback
- requires placing the project in a broad context, e.g. a literature search, consideration of the points of view of others, taking multiple perspectives into account, integrating ideas from other disciplines
- includes a reflective component on the capstone's contribution to the student and to the discipline or society

Again, these are not absolutes applicable to all capstones, and are not currently emphasized equally in all our programs. The suggestions to include a greater emphasis on integration, multiple perspectives and reflection came from a sense that these were often lacking in our current programs.

### WHAT MAKES FOR GOOD PREPARATION FOR A CAPSTONE?

- core liberal arts skills - writing/presenting, critical thinking, creative thinking, general quantitative reasoning
- statistics, advanced quantitative skills, as needed for the discipline
- lab skills/technical skill development
- disciplinary courses in general
- theoretical grounding in the discipline, not just facts
- embedded research/inquiry experiences
- preparation from coursework in the major, junior seminar or methods courses, research or writing intensive courses
- literature review experience
- prior project management experiences that develop planning and organization skills
- building for independence in thought and action

### WHAT ARE GENERAL CHARACTERISTICS OF GOOD MENTORING/DUTIES OF MENTORS?

- Encouragement
- rapport with the student; cultivating a relationship with student that is collegial; demonstrating an interest in the student's topic and the student's success
- availability
- help defining the project's scope
- providing a vision for what the project should do for the student and encouraging students to take advantage of the opportunity
- timely and constructive feedback
- requiring independence while providing scaffolding for deadlines, objectives, and expertise; providing the right amount of independence while not letting the student flounder

- modeling scholarly behavior, disciplinary practice
- be aware of institutional policies and support resources so as to deal appropriately with unmotivated, underperforming or underprepared students, or students who fall behind due to illness or family problems or experience inordinate stress
- assisting with getting resources: finances, materials, IRB approvals, contacts
- if possible, encouraging or structuring peer interactions for mutual support or collaboration

### WHAT ARE THE GENERAL CHARACTERISTICS OF A GOOD INSTITUTIONAL STRUCTURE?

- 1:1 mentoring (but not necessarily exclusively)
- equitable credit hours across majors and clear expectations for students
- equitable and adequate workload credit for faculty
- mentoring role valued by the institution and a component of retention, tenure and promotion decisions
- making the rationale for the program explicit for both students and faculty
- financial support for individual students through some regularized process (e.g. grant applications)
- clear policies – for mentor and students, and especially for double majors
- considering the special challenges of double majors
- defining what is expected of mentors; mentor training; mentor handbook
- an academic curriculum that prepares students for the capstone. Comments from mentors noted the importance of writing skills and a particular need to ground majors more firmly in the theory of the discipline.
- in most majors, a course or designed as specific preparation for the capstone, covering such areas as required research methods, project management issues, human subject/IRB ethical considerations, literature searches, etc. and that includes helping the student select their project topic and prepare a proposal.
- structures that promote student input/choice in the selection of the topic and mentor
- adequate support from support services - library, reading/writing centers, ITS , …
- public recognition and celebration of successful projects
- secondary review of the capstone product, such as through a second reader or oral presentation attended by faculty in the capstone department
- a central faculty committee or administrator to oversee and assess program effectiveness, recommend policies, organize training, etc.

### WHAT POLICY or structural concerns HAVE WE UNCOVERED ABOUT OUR CAPSTONE PROGRAMS?

- a perceived lack of uniformity in workload release for mentors
- a perception by some faculty that the work involved is greater than the released time or credited load
- a perception among some students of a lack of uniformity in the workload expected of students across departments or project options (thesis, performance, comprehensive exam)

- policies on capstones for double majors lack clarity and uniformity
- co-advising capstones for interdisciplinary capstones often leads to problems
- some students and faculty don't have a good sense of the purpose of the capstone
- mentor training is informal or inadequate; no handbook
- using visiting and first-year tenure track faculty as mentors, particularly when training and oversight are weak
- student stress is widely reported due to the high expectations and time requirements. While reasonable stress from the challenge of the capstone is part of the growth equation, an inflated sense of the challenge can occasionally be debilitating.
- capstones may make study abroad more difficult, or make it more difficult to pursue other senior level activities, such as applying for graduate school or jobs
- how mentoring is evaluated for retention, tenure, promotion or merit is not clearly defined
- outcomes data on capstones is not gathered on an ongoing basis for assessment
- many departments report the need for more resources (financial, time, space, equipment, supplies) to support their capstones
- many students are challenged by the writing component of capstones, but are reluctant to use writing centers, which are perceived to be designed for first-year students
- departmental latitude in structuring capstones appropriate to the discipline is needed, but uniformity across campus is also needed. The tension between these two concerns can be difficult to resolve
- project management does not appear to be on the preparation agenda for many pre-capstone courses

## IMPLICATIONS FOR CAPSTONE PROGRAMS

**General recommendations on policies:**

- capstones should be universal: despite being more difficult for mentors, unmotivated students should be required to do a capstone
- capstones should be universal: low GPA students should be required to do a capstone
- capstones should be universal: capstones should be required for all academic disciplines (e.g., not just sciences)
- capstone grading: capstone grading should involve more than the principle mentor (e.g., second reader or departmental input)
- double majors: the primary benefits of a capstone can be achieved by a single capstone. Policies for double majors should aim to minimize the number of students required to do multiple capstones.
- institutions should have a document explicitly giving the rationale and expected benefits for capstones
- institutions should have a mentor training program
- assessment data on capstones should be routinely gathered and reviewed at the departmental and institutional levels

- for equitability, policies on faculty workload credit for mentoring should be established on a campus-wide basis
- even a limited capstone program can result in benefits; design policies and structures with a view toward the desired benefits
- allow departments to design their own capstone structures appropriate to their disciplines, but within a centralized framework based on uniform objectives, equitable allocation of resources, coordination of integrated capstones, capstones for double majors, and equitable expectations for student and faculty performance and workload
- structures should provide for student input in the selection of both the project topic and mentor
- oral presentation of results is a good capstone feature
- campus-wide celebrations of successful capstones are a good policy
- in evaluating individual capstones, some input from beyond the mentor, such as second reader or oral presentations to the department, can be helpful for grading uniformity and capstone program assessment

## The Capstone as a High Impact Practice

High impact practices are those educational practices believed to be especially effective in achieving important educational benefits [Kuh 2008]. Earlier reports have provided some evidence that a capstone course/project is a "high impact" practice [Brownell and Swaner 2010], [NSSE 2007], [NSSE 2009]. The data collected confirms earlier findings about the educational benefits of capstones and identifies the properties of a capstone program that lead to its being a "high impact" practice.

### Capstone Educational Objectives

None of the campuses has explicitly stated educational objectives for its capstone program. However, the descriptions found in institutional documents provide a cohesive statement of the capstone's purpose, and, from that, its expected outcomes. Broadly, the purpose of the capstone is to give the student a meaningful opportunity to integrate knowledge and experience gained from coursework within a liberal arts curriculum generally and, most importantly, within the student's major. The capstone 'product' is a body of scholarly and/or creative work that is created independently by the student using the theories, methods, and tools of a discipline. The capstone should move students from *studying* in a discipline to *practicing* in a discipline, including the ability to clearly and effectively communicate their findings. An important outcome of this experience is the development of engaged and independent learners with a strong sense of intellectual accomplishment and the capacity for individual inquiry.

The data from our study suggest that most of these outcomes are met. More generally, the data suggest that capstones involving a challenging topic and a high degree of independence on the part of the student are especially effective in developing the skills and habits of mind necessary for lifelong learning.

In a more general context, the National Leadership Council for Liberal Education & America's Promise (an initiative of the Association of American Colleges and Universities) has identified five essential learning outcomes of a contemporary liberal education [AAC&U 2007]:

- Knowledge of Human Cultures and Physical and Natural World
- Intellectual and Practical Skills: Inquiry and analysis; critical and creative thinking; written and oral communication; quantitative literacy; information literacy; teamwork and problem solving
- Personal and Social Responsibility: civic knowledge and competence; ethical reasoning and action; foundations and skills for lifelong learning
- Integrative and Applied Learning: synthesis and advanced accomplishment across general and specialized studies

In addition to the more specific objectives, our study suggests that capstone experiences are, to varying degrees, also "high impact" for these national liberal education objectives.

**Educational Objectives Highly Impacted by the Capstone Experience**

Students generally report the capstone experience was positive for them overall, and both students and mentors report that students develop a variety of skills during the capstone:

- Project management skills. Perhaps surprisingly, this is the area that students and alumni mention most frequently as a benefit of their capstone. The scale and challenge of the capstone requires a level of planning, organization, time-management, and sustained effort that is beyond anything most students will have previously attempted, so these are areas with significant potential growth.
- Research/Inquiry skills. Students report development of research skills, including data gathering and analysis, technical skills (laboratory, computer, etc.), information literacy, and problem solving.
- Writing and oral communication skills. Most capstones include the writing of a major thesis and public communication of findings through a presentation, poster, and/or oral defense.
- Critical thinking skills. These include critical reading, analysis, and synthesis.
- Lifelong learning foundations and skills. These include project management skills, self-confidence, self-authorship, interest in and enjoyment of research, intellectual effort, and career and graduate school preparation.
- Disciplinary knowledge and skills relevant to the project area.

**Educational Objectives Less Impacted**

Educational objectives that did not appear to be present to a large degree in our capstone formulations, as currently practiced:

- Integrative learning across disciplines. The capstone appears to be an in-depth experience in the discipline of the major focused on answering a fairly narrow question. The project may integrate liberal arts skills, but generally not knowledge across disciplines.
- Using multiple perspectives. Unless related to the specific project topic, capstones do not generally contribute to understanding of diversity issues involving gender, race, religion, politics, or different cultures. While students develop a deeper understanding of their own views, they are more likely to report they considered the perspectives of others during regular courses than during their capstone. Again, this may not be surprising given that the focus on answering a single, often narrow, question is not conducive to exploring multiple perspectives along these lines.
- Teamwork/collaboration. The result here is not surprising since teamwork is not an emphasis of most capstone experiences. Most projects are individual, and structures that encourage student support of each other, while at times organized by individual mentors or occur as seminars or periodic meetings, are not the norm. This also suggests that students did not perceive that working with their mentor constituted "collaboration".

- Quantitative reasoning, other than in the sciences. Although quantitative reasoning is generally integrated into natural science research and social science research often involves statistical or graphical skills, the schools do not have any quantitative reasoning requirement associated with the capstone.
- Civic orientation. A few capstones are community based, but promoting civic engagement is not commonly seen as an intentional objective. Capstones did not show an impact on an orientation towards civic issues – volunteering, helping others, being a community leader, or influencing social values.

**Properties Promoting Successful Capstones**

What aspects of the capstone experience seem to lead to what students and mentors report as benefits? (These are present to various degrees in different types of capstone.)

- 1:1 mentoring. Through encouragement, feedback, providing of expertise, and modeling of scholarly skills and behavior, the mentoring relationship is a key element of a successful capstone.
- Student choice or input in the topic. A topic or project that is of personal interest to the student, either selected by the student or negotiated with student input, that the student takes ownership of.
- Project size and duration. A sustained, long-term, large scale, significant project requiring organization, planning, time and project management, and with a significant intellectual challenge.
- Inquiry, research, or a creative project. Asking the student to discover new knowledge, whether totally new (research) or new to the student (inquiry), or to conduct a creative project. There is tremendous potential for growth when venturing into the unknown.
- Independence. There is an expectation of considerable independence on the part of the student. Structures that allow students freedom to act and develop their own ideas and approaches; a requirement of "self-authorship". A related component is the need for students to deal with the uncertainty of open-ended problems and the unanticipated obstacles that often pop up.
- High expectations. An institutional ethos that expects a successful capstone project to be major achievement.
- Time-on-task. Related to the above, students spend a good deal of time and effort on their project.
- Practice of the discipline. The student is asked to act as a practitioner in the discipline, e.g. to "think like an historian". Students should be expected to use the critical thinking and writing styles of the discipline and demonstrate an understanding of the theoretical structure of the discipline. Where appropriate, specific laboratory, data analysis, or research method skills should be utilized. Evaluation of the project is based on disciplinary standards and peer review.
- Self-reflection. Recognition of personal abilities, limitations, values, and interests. Building of self-confidence and a realization of personal potential.

- Public presentation/recognition/celebrations. Presenting the results of the project through an oral defense, public presentation, poster session, celebration of learning event, undergraduate research conference, performance, exhibition, etc.
- Integration of liberal arts skills. Capstones that integrate disciplinary expertise with significant writing, critical thinking and presentation skills.

**Good Institutional Practices**

- Explicit goals for students. Explicit expectations for mentors. Perhaps in guidebook form reinforced through mentoring, particularly of junior faculty. The results of this project suggest that some of the benefits of capstones, such as learning project management, are not as explicitly understood by students or mentors or are not as much of capstone preparation as they should be.
- Use of a second reader or departmental review. Having two or more readers maintains uniformity of standards, adds to confidence in the fairness and reliability of the evaluation, and introduces an element of peer review of research. Although a designated second reader is suggested, it involves significant additional faculty workload, and student oral presentations attended by departmental faculty might be considered as an alternative. Being a second reader can be a good training tool for new mentors. In cases of student underperformance, the mentor may find the second reader is a helpful backup in enforcing standards. In cases of double majors with an integrated capstone, a reader from each discipline, possibly co-mentors, may be particularly helpful.
- Equitable treatment across disciplines for faculty workload credit for mentoring, and equitable expectations and evaluation for student achievement.
- Adequate support services. Faculty mentoring time should be counted in the workload to allow sufficient time for mentoring. Schools should consider the special needs for library support services, IT/computer services, laboratory equipment, and student workspace. Reading/writing centers should consider offering services dedicated to supporting seniors writing capstones. Financial support for individual capstone projects should be available and reviewed through a “grant” process.
- Student input in the mentor choice. Because the student:mentor relationship is so important in terms of rapport and providing expertise, policies and procedures should allow as much student choice in the student:mentor matching as can be accommodated, recognizing that there are other factors to consider, including balancing faculty workload, faculty research interests, and departmental scheduling.
- Student ownership of the project. Student ownership of the project underlies much of the developmental benefits. The topic choice and design of the project should have student input through a process of negotiation with the mentor.
- A mentor training program. Topics might include:
    - the nature and importance of the student:mentor relationship. The mentor as a guide, model of scholarly behavior and provider of encouragement
    - explicit discussion of the institutional goals for the capstone experience
    - a review of institutional policies and guidelines for capstones

    - institutional expectations for capstone mentors
    - suggestions or criteria for designing a capstone project that will meet the intended goals for student development. (e.g. from Lopatto: reasonable scope, be feasible, generate data student can present, not simply be cookbook experiment, have built in difficulties that can be faced by the student after building some confidence, be multifaceted)
    - working with the student to scale the project for the time available and the student's capabilities
    - scaffolding for independence: providing students with appropriate freedom and challenge, while providing enough structure to avoid floundering
    - monitoring and alternatives to deal with student stress, a prominent negative aspect of the capstone experience as reported by students, particularly if the capstone is configured as a high-stakes, high expectation requirement
    - ways to deal with unmotivated, unresponsive, or disorganized students (the most common mentor complaint)
    - structures to deal with mentoring multiple advisees: the options, pros, and cons of structures like classes, seminars and group meetings
- Pre-capstone preparation. Departments should "reverse engineer" their curriculums to prepare students for the capstone. In addition to writing and presenting, general education or departmental courses might include precursor experiences that include progressively more advanced elements of research and project management. Where appropriate, a pre-capstone course such as a research methods course is appropriate. A successful practice is a course, seminar, or independent study preliminary to the capstone in which individual projects are designed.
- Double majors. Policies covering capstones for double majors need to be particularly clear. Does the student need to do a capstone in both? If not, is a single integrated capstone required? Policies on responsibilities in cases of co-advising should be explicit and clear. The sense of this study is that the objectives of capstone experiences are sufficiently met with a single capstone, and requiring two capstones is not necessary or even generally desirable given other educational opportunities, such as study abroad, that might also benefit the student. On the other hand, many departments justifiably want each major to have a research experience in their major. The four institutions in this study have not found an ideal solution for this problem.
- Integrated capstones. There are special difficulties in doing an integrated capstone in multiple disciplines, as from self-designed majors or integrated double majors, particularly if it requires a theoretical understanding in more than one discipline. Institutions should consider implementing special approval procedures and guidelines that ensure the student is capable of the challenge, and that advisers in both disciplines have approved and are supporting the project.
- Multiple-perspectives. If it is an educational objective that each capstone is to be a culminating integrative experience of the four-year educational experience, this needs to be built into the capstone program explicitly. Otherwise, our data suggests that most capstones are designed as in-depth experiences of a narrow topic within the discipline.

- Self-reflection. A valuable component of the capstone experience can be to ask students to reflect in some formal way on what they learned about their own capabilities, interests, and values. Additionally, students can benefit from reflecting on the value of their project, either in the context of their discipline or for society in general.
- Opportunities for peer interaction. Although a capstone project will generally be an individual project, structures that promote student interactions concerning their projects can augment mentor guidance and spur student motivation by giving valuable peer support, critiques, problem assistance, general feedback, and opportunities to develop presentation skills. This might, for instance, take the form of departmental seminars where students present and get feedback on their capstone projects while they are in progress, or mentors supervising multiple students may simply schedule weekly meetings. Based on student reports, concurrent capstone classes or seminars should include significant discussion of individual student projects to meet this need.
- Oral presentations of results. Some sort of oral presentation of results is helpful in communication skill development and also in allowing the student to experience a role as the "expert" on his or her project. This incorporates an element of peer review of research and is motivating in terms of adding to a sense of personal responsibility for claimed results. In addition to a final presentation, student seminars might present opportunities for presentation of preliminary results and peer feedback.
- Culminating public celebrations. A campus-wide celebration of successful capstones is a helpful practice in motivating seniors and recognizing student achievements, and can have an instructive or inspirational role for students in their first through third years.
- Departmental design latitude. Within a clear general framework of goals and expectations, academic departments should have latitude to design capstone programs appropriate for their discipline. Our experience is that a variety of capstone types can be successful.
- A limited central capstone authority. While departments should be the locus of implementation of their own capstones, some committee or administrator should have responsibility to monitor the capstone program, recommend policies, provide faculty development opportunities, etc. While departments need to be able to customize the capstone as appropriate to their discipline, centralized review will help in ensuring capstone program objectives are being met and issues of equity in performance expectation and workload are resolved for both faculty and students.
- Assessment. Departments and the institution should use feedback from students and mentors in assessment.

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## Potential Improvement Projects

Following is a list of ideas for improvement projects generated from the data and our discussions. We recognize that each campus will identify its own needs and these are shared with you simply as suggestions for consideration.

*Committee chairs: Please add any items you would recommend from strengths identified in your own programs.*

General policy review to explore implications of our research

- Policies relating to double majors.
- Faculty workload and fair/equitable load credit
- Grading methods – second reader system?
- Equitable/appropriate level of expectations for students
- A faculty committee or other administrative structure responsible for ongoing policy development
- Ways to foster student project ownership and increase student input in topic and mentor selection
- Policies to promote more integration into the capstone of ideas from outside the discipline of the major
- Adding or refining a reflective component
- Adding or refining an oral presentation requirement
- Considering ways that the capstones might be combined with other high impact practices on campus (e.g., civic engagement, service learning, learning communities)
- Policies rewarding mentoring in tenure and merit reviews

Develop/formalize assessment of the capstone program

- Create a standardize instrument for campus-wide use
- Assessment and improvement committee

Mentor training

- New faculty mentor orientation program
- Mentor handbook
- Leave/sabbaticals
- Information statement on what students want/need
- Information piece on how to handle underachieving or unmotivated students (e.g., more deadlines, smaller tasks, more frequent feedback, understanding student motivations, using peer interactions to help motivation….). This could be part of the mentor handbook.
- Characteristics of a good topic/project. This could be part of the mentor handbook.
- Helping student tailor a project for the time available. This could be part of the mentor handbook?

- Developing student independence; avoiding micromanaging while verifying progress. This could be part of the mentor handbook?

Student preparation

- Student handbook
- Preparatory course adjustments
- Reengineering parts of the curriculum
- Implementing a junior capstone
- Undergraduate research opportunities/programs, including summer research internships, summer REU participation, etc.
- Building speaking/presentation experiences into the curriculum from the first year as preparation for the oral defense
- Building progressively more challenging project management experiences into the general education curriculum, and include project management as a topic of pre-capstone methods courses

Resource development

- Funding system for supporting individual capstones through a review process
- Facilities improvements – student workspace, lab equipment, computer software, etc.
- Student support service enhancements - writing center, library, IT, student grants
- Mentor support services – referral services that off-load lower level mentoring tasks commonly needed (particularly for weaker students) such as dealing with the mechanical areas of writing or use of basic statistics.

Cost/efficiency projects to increase bang for buck

- Ways to leverage mentor time through support services
- Ways for leverage mentor time through combining 1:1 mentoring in conjunction with seminars that address common issues for all capstone students of the mentor or department. Our results suggests that bringing students together on a regular basis to discuss their projects (the good, the bad, the ugly) has a real (measurable) benefit.

Public recognition of successful capstones

- Campus-wide celebrations/presentations. Possibly a dedicated day in the academic calendar
- Web publication or archiving of electronic copies of project papers or abstracts
- Prizes/awards
- Support to present at undergraduate research conferences

## PART 2: CAPSTONE PROGRAM DESCRIPTIONS

This section includes a narrative about the capstone program provided by each institution and results of surveys of academic departments concerning their policies, capstone administration, and capstone types.

SUMMARY NOTES: The Capstone Programs of Allegheny College, Augustana College, College of Wooster, and Washington College

CAPSTONE DESCRIPTION NARRATIVES

- Allegheny College
- Augustana College
- College of Wooster
- Washington College

CAPSTONE POLICIES AND ADMINISTRATION SURVEY RESULTS
CAPSTONE DESCRIPTION SURVEY RESULTS

**Summary Notes: The Capstone Programs of Allegheny College, Augustana College, College of Wooster, and Washington College**

This section includes detailed narratives from each institution about the structures of their capstone programs, and the results of surveys of departments as to capstone types, policies and administration. The brief summary notes below, in conjunction with Table 1 below, highlight features of the four programs, as summarized from this information:

- A universal capstone requirement. All students are required to complete a capstone.
- A long history of capstone programs. For Allegheny, capstones date back to 1821. Washington's and Wooster's programs date to the 1940s. Augustana is the exception, having just implemented a capstone program beginning in 2008.
- A high level of departmental control of the capstone. No institutional has a designated central faculty or administrative committee for program oversight. Since capstones center around practice of scholarship in the discipline, this approach recognizes the need to adapt policies to disciplinary approaches and standards, but may lead to some incoherence in approaches to such common concerns as capstone rationale and expectations, mentor training, faculty workload credit, and program assessment.
- Generally similar views of the capstone's objectives. These focus on a culminating, sustained, independent act of research or inquiry, centered in the student's major(s). There is a general emphasis on critical thinking and communication skills. Although a major thesis or paper is a common requirement in of many departments, one school has a universal "substantial written work" requirement and two schools require an oral defense. Unique to Augustana is an explicit "reflection" requirement on the meaning of the capstone for the society.
- Capstone types that adapt to disciplinary approaches to research or knowledge production. For example, capstones in the sciences commonly include laboratory or field work research, capstones in the arts may include creative expression, pre-professional capstones may include internships, or, in the case of education, student teaching.
- A standardized formula for faculty teaching credit. The exception here is Augustana, which varies the formula by department. For the other three institutions, the formulas are standardized across campus and close to a rule that gives one course release for supervising 11-12 capstone courses (where Wooster's capstones are counted as two courses).
- No formal institution-wide mentor handbook or training program. Instead training is more informal, and new faculty may be initiated through attending student oral defenses or being a second reader.
- No institution-wide capstone manual for students. This may be a consequence of departmental variation in the capstones, although the general objectives would seem to be a common theme that might warrant an institutional explication. Wooster reports that all or nearly all departments have a departmental capstone manual of policies and procedures.
- Capstone specific preparatory experiences. All institutions recognize the need for curricular elements that prepare students for the capstone. Critical thinking skills and communication skills in writing and oral presentation are built in general education and departmental courses. Most departments have one or more courses specifically designed as preparation for the capstone, and that covers such things as research methods, writing skills in the discipline, and may include development of the capstone proposal.

- Financial support for individual capstones. Although the amounts vary widely, all institutions have some provisions for allocating funds for individual students to support capstone needs such as for supplies, materials, equipment, travel, etc.
- Double major policies. Policies on capstones for double majors vary widely. Double majors at Allegheny generally are expected to a single integrative capstone, while at Washington and Wooster, double majors do a single combined capstone if a suitable project can be found. This is typical for Wooster and occurs about 50% of the time for Washington. Augustana allows departments to negotiate if a double major must complete capstones in both departments or if one department will waive their requirement; integrated capstones are possible but not the general rule.
- Rubrics are commonly used by departments in evaluating their capstones.
- Assignment of mentors generally accommodates both student preferences and the need to balance faculty workload.
- Determination of the capstone topic is typically either done by the student or negotiated between the student and mentor.

## Part 2 Table 1: Capstone Program Features of the Four Colleges

| Institution: | Allegheny | Augustana | Washington | Wooster |
|---|---|---|---|---|
| **Capstone Title (Informal)** | Senior Comprehensive Project (SCP) | Senior Inquiry (SI) | Senior Capstone Experience (SCE) | Independent Study (IS) |
| **Summary Description** | A sustained independent act of inquiry or creativity consistent, in methodology and focus, with the nature of such work in that student's academic major. All include a substantial written component and all conclude with a student's oral defense or oral presentation. Nature of projects largely determined by departments. | Culminating project of synthesis, analysis, and reflection | Project of active learning within the major | Junior year IS plus a two-course senior year IS. Seniors work individually with an advisor on a topic agreed on between the student and advisor, culminating in a thesis or creative project, and defended in an oral presentation. All students must submit their project by the same date. Departments have considerable latitude in the implementation (types of IS, selection of topic and mentor, etc.). |
| **Origin and History** | Present SCP format since 1942; some kind of capstone since 1821 | SI designed in 2005-6, phased in by departments in 2008-11 | A form of senior capstone has been a requirement since 1959. Previously a thesis or comprehensive exam , and called "senior obligation", it has been the SCE since 2006-07. | Established as a universal requirement in 1944 under a philosophy that the most effective learning occurs through the independent effort of the student; that personal development is more than acquiring subject matter knowledge; and, that grappling with the basic problems of scholarship gives the student the confidence and abilities necessary for lifelong learning. |
| **Purpose/ Objective** | Put into independent practice the analytic, creative, and expressive habits cultivated in their major field(s); integrate discipline-specific knowledge with communication and research skills | Substantial in meaning, communicative of discoveries, reflective; with a meaningful mentor relationship | Integrate knowledge and skills to produce sense of mastery and intellectual accomplishment | The culmination of a four-year academic journey and a framework for thinking and inquiry that brings cohesion to the curriculum. Development of engaged and independent learners and the capacity for individual inquiry. Creation of a body of scholarly and/or creative work that is generated independently by the student using the tools and theories of a discipline and that somehow advance or otherwise contribute to a field of study. Moving students from studying in a discipline to practicing in a discipline. |

| Institution: | Allegheny | Augustana | Washington | Wooster |
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| **Project Types** | Emulates practice of discipline. Laboratory experimentation guided by hypothesis; social science projects do quantitative or theory-based research; humanities projects involve interpretive arguments about primary documents, informed by second-source research, or they are creative works. | No institutional requirement; determined by needs of department curriculum. | Varies by department. Types include: traditional thesis (all Departments offer this as an option),Visual thesis (Art), curating thesis (Art), comprehensive exams (Art, Biology, Economics, English, Modern Languages, drama Production thesis (directing, performance or design)<br>playwriting thesis, solo recital (Music),extended composition (Music), lecture recital (Music),programming project (Computer Science), strategic analysis of a firm (Business Management), experiential (Business Management), experimental capstone (Biology, Chemistry, Psychology). | Varies. Examples: Psychology - data gathering project with clear manipulation of at least one variable; Physics - extending knowledge by experiment, simulation, or theory; English - literary analysis or creative works (short stories, poems, novella, film studies, news writing...); Theatre - thesis or based on acting, directing, stage management, play writing, ... |
| **General Requirements /Expectations** | Projects must include a substantial written work and an oral defense. Other expectations vary by department. Most departments have an evaluation rubric. | | Students should demonstrate the ability to think critically and to engage in a project of active learning in their major field of studies. They are expected to demonstrated student initiative, significant preparatory work, active inquiry, integration of acquired knowledge and skills, and culmination of previous academic work | Content criteria - the significance of the subject for personal intellectual development, the progress of professional understanding, and the needs of society. Manageability of the topic is also an essential consideration. Method - development of a plan with an appropriate logic, design, or conception. Form - communication of what has been discovered or developed through exposition or creative expression. An oral defense. |
| **Grading Policies** | Letter grade; passing required for graduation. Grades determined by the project director and second reader after the oral defense. Some departments consider these grades provisional pending a departmental review to "norm" the grades. Most departments have rubrics. | Varies by department | Set by department. Some honors, pass, fail or pass and fail; others regular grades; passing required for graduation. Project due on last day of classes, senior year. | No Credit, Satisfactory, Good, or Honors. Grades based on the work accomplished during each of the semesters, the quality of the completed thesis, and the oral defense of the thesis. Grade jointly assigned by first and second reader. Some departments hold a meeting to discuss assignment of I.S. grades. Many departments have evaluation rubrics. |
| **Topic Selection Methods** | Varies by department. Examples: students approach and negotiate with faculty whose expertise matches the focus the student would like to take; students choose from categories of topics and linked mentors presented at open houses, on web sites; topics determined as extensions of a junior or senior seminar. Almost all departments require a project proposal. | Varies from individually negotiated to student enrollment in a topical seminar from with the topic is derivative and the mentor is the seminar instructor. | Most topics are negotiated between the student and mentor, and is usually allied with the mentor's interests and expertise. | Topic selection is student-driven and negotiated with the advisor, but methods vary by department. All departments have a handbook covering the process and many have meetings where faculty share their interests and suggest ideas for IS topics. |

| Institution: | Allegheny | Augustana | Washington | Wooster |
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| **Mentor Selection Methods** | Varies by department and conjoined with topic selected (see above). Most restrictive are projects extending a seminar, where the mentor is the seminar instructor. Second readers are mostly assigned by department chairs based on expertise and workload distribution. | Varies by department. | In order or most frequent: chosen by students, negotiated, or assigned by departments. | Varies by department. Considerations include student and advisor preferences, the student's topic, and the need to distribute advising load. In some departments students submit a list of ordered preferences and an attempt is made to match. Some use a first-come first-served approach. |
| **Student Credit Hours (semester Hours)** | 4-8 credit hours. Most common is 6 credits spanning two terms with a 2-credit preliminary course in which students do research and develop their project proposal followed by the four-credit project itself. | With exceptions, 3 to 9 credit hours, with 3 most usual. | 4 credit hours | 4 credit Junior IS over one semester plus 8 credit Senior IS over two semesters |
| **Faculty Teaching Credits** | Point system. 4 points per student: 3 for the project director, 1 for the second reader. With double-major projects, the capstone advisors from each major receive two points each (and that usually constitutes the faculty board for the project). A course release is given for 44 points, so 11 senior projects are roughly equivalent to a course. Points can be banked, but only one release can be used in any term. | Varies by department according to formulas negotiated with the dean. | One course release for every 12 capstones supervised. Can be banked. Faculty can opt for payment on the same basis as a course overload, the most common option due to a shortage of qualified adjuncts to cover overloads. | Faculty teach 5.5 teaching credits/year. Faculty receive one course release for advising five IS students for the two terms. Credits can be "banked". |
| **Expectations for Mentors** | No formal expectations or requirements have been enunciated, assuming same expectations as for classroom teaching. No mentor handbook. Training is informal and collegial. New faculty don't mentor the first year, often begin by attending oral presentations. | No explicit expectations. | | Help identify topic; meet regularly with the student (3/4 -1 hour/week, but varies greatly by dept.); assist with thesis editing; provide a written evaluation of the work submitted |

| Institution: | Allegheny | Augustana | Washington | Wooster |
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| **Student Preparation** | Junior seminar; approved proposal | General education courses, earlier department course(s), research methods courses. | Most departments offer a course specifically designed to prepare students for the capstone. Depending upon the department, these preparatory courses include Junior Seminars, Senior Seminars, and various research methods courses. Virtually all of these preparatory courses involved learning methods useful for the SCE, determining the SCE topic, developing a capstone proposal, starting work on the SCE, and refining discipline specific communication skills. About half included assigning students to SCE mentors, and some prepared students for a comprehensive exam. | The general education requirements and courses taken in the student's major are intended to prepare the student for Senior Independent Study by developing disciplinary expertise, critical and creative thinking skills, and communication skills. The development of writing skills begins with First Year Seminar and continues in a writing intensive course that must be completed prior to beginning Junior Independent Study. Most departments require a one semester Junior IS course, often a research methods course. |
| **Institutional Administration** | No central administrative or faculty group. Policies and administration under departmental control, except for faculty workload credit system. | No central administrative or faculty group. Policies and administration under departmental control. | No central committee. Administered almost entirely by departments. | No central committee beyond Educational Policies Committee. Departmental latitude within general framework. No formal assessment has been done recently , other than through this Teagle Grant |
| **Double Majors** | Project nature negotiated among student and advisor from each department, and are expected to be integrative. Credit hours count once on transcript but towards each department's requirements separately. Deadlines are set by the department the student identifies as the primary major. | Policies vary by department. Integrative capstones are not the general rule. Some departments require a capstone in their department and the student will do two capstones. Others may waive the requirement in deference to another department, based on the student's preference. | Double majors complete a single, combined capstone about 50% of the time. Whether the capstone is combined or separate, each faculty mentor receives full credit (1/12) for that student, but the student receives only one course credit. | A student is required to complete all the I.S. requirements in each of his/her majors. Typically a double major will find a topic that satisifes the requirements of both departments and produce a single thesis. In these cases, each department will provide an advisor. The student registers for the first semester of Senior I.S. in one of th departments, and for the second semester in the other department. |
| **Special Resources** | Funds distributed from the Provost's office are designated to support senior projects. The Center for Experiential Learning can help fund students' travel to conferences in which they present research undertaken in their senior projects. A "Senior Research Fund" underwrites awards up to $500. | An "Augie Choice" fund incorporated in tuition charges serves as a $2000 personal account that students may draw on for senior projects, among other approved opportunities such as study abroad. | While no funding sources are specifically devoted to SCE, some departments provide funding support for students., and some receive support from fellowships. | The "Copeland Fund" provides about $90,000 annually to support individual projects, granted by competitive proposal review. Library study carrels. Support centers for writing, math, advising. Collaborative Research Environment center - collaborative spaces, presentation practice rooms, advanced technology, support staff for research, writing and new media. |

| Institution: | Allegheny | Augustana | Washington | Wooster |
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| **Celebrations/ Recognition of Completed Projects** | Electronic archiving of projects in "D-Space". Invited presentations at a project celebration. Departmental celebrations. Currently working on a reserved calendar day at the end of the school year for presentations. | An all day campus-wide "Celebration of Learning", is held on a Saturday in spring, and gives students an opportunity to present their projects as oral presentations or via posters. | No college-wide celebration, but a number of departments host events. All students submit their capstones to the college library's online database. | All projects due on the first Monday after spring break. A celebratory parade of seniors who have submitted their project is held that day, and "I did it" buttons are worn. Classes are canceled in late spring for a "Senior Research Symposium" with presentations, posters and exhibits. *Wooster Magazine* devotes an issue to projects. College web page features short videos of students explaining projects. |

**Allegheny College**
**Capstone Structure Description**

The capstone experience at Allegheny College is called the Senior Comprehensive Project (the "senior project," in the official idiom; the "comp" in the vernacular). For every graduating senior at Allegheny this experience is a sustained independent act of inquiry or creativity consistent, in methodology and focus, with the nature of such work in that student's academic major. Students doing senior projects in biology and chemistry do what biologists and chemists do, laboratory experimentation guided by hypotheses and research questions; students undertaking political science projects do the quantitative- or theory-based research and discursive work that characterize that discipline; English majors make critical arguments about literary texts or, as creative writers, fabricate their own literature. All senior projects include a substantial written component (even in the case of visual art and music majors), and all conclude with a student's oral defense or oral presentation of findings before a two- or three-person faculty board. Seniors choose their project topics with varying degrees of latitude (depending on the department or program), and each senior project is guided by that student's senior project faculty advisor, with another faculty member, designated "second reader," sometimes contributing to this guidance.

*Origin and History*

Allegheny has had some kind of required capstone experience for all students since its first graduating class in 1821. Since 1942, successfully completing a senior project as we know it now, including the oral defense, has been a graduation requirement. (In the 1970s, oral examinations shifted from a general defense of disciplinary expertise to a more focused presentation of the Senior Project findings.) Much like the rest of the curriculum, the nature and evolution of senior projects within each discipline has largely been determined by each department, reflecting the evolving practices that characterize academic work in that discipline. From at least its modern inception onward, the senior project has figured centrally in the educational culture at Allegheny. Although it is no longer characterized by the breadth or recapitulative nature suggested by the "comprehensive" part of its name, the Comprehensive Senior Project stands as the culminating experience of undergraduate education at the college. Admissions literature touts it as the pinnacle of independent intellectual opportunity and challenge at Allegheny; the College Catalogue notes that it is "often . . . a pivotal moment where a student realizes his or her own abilities and potential;" many departments and programs construct their curricula in part to prepare their majors for the senior project; and many seniors, working in disciplines where their senior project research can lead to national conference presentations and even co-authorship of articles with their faculty mentors, make use of the senior project as an asset in graduate school applications and post-graduate employment. Finally, for faculty, the senior project has recently emerged as a site in which they can undertake both interdisciplinary and assessment-based considerations. Over the last five years an average of 15% of Allegheny's seniors have been double-majors; because most of them do one senior project that combines the disciplines of their two majors, faculty members advising and evaluating such projects have had to define, at least situationally, what successful multi- or interdisciplinary work looks like in that context. (As of yet, such conversations have not been systematic or comprehensive.) Similarly, because it is the most thoroughgoing occasion in which students demonstrate both their disciplinary learning and their possession of broader liberal arts learning outcomes such as effective communication and critical thinking, the senior project is now being considered as the window through which the college can best assess, in a direct way, the success of its educational program.

*Educational Objectives*

It is fair to say that the Senior Project was initiated and developed at Allegheny before the educational objectives or learning outcomes hoped for from this experience were formulated in an explicit, elaborated, and consensus-based way. Still, it is an institutional fact that the Senior Project is the one sustained occasion when Allegheny students can put into independent practice the analytic, creative, and expressive habits cultivated in their major field(s) of study and in the college's liberal arts environment more generally. In it students are called on to integrate discipline-specific knowledge with the communication and research skills they have practiced, since their first semester, in the College's general education sequence of writing- and speaking-intensive seminars. The senior project grading rubrics that departments and programs have been developing in recent years reflect these educational goals.

*Administration, Policies, and Procedures*

The specific nature and administration of senior projects—their length, methodology, and standards of evaluation, for example, and how students arrive at their topic and are assigned their senior project advisors—are defined by each department and program. There is no central administrative or faculty group regulating these matters. The one exception to this rule is in the determination and distribution of "senior project points" for faculty (see below). The project point system was initiated and defined by the Provost, in consultation with Faculty Council, and the Registrar keeps track of each faculty member's points total, in consultation with department and program chairs.

Students receive anywhere from 4 to 8 credits for their senior projects. (At Allegheny, a course typically is worth 4 credits.) The most common credit total is 6, spanning two semesters (a two-credit preliminary course experience, in which students do research and develop their project proposal, and the four-credit project itself); 10 of Allegheny's 22 majors require a two-semester, 6-credit sequence. Seven majors are the one-semester, four-credit variety; three majors offer the option of a one- or two-semester senior project (with total senior project course credits varying from four to eight); one department, Environmental Science, requires a two-semester, eight-credit senior project experience, and one department, Communication Arts, has a two-semester, five-credit project.

There is nearly the same level of variation in how the specific topics for senior projects are chosen. Some departments take a relatively laissez faire approach, inviting students to approach faculty whose expertise matches (exactly or roughly) the focus the student would like to take in his or her project, and the two have a conversation in which, typically, the topic is modified for practical reasons but still reflects the student's original interest. Other departments present categories of topics to their rising seniors (through their website, in a department-wide open house, or in some other way), and students choose a topic within those categories, each asking to work with the faculty member identified with their chosen category. Other departments guide the choice of topics much more firmly, usually through a junior or senior seminar, in which the research focus of that course is extended into the senior project itself. This model suits some natural science departments particularly well since students' senior project work can merge with the ongoing research of the faculty member teaching the pre-senior project seminar in question. Almost all departments also require a senior project proposal—usually that is the culminating product of the two-credit preliminary senior project course—and further practical modifications of a student's topic occur through a faculty vetting of the proposal. This vetting occurs among the student, the designated senior project advisor, and the "second reader," that is, the other faculty member on that senior project board. In the case of double majors, the discussion over the

proposal is especially important, since the challenge of crafting a topic that satisfies two departments at once (in the case of joint projects) can be pronounced. In that case, the two faculty advisors are both senior project directors, one from each department involved.

As suggested above, the senior project topic-selection process is conjoined, in many cases, with the process by which mentors are assigned to seniors. Obviously, in the case of departments where the junior seminar leads quite explicitly to the senior project, the options for students in choosing senior project mentors are limited—limited, by and large, to those faculty teaching those seminars. In terms of the composition of the senior project board, nearly all departments now have two-reader boards: the senior project director (also called "first reader") and the second reader. In most departments, second readers are assigned by the department chair, working by the principles of relevant expertise and work-load equity. (In joint-projects for double-majors, the two faculty readers are the comp advisors from the two departments in question.)

Allegheny has no formal senior project mentor training program or handbook for faculty, as of yet. We have depended on collegial mentoring (and perhaps institutional osmosis) to bring new colleagues up to speed in this area. In recognition of the teaching and work-load challenges specific to successful senior project advising, it is common practice not to allow first-year tenure track faculty to advise senior projects. Furthermore, some departments help new colleagues learn these ropes by having them sit in on senior project oral defenses. It is also typically the case that non-tenure-track faculty do not advise senior projects; nor do adjunct faculty.

There are no formal expectations or requirements for senior project advising articulated in any college documents. The presiding assumption is that faculty will be guided in this mentoring by many of the same principles that define successful classroom teaching and academic advising at Allegheny: a demonstrated competence in their field of specialization (citing relevant research in the field, invoking current issues and problems for scholars in this area, placing this subject area within a liberal arts context, being willing to explore new areas of inquiry related to this field); the maintenance of evaluative standards (demonstrating personal and professional integrity, adhering to high standards for student performance, grading fairly); and a willingness to work with students in an advising capacity (being available for student consultation, being sympathetic to student needs). In practice, the mentoring process also adheres to certain conventions. In the Humanities and Social Sciences, students usually meet with the senior project advisors at regular intervals (once every week or two), often to discuss chapter drafts. In some large departments in those divisions, these meetings happen in "comp groups." The mentoring routine is usually different in the Natural Sciences, organized as that work is by collaborative laboratory work. On the occasions when students "fall behind" in some way—do not turn in chapter drafts by the appointed date, miss lab sessions, fall behind in data collection, etc.—faculty are free to "mentor" as they choose (from contacting and persistently encouraging such students, to granting them complete independence and leaving them alone).

Regarding policies for senior projects that combine two majors: as with the formulation of joint senior project topics mentioned above, how such projects are undertaken is always negotiated by the three parties involved (the student and the two faculty readers from the two departments). There are some rules, though, that govern the parameters of such projects. In terms of credits, a student's joint project will have its credits "double-counted" in each department, even though this double-counting doesn't happen, quantitatively, on the student's transcript. (For example, if a student does a joint German and Music senior project, each department will understand that student to have added 4 credits to his major in their department, but he will not get 8 credits for the project on his transcript.) When the two

departments have asymmetrical senior project credit arrangements (a two-course, six-credit sequence in one department and a one-course, four-credit project in the other, for example), the faculty members and student need to negotiate a plan that satisfies both departments. Finally, on the specific question of which department's deadlines (for the proposal and the final draft of the project itself) obtain, the major that the student lists first in the major declaration form dictates on this subject.

There are two standard ways that senior project grades are determined. In most departments, the faculty board (the project director and the second reader—and, on rare occasions, a third reader) confers directly after the student's senior project oral defense and arrives at a grade. A few departments think of such grades as provisional. At the end of each semester they meet to discuss all the senior projects in the department that term, along with the provisional grades they received, with the intention of having these discussions "norm" the grades across the department. Most departments (no matter which of the above two paths they take to grading senior projects) have created senior project rubrics which also help to systematize such grading. Most departments also have senior project guidelines which they distribute to their majors; these guidelines spell out the department's expectations for senior projects, along with enumerating protocols (such as manuscript formatting), deadlines, and "late-comp" policies. Senior projects that are completed after the deadline will receive a grade penalty that is usually stipulated in a department's guidelines.

*General Requirements and Expectations*

Not surprisingly, departments understand most of the course work required of the major as prerequisites for the senior project. (The three-course writing- and speaking-intensive seminar sequence, required of all first and second year students, can be said to begin all Allegheny students' preparation for the senior project.) With one exception, every major requires a junior seminar. (In Religious Studies this course is required but is designated a "Group Tutorial," in deference to the heterogeneity of methodologies and content areas in this field; in three interdisciplinary majors—Biochemistry, International Studies, and Neuroscience—a junior seminar in one of the contributing departments is required.) The junior seminar is the closest Allegheny comes to focused, college-wide curricular preparation for the senior project. In many departments, junior seminar work includes the first stages of students' work on the senior project research and proposal; in many others, the seminar includes a substantial research project akin to senior project work, so that students practice the methodology of senior project work, even if they don't begin work on that very project.

As we have noted, all senior projects include a written document and an oral defense or presentation when the project has been completed. The College now archives these documents electronically, in "D-space," an archival system that is password-protected and accessible to all faculty and current students. (Older senior projects are stored as hard copy in departments or the library.) These documents can vary in length and substance, of course, given different disciplinary conventions and methods. (English and history majors have written 100 page theses; mathematics majors have submitted twelve pages of original, elegantly proven theorems.) For some majors, the written document complements another original artifact or representation, such as a piece of visual art, a musical performance or original composition, the performance of a theatre major's original play, or a poster summarizing research findings in a biology senior project.

The College has for the past six or seven years hosted some version of a senior project celebration, during which select students have presented, in abbreviated form, the senior project to a wider audience. We have not canceled classes during these events, however, so attendance at them has been

uneven. Our Curriculum Committee is currently working on a revision of the academic calendar that includes a "protected day" at the end of the school year when such presentations can occur and draw a wider audience. It should be noted that a few departments hold their own version of such events, with seniors making poster presentations about the senior projects to students and faculty in the department. For these departments, such presentations constitute the main "oral" component of the senior project experience and are in keeping with the dissemination practices in such fields.

*Resources*

Six years ago the Provost initiated a point system by which faculty could be compensated, through course releases, for advising senior projects. The formula of this compensation equates every senior project (no matter its duration or course credit equivalents) with 4 project points. In single-major projects, the faculty advisor usually receives 3 points, and the second reader receives one. In a joint project, the two advisors typically divide the 4 points in half. When a faculty member has accumulated 44 points, he or she becomes eligible for a course release, the timing of which is negotiated by the department chair and the Provost, depending on departmental circumstances. (Project points cannot be so "saved up" that a faculty member receives more than one course release at a time. On the other hand, project points can theoretically be "banked" indefinitely.) The Registrar tabulates the "earning" of such points and informs faculty of their totals each semester.

In terms of the expenditure of faculty effort and time in service to the senior project, it is difficult to generalize accurately, since disparities in this area exist not only across departments but within them—and, at times, for individual faculty members, since each student compels his or her own amount of attention, guidance, and routine interaction. Still, speaking impressionistically, it is fair to say that directing five or six senior projects in one semester for many faculty members can approach the expenditure of time and energy required for teaching a stand-alone class. In the departments with the highest number of majors, Psychology and Biology, faculty can advise up to 10 or more senior projects at a time. While these departments have devised efficiencies, such as "comp" groups that meet once a week as a kind of class, senior project advising in those cases can seem fully equivalent to teaching another four-credit course (adding roughly 33% to a faculty member's teaching load). Conversely, in departments with low majors-to-faculty ratios, senior project advising of course adds much less to the faculty workload, though in a few such "richly staffed" departments, faculty have developed very time-intensive mentoring arrangements.

In terms of the institutional (and specifically staffing) costs of mandating senior projects, finding a numerical answer implies a precision that is finally illusory or at odds with reality. Our Registrar is quite insistent on this point. Given that substantial caveat, however, we can say the following:

- Each senior project is worth 4 senior project points for faculty[1]
- 44 project points is equivalent to a course (ostensibly in the form of a faculty course release)
- Most courses at Allegheny are worth 4 credit hours
- 11 senior projects are roughly equivalent to one regular course, carrying 44 total credits hours
- The current Allegheny Fact Book lists the average class size at 17, meaning, on average, a regular class generates 68 student credit hours

[1] While directing a senior project generates 3 project points, not 4, we've "rounded up" because in the course of advising 11 projects, most faculty would have also been second reader (a 1-point endeavor) as often, making up the "gap" between 33 and 44 points in the process.

- Therefore, in terms of credit hours, the ratio of one senior project "course" equivalent to one regular course is 44:68 (or 11:17), meaning, on the staffing side, that it is about half again as expensive to "teach" senior projects as it is courses.

For students there are funds designated to support their work in the senior project. Some departments, such as Computer Science, have budget lines that can, to a modest degree, be used to underwrite the purchase of materials and other necessities for student projects. The Allegheny College Center for Experiential Learning can help fund students' travel to conferences in which they present research undertaken in their senior projects. On rare occasions the Allegheny Student Government can also be a funding source for senior projects. Finally, the "Class of 1939 Senior Research Fund," managed by the Provost, underwrites research and other senior-project-related expenses for students; these awards are usually capped at $500 per student. In terms of infrastructure or staffing, though, there are no designated facilities or technical support colleagues exclusively devoted to supporting senior project work.

**Augustana College**
**Senior Inquiry**
**Capstone Description**

The capstone experience at Augustana College is called Senior Inquiry (SI). In most disciplines students produce a culminating project in an inquiry-based curriculum that asks them to synthesize, analyze and reflect on their course work in the major, their broad college experience and its relationship to the needs of the community. The Senior Inquiry structures developed by various department and programs include a variety of models, such as traditional independent research, internships, literature reviews and analysis, civic engagement projects, and student teaching. The reflection component asks students to assess how their projects contribute to the intellectual, social, and physical communities of which they are a part, and how they could make a difference in those communities.

*Origin and History*

While approximately half the programs at Augustana had for many years included some sort of senior paper or project, these varied widely. In the early 2000's our outcomes assessment data (particularly NSSE) indicated that the college needed to take steps toward formalizing and expanding its capstone expectations.

In 2005, the dean and a group of faculty drafted a proposal to create an institutional response to the identified need. Ultimately, a committee of faculty led by an associate dean developed guidelines, approved by a vote of the full faculty, that departments and programs would use in designing a capstone requirement for their program, with proposals to be submitted for review. Specifically, Senior Inquiry was expected to be:

- Substantial in meaning and impact
- Communicative of the discoveries made through the project
- Reflective of one or more of the following:
    - the nature of knowledge and inquiry
    - self-awareness and connection with others
    - the relationship of individuals to a community

In addition to these outcomes, departments and programs were encouraged to design offerings that enable students to integrate two or more of the general education dispositions (attributes such as life-long learning, responsible citizenship etc.) Given the breadth of these outcomes, departments selected the particular goals most relevant to the major. Departments and programs were expected to build assessment strategies into their proposals.

Starting in 2006, departments and programs began work on creating their Senior Inquiry proposals. Typically, this involved careful examination of existing curricula to insure that students would be prepared for their senior projects and the redesign of the major to include appropriate supporting courses. Multiple models (i.e. traditional research; internship; civic engagement project) for the capstone experience were encouraged. Projects could extend beyond a single term. If a proposal requested additional staffing, it needed to be approved by the dean. Proposals were then vetted through a faculty committee and proceeded through the normal channels of faculty governance for approval. As of this writing in 2011, approximately 90% of Augustana students complete a Senior

Inquiry project with more being added each year as departments and programs implement their proposals.

The unique feature about Senior Inquiry at Augustana is its reflective component. A significant portion of final papers and presentations focus on the students' metacognitive interpretations of their learning, not only during the SI project but also as it connects to their course work at Augustana. Students are also expected to assess how their projects contribute to the intellectual, social, and geographic communities of which they are a part, and they are asked to consider how they have and could make a difference in those communities.

*Educational Objectives*

The objective of the SI process was that the student would demonstrate integration of knowledge within a discipline with all aspects of the Augustana experience and beyond. A goal is that programs would enhance meaningful one-on-one relationships between students and participating faculty and staff. These very broad, college-wide parameters were operationalized by the individual departments and programs. Outcome statements typically discuss understanding foundational knowledge and skills, engaging in meaningful research, communicating results in both written and oral forms, and reflecting upon expertise in the major and integration of the liberal arts.

*Administration, Policies and Procedures*

The administration of the Senior Inquiry program is very decentralized. Each department or program has negotiated its own parameters in terms of credit requirements and load credit for mentoring. Sometimes if more than one option for SI is offered, these can vary even within the department or program. Three are the fewest credits required for SI, and nine credits are the most. In 2010-11, 1,309 credits of SI were generated with 133 credits of assigned faculty load. Overall, 9.8 student credits were generated for each credit of faculty load, but this varied widely by department and program. In contrast, regular upper division courses generate about 20 student credit hours per credit hour of faculty load. In some cases, faculty were supervising/mentoring 3 students while in others it was 15-20.

Most frequently, departments create a designated SI course or courses that are included in the course catalog and scheduled for one or more terms with a designated instructor. Students register for the SI courses as usual and are all mentored by the instructor assigned to the course.

Probably because the SI program is relative new, the faculty role is not as defined as it might be, and mentoring has not received a great deal of attention. Departments and programs assign mentors in many different ways. In some areas, the students are dispersed across departmental faculty so that every faculty member oversees projects. In other areas, certain faculty are assigned to the designated courses, and this assignment rotates through the department. Preparation for the faculty mentoring experience tends also to be handled within the department or program. Faculty will typically share syllabi and other resources. Choice for the SI focus also varies by department. In some instances, the topic is selected by the faculty member, but mainly students choose their projects. In almost every department/program, faculty attend the students' final presentations, and in many cases also participate in grading them using a common rubric.

Student experiences also vary widely both before and during the SI experience. Project requirements also offer alternatives. While the most common type of SI is a traditional research project, paper and

presentation suitable to the field, students in many departments/programs have options. The English Department, for example, offers a series of seminars from which students can choose. The Religion Department requires an internship or community based project before students enroll in the course where they research, write and present their papers. In Business Administration, and Multimedia Journalism, students can elect to complete an internship and accompanying reflective component. Students in Psychology and Communication Studies may opt to do a community based project. In Biology, students choose from a literature-based inquiry (resulting in a literature review or grant proposal), laboratory or field research, or an off-campus research opportunity.

Students who are double majors are similarly confronted with a variety of scenarios. Some departments/programs substitute an upper division course if the student is completing a SI in another area. Other departments/programs collaborate to offer an interdisciplinary option that pulls the student's areas of interest together. Finally, some departments see the SI as an integral component of the major and require that all students complete it even if they are also doing one elsewhere on campus.

Grading uses the standard A-F grading system. A pass/fail option is not available. If a project extends beyond one term, departments/programs can decide if each term will be graded separately or if the final project grade will be awarded at the end.

*Student Preparation*

Departments were expected to examine how they would prepare students for SI. The Biology Department, for example, thoroughly revamped their offerings according to a model they had developed called IRIS (Integrated Reflection and Inquiry in the Sciences). First year students now take a course called "Becoming Biologists" in which they explore what is means to enter the discourse of their discipline. Communication Studies requires that students select three of nine different one-credit methods modules prior to the senior year. In Art, students plan for their senior exhibit during a junior year course. Psychology and sociology students complete a research methods course.

*Celebrations/recognition for completed projects*

A campus-wide "Celebration of Learning" is held each spring as one venue for students to present their project results as a talk or poster session. Individual departments also sponsor presentations open to the campus. Students are also often encouraged to present at student research conferences sponsored by various disciplinary societies.

*Assessment*

As a part of the SI proposal, departments also were asked to describe how they would evaluate their final projects. Many departments/programs use the final project as an indicator of student learning. For example, all faculty in the department attend the final presentations and evaluate each on a common rubric. They draw upon observed strengths and weaknesses in modifying their curriculum and pedagogy.

*Resources*

The staffs at the Tredway Library and the Reading-Writing Center have been instrumental in assisting students. They have offered special instruction in databases and bibliographic software. They have also worked with students on writing their final papers.

A number of financial initiatives have been institutionalized to support SI. Some students choose to use "Augie Choice" funding to support their senior inquiry. "Augie Choice" is a $2,000 grant for which junior and senior students can apply if they are conducting research, completing an internship, or studying internationally. In 2010-2011, 16% of the students used this grant for research. Faculty can also apply for summer funding when doing research with students. Some departments allow students to complete a summer REU at other institutions as a means of fulfilling the SI expectation. Finally, the dean has recently established special funding to enable students to present their research at state, regional and national conferences.

**The College of Wooster**
**Capstone Structure Description**

**Summary description**

Wooster's Independent Study program (I.S.) has a long tradition of being a graduate requirement of all seniors since its introduction by President Harold Lowry in 1948. Completed in the area of the student's major(s), the program's emphasis is on the development of independent critical and creative thinking skills that are the foundation for learning throughout life. Over two semesters, each senior works individually with a faculty advisor (the "first reader") on a topic agreed upon between the student and the advisor, culminating in a thesis or creative project, and defended in an oral presentation. Students with two majors either complete a Senior I.S. thesis in both departments or, more commonly, complete a single thesis on a topic acceptable to both departments. Often students present the results of their research at professional meetings in their discipline, publish results in peer-reviewed journals or in creative periodicals, or continue their research in graduate school.
The theses are due on "I.S. Monday," the first Monday after Spring Break, and are evaluated by the I.S. advisor (the first reader) and a second reader, who is typically another faculty member from the department of the student's major. A more recent addition to Wooster's I.S. tradition is the Senior Research Symposium, an event to which seniors are invited to share their work with the campus and local community; the symposium is held one Friday late in the spring semester, and all classes are cancelled. In order to provide the time needed to advise seniors, I.S. advisors receive a single course release for every five seniors advised over an academic year.

*Origin and history*

When Howard Lowry left Princeton University in 1944 to become president at Wooster, he brought with him the belief that Princeton's independent study program should become an integral part of Wooster's curriculum. Lowry argued that the most effective learning occurs through the independent effort of the student; that personal development is more than acquiring subject matter knowledge; and, that grappling with the basic problems of scholarship gives the student the confidence and abilities necessary for lifelong learning. As a fundamental component of a liberal arts education, Lowry also believed that participation in the program should be a requirement of all students.
The curriculum was revised in 1948 to include a four-semester, twelve-credit program in independent study. All seniors sat for a senior comprehensive exam to test disciplinary knowledge (a check on breadth within the discipline) and a field examination to measure progress in the area of the student's project (a check on depth). By 1953, the comprehensive exam was largely gone and the field exam had become an oral defense of the thesis in many departments and in others a written response to questions about the thesis. Eventually the Independent Study program was reduced to three semesters and a required Junior Independent Study was instituted as a prerequisite for registering for Senior Independent Study in the senior year.
From the beginning departments were given latitude in how they implemented the program, including how topics were selected, how mentors were assigned, how the mentoring was done, and how the final grade was determined. Over time each department has produced a system that reflects the discipline's unique ways of thinking. Indeed, I.S. is regarded as moving students from *studying* in a discipline to *practicing* in a discipline. Today, Wooster faculty members regard I.S. as the culmination of a four-year academic journey and as a framework for thinking and inquiry that brings cohesion to the curriculum.
Most assessment within the disciplines at The College of Wooster began with the development of rubrics to assess the written I.S. thesis, the oral defense, and/or the I.S. process. For example, in the

Philosophy Department, the Junior I.S. is considered the critical point in the curriculum in which a student begins to transition from *studying* philosophy to *doing* philosophy. Assessment practices in the Philosophy Department, which involved the development of several rubrics and the use of primary trait analysis at key points in the department's I.S. process, have played a vital role in the design of the department's Junior I.S. course as a research seminar encouraging this transition. (See Rudisill, J. "The Transition from Studying Philosophy to Doing Philosophy."*Teaching Philosophy*, v. 34 Issue 3, 2011, p. 241. Dr. Rudisill was awarded the 2012 Lenssen Prize for the best published article on teaching and learning in Philosophy in 2010 and 2011.)

*Educational objectives*

Several documents describe the rationale and general goals of the Independent Study program. An enduring aspect of the I.S. Program has been the creation of a body of scholarly and/or creative work that was generated independently by the student using the tools and theories of a discipline and that somehow advanced or otherwise contributed to a field of study.
The current curriculum, "A Wooster Education," was adopted in 2001. Consistent with the rationale given when I.S. was introduced "A Wooster Education" describes I.S. as epitomizing the goals of a liberal arts education, the heart of which is the development of engaged and independent learners.
Similarly, Section 3 of the Faculty Handbook which contains the "Handbook for Independent Study" places I.S. in the context of a liberal arts education: "The capacity for individual inquiry and expression is a mark of a liberally educated person, and the objective of the Independent Study program is to provide an opportunity through which this capacity may be nurtured." (Faculty Handbook, Section 3, p. 2)
A study of Wooster's independent study program was initiated in 1953. The preface to that work provides a justification for the creation of the program and is remarkably relevant to today's thinking:

> Another basic consideration is the need for men and women with initiative, imagination, and independence. We live in an age of mass communication which tends to breed conformity. At the same time there is greater need for men capable of original thinking than ever before. The tempo of social change today, imposed by advancing science and technology, is certainly without precedent in all our history. Adjusting to these changes will require leaders of imagination, creative intelligence, and critical judgments. Without them social stability and progress will be jeopardized. Thus society has a stake in the kind of education that develops originality, creativity, and independence. (p. viii)

Every department or program that offers a major has an I.S. handbook specific to its majors. Some of these handbooks include the learning goals for the major and, at least indirectly, places I.S. in the context of those goals. No handbook offers specific learning goals for its I.S. However, in most departments the learning goals and I.S. come together in the rubrics that are used to evaluate I.S. theses.

*Administration, Policies and Procedures*

*Institutional oversight*: There is no central committee charged with overseeing the Independent Study program. Issues relating to the Independent Study curriculum are discussed by the Educational Policy Committee. No review of the I.S. program has been done in recent memory.
*Student Course Credits*: In most departments Independent Study is a three-course sequence beginning with Junior Independent Study (I.S. 401), which is a prerequisite for registering for the first course in Senior Independent Study. A few departments lack a distinct Junior I.S. course, choosing instead to incorporate Junior I.S.-like elements into a course in the major that students typically complete in their Junior year. For all students, Senior Independent Study consists of two courses: I.S. 451 in the fall

and I.S. 452 in the spring. A “grade” of “Satisfactory” must be received in I.S. 451 in order to register for I.S. 452. Each full course at Wooster is considered to be the equivalent of four credit hours, so all Senior I.S. courses count for eight credit hours. Double majors completing a single I.S. will register for 451 in one department and 452 in the second department.

*Faculty Teaching Credits*: The teaching load at Wooster is 5.5 teaching credits per year. Faculty members receive one course release for advising five IS students in both IS 451 and 452 during students’ senior year. The course release is taken in the academic year the students are advised. Faculty members may “bank” teaching credits. Hence, a faculty member advising seven students may take a single course release and bank the remaining .42 credit hours (0.2x2semesters). In a subsequent year, the faculty member might advise three students and draw on their banked credits to get a full course release.

*Topic selection*: The process used to determine the student's I.S. topic varies by department, but is student-driven and negotiated with the advisor. The degree to which topic selection is student driven varies by department. Many departments hold a meeting of rising seniors to discuss how I.S. is done in the department. This is often when the department’s I.S. Handbook is made available and students have an opportunity to ask questions about the process and possible topics. Faculty share their interests and ideas for I.S. topics through their department’s handbook, on the department web page, through individual meetings with students, or through a meeting with rising seniors.
Some departments require the student to identify their topic by the end of their Junior year while others leave the selection to the beginning of the Senior year. Some departments allow the student to pursue a topic developed in their Junior I.S., while other departments require that the student pursue something different. Students in the sciences are more likely than students outside the sciences to work on a topic close to their advisor’s research area.

*Project types*: The expectations for the Senior Independent Study project vary by department. In Psychology, seniors must complete an experimental data-gathering project with a clear manipulation of at least one independent variable. In Physics the project must extend our knowledge of physics using at least one of the following techniques: experiment, simulation, theory. Some departments allow a wide range of Independent Study project possibilities. In English, for example, a student can do literary analysis, write a collection of short stories or poems, write a novella, pursue film studies, do news writing, write a memoir, or write a piece of creative nonfiction. In history, in addition to the traditional historical monograph, a student can produce a film documentary, produce a public exhibition, write an historical novel or develop a high school curriculum. The Theater and Dance program supports projects that are traditional thesis-based, are based on acting, directing, technology and design, stage management, modern dance and play writing.

*I.S. Advisor selection policies/methods*: The pairing of a senior with an I.S. advisor differs by department; considerations include student and advisor preferences, the student’s topic, and the need to distribute advising load. In some departments students submit a list of ordered preferences and an effort is made to match the student with his/her highest preference. In other departments, faculty will accept students on a first-come basis until the faculty member has reached his/her I.S. advising load for the year. It is possible for the I.S. experience to be the student’s first time working with a faculty member or for a student to be assigned to a visiting faculty member.

*Expectations/requirements for the mentor*: Section 3 of the Faculty Handbook, which contains the “Handbook for Independent Study,” outlines the expectations of the I.S. advisor. These include:

- helping to identify a topic that will challenge the student, but is doable given the student's abilities and the resources available;
- meeting with the student on a regular basis (3/4 to 1 hour per week on average, but this varies greatly by department) during which the advisor helps guide the student toward successful completion of his/her thesis;
- assisting with editing of the thesis; and
- providing the student with a written evaluation of the final work submitted.

All faculty members are expected to submit course evaluations for two different courses each year. However, few departments systematically evaluate faculty as I.S. advisors. An informal evaluation is done as part of the renewal, tenure, and promotion decisions at which time the faculty member is asked to provide a list of I.S. advisees who might be asked to comment on the quality and nature of the faculty member's advising.

*Grading policies/processes*: The I.S. thesis is graded "No Credit," "Satisfactory," "Good," or "Honors." The final grade is decided on the basis of the work accomplished during each of the semesters, the quality of the completed thesis, and the oral defense of the thesis. Each thesis is evaluated by at least two faculty members (the first and second readers; the first reader being the student's I.S. advisor), who jointly assign the grade. Some departments hold a meeting to discuss assignment of I.S. grades. Where there is disagreement that cannot be resolved, a third reader may become involved.

*General Requirements and Expectations*

The Handbook for Independent Study in the Faculty Handbook describes the three elements that make up an Independent Study thesis or equivalent project:

Content - Students differ in their individual interests and the requirements for various courses of study are not uniform; consequently, there are few rules for the proper choice of content for I.S. projects. A well-selected thesis or project should be governed by such consideration as the significance of the subject for personal intellectual development, the progress of professional understanding, and the needs of society. Given the constraints imposed by available resources and time, the manageability of the topic is also an essential consideration.

Method - Implicit in every inquiry is a method or plan which includes a logic, a design, or a deliberate conception of what is being attempted. The method selected will determine the techniques, devices, or tools appropriate for the project.

Form - The successful completion of the project requires the communication of what has been discovered or developed. Through the form of the thesis or creative project, students share with others the results of their efforts. Whether by exposition or through an act of creative expression, the forms of communication should be consistent with the content and method and should be chosen carefully to communicate as clearly and forcefully as possible the results.

Typically there is an oral defense of the thesis.

Within this context, each departmental I.S. Handbook provides additional requirements.

*Student Preparation*

Independent Study is regarded as the culmination of a four-year program. The general education requirements and courses taken in the student's major are intended to prepare the student for Senior

Independent Study by developing disciplinary expertise, critical and creative thinking skills, and communication skills.
Most departments require their majors to successfully complete a research methods course (often designated as Junior I.S.) before being allowed to register for Senior Independent Study. The development of writing skills begins with First Year Seminar and continues in a writing intensive course that must be completed prior to beginning Junior Independent Study.

*Resources*

The Copeland Fund for Independent Study was created in 1995. In 2011-12 it will provide $90,000 in funding to seniors to support their projects. The process involves writing a proposal which is reviewed by a committee of faculty and is highly competitive.
Seniors are eligible to apply for library study carrels which are theirs for the entire senior year. The number of carrels is fewer than the number of seniors and carrels are allocated on a first-come-first-served basis.
All students have access to several support centers (Educational Planning and Advising Center, Writing Center, Learning Center, and Math Center). Seniors frequently use the Writing Center for assistance with their thesis.
In January 2012, the Collaborative Research Environment (CoRE) was opened in a renovated space in Andrews Library. CoRE offers collaborative spaces; presentation practice rooms; advanced technology; and support staff for research, writing, and new media needs. Its objective is to support undergraduate research generally, but it is seen as an important new resource for seniors.

*Celebrations/Recognition for Completed Projects*

The student submits two bound copies of his or her I.S. thesis to the Registrar by five p.m. on the first Monday after spring break. The Registrar reciprocates by giving the student a Tootsie Roll and a numbered black and yellow button that proclaims, "I did it." At five p.m., seniors who have submitted their thesis gather by the arch in Kauke Hall. The Scot pipers begin to play and the Dean for Curriculum and Academic Engagement and the pipe band lead the annual I.S. parade through the Kauke arch (in the opposite direction through which they walked as first years) and around campus.
In late April classes are cancelled on a Friday to hold the Senior Research Symposium during which seniors present the work they did for their Senior I.S. through presentations, posters, and exhibits.
Each year the *Wooster Magazine* devotes an issue to that year's I.S. projects.
The College web page features short videos of students describing their I.S. experience, and Andrews Library has a public meeting space with a large touchscreen monitor with a similar set of videos. This location is part of the tour given by the Office of Admissions to prospective students.
*Formal Assessment Structures for Evaluation of the Capstone Program*
There has been no formal assessment of Independent Study in recent memory and there is no effort to use I.S. to assess general institutional learning objectives, including the recently adopted Graduate Qualities. Most departments and programs that offer I.S. use it as their direct measure of assessment of learning in the major or minor. The Teagle Capstone Project undertaken from 2009 to 2013 has been the first formal assessment of I.S. in decades.

**Washington College**
**Senior Capstone Experience**

All Washington College students have been required to complete some form of senior capstone since the 1959-1960 academic year when the college made the move to the current four-course plan. The exact nature of the capstone has always varied across departments, largely as a reflection of the many different modes of inquiry existing at a liberal arts institution. Until the 2006-2007 academic year, the capstone experience was known as the "Senior Obligation," and neither students nor faculty received course credit for completing the obligation. Due to growing student and faculty concern over workload issues, the Faculty Affairs and Curriculum Committees began discussing changes to the obligation in 2005, and generated a proposal that was approved by the faculty and the Student Government Association in the Spring of 2006. Beginning in the Fall of 2006, the Senior Obligation became known as the "Senior Capstone Experience," students began receiving four credits for completing the capstone, and faculty began receiving one course credit for every 12 capstones they supervised.

*Educational Objectives*

As stated in the Washington College catalog, the Senior Capstone Experience (SCE) "requires students to demonstrate the ability to think critically and to engage in a project of active learning in their major field of studies. In the SCE, required of all graduating seniors, students integrate acquired knowledge and skills in a senior project demonstrating mastery of a body of knowledge and intellectual accomplishment that goes significantly beyond classroom learning" (p.38). While the specific design of the capstone may vary, all capstones "will be informed by the following expectations:

- Demonstrated student initiative
- Significant preparatory work
- Active inquiry
- Integration of acquired knowledge and skills
- Culmination of previous academic work" (p.39)

For most students, the SCE also represents the culmination of four years of writing at Washington College that begins with a two-semester sequence of writing intensive courses in the first year, continues with two semesters of writing intensive courses in the sophomore and junior years, and ends with the capstone.

*Administration, Policies and Procedures*

Our Washington College's SCE program is administered almost entirely at the department level. We have no SCE committee, no lead administrator for the program and no college-level administrative oversight of any sort. Although our college catalog states that, "The Curriculum Committee will review, at regular intervals, departmental policies regarding the Senior Capstone Experience to ensure compliance with the expectations listed above and overall equality of demands across departments,"(p.39) such a review has not yet been conducted.

In the absence of centralized oversight, details regarding capstone policies are determined by departments, resulting in substantial variation across the college. While the College has always been aware of this variation and, to some degree, has even considered it to be a strength of the program, the degree of variability and its effects on students and faculty were not fully understood until the college

participated in the Teagle-funded Capstone project.

At Washington College, all students complete the SCE, all receive 4 credits for doing so and all faculty receive either a course release or a small stipend for every 12 capstones they supervise; aside from these constants, all other aspects of the SCE vary by department.

For example, departments report that students work on their SCE's between 2 and 25 weeks ( $\overline{X}$ =13.56). Also, while 30% (*N* = 7) of departments allow students to choose the topic for their SCE, 65% (*N* = 13) rely on a process of negotiation between student and mentor. The final topic is usually allied with the faculty mentor's interests and expertise (65% indicated that this occurs "usually" or "always"), but is much less likely to be allied with the faculty mentor's research (21% indicated that this occurs "usually" or "always"). Perhaps in part due to the high level of inter-departmental variation, no college-wide mentoring or training of SCE mentors occurs, and there are no college-wide, formal expectations or requirements for mentors. However, many departments engage in informal mentoring of new SCE mentors during which the departmental expectations and requirements are made clear. Such mentoring is usually at the discretion of each department chair, and to the best of our knowledge neither the college nor any department has ever produced any sort of handbook for mentors specifying these expectations and requirements.

Similar variability exists in the selection of faculty mentors with 48% (*N* = 11) of departments reporting that mentors are chosen by students, 30% (*N* = 7) reporting that pairings are negotiated between students and mentors, and 13% (*N* = 3) indicating that students are assigned a mentor by the department. In addition, in one department all faculty mentor every student and in another, one faculty member mentors all students. Students usually do get their first choice for mentor (83% indicated that this occurs "usually" or "always"), and when they do not, it is usually due to a need to equally distribute the mentoring load.

Grading policies are also variable with most departments (75%; *N* = 12) utilizing the Pass/Fail/Honors system that had been universal before 2006, and a few departments (25%; *N* = 4) utilizing traditional letter grades plus Honors. Also, 47% (*N* = 9) of departments have only the mentor grade the SCE, 26% (*N* = 5) also use a second reader, 21% (*N* = 4) require the entire department to grade each SCE and 5% (*N* = 1) employ a departmental committee. Most departments (63%; *N* = 10) reported that they did employ a grading rubric to determine capstone grades, while a significant minority (37%; *N* = 6) reported that they did not.

Finally, double majors complete a single, combined capstone about 50% of the time. Whether the capstone is combined or separate, each faculty mentor receives full credit (1/12) for that student, but the student receives only one course credit.

*General/Core Requirements*

The only college-wide requirements are that every student must earn a passing grade on the SCE, that the SCE must be completed by the last day of classes in one's senior year, and that the student must electronically submit the completed SCE to the library.

*Student Preparation*

Of the 16 departments at Washington College completing our capstone Departmental Administration

survey, 69% (*N* = 11) reported that they offered a course specifically designed to prepare students for the capstone. Depending upon the department, these preparatory courses include Junior Seminars, Senior Seminars, and various research methods courses. Virtually all of these preparatory courses involved learning methods useful for the SCE, determining the SCE topic, developing a capstone proposal, starting work on the SCE, and refining discipline specific communication skills. About half included assigning students to SCE mentors, and only 12% (*N* = 2) prepared students for a comprehensive exam.

*Description of Capstone Types*

Capstone types vary widely across departments, but also within departments. Of the 15 departments responding to this question, 47% (*N* = 7) offer more than one capstone option; five departments offer two options, while two departments offer three options. The available types are listed below.

- Traditional thesis (all Departments offer this as an option)
- Visual thesis (Art)
- Curating thesis (Art)
- Comprehensive exams (Art, Biology, Economics, English, Modern Languages)
- Drama Production thesis (directing, performance or design)
- Playwriting thesis
- Solo recital (Music)
- Extended composition (Music)
- Lecture recital (Music)
- Programming project (Computer Science)
- Strategic analysis of a firm (Business Management)
- Experiential (Business Management)
- Experimental capstone (Biology, Chemistry, Psychology)

*Celebration/recognition for Completed Capstones*

Unfortunately, Washington College does not have a college-wide celebration, but a number of departments host events for this purpose. For example, the Biology, Chemistry and Psychology departments host separate poster sessions in which seniors present their completed SCE's to other students, faculty, administrators and parents. Also, students completing a visual thesis present their work at the Annual Student Art Show, Drama students present their productions, and all students submit their capstones to the college library's online database.

*Formal Assessment Structures for Evaluation of the Capstone Program*

The college engages in no formal assessment of the capstone program. The course is not evaluated by students using our standard course evaluation form (nor could it effectively be evaluated using this form). Some departments engage in yearly, informal evaluations of their programs, typically through intra-departmental discussions of the strengths and weaknesses of graduating seniors. As mentioned above, the college catalog does state that the Curriculum Committee will periodically evaluate the SCE program, but such an evaluation has not occurred since the creation of the new SCE program in 2006.

*Resources*

Faculty members at Washington College receive either one course credit or a stipend ($3,000) for every 12 SCE's they mentor. Credits are tracked by Department Chairs and by the Registrar, and faculty must take the course release or stipend when they reach 12 credits (i.e., they cannot "bank" 24 credits and take two course releases). The decision, in 2006, to begin giving faculty course credit for supervising SCE's was intended to provide faculty with more time to devote to capstone mentoring. However, the college has always struggled to find and fund qualified adjuncts to cover course releases, so the majority of faculty members choose to take the stipend, thereby defeating the purpose of the course credit.

The 12 to 1 ratio was chosen to reflect the College's advertised 12 to 1 student/faculty ratio, but may not be an equitable rate when the SCE workload is compared to the workload for a typical course. Faculty reported meeting with each SCE student for an average of 1.41 hours per week, and spending an average of 2.88 hours per week working on all aspects (e.g., meetings, reading drafts, etc.) of each SCE. This means that faculty mentors are meeting with SCE advisees for an average of 17 hours per week (1.41 x 12) and working almost 35 hours per week (2.88 x 12) for one SCE course credit, but meeting with students for only 3 hours per week (and certainly working something less than 35 hours per week) for one typical course.

As for other resources related to the SCE, most departments reported that students received no funding support, though Chemistry and Drama reported providing funding to 100% of SCE students, and Biology, Psychology and History reported funding 20-30%. Two departments mentioned inadequate library resources for supporting capstones, and three suggested increased funding to support student conference presentations. While we have no funding sources specifically devoted to the SCE, some seniors do receive support for their projects through the Cater Society of Junior Fellows, and through several fellowships.

**Summary Notes on the Department Policies and Administration Survey**

This survey was completed by 108 departments/programs completed the survey. Respondents were fairly evenly distributed by school and the three major academic divisions (humanities, natural sciences, and social sciences).

Highlights:

- 67% of departments have a course specifically preparatory for the capstone
- Departments with a preparatory courses reported it covered the following items to the extent shown below:

| Please describe to what extent the following items are covered in this preparatory course: | % not at all/ very little | % to a great extent | Mean (4 pt scale) |
|---|---|---|---|
| 10 Refining discipline-specific communication skills | 4% | 70% | 3.19 |
| 6 Learning methods useful for the senior capstone | 4% | 65% | 3.80 |
| 7 Determining the topic of the senior capstone | 17% | 59% | 3.59 |
| 8 Creating a senior capstone proposal | 24% | 54% | 3.60 |
| 11 Assigning students to senior capstone advisors | 49% | 39% | 2.68 |
| 9 Starting work on the senior capstone | 37% | 27% | 3.34 |
| 12 Preparation for a comprehensive exam | 94% | 3% | 2.37 |

- 75% of the programs who reported their capstone had a fixed number of credit hours indicated it was 4 semester credit hours or fewer. 5.6% reported 8 credit hours, the nominal amount expected for school Red.
- The mentoring workload is distributed among faculty mostly by a combination of student requests and a need to balance workload:

**DeptCap20 What best describes how the capstone mentoring workload is distributed among department faculty?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 other | 22 | 20.4 | 24.4 | 24.4 |
| | 1 by student requests for individual faculty | 31 | 28.7 | 34.4 | 58.9 |
| | 2 by assignment of faculty to a scheduled capstone seminar or course | 19 | 17.6 | 21.1 | 80.0 |
| | 3 by a department policy that balances loads | 18 | 16.7 | 20.0 | 100.0 |
| | Total | 90 | 83.3 | 100.0 | |
| Missing | 999999 | 18 | 16.7 | | |
| Total | | 108 | 100.0 | | |

- The most common practice for double majors is for students to do a single combined capstone:

**DeptCap22 How often does a student in your department who is a double major do a single combined capstone?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 rarely/never | 17 | 15.7 | 19.3 | 19.3 |
| | 2 occasionally | 19 | 17.6 | 21.6 | 40.9 |
| | 3 about half the time | 13 | 12.0 | 14.8 | 55.7 |
| | 4 usually | 30 | 27.8 | 34.1 | 89.8 |
| | 5 always | 9 | 8.3 | 10.2 | 100.0 |
| | Total | 88 | 81.5 | 100.0 | |
| Missing | 999999 | 20 | 18.5 | | |
| Total | | 108 | 100.0 | | |

- About half of departments report using traditional letter graded or letter grades plus honors:

| **What grading system is used for the capstone? Check all that apply.** | % yes |
|---|---|
| Pass/Fail | 5.6 |
| Pass/Fail/Honors | 11.1 |
| Honors/Good/Satisfactory/No Credit | 22.2 |
| Traditional letter grades | 45.4 |
| Traditional letter grades/honors | 4.6 |
| Other (please specify) | |

- Over ¾ of departments involve more than just the mentor in assigning the grade. Those who selected "Other" almost all indicated that the reader(s) recommended a grade, with the grades for the department's capstones reviewed by the department.

| **Who reviews the capstone for grading? Check all that apply.** | % yes |
|---|---|
| Mentor only | 22.2 |
| Mentor and second reader | 46.3 |
| Committee of department faculty | 7.4 |
| Committee of department and external faculty | 0 |
| The entire department | 12 |
| Other | 13 |

- Using a rubric in determining the grade is a reported practice by 47% of departments, while 53 do not use a rubric.
- Departments report funding to support student capstone projects varies from none to providing a fixed amount, to access to an endowment fund, or other individual fund (Augie Choice). 37% of departments report no students receive funding, 16% report all students receive funding.
- In response to "Please indicate any areas where you think support for your department's capstones is strong or inadequate", 10 departments listed both a strong and inadequate area, 14 only a strong area, and 27 only an inadequate area. The predominate sense is that departments are in need additional resources to support their capstone programs.
- The median reported percentage of students who do not pass the department's capstone is 2%.
- The median reported percentage of students who do not graduate due to failure to complete the department's capstone is 1%.
- The median reported percentage of students who had an undergraduate research experiences outside of the context of a course classroom was 20%.
- The median estimate for the percentage of students who present their capstone work at a professional or undergraduate conference was 10%.
- The median estimate for the percentage of students who publish their capstone work in professional journals was 2%.

Please see our DropBox for more a more detailed report on the results, including listings of the open-ended responses.

**Summary Notes on the Capstone Description Survey**

105 responses were received for this survey. Departments/programs were asked to complete the survey for each distinct type of capstone they offered, so multiple submissions were possible from a single department/program. Respondents were fairly evenly distributed by school and the three major academic divisions (humanities, natural sciences, and social sciences).

Highlights:

- Below are the results of a series of questions about the importance of various capstone characteristics, in descending order of the percent "essential". These are the overall results, and one would expect significant variation if the results were broken down by academic division.

| **Please indicate the degree of importance each of the following has as part of capstones of this type:** | % not imp | % essential | Mean (4 pt scale) |
|---|---|---|---|
| Production of a written thesis or substantial paper | 2.1% | 86.6% | 3.80 |
| An oral examination of the project | 6.0% | 78.3% | 3.59 |
| A literature search and review | 1.9% | 72.8% | 3.60 |
| An oral presentation of project progress or results | 8.9% | 64.4% | 3.34 |
| A reflective analysis concerning the project (e.g., its value, lessons learned, contribution to the discipline or to self-knowledge, etc.) | 9.3% | 54.7% | 3.19 |
| Generation of data through direct measurement (e.g. through experiments, observation, questionnaires, interviews, etc.) | 25.3% | 42.7% | 2.68 |
| Creation of or contribution to an artistic performance or product (music, art, theater, literary work ...) | 34.9% | 32.6% | 2.37 |
| Use of other library services (e.g. library instruction, reference librarian assistance, special collections) | 19.6% | 28.4% | 2.63 |
| A poster presentation of project results | 38.2% | 27.9% | 2.25 |
| Laboratory experimentation | 32.7% | 26.9% | 2.40 |
| Statistical analysis of data | 20.5% | 21.9% | 2.40 |
| Clinical or practicum experiences | 51.4% | 21.6% | 2.03 |
| A written examination | 71.0% | 19.4% | 1.74 |
| Collaboration with other students | 35.4% | 13.4% | 2.04 |
| Field study (e.g. research or projects carried out on location) | 30.6% | 11.3% | 2.05 |
| Internship experiences | 60.0% | 8.0% | 1.62 |
| Civic engagement or service learning experiences | 52.7% | 7.3% | 1.71 |
| Questionnaire construction and analysis | 49.1% | 5.7% | 1.68 |

- 90% of respondents indicated the mentor was assigned prior to the beginning of the senior year, 10% after the senior capstone has begun.
- Pairing of the student and mentor most frequently, but not always, involves student input or choice:

| **How is a student typically paired with a mentor for the capstone?** | **Valid Percent** |
|---|---|
| 0 other | 7.7 |
| 1 by enrolling in a course (e.g. capstone seminar) with a departmentally assigned instructor | 12.5 |
| 2 negotiated between student and mentor | 33.7 |
| 3 assigned by the department using student preferences | 40.4 |
| 4 assigned by the department not using student preferences | 5.8 |
| Total | 100.0 |

- The predominant mentoring style is 1-1 mentoring:

| **CapType34 If mentors supervise multiple students at one time, how is the mentoring typically structured (select the best option):** | **Valid Percent** |
|---|---|
| 1 using one-on-one mentoring only | 41.0 |
| 2 primarily using one-on-one mentoring, with less frequent group meetings | 29.0 |
| 3 primarily using group meetings (e.g. a seminar), with incidental individual mentoring | 11.0 |
| 4 primarily using meetings (e.g. seminar) but with significant structured individual mentoring | 8.0 |
| 5 varies by faculty member | 12.0 |
| Total | 101.0 |

- 88% of respondents report that the student usually or always is assigned to the mentor of their first choice. The most common reasons reported why the student would not get their first choice are to balance faculty workloads are to better match faculty interests or expertise.
- The topic of the capstone is most frequently negotiated between the student and mentor (53%) or by student selection (31%).

| CapType36 Typically, how is the capstone topic determined? | Valid Percent |
|---|---|
| 0 other | 11.7 |
| 1 student selection | 31.1 |
| 2 mentor selection | 3.9 |
| 3 negotiated between student and mentor | 53.4 |
| Total | 100.0 |

- Capstone topics are generally aligned with the mentors *interest or expertise*, but not generally with the mentor's creative, scholarly or research *projects*:

| CapType38 How often are students' projects allied with faculty mentors' creative, scholarly, or research projects? | Valid Percent |
|---|---|
| 1 rarely/never | 19.6 |
| 2 occasionally | 41.2 |
| 3 about half the time | 18.6 |
| 4 usually | 17.6 |
| 5 always | 2.9 |
| Total | 100.0 |

| CapType39 How often are student's projects allied with faculty mentors' interests or expertise? | Valid Percent |
|---|---|
| 1 rarely/never | 2.0 |
| 2 occasionally | 19.6 |
| 3 about half the time | 15.7 |
| 4 usually | 52.9 |
| 5 always | 9.8 |
| Total | 100.0 |

Please see our DropBox materials for a more detailed report, including written remarks to open-ended items.

# PART 3: CAMPUS IMPROVEMENT PROJECTS

A report from each campus of capstone improvement projects they intend to pursue as a result of their review of the data

- Allegheny
- Augustana
- College of Wooster
- Washington College

**Allegheny College Report to be inserted here.**

**AUGUSTANA COLLEGE**
**Overall Reactions**

Like our colleagues at the other institutions, we concluded that senior capstones are remarkably successful endeavors for both students and faculty. As the culminating experience in the major, senior inquiry has a powerful impact upon students. On the pre-post surveys our students reported significant gains in scholarly skills such a locating material, supporting arguments with evidence and using feedback, and in academic abilities such as writing, critical thinking and intellectual confidence. Survey results demonstrated that they enjoyed doing research and possessing research skills. In the written comments, students further indicated that they had developed an understanding of their abilities, were better able to manage projects, and liked working closely with their mentors. Augustana faculty were also very positive about the experience, even more so than faculty at other institutions. Their pre-post surveys reported gains in student communication skills, project management abilities, intellectual engagement and improved critical thinking. Their comments indicated that they enjoyed working with the students and learning about topics outside their area of expertise. Overall, both faculty and students perceive senior inquiry as one that is worthwhile and powerful.

**Specific Observations**

We were heartened to learn that both students and faculty saw SI as contributing to the development of public speaking abilities. A survey of recent alums conducted separately by our Advancement and Communications Offices (Dehne & Associates, 2011) suggested that our graduates were less than satisfied with their abilities to speak publically. Many of the graduates in this separate survey would not have completed the intensive SI experience that requires some form of public presentation. It is hoped that this gain reported in the capstone surveys and focus groups are illustrative of a trend that will assist our students in being better prepared for public speaking opportunities that they encounter as graduates. It will be a finding to monitor in the future.

We found our results raised questions for us to investigate in several areas.

1. In comparing pre-post student responses, Augustana was the only school that showed declines in satisfaction with instruction in the major field and with the overall college experience. While the decline on this factor was slight (4.44 to 4.37), it was statistically significant and should be further investigated.
2. While not all of our alums that returned the alumni survey also completed capstone experiences, on the whole they were less positive about the experiences they have had and its contribution to their development.
3. Our focus groups report suggested that we needed to do some work institutionalizing the SI experience, building the reflective component and enhance our assessment of the senior experience.

**Next Steps**

We have two outcomes that we would like to implement.

1) We will recommend to our Nominations and Rules Committee the establishment of a SI subcommittee of our Educational Policies Committee. Right now, we don't have any oversight committee for SI. Once department proposals were approved, the committee disbanded. An oversight committee would insure that the many variations of our experience maintain a strong standard. It will also help us:
    - identify and share best practices,
    - develop support services in place to assist students and faculty,
    - consider issues such as workload and rewards for mentoring are adequately addressed.
    - continue to strengthen the reflective component of SI.
2) We will recommend that the Assessment for Improvement Committee build upon this study, finding ways to use the instruments and information to insure ongoing monitoring of the SI experience. Our previous NSSE results have suggested that academic rigor slips somewhat in the senior year. The Assessment for Improvement Committee should study whether SI is addressing this concern.

**College of Wooster Report to be inserted here.**

Washington College Campus Report

All Washington College (WC) students have been required to complete some form of senior capstone since the 1959-1960 academic year when the College made the move to the current four-course plan. The capstone experience was known as the "Senior Obligation," and neither students nor faculty received course credit for completing the obligation. Due to growing student and faculty concern over workload issues, the College developed the current "Senior Capstone Experience" (SCE) in the Fall of 2006, and students began receiving four credits for completing the capstone, while faculty mentors earn one course credit for every 12 capstones they supervise.

Through their SCE students are expected "to demonstrate the ability to think critically and to engage in a project of active learning in their major field of studies. In the SCE, required of all graduating seniors, students integrate acquired knowledge and skills in a senior project demonstrating mastery of a body of knowledge and intellectual accomplishment that goes significantly beyond classroom learning" (Washington College Catalog, p.38). While the specific design of the capstone varies across departments, all capstones "will be informed by the following expectations:

- Demonstrated student initiative
- Significant preparatory work
- Active inquiry
- Integration of acquired knowledge and skills
- Culmination of previous academic work" (Washington College Catalog, p.39)

For most students, the SCE also represents the culmination of four years of writing at Washington College that begins with a two-semester sequence of writing intensive courses in the first year, continues with two semesters of writing intensive courses in the sophomore and junior years, and ends with the capstone.

In the Summer of 2008, Washington College joined Allegheny College, Augustana College and The College of Wooster in planning a major assessment of the impact of the required capstone experiences at each of these four schools. The Teagle Foundation agreed to fund the project, and data collection began in the 2009-2010 academic year and continued through the 2011-2012 academic year.

Prior to the beginning of this project, Washington College had never conducted a formal assessment of the SCE. While the college currently requires course evaluations for every course, no such evaluation of the SCE occurs. Also, although the Washington College Catalog states that the Curriculum Committee will review the SCE program at regular intervals, these reviews have never taken place.

The data reported below are based on pre- and post-capstone surveys of seniors and their faculty mentors conducted during the 2009-2010 and 2010-2011 academic years; seven focus group discussions conducted by two Teagle Scholars and involving nine untenured faculty mentors, eight tenured faculty mentors, eight seniors from the Natural Sciences and

Mathematics division, seven seniors from the Humanities division, nine seniors from the Social Sciences division, seven staff members and four administrators; and a survey sent to Washington College alumni from the classes of 1999 and 2004.

## ***What we're doing well***

### ***Faculty Perspective***

*Survey Data*

The Senior Capstone Experience is clearly having a number of beneficial effects on Washington College students. Faculty reported significant precapstone-postcapstone improvements in students' ability to write in a clear and articulate manner ($M_{pre}$=3.80, $M_{pst}$=3.93), deliver an effective oral presentation ($M_{pre}$=3.83, $M_{pst}$=4.08), identify a manageable set of project goals ($M_{pre}$=3.93, $M_{pst}$=4.05), persist when faced with perceptual and practical difficulties ($M_{pre}$=3.93, $M_{pst}$=4.20), synthesize information to produce insights that expand their understanding ($M_{pre}$=3.81, $M_{pst}$=4.04), logically interpret and evaluate main points of source material ($M_{pre}$=3.87, $M_{pst}$=4.07), support arguments with appropriate evidence ($M_{pre}$=3.85, $M_{pst}$=4.10), use disciplinary knowledge and methods appropriately ($M_{pre}$=3.78, $M_{pst}$=4.10), demonstrate appropriate confidence in own intellectual ability ($M_{pre}$=3.74, $M_{pst}$=4.00), address opposing arguments or alternative explanations ($M_{pre}$=3.56, $M_{pst}$=3.78) and display accurate awareness of their own abilities and limitations ($M_{pre}$=3.77, $M_{pst}$=3.99).

In addition, Faculty Mentors' responses to the open-ended survey questions highlighted a number of perceived benefits. In response to our request to, "Please note any particularly significant benefits you think the student gained from this capstone," faculty most frequently mentioned critical thinking skills (17% of the total comments), research skills (14%) and written communication skills (12%). Also, when asked to, "Please describe areas where the student was exceptionally well prepared for this capstone," Faculty Mentors mentioned personal skills and attributes (work ethic, motivation, independence) most frequently (17.8%), followed closely by written communication skills (17.4%). Finally, when asked to, "Please share any other observations you have about this capstone you think may be of interest," the most common response provided by Faculty Mentors was that the capstone outcome was good or excellent (9.2%), followed by mentioning that the mentoring experience was positive for the mentor (7.8%).

*Focus Group Data*

Faculty comments during the campus focus groups were also quite positive. The Faculty saw the SCE as a large project that provides an opportunity to put into practice the research, analysis, synthesis, and time management skills developed over the course of a student's academic career. The end result is a project that comprises a large body of work that would be summative and which could contain components showcasing independent and original work. Faculty saw the project as building the students' skills and, in some cases, facilitating a genuinely transformative experience.

Faculty members also saw their supervision of capstones as having a positive impact on their own work. Faculty members reported being satisfied with the opportunity to work closely with their students as a natural extension of their research and teaching.

### ***Student Perspective***

*Survey Data*

Washington College seniors' initial expectations regarding the capstone were quite positive ($M_{pre}$=4.1 on a 5-point scale), although their ratings were the lowest of the four institutions that participated in the project. Our students' highest scores came on their expectation that the capstone would be intellectually challenging ($M_{pre}$ =4.51), more engaging than regular coursework ($M_{pre}$=4.39), and would lead to a better understanding of their skills, abilities and interests ($M_{pre}$=4.33).

In fact, when compared to their typical academic work, in the capstone our students reported being significantly more likely to exhibit a wide range of scholarly skills including locating appropriate source materials, using disciplinary knowledge and methods appropriately, supporting arguments with appropriate evidence, showing originality, synthesizing information to produce insights that expanded their understanding, showing evidence of independent thinking, showing skill with quantitative reasoning, persisting when faced with conceptual and practical difficulties, using feedback to assess their performance and integrating ideas or information from various sources.

Our students also showed significant precapstone-postcapstone improvements in their ratings of their own academic ability ($M_{\text{pre}}$=4.0, $M_{\text{pst}}$=4.1), creativity ($M_{\text{pre}}$=3.78, $M_{\text{pst}}$=3.89), research skills ($M_{\text{pre}}$=3.61, $M_{\text{pst}}$=3.81), and enjoyment of doing research ($M_{\text{pre}}$=3.52, $M_{\text{pst}}$=3.79).

Washington College students indicated that the SCE made the greatest contributions to their development of the abilities to manage a large project ($M_{\text{pst}}$=4.35 on a five-point scale), think critically and analytically ($M_{\text{pst}}$=4.3), think creatively ($M_{\text{pst}}$=4.24; WC scored highest of the 4 schools) and have confidence in their own abilities ($M_{\text{pst}}$=4.27).

In addition, students' responses to the open-ended survey questions highlighted a number of perceived benefits. In response to our request to, "Please describe any particularly positive or negative aspects of your capstone experience," students reported more positive (55%) than negative (44%), but this was the worst ratio of any of the four schools involved in the project.

The most frequently reported positive responses were comments about faculty mentors (17% of total responses; e.g., great overall, helpful, supportive, available, interested, gave good feedback), and such comments were more common at WC than at any of the other three schools.

Comments that student appreciated the freedom to choose their topic and direct their project were next most frequent (5.9%), followed by comments concerning improved project management skills (4.7%).

When asked, "What did you learn about yourself as a result of the capstone experience?" 69.5% of the students who responded listed strengths, 12.8% listed limitations and 12.2% listed an insight. More specifically, 25.6% learned that they can manage and complete a large project, 11.6%) learned that they have good writing skills and 9.1% learned that they need to pay attention to and improve their project management skills.

When we asked the students, "What aspects of the capstone experience do you think will be of the most value to you after you graduate?" the largest percentage of those who responded (18.2%) mentioned project management skills (specifically time management), followed by preparation for graduate/professional school (12.5%), development of research skills (11.4%) and development of writing skills (9.7%).

Overall, Washington College Seniors offered extremely positive rating of their Faculty Mentors ($M_{pst}$ =4.41). Our students were particularly pleased with their mentors' experience in capstone advising, ability to give helpful advice, encouragement of their independence and with the overall comfort level of the mentoring relationship.

*Focus Group Data*

During the focus group meetings, students often mentioned their personal growth in areas like research and writing skills development, time management, clarification of personal goals, and self-confidence in the academic context as important benefits of the SCE.

In most cases, the students were satisfied with the topic of their SCE and the nature of their work, and appeared to have developed confidence and a greater love for their capstone subject as they progressed. The students mostly felt that they had been well-prepared for writing their theses, but somewhat less prepared with regard to their time management skills.

***Alumni Perspective***

Of the various aspects of the SCE that might contribute to development, our alumni rated ability to write effectively (55.2% very much), skill in interpreting data, evidence and texts (50.9% very much) and managing a large project (43.9% very much) most highly, and ability to make an effective oral presentation (29.8% very much) lowest.

Also, 81% agreed or strongly agreed (vs. 8.6% disagreed or strongly disagreed) that the SCE had a positive influence on their intellectual growth, 69.5% (vs. 10.2%) said it was more intellectually challenging than a regular course, 61% (vs. 13.6%) said the SCE had a positive influence on their personal growth, 59.3% (vs. 13.6%) said the SCE led to better understanding of skills, abilities and interests and 55.9% (vs. 13.6%) said the SCE made them better prepared for a job or grad school.

In the open-ended questions, our alums most frequently mentioned that the capstone provided them with a sense of accomplishment (25% of comments), was good preparation for graduate school (22.5% of comments), gave them project management experience (especially time management, 17.5%) and that they had positive experiences with their mentors (20%).

## ***Where we need improvement***

### ***Faculty Perspective***

*Survey Data*

While the data indicate that the WC Faculty have a very positive opinion of the SCE in an absolute sense, relative to the other three schools involved in the project, our scores tend to lag behind.

For example, the WC Faculty Mentors' ratings of seniors' ability to demonstrate effective time management in completing tasks were the lowest of the four schools and showed no precapstone-postcapstone differences ($M_{pre}$=3.78, $M_{pst}$=3.79).

WC Faculty Mentors also reported that their students had the least postcapstone enthusiasm for their SCE topics of the four schools, and showed declines in enthusiasm from precapstone to postcapstone ($M_{pre}$=4.2, $M_{pst}$=4.1). This finding is particularly troubling since mentors' ratings of students' enthusiasm for their topic is a significant predictor of students' ratings of the overall success of the SCE ($r$=+.35). Part of this lack of enthusiasm may stem from the fact that WC Faculty Mentors indicated that their students had the lowest degree of participation in developing and/or refining their capstone topic of the four schools ($M_{pst}$=3.97). When students fail to engage fully and take ownership for their SCE topic, it seems likely that they would not be as enthusiastic about the topic.

In addition, WC Faculty Mentors scored the lowest of the four schools on many of the items on which they rated their own mentoring. WC mentors rated themselves lower than did the mentors at the other three schools in the degree to which they effectively guided students through their capstones ($M_{pst}$=4.23), felt comfortable working with students on their capstones ($M_{pst}$=4.51), felt comfortable supervising their capstones ($M_{pst}$=4.41), communicated well with their capstone students ($M_{pst}$=4.40) and encouraged their students to work independently ($M_{pst}$=4.48). It should be noted that since these responses were made on 5-point scales, all of these ratings are extremely positive, just not quite as positive as the ratings from the other three schools.

The largest negative discrepancies between WC and the other three schools occurred in mentors' response to the item, "I met regularly with this student" ($M_{pst}$=3.94). WC Faculty also reported spending fewer hours per week meeting (individually or group) with their Senior Capstone students than did faculty at any of the other institutions ($M_{pst}$ =1.41 hrs/wk).

Findings regarding the quality of the mentoring relationship and the amount of time mentors spent with their capstone students are particularly important since mentors' ratings of their relationship with their capstone students are a significant predictor of students' ratings of the overall success of the SCE ($r$=+.282).

In addition, Faculty Mentors' responses to the open-ended survey questions suggested several areas of concern. In response to our request to, "Please describe areas where the student should have been better prepared for this capstone," mentors most frequently mentioned disciplinary knowledge, theory and ways of thinking (16.8% of the total responses) and written communication skills (16.8%). Critical thinking skills (16.2%) and project management skills (13%; particularly time management, planning, organization) were the next two most frequently mentioned concerns.

When asked to, "Please share any other observations you have about this capstone you think may be of interest" the two items mentioned most frequently were positive (see above), but the next most frequent response was that the project didn't deserve the number of credits awarded (6.1%).

*Focus Group Data*

A number of concerns also arose during the mentors' focus group discussions. Faculty Mentors commented on the different standards and levels of preparation for the capstone experience that exist across departments. Most of the faculty concerns centered on the perception that there are disparities in degree of academic rigor, standards and workload between departments, and that greater uniformity would be beneficial. Mentors expressed concern over the disparity in workload required to supervise a traditional thesis vs. a comprehensive examination. Mentors also noted that while they enjoy the time they spend interacting one-on-one, such interactions reduce the time they have available to attend to other responsibilities.

***Student Perspective***

*Survey Data*

As mentioned above, while our students' expectations regarding the capstone were very positive ($M_{\text{pre}}$=4.1 on a 5-point scale), they were the lowest of the four institutions. In particular, our students scored lowest on their expectation that the capstone would help them clarify career or graduate school objectives ($M_{\text{pre}}$=3.69) or better prepare them for a job or graduate school ($M_{\text{pre}}$=3.87). Students' pre-capstone expectations that the capstone would be helpful were one of the strongest predictors of their post-capstone ratings of the overall success of the SCE ($r$=+.506).

Our students reported the lowest levels of post-capstone enthusiasm for their capstone topic of the four schools ($M_{pst}$=3.96), and while student ratings of their pre – post capstone enthusiasm declined at three of the four institutions, the drop was greatest at WC.

WC students also scored lowest of the four schools in the extent to which they participated in developing/refining their topic ($M_{pst}$=4.11), a finding that mirrored the faculty response to the same item.

Unlike the students at the other schools, our students did not report improved project management skills (planning, time management, identifying manageable goals), writing ability, ability to think critically, or intellectual self-confidence from pre to postcapstone, and our students' postcapstone scores on these items were the lowest of the four schools.

The findings regarding project management skills are particularly disturbing since students' perceptions that they had exhibited good project management skills are significant predictors of their ratings of the overall success of the SCE ($r$=+.429).

WC students also reported no significant pre to postcapstone changes and low ratings of their public speaking ability and leadership ability, and no change but fairly average ratings of social self-confidence.

When compared to their ratings of their regular coursework prior to the capstone, our students rated their capstone work as less likely to include diverse perspectives, put together ideas and concepts from different courses, or increase understanding of someone else's perspective. This unexpected finding held across all four institutions.

The relationships students form with their mentors appear to be critical to the success of the capstone experience as students' post-capstone satisfaction with their capstone instruction ($r$=+.431) and their post-capstone perceptions that their relationships with their mentors were helpful and comfortable ($r$=+.399) were significant predictors of their post-capstone ratings of the overall success of the SCE.

While our students were generally extremely positive in their ratings of their Faculty Mentors ($M_{\mathrm{pst}}$=4.41 on a 5-point scale), their ratings of whether their mentors met with them regularly ($M_{\mathrm{pst}}$=3.93), effectively guided them ($M_{\mathrm{pst}}$=4.09) and communicated well with them ($M_{\mathrm{pst}}$=4.18) were the lowest of the four schools. The perceptions of the students closely parallel the ratings of the Faculty Mentors reported in the section above.

Washington College students indicated that the SCE made the least contribution to their development of the ability to make an effective oral presentation ($M_{\mathrm{pst}}$=3.42 on a 5-point scale; WC scored lowest of the 4 schools), in acquiring research related skills ($M_{\mathrm{pst}}$=4.04) and in learning ethical conduct in their field ($M_{\mathrm{pst}}$=3.59).

Students' post-capstone perceptions of the capstone as more intellectually engaging than a regular course were one of the strongest predictors of their post-capstone ratings of the overall success of the SCE ($r$=+.622). Our students generally agreed with statements indicating that they worked harder on their capstone than on regular coursework ($M_{\mathrm{pst}}$=4.10 on a 5-point scale), that the capstone was more intellectually challenging than their regular coursework ($M_{\mathrm{pst}}$=4.03) and that they developed more from the capstone than

from a regular course ($M_{pst}$=3.74), but WC students had lower levels of agreement on each item than did students at each of the other three schools.

Perhaps most disturbingly, WC students were less likely to agree with the statement, "Overall, I had a good capstone experience," than were the students at the other three schools ($M_{pst}$=4.16 on a 5-point scale). They also had the lowest levels of agreement with statements indicating that their capstone had a positive influence on their intellectual growth and interest in ideas ($M_{pst}$=4.11), their understanding of their discipline improved ($M_{pst}$=4.04), their capstone was more engaging than their regular coursework ($M_{pst}$=4.04), their capstone has led to a better understanding of their skills, abilities and interests ($M_{pst}$=4.01) and their capstone better prepared them for a job or graduate school ($M_{pst}$=3.74).

In addition, students' responses to the open-ended survey questions noted several areas of concern. As noted above, in response to our request to, "Please describe any particularly positive or negative aspects of your capstone experience," students reported more positive (55%) than negative (44%), but this was the worst ratio of any of the four schools involved in the project.

The most frequently reported negative comments were about the experience being stressful, difficult or frustrating (10.7% of the responses), the mentor being unhelpful or unavailable, (9.5%, although WC had the lowest percentage of these comments) and difficulty balancing the capstone with other coursework (6.7%).

When we asked seniors to, "Please tell us about any other aspects of your capstone that might be helpful to our study of the benefits of capstones," WC seniors had the most negative and fewest positive comments. Of the total number of responses to this question, 38.5% were negative comments concerning issues of capstone administration, including a desire for more and better precapstone preparation and equitable standards across majors. Students also mentioned that the SCE was too time consuming and that comprehensive exams were too easy.

*Focus Group Data*

As were the faculty, students were concerned with the different levels of preparation for the capstone experience that exist across departments, and with the variation in standards and rigor across the College. Students believed that more uniformity of rigor and time requirements would be beneficial.

In addition, many students felt that the time commitment for a senior capstone exceeds that of a normal four-credit course and it affects the time they need for job searches and other valid commitments, and some students did not accept or understand the purpose of the SCE and saw it as onerous and a waste of time.

### *Alumni Perspective*

Our alums (N=59) had the lowest rating (of the three schools whose alums completed capstones) of the overall capstone experience, but the rating was quite high (M=5.68 out of 7 – between good and very good).

### *Summary*

The overall picture for Washington College is decidedly mixed. The SCE provides numerous benefits for WC students, including improvements in the abilities to

- write in a clear and articulate manner
- synthesize information
- persist in the face of difficulties
- logically interpret and evaluate source material
- support arguments with evidence
- use disciplinary knowledge and methods
- address opposing arguments
- think critically, analytically and creatively
- conduct independent research
- manage a large project

The SCE also seems to add value to the educational experience above and beyond what could be provided by offering additional courses within or outside the major.

So, in an absolute sense, the Washington College SCE is quite successful. However, when we compare the outcome of our SCE to that of the other three schools involved in this project, we rank last on many measures. In this relative sense, Washington College has a great deal of room for improvement. For example, Washington College ranked below the other schools in

- student enthusiasm for their SCE topic
- student time management
- effectiveness and frequency of mentoring
- overall rating of the capstone experience

Students and faculty at Washington College also expressed heightened concern with the perceived variations in standards and rigor that exist across departments.

So it appears as though the SCE is working well, but could be working even better. Toward this end, we conclude with several recommendations for actions intended to improve the outcome of the Washington College SCE.

***Campus Action Plan***

*Develop Student and Faculty Mentor Handbooks*

Students and mentors need to have a fuller understanding of the purpose of the SCE, and of the specific college and departmental guidelines that govern the process. While some WC departments expend a great deal of time and effort to educate students and new faculty mentors about the SCE, others do very little. A single handbook containing a discussion of general principles and guidelines, followed by separate chapters for each department, would add consistency, clarity, accountability and transparency to the SCE.

*Take steps to reduce or eliminate reliance on Comprehensive Exams*

Ratings of the WC SCE were below those at the other three schools involved in this project, and the primary difference between WC and these other schools is that we alone allow comprehensive exams in lieu of the traditional thesis. Ratings of the quality and quantity of mentoring students receive may be influenced by the fact that comprehensive exams do not allow for the same degree of collaborative interaction between students and faculty mentors that occurs with traditional theses. And since the mentoring relationship is an important determinant of the outcome of the SCE, the absence of such a relationship may explain why some WC students had a more negative perception of their overall capstone experience. In addition, both students and faculty mentors were aware of and concerned by the disparities in workload that exist when comprehensive exams can be used to satisfy the SCE requirement.

*Develop a campus-wide celebration of the SCE*

While individual departments often have some sort of concluding celebration, Washington College does not take sufficient advantage of the opportunity to recognize, praise and reward students for their remarkable capstone achievements.
Some schools set aside an entire day at the end of the year during which capstones are presented to the rest of the college community in a variety of different formats (e.g., plays, readings, poster sessions, art exhibits, etc.). Such a celebration would not only increase the feelings of pride and accomplishment among Seniors, but may also stimulate increased excitement and enthusiasm about the SCE among Juniors, and could generate publicity that would be helpful in recruiting, and in building the reputation of the college.

*Institute yearly, formal, college-wide assessment of the SCE*

We assess all four credit courses at Washington College, except the SCE. Neither the individual capstones nor the SCE program as a whole has ever been formally assessed, and without such regular assessments, it is difficult to know whether any changes are successful or necessary.

# PART 4: SENIOR AND MENTOR SURVEYS: STATISTICAL ANALYSIS OF RESPONSES

## NARRATIVE: Quantitative Results of the Senior and Mentor Surveys

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## Quantitative Results of the Senior and Mentor Surveys

### Notes on Tables 4.1 to 4.13

The objective of Part 4 is to present a numerical analysis of the pre- and post-capstone surveys of seniors and their faculty mentors, including explanations of the methodology, guidance on reading the tables included in the following section, and highlights of findings. Parts 5 and 6 are companion sections giving results of a textual analysis of the open-ended comments on these same surveys.

These notes are based on our database of individual capstones from the years 2009/10 and 2010/11, which includes, if all data is available for an individual student/capstone – selected student bio-demographic data (gender, race, majors, GPA data, etc.), the student's pre- and post-capstone surveys, the paired pre-capstone survey for the mentor (or, if not possible, another faculty member familiar with the student's pre-capstone academic performance), the mentor's post-capstone survey, and the matched data descriptive of the type of capstone course taken by the student from the departmental policies and capstone type surveys. Altogether the database has the records for 2,843 distinct capstones, each with 636 data fields.

Primary statistical analysis has been done using SPSS V18. Unless otherwise noted, statistical significance of differences has been determined using two-tailed t-tests, and will be only noted if at p<=.05. Levels in tables are noted by asterisks: * p<=0.05, ** p <=.01, *** p<=.001. To add a measure of practical significance, the tables of pre/post capstone differences also include an "effect size" measure which is computed as the mean of the differences divided by their standard deviation, a computation that scales the magnitude of the change relative to a total variation measure, somewhat analogous to computing a percentage. An empirical comparison showed this computational method results in values close to the common method of comparing two means by dividing the mean difference by the pooled standard deviation. The simpler formula also avoids a lot of unwieldy computations given the number of subgroup breakdowns. Following Cohen (1988) a general interpretation of the standard effect size is that effects of about .2 might be considered "small", .5 "medium", and .8 "large". Noting that our surveys are similar to the NSSE surveys, and actually used several of their questions (with permission), a more appropriate general characterization in our context, even with our modified effect size, however, might be .1 small, 0.3 medium, 0.5 large, as suggested by NSSE for their data. (c.f. http://nsse.iub.edu/pdf/effect_size_guide.pdf).

### AVAILABLE DATA POOLS

**Data subgroups.** Because of missing surveys, the data is not complete for all capstones. Indeed, all four surveys (pre/post student and mentor) are available for only 536 capstones. Both the pre and post student surveys are available for 1,229 capstones, and both the pre and post mentor surveys are available for 931 capstones. Consequently, there are various subgroups of the capstone data available to be analyzed for difference purposes:

- all capstones, N=2843
- capstones with matched pre/post student surveys, N=1229
- capstones with matched pre/post mentor surveys, N=931

- capstones with a pre survey for both student and mentor, N=1112
- capstones with a post survey for both student and mentor, N=968
- capstones with both a pre and post survey for student and mentor, N=536

Choosing a pool for any particular analysis is based on using the largest group for the most comprehensive result with the exception that matched pre/post data is preferred when pre/post differences are being investigated. Note that as a consequence of using difference pools, tables or individual results cited may indicate somewhat different means or Ns for the same data item.

**Student subgroups.** The pools above may also be broken down by student subgroups. The subgroups of most interest to our research questions and that most of the data tables include are: students overall and students from each school, each of three academic divisions (NS=natural sciences; SS= social sciences or SS+ = SS with business administration and teacher education included; and HUM=humanities, with languages, literature, and arts included), each of three college GPA groups (L = "<=2.99", M = "3.0 to 3.49", and H = ">=3.5") , and each gender. Whenever the means for subgroups are compared for statistically significant differences, statistical significance is based on two-tailed t-tests with significant differences denoted by asterisks: * p<=.05, ** p<=.01, *** p<=.001. Microsoft Excel's conditional color highlighting has been used in several tables to visually differentiate low to high values for the convenience of the reader and has no other intended significance.

Also note that in the tables the Ns may vary for individual data fields because of missing values. For instance, because questions may have gone unanswered or "not applicable" was selected.

**NON-RESPONSE BIAS CONSIDERATIONS**

Our methodology was to attempt to obtain complete survey data for all capstones completed during the years 2009/10 and 2010/11. Non-response bias is a potential concern since for 22% of the capstones no student surveys were obtained and both the pre- and post-survey were completed for a minority, 43%, of the capstones.

Appendix 4.1 reports on an investigation of potential non-response biases done using the data from year 1. As discussed there, citing the statistically significant differences, p<=.05, two-tailed, the students who completed both pre- and post-surveys, on average, received a higher grade on the capstone, had a higher college GPA both before and after the capstone, had a somewhat higher expected family contribution (EFC) for college (indicating higher average family incomes), had a higher average ACT (including converted SATs), a higher average high school percentile, had a higher percentage of females ( 70% vs. 51%), a higher average educational level for mothers, and, perhaps related to the female percentage, participated in fewer intercollegiate athletic teams during their senior year.

In short, higher achieving students, higher socio-economic-status students, and females tended to respond in higher percentages, a result shared with most student surveys. This, of course, limits our ability to generalize overall means and percentages to all seniors without weighting the results based on sample imbalances. However, our findings largely take these differences into account by considering separately in the tables the student subgroups based on school,

GPA level and gender. We have excluded separate consideration in the tables of socio-economic subgroups based on an analysis that SES has little impact on capstone outcomes (see Appendix 4.2). Finally, our results based on generally linear modeling (GLM) are after controlling for school, GPA, and gender.

## RESULTS HIGHLIGHTS - TABLES 4.1 TO 4.13

This section discusses the results by looking sequentially at each of the Tables 4.1 to 4.13, which the reader is encourage to consult while reading this analysis.

### TABLE 4.1: DATA DIRECTORY AND OVERALL MEANS BY STUDENT SUBGROUP

This table is based on all capstones. It functions, at the basic level, as a reference directory to the data fields in the capstone database. It also serves a guide to all six surveys in the study, and a reference for the mean values for the pools of student groups of most interest to our research questions – all students and students by gender, academic major, GPA level, and school.

Included for each field are the SPSS Name, a descriptive text, and any special notes. For survey questions, the question text and response options are reproduced, along with the range of the response scale. For example "SA-SD" is a 5 point scale from Strongly Agree to Strongly Disagree.

In addition to the original items on the surveys, the database includes the computed differences in the responses for matching pre and post values for fields and scales. In the table, these have an SPSS name that starts with a "D" followed by the field or scale name. Thus DStu1 is computed for each capstone as the difference PostStu1 minus PreStu1 for capstones for which both a pre- and post-student survey are available. The means for these difference values are also included in the table, and, being based only on paired pre/post values, are the purest measures of change during the capstone**.** Appendix 4.12 notes some highlights of the overall means.

Our main results are for pre/post differences in the scales derived from factor analysis and reported in other Tables, but it is helpful to first consider means of the individual survey items and the most inclusive look at the overall pool of respondents, as shown in Table 4.1.

Please refer to Table 4.1 for the remainder of this section. Some specific items of interest are:

**Student and faculty bio-demographic data.**

- **Capstone credit hours.** Capstone semester credit hours were predominantly equivalent to two 4- credit regular courses at Red, and one 4-credit course at both White and Yellow. Tan, where a 3-credit course is standard, had a wider range of capstone credit hours among those in the database, with a 3-credit capstone most common, but many that combined extra components for a 4 or 6 credit package, and about 20% 12 credits.
- **Capstone grades.** Overall, capstone grading averaged about the same as for regular courses, but with significant variation by school and division. The average capstone grade was 3.25 (B+) which is about the same as the average pre-capstone college GPA (3.22). Using the pre-capstone college GPA as a predictor, when compared to pre-capstone college GPA, Red tended to grade the capstone lower, Tan higher, and Yellow and White about the same. Female students had a higher average capstone grade than

males, 3.33 versus 3.12, but in line with pre-capstone GPAs of 3.31 and 3.08, respectively. NS students had the highest average capstone grade, 3.34 and the biggest jump from the pre-capstone GPA, 3.24. Similarly, students in the lower GPA range scored a lower average capstone grade than students in the highest GPA range, but again, these values are about the same as their GPA averages pre- and after the post-capstone.

| Means | Group | CapGrade | PreCapColGPA | Diff. |
|---|---|---|---|---|
| ALL | ALL | 3.25 | 3.22 | 0.03 |
| BY SCHOOL | R | 3.05 | 3.19 | **-0.14** |
| | T | 3.61 | 3.36 | **0.25** |
| | W | 3.15 | 3.16 | -0.01 |
| | Y | 3.22 | 3.16 | 0.06 |
| BY DIVISION | NS | 3.34 | 3.24 | **0.10** |
| | SS+ | 3.20 | 3.19 | 0.01 |
| | HUM | 3.22 | 3.24 | -0.02 |
| BY GPA GROUP | Low | 2.66 | 2.65 | 0.02 |
| | Mid | 3.26 | 3.22 | 0.04 |
| | High | 3.66 | 3.62 | 0.04 |
| BY GENDER | M | 3.12 | 3.08 | 0.04 |
| | F | 3.33 | 3.31 | 0.03 |

[We have speculated that the standard research paradigm fits the natural sciences marginally better than other disciplines. Is this evidence of that? Does it matter that Red appears to have grading standards more rigorous than for a regular course, and Tan less rigorous?]

- **Family SES.** The table includes several socio-economic-status (SES) variables obtained from financial assistance FAFSA filings. These include measures of expected family contribution, need, grant aid, loan aid, and parental education levels. Although some differences by school and student subgroup were observed among these variables, an investigation of the effects of SES on capstone outcomes indicated that these differences are not consequential to capstone success (see Appendix 4.2).

**Student pre-capstone survey data.**

Below we consider the matched pre/post questions, where they are discussed in the context of pre/post changes and using the scales resulting from our factor analysis.

- **Student expectations (PreStu66 – PreStu77).** Students have high expectations for the capstone experience. Students tend to strongly agree that their capstone will be intellectually challenging, that they will be comfortable working with their mentor, that they will improve their knowledge of their disciplinary and critical thinking skills, and increase their understanding of their own abilities and interests. They are less likely to agree that the capstone will clarify career or graduate school goals, a result consistent with a hypothesis that most students feel they have made their key career or graduate school decisions prior to the start of the capstone.

- **Challenge vs. stress (PreStu66 and PreStu77).** In an interesting distinction, higher GPA students are more likely to agree their capstone will be intellectually challenging (PreStu66), while lower GPA students are more likely to think their capstone will be very stressful (PreStu77). The psychology of this distinction may involve motivational issues relating to success orientation versus failure-avoidance. We speculate higher ability students are more likely to respond to the intellectual challenge as an opportunity to prove themselves, while others are more concerned about being able to meet the challenge, which they believe will be stressful. The follow-up story is that the expectations were, as far as the data shows, not necessarily accurate. On the post-capstone survey, the differences in means by GPA group for "My capstone was more stressful than my regular coursework" (PostStu98) were not statistically significant, although the mean for the lower GPA group was somewhat higher. Without regard to GPA, the pre expectation of stress with the post reporting of stress had an overall correlation of .281.
- **Student time (PreStu78 and PostStu53).** Student time-on-task is greater for capstones. As an overall average, students expected to spend 14.16 hours per week on their capstone, a number remarkably close to the 14.11 hours per week students actually reported on the post-capstone survey. If reasonably accurate, 14.11 hours per week on their capstone alone is an indication of effort well beyond that of a regular course, considering that national senior data indicates students report working about 10-11 hours per week on *all* their courses, and the capstone is generally taken simultaneously with other courses. This data suggests that part of the success of a capstone experience is that the capstone can be engaging enough to simply increase students' time-on-task. The correlation of student time on the capstone and the rating of the capstone's contribution to development and the rating of a successful capstone were .201 and .214, respectively. These are significant correlations, but not as high as some other aspects of the capstone experience (see discussion below).

  The averages vary by school and division with higher average hours for Red (15.7) and Yellow (14.7), followed by White (12.7) and Tan (11.9). NS (15.3) has a higher average than SS+ (13.7) or HUM (13.2).

**Post-capstone survey data.**

- **Preparation – coursework (PostStu34, PostStu37).** Not surprisingly, students consider courses in the major or minor, including a junior or senior seminar, as the most important preparation, m=3.46 on a 4-point scale. Surprisingly, however, courses outside the major, which includes general education courses, are rated markedly lower, m=2.10, just above volunteer experiences, m=2.06, and much lower than general non-academic interests/experiences, m=2.74. This might be explainable by students perceiving this question to be only about content preparation and ignoring skill development. Another possibility is that most capstones are done within the major and are typically focused on a narrowly-defined topic, making the relevance of coursework within the major appear to be higher than for non-major coursework. If so, it is consistent with a finding that capstones generally do not integrate knowledge from

curricular areas outside the major. Another possibility is that students have not had sufficient time to reflect on what went into their capstone and which parts of their undergraduate experience contributed directly or indirectly to their preparation (see discussion of "multiple perspectives" below).

Students in the Natural Sciences were the least likely to find courses outside the major/minor useful (1.95) and the most likely to find courses in the major/minor to be useful (3.52).

- **Preparation – prior research (PostStu35-36).** The schools provide extensive pre-capstone research opportunities. 78% of respondents indicated they had experienced a course-embedded research project prior to their capstone (with almost equal participation across the three academic divisions), 41% had completed an independent study course/project and 24% had completed a summer research project. Students in the Natural Sciences were most likely to have had a summer research experience of greater than four weeks and to have been a research assistant during the academic year. Students in the Humanities were the least likely to have had these experiences.
- **Topic selection (PostStu211-215).** On five point scales, students seem to be relatively happy with the process for topic selection (m=4.05), and with the resulting topic, rating their enthusiasm for the topic at the beginning of the capstone with a mean of 4.21. Enthusiasm drops modestly, however, by the end of the capstone to a mean of 4.09.

  Although not rising to the level of statistical significance, it is worth pointing out that students in the Natural Sciences gave lower values for the origin of the their topic (3.37) and the extent to which they participating in its development (4.11) than students in the Social Sciences (4.05 and 4.26 respectively) and the Humanities (4.21 and 4.42). However, students in the Natural Sciences expressed the greatest satisfaction with the process uses to select the topic (4.16, with 4.0 for the Social Sciences and 4.05 for the Humanities). We know from the focus groups that Natural Science students are more likely to work in the area of their mentor's research than students outside the Natural Sciences, and that Natural Science students expressed some relief at having the topic selection somewhat narrowed for them. By contrast, students outside the sciences, particularly in the Humanities, mentioned in the focus groups that topic selection could be a real challenge. We might speculate that students in the Natural Sciences take less responsibility for (show less independence) in topic selection than non-Natural Science students.
- **Student view of mentors (PostStu80-83; PostStu216-225).** Again, on a five point scale, the expanded list of items about the student/mentor relationship showed generally high marks for the mentor's rapport with the student, including being interested in the project (m=4.44), encouraging the student's independence (m=4.49), and being comfortable to work with (m=4.47). In what seems to be an inconsistency, the mean for "my mentor effectively guided me through the capstone", m=4.19, was lower than all the related specific guidance items, such as sufficient feedback (m=4.29) and useful

feedback (m=4.39). Perhaps there is some important aspect of mentoring that was missed in our survey that contributes to this discrepancy. Nonetheless, the overall results seem to indicate students perceive a high level of mentoring ability on the part of faculty. School Red had the highest value for almost all items in this group, suggesting that there is an aspect of mentoring there that is especially effective.

- **Mentors' self-ratings (PostFac202-215).** Similarly, mentors rate their own performance highly. They thought they gave the student sufficient access (m=4.64) and useful advice (m=4.55), but were less confident that they provided helpful subject matter expertise (m=4.30) or effectively guided the student through the capstone (m=4.28). Although the issue of faculty workload for the capstones arose in several focus groups, it was mentioned rarely in the mentor survey comments, which suggests that mentors feel they are, in general, performing well despite workload concerns. Much of the workload concern may relate to equitable treatment across departments and as compared to regular courses.
- **Student time (PostStu52-53).** Students report an average of 2.86 hours per week interacting with their mentor in individual or group meetings, and working an average of 14.1 hours per week on *all* aspects of the capstone. Students in the Natural Sciences report working meeting for an hour more per week than students in the Social Sciences and Humanities. Lower GPA students report meeting with the mentor for an hour more per week than students in the medium and higher GPA ranges, but spending approximately the same total amount of time per week as students in the other GPA ranges.

**Department Capstone Policies and Administration survey and Capstone Type survey.**

In contrast to the above data items completed by the student or mentor, these data fields come from surveys completed by academic departments, typically by the department chair, and concern departmental policies and descriptive information about capstone courses offered by the department. This data has been added to student capstone records based on matching the department and course. A technical problem made it impossible to match records for school White.

The results of these surveys at the department and course level are discussed elsewhere (see Part 2). The means in this section, being at the student level, are weighted by the number of actual student capstones they affected.

- **Completion and Outcomes.** Based on the departmental policies surveys, as weighted by the proportion of capstone surveys from each department in the database, we have estimates that about:
    - 6% of capstones started are not completed successfully
    - 1% of majors fail to graduate because of failure to complete the capstone
    - 19% of majors present their capstone results at a professional or undergraduate conference
    - 9% of majors, where this is applicable, exhibit/perform/present their capstone project in a professional venue outside of the college

- 4% publish their work in a professional journal

- **Preparatory course features.** For capstones where the department indicated there was a preparatory course, the means shown in the table below indicate the extent various items were covered (on a 4-point scale from "not at all" to "a great extent"):

| **Please describe to what extent the following items are covered in this preparatory course:** | |
|---|---|
| Refining discipline-specific communication skills | 3.54 |
| Learning methods useful for the senior capstone | 3.51 |
| Determining the topic for the senior capstone | 3.31 |
| Creating a senior capstone proposal | 3.27 |
| Starting work on the senior capstone | 2.70 |
| Assigning students to senior capstone advisors | 2.53 |
| Preparation for a comprehensive exam | 1.15 |

Thus three frequently occurring features of a capstone-specific preparatory course are learning to write or communicate in the style of the discipline, learning capstone-specific research/inquiry methods, and deriving a capstone topic and developing a proposal. In retrospect, there should have been questions about capstone project management, as student comments reveal this as an area where they encounter difficulty (and growth) during the capstone.

**Capstone features.** On a 4-point scale from "not important" to "essential" for our questions about the importance of various capstone components the means for the capstones in the database were:

| **Please indicate the degree of importance each of the following has as part of capstones of this type:** | |
|---|---|
| Production of a written thesis or substantial paper | 3.95 |
| A literature search and review | 3.82 |
| An oral examination of the project | 3.61 |
| An oral presentation of project progress or results | 3.49 |
| A reflective analysis concerning the project (e.g., its value, lessons learned, contribution to the discipline or to self-knowledge, etc.) | 3.18 |
| Laboratory experimentation | 2.77 |
| Generation of data through direct measurement (e.g. through experiments, observation, questionnaires, interviews, etc.) | 2.64 |
| Use of other library services (e.g. library instruction, reference librarian assistance, special collections) | 2.52 |
| Creation of or contribution to an artistic performance or product (music, art, theater, literary work ...) | 2.43 |
| Statistical analysis of data | 2.42 |
| Collaboration with other students | 2.38 |

| | |
|---|---|
| Clinical or practicum experiences | 2.15 |
| A poster presentation of project results | 2.11 |
| Civic engagement or service learning experiences | 1.91 |
| Internship experiences | 1.87 |
| Field study (e.g. research or projects carried out on location) | 1.82 |
| Questionnaire construction and analysis | 1.59 |
| A written examination | 1.56 |

The most universal features of capstones that emerged were a literature search/analysis and communicated products in the form of a written thesis or substantial paper and an oral presentation or defense. Some sort of reflection on the meaning of the project seems to also be common. Many of the other features, such as statistical work, have lower overall means because they do not apply equally in all disciplines. This variation is shown in the means by division, as included in the table.

- **Capstone evaluation.** In accordance with individual school policies, most grading for capstones in our database was done with traditional letter grades alone (59%) or with an honors option (+4%). A pass/fail or pass/fail/honors grading system was used for 16% of the capstones and an "honors/ good/ satisfactory /no credit" system for 25%. 25% of grades were assigned by the mentor alone, but for 56% a second reader was also used. For 14%, the department assigned the grade. Schools using a second reader note its value in maintaining uniformity of standards, as a backup for the mentor, and as a training experience for new faculty.

### TABLES 4.2 AND 4.3: SUMMARY LIST OF CAPSTONE SURVEY SCALES AND CAPSTONE SURVEY SCALES

Given the large number of items in the surveys, factor analysis has been done to reduce the data to a more intelligible set of scales that capture the main underlying concepts in the surveys and help smooth out the data, reducing some of the "noise" in the responses. Factor analysis of the pre- and post-surveys of students and mentors, done separately for each survey, resulted in various scales that combine highly correlated items. These are listed with a brief description in the "Summary List of Capstone Survey Scales", Table 4.2. The statistical details of the scales that validates their use are given in the "Capstone Survey Scales…" document (Table 4.3). These include the scale reliability alpha, a list of the individual items included in each scale, and the correlation or factor loading value of each component item with its corresponding scale. Scale values are computed as the averages of the component items.

Technical details of the factorizations are given in Appendix 4.3. The scales are themselves a valuable outcome of the study that may be useful to others doing subsequent research or for developing assessment instruments. The inter-correlations of the scales are given in Tables 4.4 to 4.9 and the scale means are listed in the "Scale and Item Means…" table described directly below, as well as the Data Directory, Table 4.1.

Most of the scales are from items repeated in both the pre- and post-capstone surveys. Discussion of those scales and their changes is found below in the notes on Table 4.10.

The only scale developed from just pre-capstone items, ExpectGoodCapstone, is a combination of feeling the capstone will help the student develop academic skills, prepare for graduate school or a job, understand their own interests and skills better, and be engaged and challenged by their project. It represents a positive attitude toward the capstone at the beginning. It turns out to be an important scale in having a high correlation with post-capstone ratings of success and development.

Scales from post-capstone items only are retrospective reports concerning preparation for the capstone, the relationship with the mentor, the engagement of the student with the capstone, and the student's ratings of the capstone as personally successful and its contribution to development. The preparation questions factored into three scales: preparation in the discipline through coursework (PrepDisc); preparation through volunteer, study abroad, non-academic interests, internships, or courses outside the major (PrepBreadth); and preparation in quantitative methods (PrepQuant). The relationship with the mentor scale (MentorRel) is a composite of 14 separate items with a very high reliability of .959. This reliability indicates the number of items could be reduced while still providing an accurate measure of this construct.

**Two special outcomes scales.** Of special note are the "PostCapContDev" (post-capstone survey contribution to development) and "PostCapSuccessful" (post-capstone survey successful experience) scales, which capture two aspects of how students perceive a successful capstone. "CapContDev" measures a student's perception that the capstone contributed to their development of academic and life-long learning skills, such as critical thinking, writing, data interpretation, research skills, managing a large project, having confidence in one's abilities, and learning on one's own. "CapSuccessful" is related, but, as a separate factor, is distinct. It represents a broader perception of the capstone as a contributor to personal development, including intellectual growth, self-understanding, and realization of personal potential post-graduation. It includes a perception that the capstone contributed positively to: intellectual growth and interest in ideas; personal growth, attitudes and values; understanding of skills, abilities, and interests; graduate school or career preparation (including clarification of objectives); and a better understanding of their discipline and creating new knowledge in their discipline. As our two main measures of success, many of our results relate to discovering what leads to the highest or lowest values on these two scales.

### TABLES 4.4 TO 4.8: INTER-CORRELATIONS OF VARIOUS SCALES

Table 4.4 gives the inter-correlations of the scales derived from the pre-student survey. The other tables 4.5-4.8 give the inter-correlations for scales on the post-student survey, pre- to post-student surveys, pre- to post-faculty surveys, and post-student to post-faculty surveys. Excel's conditional highlighting has been used to color code low to high values with graduated colors going from yellow to green, or light to dark when printed in gray scales. For example, Table 4.4 shows that expecting to have a good capstone experience is more highly correlated with prior year academic performance (PreExhibitScholarlySkills = 0.37, PreHighOrderCogn = 0.34, PreMultPerspectives2 = 0.33 and PreResearchOrient = 0.31) than with ability self-ratings (PreRatingAcadAbil = 0.13, PreRatingLeadCollabSkills = 0.15) and PreRatingIndepVoice = 0.16. The other tables serve as a reference for similar considerations. Of particular interest might be

the correlations with ratings of a successful capstone and the capstone's contribution to development shown in Tables 4.5 and 4.6.

In Table 4.5, PostCapSuccessful correlates most highly with PostCapContDev = .699, PostCapMoreEngaging = .580, PostExhibScholarlySkills = .509 and PostProjMgt = .421. Somewhat surprising is the relatively low correlation with PostRatingStriver at .270, PostRatingIndepVoice at.180, and with PostRatingAcadAbil at .164.

PostCapContDev correlates most highly with PostCapSuccessful = .699, PostxhibScholarlySkills = .599, PostHighOrderCogn = .509, PostCapMoreEngaging = .474, and PostPreDisc = .426. Again, PostRatingIndepVoice = .230 and PostRatingStriver = .289 are relatively low correlates.

However, in Table 4.6, which looks at scale inter-correlations from pre- to post-students surveys, the highest correlates with PostCapContDev are PreExpectGoodCapstone = .48, PreHighOrderCogn = .29, PreExhibScholarlySkills = .28, and PreRatingStriver = .27. The scale with the second lowest correlation with PostCapContDev is PreRatingIndepVoice = .15. The results are similar for PostCapSuccessful, with PostProjMgt appearing at .29.

In Table 4.7, the inter-correlations of the four student performance rating scales (CommunSkills, EffProjectMgt, IntelEngagement, and CrthinkSkills) are high for each of the pre (0.67 - 0.82) and post (0.71 - 0.87) sets of scales. It is not clear if these areas are really that inter-related or if faculty unable to make the distinctions we would anticipate. The correlations of StudentTopicMotiv, the mentor's rating of their instruction (MentorInstruction) and rapport with the student (MentorRapport) are positively correlated with the four student performance scales. It is worth noting that MentorRapport is more highly correlated with the student performance scales (.46 to .58) than MentorInstruction (.23 to .36).

### TABLE 4.9: FACULTY SUMMATIVE ASSESSMENTS TO FACULTY SCALES INTER-CORRELATIONS

Table 4.9 correlates a series of summative questions on the post capstone mentor survey in which the mentor rates the student's performance on a single attribute with the various mentor survey scale items. For instance, the correlation of the scale item "PostCommunSkills", which is based on a series of questions, with the single summative question to rate "communication" was .680. Overall, the high correlations suggest that future surveys, such as for ongoing assessment, might use the summative items without too much loss of reliability.

### TABLES 4.10 TO 4.12: RESULTS OF PRE/POST CHANGE

Because we are interested in changes during the capstone and this is best done with a repeated measures design, the data in Table 4.10 is based on only the 1,229 capstone records with a matched pre- and post-capstone student survey. The faculty survey data is based on this same subset of capstones.

The "Pre" and "Post" columns give the means for all available pre- and post-capstone surveys (1229 for students, pre and post, and 762 pre and 729 post for faculty. The "D" column indicates the mean of the difference scores for paired pre/post responses only (1229 for students and 526 for faculty). Because of rounding and because some students or faculty responding to a particular item on only one of the pre or post surveys and lack a "D" value, the

"D" mean does not always equal the Post mean minus the Pre mean. The "eff" column is an effect size computed as the mean of the difference values divided by their standard deviation.

Tables 4.11 and 4.12 are reduced views of the data showing only statistically significant changes with up or down arrows. Table 4.11 includes the scales and component questions, and Table 4.12, the most concise summary of the observed changes, indicates the significant changes in the scales only. The small numeral next to the arrows indicates the value of the effect size ("eff" in Table 4.10) rounded to the closest $10^{th}$.

Although the tables are very helpful in separating out means by school, division, GPA level and gender, it isn't clear how these interact. In hopes of teasing this out, references and plots are included below to a series of SPSS GLM models for the pre/post difference scores that included school, academic division, pre-capstone GPA (as a continuous covariate), and the school*division interaction. These generally show that, after controlling for the pre-capstone GPA, there are significant interactions of school and division for many of the scales, particularly for those with larger effect sizes. The plots below help elucidate these interactions by showing the estimated marginal means for the predicted difference scores by school and division, with the GPA set at an overall mean value of 3.32. For completeness, plots have been included even in the cases where school and/or division did not show differences of statistical significance. The statistically significant effects are noted in the text. Please note the scale when reviewing the charts, as the scale may exaggerate small differences. The connecting lines have no significance other than to visually connect the points for the same academic divisions.

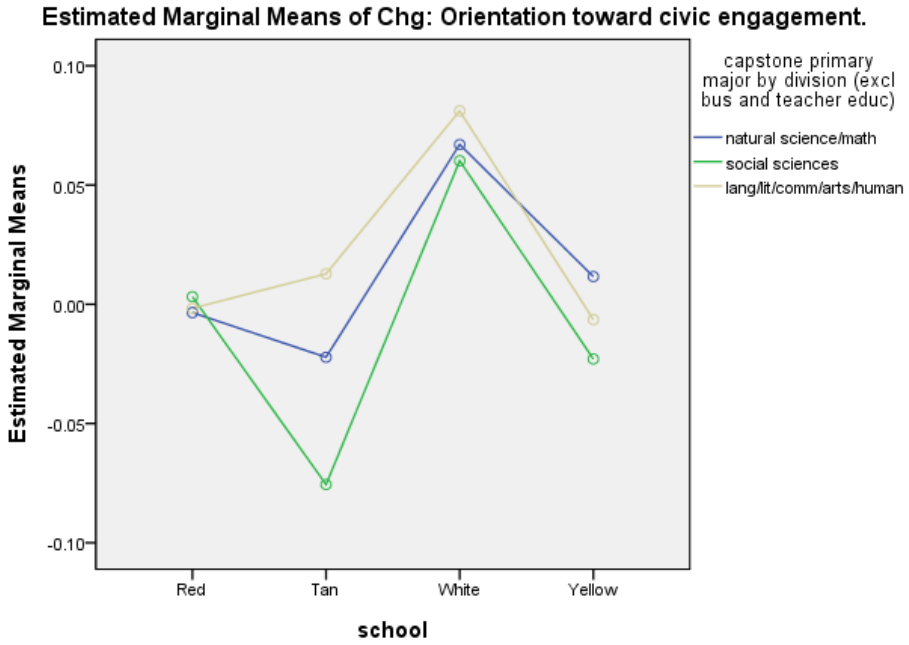
In summary, the statistically significant changes observed for the scales were:

- **No change:** Civic orientation, status career orientation, satisfaction with instruction.
- **Scale Declines:** Higher order cognition, satisfaction with support services, use of multiple perspectives.
- **Scale Increases:** All four faculty scales (communication skills, effective project management, intellectual engagement, and critical thinking skills), and the remaining eight student scales (exhibit scholarly skills, need for cognition lite, project management, academic ability, collaborative skills, independent voice, strive to achieve, and research orientation).

**Remarks:**

**Student scales with no change:**

- **Civic Orientation.** An increase in an orientation toward civic concerns (volunteer, helping others, community leadership, influencing social values, …) is a generally espoused goal of a liberal education, but was seldom mentioned in the focus groups or comments as an explicit goal of the capstone experience. School Tan incorporates a reflective component that asks the student to consider the value of the experience for society, but no significant change was observed for Tan or any other school. The absence of a change largely confirms expectations. As the lone exception among our student subgroups, civic orientation went up for the high GPA group. The GLM showed significant effects for GPA and school.



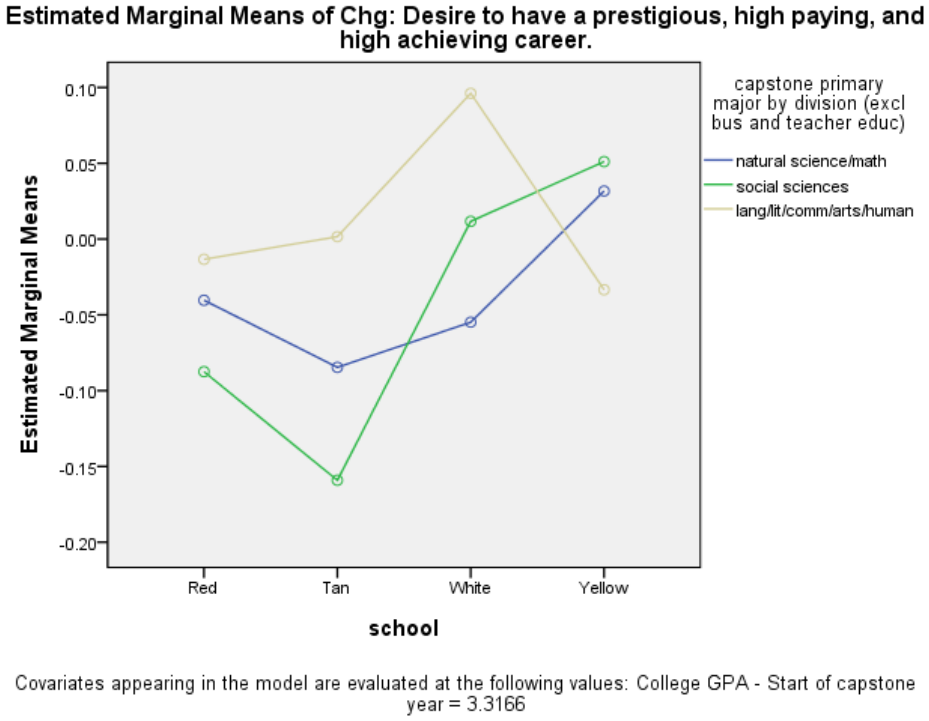

Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3166

- **Status Career Orientation.** Although this scale did not change significantly overall, the sub-item of "becoming accomplished in my field of expertise" as a life goal declined overall for most student categories and would appear to be the main contributor to the scale decline. To the extent that this scale reflects a desire for making more money and prestige, this is not an unfavorable result, but a decline in a goal of becoming accomplished in their field is, on the surface, an unexpected negative result worth exploring. Perhaps related to this is an unexpected small decline in the pre to post percentage of students, using matched data, that intend to pursue a doctorate, from 23% to 22%. This was not a statistically significant decline, but an increase was anticipated and did occur for master's degrees (+1%) and law degrees (+2%). The following table shows the shifts among degree categories for seniors where both the pre and post responses were available. It shows considerable movement between categories: moving to a doctorate were 7% of those formerly intending to stay at the bachelor's level, and 8% of those intending a masters. Moving the other direction, 4% of

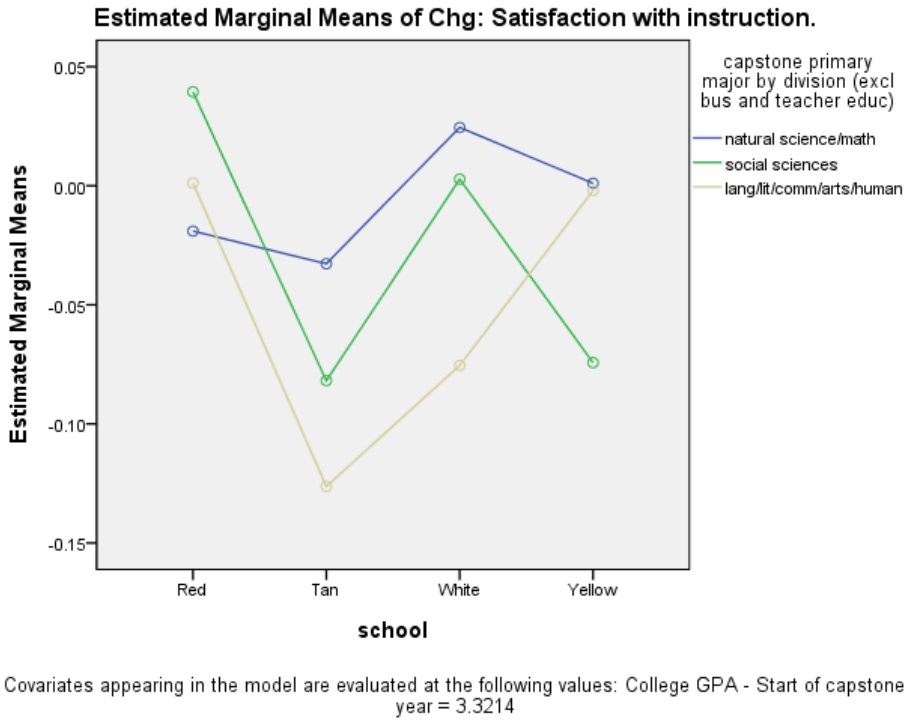
those intending a doctorate moved to the bachelor's category and 12% to the master's level.

| Pre vs. Post: Advanced Degrees | | Post: What is the highest academic degree you intend to earn in your lifetime? | | | | Total |
|---|---|---|---|---|---|---|
| | | 1 Bachelor's | 2 Master's | 3 Law (JD) | 4 Doctorate | |
| Pre: What is the highest academic degree you intend to earn in your lifetime? | 1 Bachelor's | 67 | 35 | 2 | 8 | 112 |
| | 2 Master's | 48 | 476 | 3 | 46 | 573 |
| | 3 Law (JD) | 1 | 8 | 49 | 3 | 61 |
| | 4 Doctorate | 16 | 47 | 5 | 329 | 397 |
| | Total | 132 | 566 | 59 | 386 | 1143 |

The table is evidence that the capstone experience confirms doctoral degree interest for some while reversing it for others, with little overall net change. In that case, the capstone may serve a useful function in identifying through more informed self-appraisal the students who have the interest and abilities for doctoral studies. (Medical schools encourage some research experience or doctor shadowing for the same purpose.) The GLM showed a significant GPA effect, and suggests higher increases for higher GPA students.



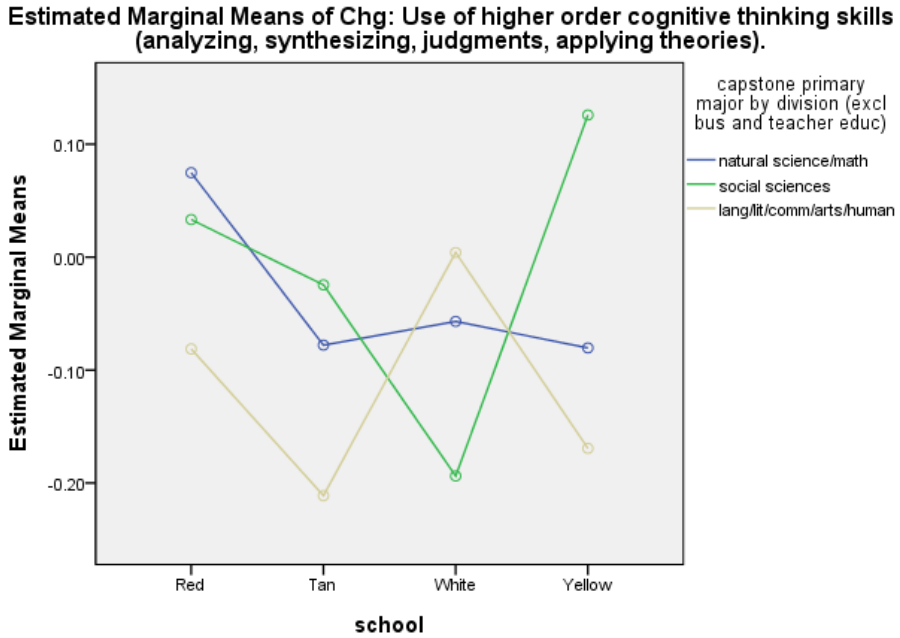
- **Satisfaction with instruction.** Satisfaction with instruction was high before and after the capstone, and not seeing a significant increase simply corresponds with continued high ratings. The GLM model showed no significant effects.




**Student scales declining:**

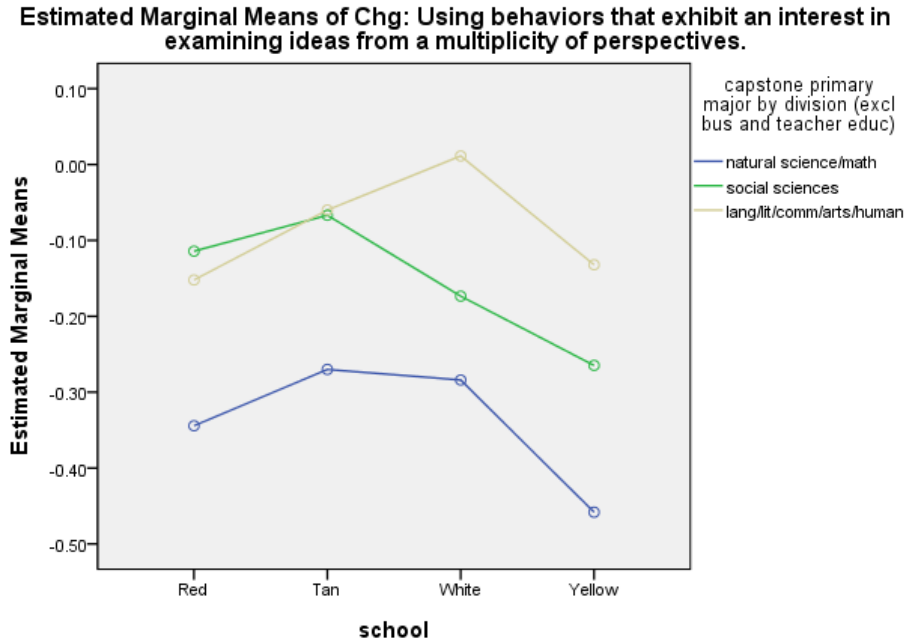
- **Higher order cognition (eff=-.07).** This scale is appropriated from NSSE (by permission) and also emerged during our factor analysis. While the decline is quite modest, it might have been expected that the use of higher order cognition would instead go up significantly during the capstone. Adding to this incongruity, it is somewhat puzzling that the higher order cognition scale would decline while the related need for cognition scale would increase; although they are different, the two scales might be expected to move in sync. The former is a comparison of practice of cognition skills prior to and during the capstone, while the latter is a measure of enjoyment of cognition effort during the capstone. Looking at the subcomponents, the decline came from "analyzing…ideas" and, most significantly, a decline in "applying theories or concepts to practical problems or in new situations" (eff=-.20), while "synthesizing and organizing ideas, information, or experiences…" actually went up overall. Certainly the increase for "synthesizing…" seems valid, and is supported by faculty reports, where an item on "synthesizes information" had one of the largest positive effect sizes. We have no clear explanation for the decline in "applying theories or concepts to practical problems….". Speculatively, this result would seem to have some face validity for capstones if students don't see their capstone as solving a "practical problem" or the skills developed as applicable to practical problems. While research generally and many capstones require attention to both the practical and theoretical aspects of a discipline, most capstone projects may be seen as predominantly theoretical. If this is the case, the

decline in this scale is a misleading result from a nuance in the NSSE wording that doesn't apply well to capstones. Any follow-up projects might consider looking more closely at this. As with other aspects of the capstone, it may take time for the student to see some of the more general benefits of the capstone. The GLM model a significant school*division effect.



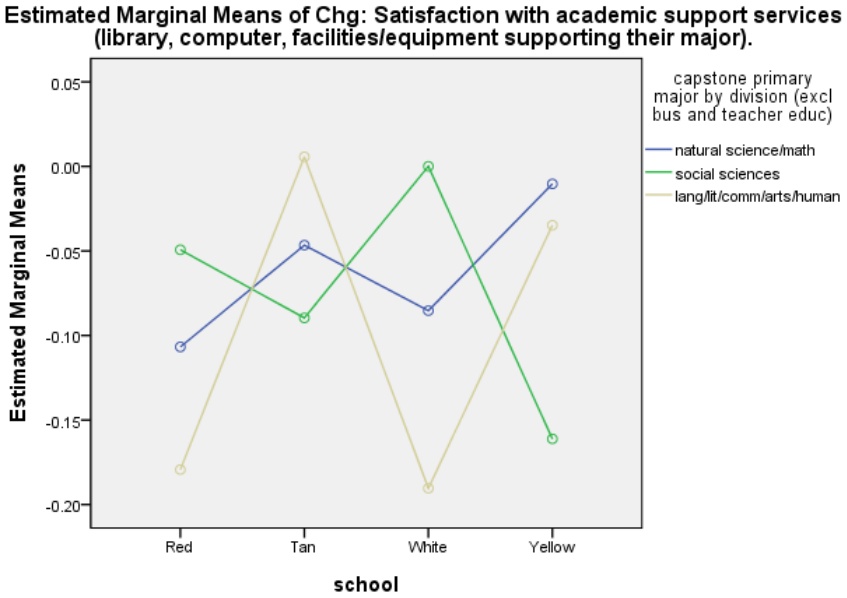

Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3242

- **Multiple Perspectives (eff=-.30).** The decline in multiple perspectives contrasts with some popular perceptions of the capstone as a culminating experience integrating the 4-year college experience. In practice, it is more an in-depth experience in the discipline that integrates general education skills such as writing and critical thinking, but not necessarily ideas or concepts from other areas, and does not, as a general rule, give emphasis to diverse perspectives based on race, religion, gender, or political beliefs. A decline in "tried to better understand someone else's views…." also contributes to the decline in this scale and gives some pause, as this would seem to be a goal of the literature review of any inquiry, and critical thinking in general. However, it may be that the question was interpreted to mean taking someone else's *personal* views into account, as opposed to consideration of different scholarly positions on a subject. A decline occurs across all student subgroups (by school, major, GPA, and gender), but is greatest for natural science majors and low GPA students. A GLM model showed both the school and division with significant effects after controlling for GPA, with the estimated marginal means for the pre/post difference scores, broken down by school, shown in a plot below. The order of least decline, from humanities to social sciences to natural sciences, is possibly related to how mathematical/technical each disciplinary area is, the more objective disciplines perhaps placing less emphasis on consideration of various personal points of view on a topic. The GLM model showed significant effects by both school and division.




Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3378

- **Satisfaction with support services (eff=-.10).** This scale has subcomponents for rating of computer, library and facilities/equipment services. The small decline is possibly a result of increased demand for these services resulting from capstones. Being highly individualized, capstone projects may require specialized equipment or computer software, reserved workspace (including laboratory or library space), special library resources, etc. The GLM model showed a significant GPA effect with higher GPA students showing more satisfaction.

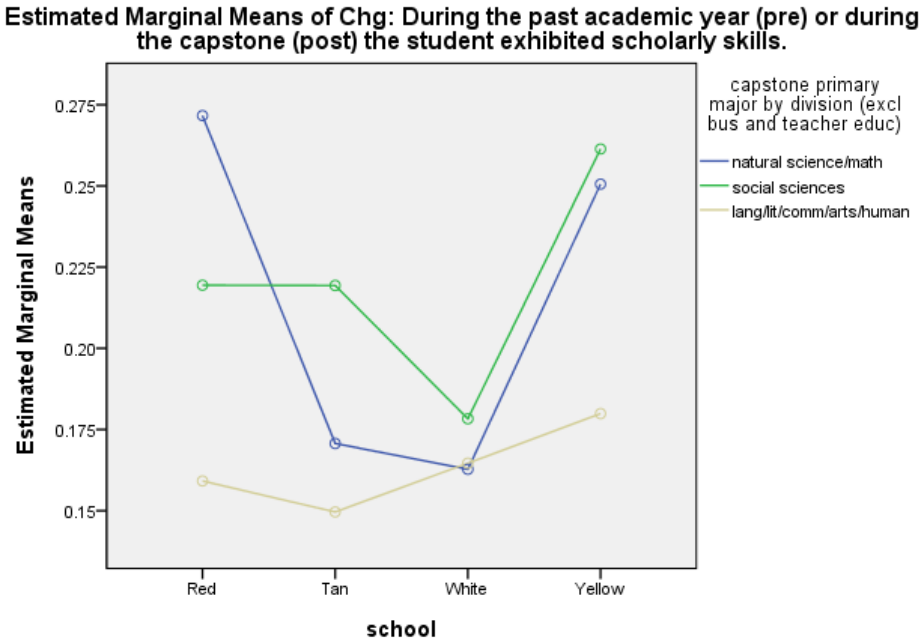



Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3214

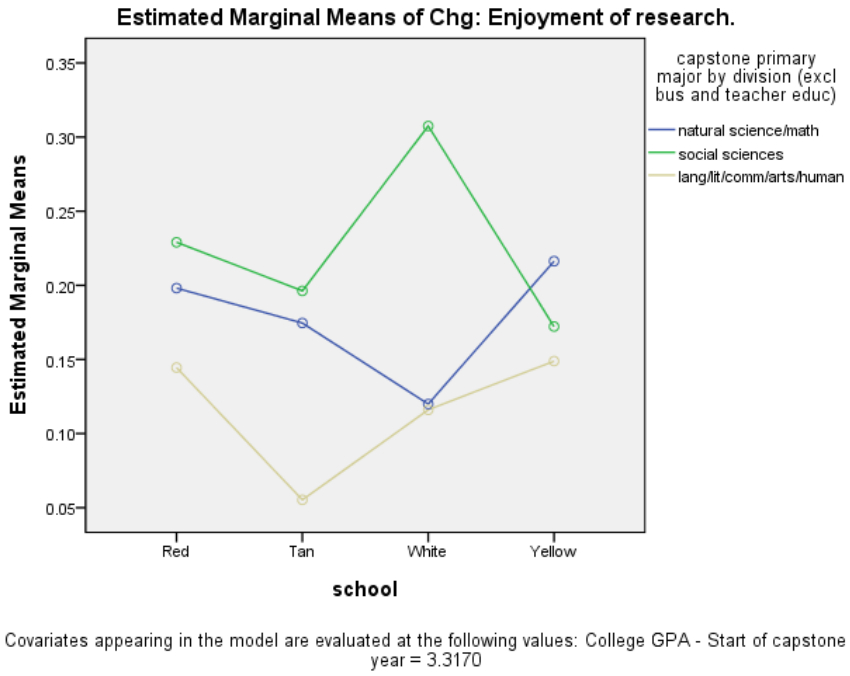
**Student scales that increased:**

- **Exhibiting Scholarly Skills (eff=+.42) and Research Orientation (eff=+.29).** The combined increase in these scales is evidence the capstone is an effective educational practice. Students report that they performed at a higher level on many critical thinking, research and communication skills during the capstone than in prior regular courses, and that, on average, they gained in enjoyment of doing research.

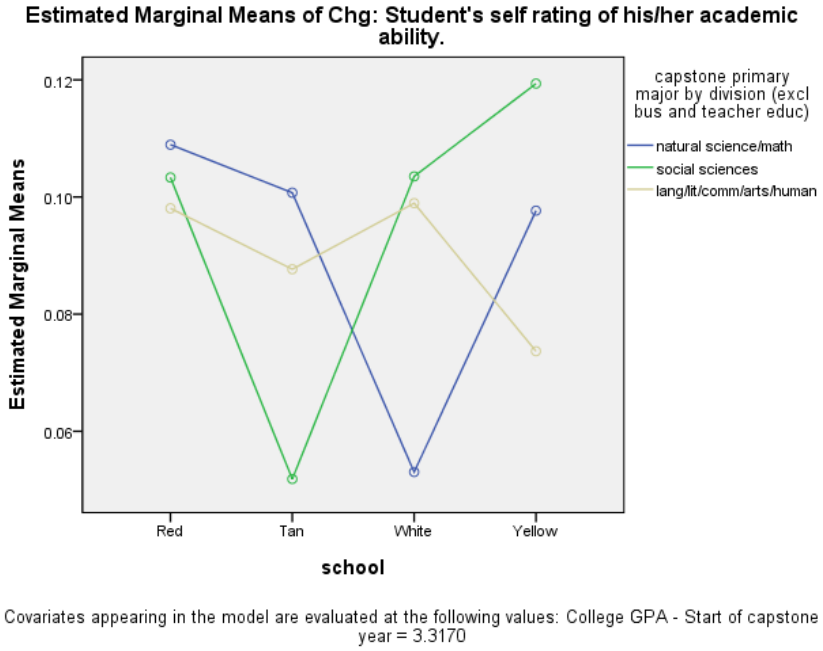
  These scales increased overall and for all student subgroups (see the table values and the plot below). Moreover there was a statistically significant increase in the mean response for each individual question in both scales. For individual items, the only significant decline observed was for humanities majors and quantitative reasoning, a result that adds credibility to the validity of student responses. The GLM for scholarly skills showed no statistically significant effects p<=.05. School and division, which appear significant in the plot, were close to the .1 level. The GLM for research orientation showed division is significant, and suggests the greatest gains for research interest were in the social sciences.



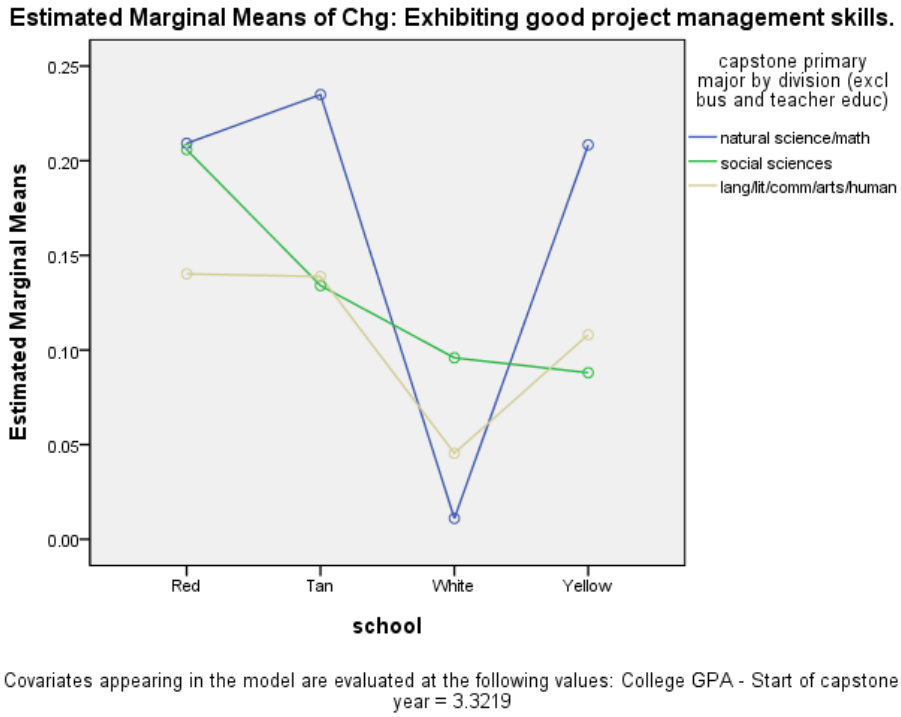

Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3229



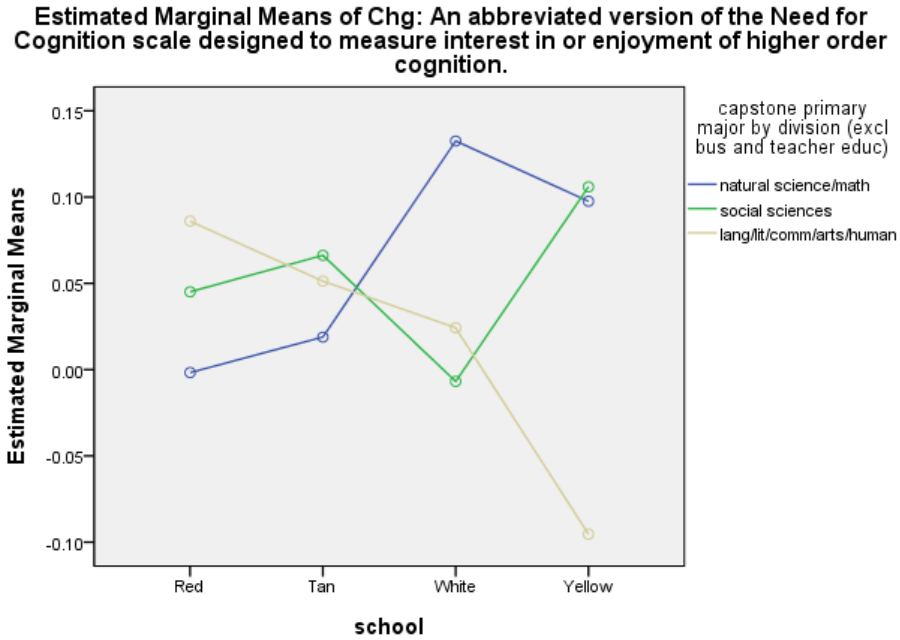

- **Rating of Academic Ability (eff=+.27).** Students' ratings of their abilities in writing, creative and critical thinking, and academic ability in general went up pre- to post-capstone, as did their intellectual self-confidence. An increase in the mean was observed for every school and student type. Looking at the component items for this scale in the table, it seems that the strongest increases may be for the highest GPA group (H), and for females, but this impression for females was contraindicated by a GLM that added gender and gender*division to the model that showed no significant effect from gender. The original GLM without gender showed no significant effects.



- **Project Management (eff=+.17).** In the open ended questions, an increase in project management skills was among the most frequently cited benefits of the capstone, and this is corroborated by the increase in this scale. A significant increase was observed for all divisions, GPA levels and both genders. By school, however, significant increases were found only for Red and Yellow. This corresponds to those schools having more intense capstones in terms of credit hours and duration, which is always the full senior year for Red. It is likely that achieving significant development of project management skills during the capstone is enhanced by capstone programs that emphasize the scale, challenge, and duration of the projects as well as mentoring styles that foster student independence. The GLM showed GPA as significant p<=.05, and, notably, that students with *lower* GPAs reported *higher* project management gains.

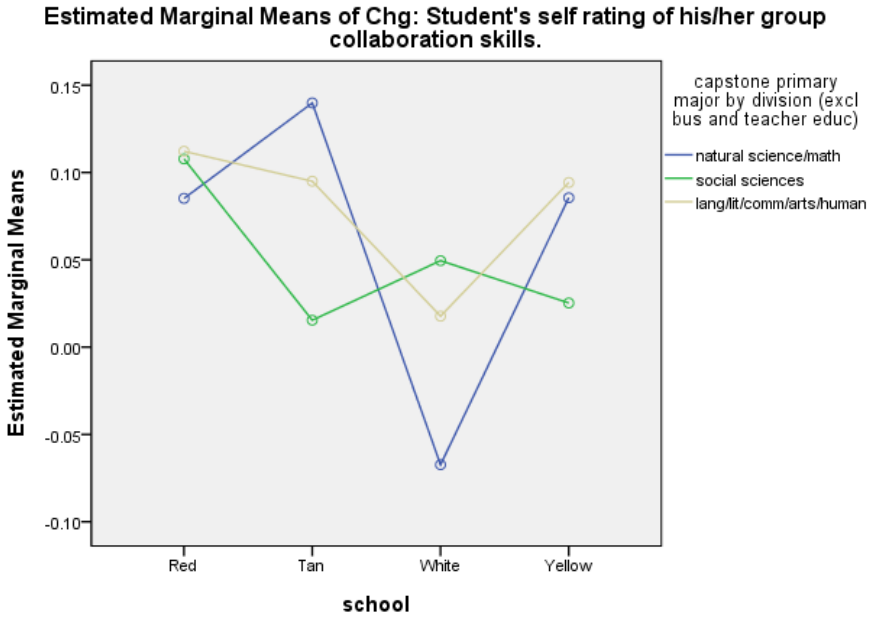



- **Need for Cognition Lite (eff=+.11).** The surveys used five of the 18 items from the Need for Cognition scale as an abbreviated version to measure enjoyment of effortful cognitive activities. Studies indicate the full need for cognition scale is a relatively stable dispositional construct. The observed increase in this scale over a brief time period, though a small effect, along with the increase in an enjoyment in conducting research noted above, is evidence that capstones contribute to a precursor condition for life-long learning. The increase was concentrated in schools Red and Yellow, but occurred across all GPA levels at all schools. The GLM showed school*division as significant.



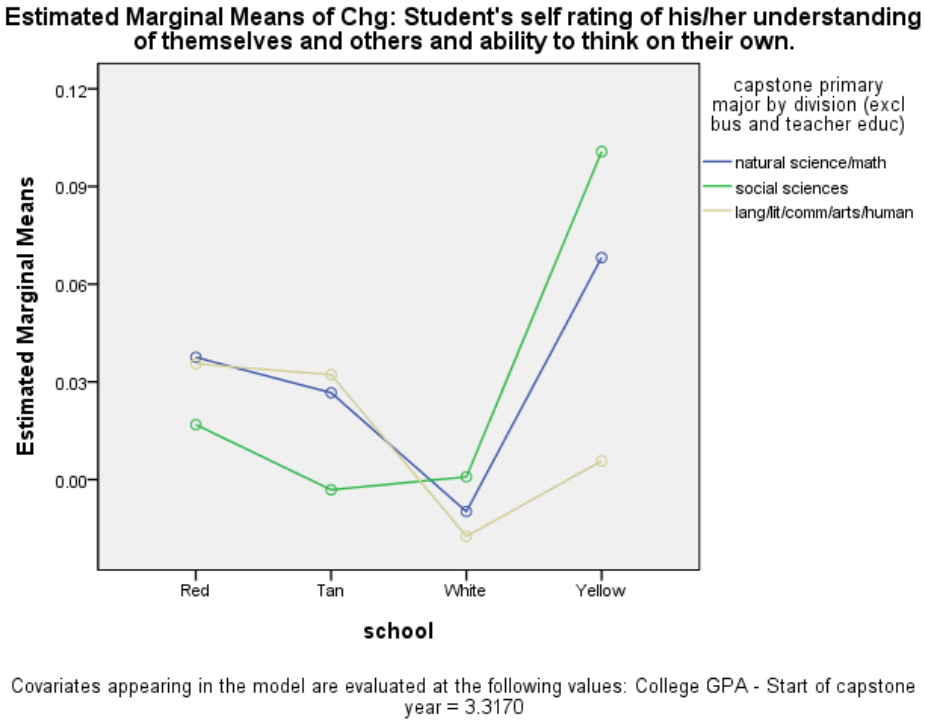

Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3166

- **Rating of Leadership/Collaboration Skills (eff=+.17).** This scale incorporates public speaking ability, leadership ability, and social self-confidence. Although the overall result was an increase in each component item, the most uniform increase across student types was for public speaking ability. A key component of most of the capstones in the study has been a public presentation. The GLM showed GPA as significant.

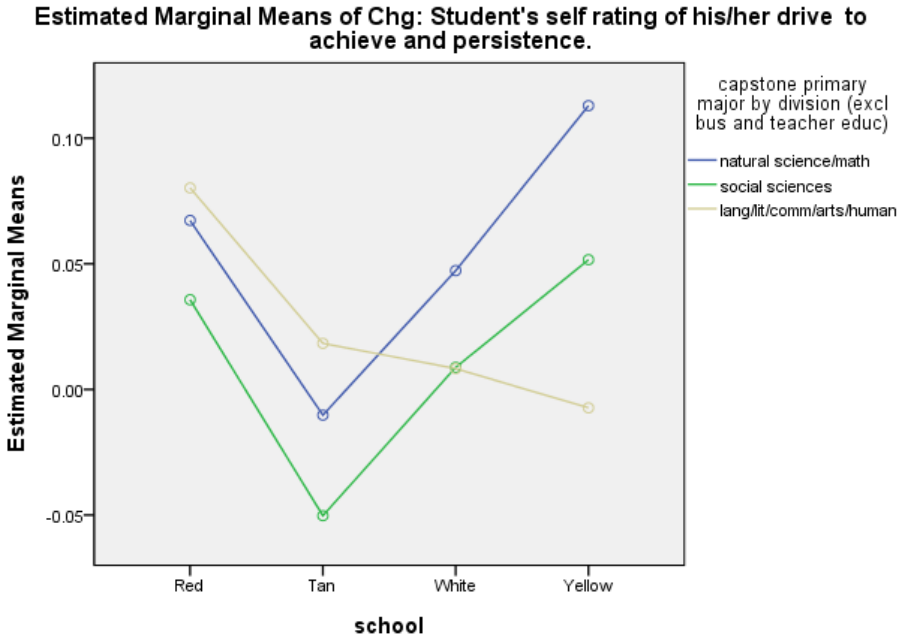



Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3170

- **Rating of Independent Voice (eff=+.07).** The increase in this scale, which comes primarily from an increase in self-understanding, is reinforced by many student comments relating to developing an understanding of interests and abilities. Indeed, the small effect size is surprising given the emphasis this received in student comments. The GLM showed no significant differences by subgroups, although GPA was significant with a somewhat less stringent standard of p<=.1.



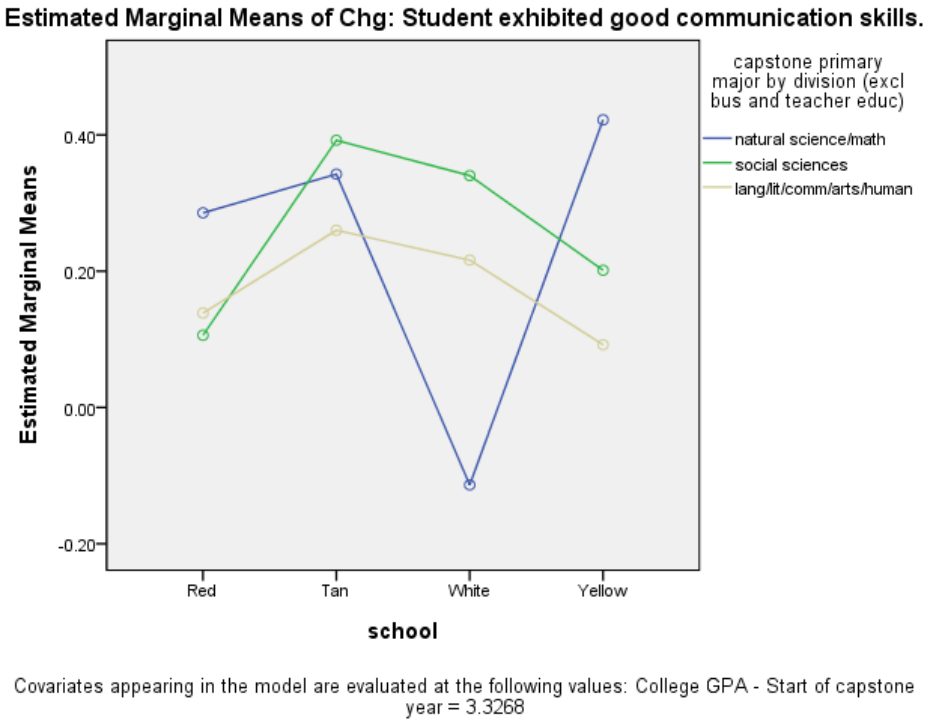
- **Rating of Striver (eff=+.07).** The increase in this scale evidences an increased self-rating of a drive to achieve and of persistence, and is presumably related to experiencing the challenge of a sustained and difficult project, and related to such student comments as “I did it!”. The GLM showed no significant differences by subgroups.



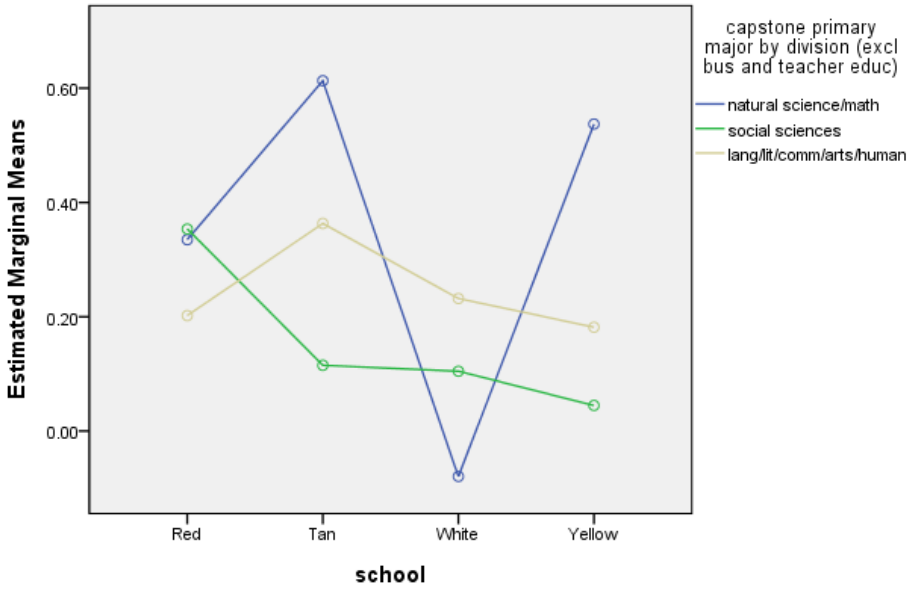

Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3170

**Faculty scales – all increased:**

**All four faculty scales increased: communication skills (eff=+.27), effective project management (eff=+.35), intellectual engagement (eff=+.34), and critical thinking skills (eff=+.42).** These scales compare faculty perceptions of student work during the capstone to their academic work in regular coursework prior to the capstone. Our evidence is that these scales went up for all four schools and student groups by major, GPA level and gender. In summary, faculty mentors seem very pleased with the performance of students during the capstone and feel it compares favorably with their performance during a regular course on these measures. A closer look at student subgroups using GLM univariate models showed that for the last three faculty scales listed above there were significant effects from the school*division interaction. Plots of pre/post difference scores for faculty scales by school and division:

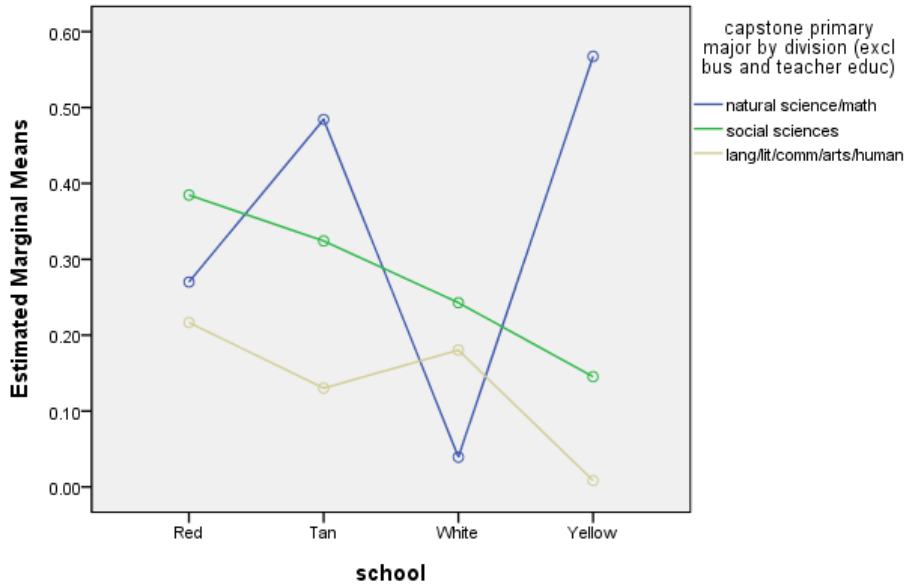


**Estimated Marginal Means of Chg: Student exhibited good intellectual engagement behaviors.**

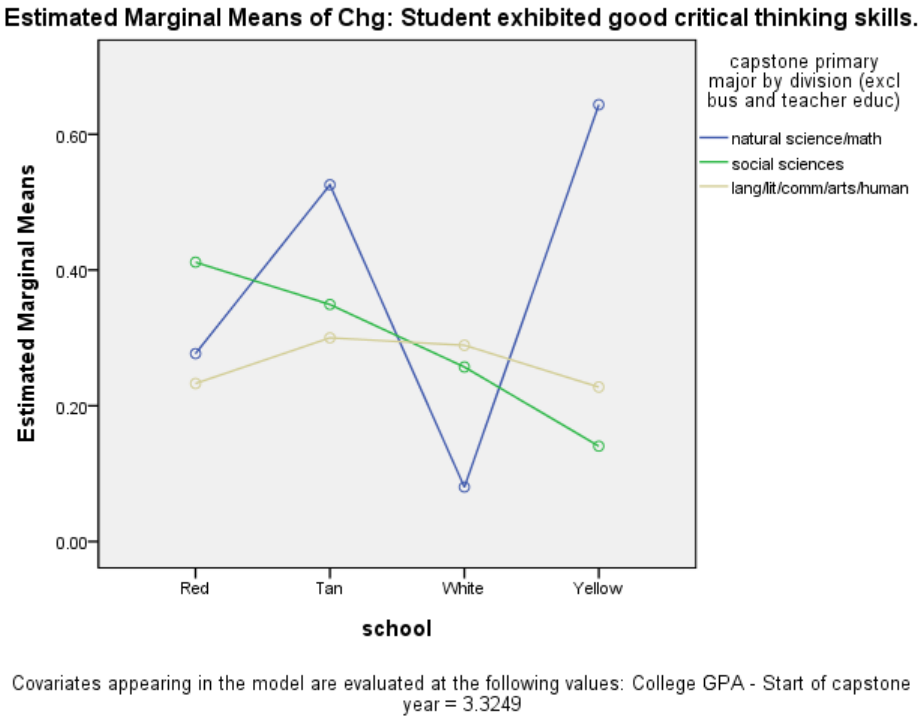



Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3270

**Estimated Marginal Means of Chg: Student exhibited good project management skills.**




Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.3275

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### TABLES 4.13: SUMMARY SHEET: MEANS OF SCALES AND SUMMATIVE ITEMS ONLY ON THE POST-CAPSTONE SURVEYS

This table is a companion to Table 4.11 that summarizes the scales and items for which no pre/post change could be computed, since they were from questions asked only on the post-capstone surveys.

**********

## RESULTS - USING THE SCALES TO INVESTIGATE KEY QUESTIONS

### WHAT MAXIMIZES THE CAPSTONE'S CONTRIBUTION TO DEVELOPMENT?

A key question of interest is what aspects of the capstone are significant contributors to student academic development. To look at this a wide variety of variables were used in a series of regression models that resulted in the following list of survey items that had statistically significant coefficients in the model, $p<.05$. They are listed in descending importance based on the standardized Beta coefficients for the model.

| Item | Beta |
|---|---|
| PreExpectGoodCapstone Student expects capstone experience to be helpful. | .263 |
| PostStu57 Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions. | .220 |
| PostMentorRel Helpful and comfortable relationship with the mentor. | .211 |
| PostPrepDisc Helpfulness as preparation for the capstone of areas that are grounded in the disciplinary major of the capstone. | .191 |
| PreRatingStriver Self-rating of drive to achieve and persistence. | .113 |
| PostStu214 When the project started, how enthusiastic were you about your capstone topic? | .082 |
| PostPrepBreadth Helpfulness as preparation for the capstone of areas that add educational breadth. | .064 |
| PreCivicOrient Orientation toward civic engagement | .064 |
| PostStu53 On average, how many hours per week did you spend working on ALL aspects of your capstone combined? | .059 |

The list suggests that significant correlates of a capstone that contributes to academic development involve the student's positive attitudes and motivation (expecting a good capstone, being enthusiastic, and being motivated to achieve and persist), the student's preparation both in terms of breadth in general education and in the discipline, a helpful and comfortable relationship with the mentor, a project that engages the student in critical thinking, and, finally, spending time-on-task. Not surprisingly, good preparation and good mentoring are associated with a contribution to development. What might be especially noted from this is the importance of structuring the methods of topic and mentor selection so that the student is interested in and has enthusiasm for the topic and is comfortable working with the mentor. Some student input in negotiating both would seem to be highly desirable. It might be noted that the survey timing was at the beginning of the capstone so the ExpectGoodCapstone rating was made after the topic and mentor were known (for most students) and would incorporate both those aspects. The use of higher order cognition in terms of making judgment about information, arguments and methods also points to the need for mentors to design or tailor the capstone project to elicit those critical thinking skills. Finally, higher time-on-task is related partially to interest and enthusiasm, as evidence by a correlation of 0.31 between PostStu53, hours per week, and PostCapMoreEngaging, with high expectations for student performance another dimension.

### WHAT CONTRIBUTES TO STUDENTS' RATINGS OF THE CAPSTONE AS SUCCESSFUL?

Similarly to the contribution to development analysis, a series of regression models resulted in the following list of significant variables relating to higher ratings by the student of the capstone as a successful experience, in descending order of importance by t values:

| Item | Beta |
|---|---|
| PostCapMoreEngaging Rating of the capstone as more or less intellectually engaging than a regular course. | .294 |
| PostStu215 When the project ended, how enthusiastic were you about your capstone topic? | .236 |
| PreExpectGoodCapstone Student expects capstone experience to be helpful | .181 |
| PostPrepBreadth Helpfulness as preparation for the capstone of areas that add educational breadth. | .122 |
| PreProjMgt Exhibiting good project management skills | .113 |
| PostStu213 How satisfied were you with the process used to select your capstone topic? | .111 |
| PostMentorRel Helpful and comfortable relationship with the mentor. | .101 |
| PostStu58 Applying theories or concepts to practical problems or in new situations | .087 |
| PostStudentTopicMotiv Mentor rating of students enthusiasm for the topic | .068 |
| PostStu54 Memorizing facts, ideas, or methods so you can repeat them in pretty much the same form | .049 |
| PostStatusCareerOrient Desire to have a prestigious, high paying, and high achieving career. | .049 |
| PostStu57 Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | .048 |

As in the list for the contribution to development, broadly speaking, items in the list relate to pursuing a project of interest to the student and believing the student has the preparation and mentor support to succeed. Engagement with the capstone, preparation, the mentor relationship, and critical thinking emerge as significant aspects, although with somewhat different variables. Satisfaction with the process used to select the capstone topic is likely related to interest or enthusiasm for the topic. Having utilized good project management skills in courses prior to the capstone is a new area in this list and points to the value of incorporating in preparatory courses some projects that require aspects of organization, planning, and time management. (Student comments about the capstone show project management as a significant area of development.)

### IS A UNIVERSAL CAPSTONE REQUIREMENT JUSTIFIED?

Our institutions have made the capstone requirement apply to all students, not just honors students or students in the natural sciences, where undergraduate research programs tend to concentrate. This decision appears to be justified by our data in Tables 4.10 to 4.13, in student and mentor comments, and in our alumni survey results. Although there are some notable differences, a review of Table 4.11, for instance, shows remarkable consistency of reports of capstone changes by both students and mentors across academic divisions, GPA levels and gender, and generally that significant gains from the capstone experience can be achieved by all types of students. Moreover, many of the areas of gains seem linked to the special characteristics of the capstones, as compared to a regular course, as an independent, large scale, significant research or creative project. Among the student scales, most showed no

significant effects from academic division or GPA. The exceptions are GPA effects for StatusCareerOrient, RatingLeadCollabSkills, and ProjMgt. Lower GPA students appear to report *higher* gains in ProjMgt, reinforcing the value of capstones for this group. No student or faculty scales showed significant effects from division alone, but HighOrderCogn, NeedCognLite, EffProjectMgt, IntelEngagement, CrThinkSkills showed a significant effect from the school*division interaction. The interpretation of this is not crystal clear, but apparently institutional approaches to the capstone, which are largely driven at the departmental level, are different enough to result in varying results based on disciplines. Some further comparisons of capstone types by division and across schools might help clarify this.

Looking more closely at GPA differences, it appears from faculty reports that higher GPA students tend to perform better during the capstone, as shown by the correlations of the pre-capstone GPA with the faculty measures:

| Correlations with pre-capstone GPA | PreCapColGPA College GPA - Start of capstone year |
|---|---|
| PostCommunSkills Student exhibited good communication skills. | 0.50 |
| PostCrThinkSkills Student exhibited good critical thinking skills. | 0.50 |
| PostIntelEngagement Student exhibited good intellectual engagement behaviors. | 0.49 |
| PostEffProjectMgt Student exhibited good project management skills. | 0.48 |

Consistent with these scale correlations, the capstone grade assigned by the faculty member had a similar correlation with the pre capstone GPA of 0.57.

That students who perform better academically prior to the capstone would also tend to perform better during the capstone is not surprising. The case for including lower GPA students in a capstone program, however, is that they are able to develop during the capstone on a par with other students. We have seen above that there are positive effect sizes for many of the developmental scales. That students at all GPA levels are achieving growth on a more or less equal basis is evidenced by the comparable effect sizes at various GPA levels in Table 4.11, and the low correlations of the pre-capstone GPA with the pre/post difference scores for both the student and faculty scales:

| Correlations with pre-capstone GPA | PreCapColGPA College GPA - Start of capstone year |
|---|---|
| DCivicOrient Chg: Orientation toward civic engagement. | **0.08** |
| DStatusCareerOrient Chg: Desire to have a prestigious, high paying, and high achieving career. | **0.07** |
| DSatisSuppSrv Chg: Satisfaction with academic support services (library, computer, facilities/equipment supporting their major). | **0.07** |
| DRatingLeadCollabSkills Chg: Student's self rating of his/her group collaboration skills. | 0.05 |
| DRatingIndepVoice Chg: Student's self rating of his/her understanding of themselves and others and ability to think on their own. | 0.05 |
| DRatingStriver Chg: Student's self rating of his/her drive to achieve and | 0.04 |

| | |
|---|---|
| persistence. | |
| DResearchOrient Chg: Enjoyment of research. | 0.03 |
| DHighOrderCogn Chg: Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). | 0.02 |
| DRatingAcadAbil Chg: Student's self rating of his/her academic ability. | 0.02 |
| DMultPerspectives Chg: Using behaviors that exhibit an interest in examining ideas from a multiplicity of perspectives. | 0.02 |
| DSatisInstr Chg: Satisfaction with instruction. | 0.01 |
| DNeedCognLite Chg: An abbreviated version of the Need for Cognition scale designed to measure interest in or enjoyment of higher order cognition. | -0.01 |
| DAdvDeg Chg: % planning advanced degree | -0.01 |
| DExhibScholarlySkills Chg: During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. | -0.04 |
| DProjMgt Chg: Exhibiting good project management skills. | **-0.07** |

Statistically significant correlations have been bolded. Note the negative significant correlation with DProjMgt indicates the possibility that lower GPA students perform better in developing project management skills.

A caveat in regard to universality is that there were a number of faculty comments about the frustrations of mentoring a capstone for students that are unmotivated or have poor writing/communication skills, and including lower GPA students in a capstone requirement, to the extent lower GPAs are associated with lack of motivation or writing skill, may add to the faculty mentoring burden.

### Does student socio-economic background effect results?

No evidence emerged that the student ratings for the capstone as successful or its contribution to development were affected by socio-economic background variables that included parental education levels or financial aid measures of need, grant aid, or loan aid. See Appendix 4.2.

### Do Mentor Reports of Student Success Agree with Student Self-Assessment?

Yes, positive correlations show they are generally consistent. See Appendix 4.4.

### Are the Capstone Experiences Different for Double Majors than Single Majors?

In our database of capstones almost 39% of the students were double majors. This group shows statistically significant higher means on multiple perspectives, self-ratings of academic ability, orientation toward research, and use of high order cognition during the capstone. They were less likely to expect a good capstone or find the capstone more engaging than a regular course. They had a smaller decline in multiple perspectives and a smaller increase in reporting they exhibited good project management compared to single-major students. See Appendix 4.9.

### Does the Capstone Grade Assigned by the Faculty Correlate Highly with Students' Self-Ratings of a Successful Capstone or Development from the Capstone?

Not as highly as might be expected. After converting grades to a 4-point scale, the correlation of grades assigned with student estimates of success and development were a fairly modest .23 and .15, respectively. See Appendix 4.10.

### Is There Evidence of an Impact from the Capstone's Expectation of Independence of Thought and Action on the Part of the Student?

As shown below, encouraging student independence is a strongly positive aspect of capstones. Students' perceptions of the mentor encouraging their independence are positively and significantly correlated with a large number of favorable scale outcomes, including pre/post changes in the development scales. The following table lists the correlations >=.2, in descending order. In particular independence is highly associated with a positive mentor relationship and ratings of the capstone's success and contribution to development.

| Correlations With PostStu216 My mentor encouraged my independence | Corr. |
|---|---|
| PostMentorRel Helpful and comfortable relationship with the mentor. | .717** |
| PostCapSuccessful Overall assessment of the capstone as a successful experience. | .376** |
| PostCapContDev Rating of the contribution of the capstone to the development of scholarly skills. | .368** |
| PostSatisInstr Satisfaction with instruction. | .344** |
| PostExhibScholarlySkills During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. | .339** |
| PostHighOrderCogn Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). | .256** |
| PostProjMgt Exhibiting good project management skills. | .244** |
| PostCapMoreEngaging Rating of the capstone as more or less intellectually engaging than a regular course. | .232** |
| DExhibScholarlySkills Chg: During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. | .216** |

Perhaps indicating a concern, correlations show little agreement between students and faculty on whether faculty members are actually encouraging independence. The correlation between the student rating of "My mentor encouraged my independence" and the faculty report that "I encouraged this student to work independently" was only .09 (see Appendix 4.10). This low level of agreement shows that faculty efforts to encourage independence are an area to address in any mentor training, since they are either ineffective or misunderstood by either mentors or students.

### Is it Important to have students Participating in Developing or Refining their Capstone Topic?

Yes, data supports this. The table below shows the positive and significant correlations between letting the student participate in developing the topic and many favorable scale outcomes. With particularly strong correlations are faculty reports of student enthusiasm for

the topic and student performance during the capstone. Student scales of performance are also significantly correlated, but not as strongly.

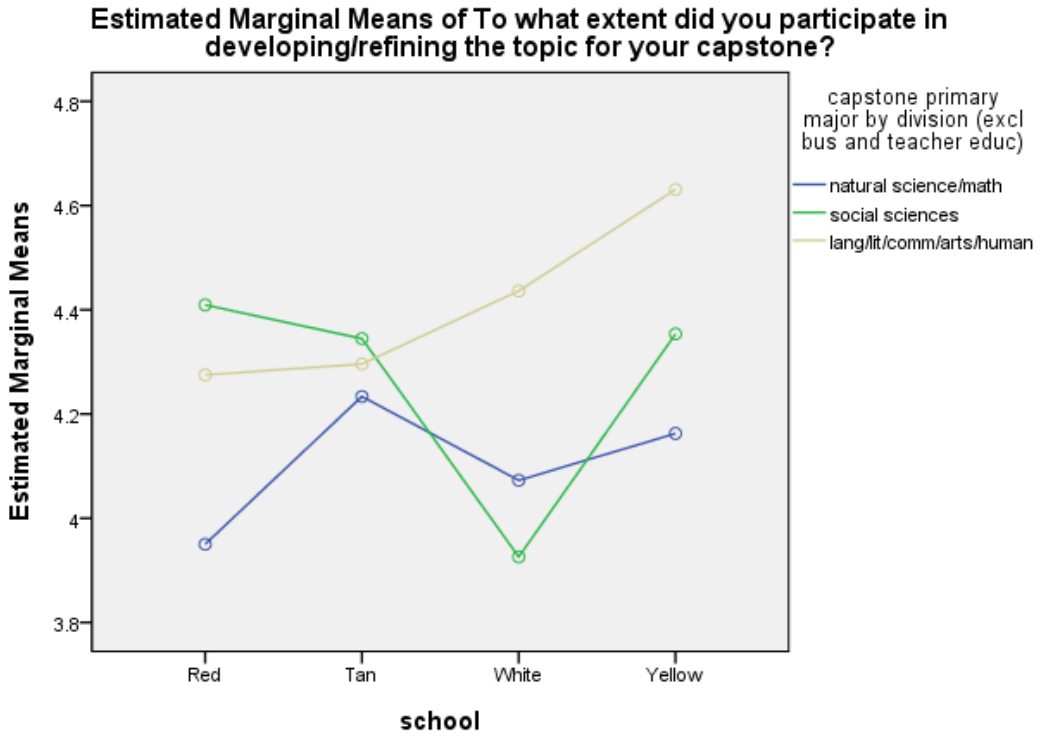
Having noted above the association of student enthusiasm and time-on-task, we would conclude that having the student participate in topic development is also linked with more time-on-task. Intuitively, the more interested the student is in the topic, the more willing they are to devote time to its exploration. Other data suggests that it is fine for mentors to originate the topic for the capstone as long as the student is involved in negotiating its development and can take ownership of the project.

| **Correlations** | **PostFac38 To what extent did the student participate in developing / refining his /her capstone topic?** |
|---|---|
| PostStudentTopicMotiv Mentor rating of students enthusiasm for the topic | 0.79 |
| PostIntelEngagement Student exhibited good intellectual engagement behaviors. | 0.52 |
| PostCrThinkSkills Student exhibited good critical thinking skills. | 0.46 |
| PostEffProjectMgt Student exhibited good project management skills. | 0.46 |
| PostMentorRapport Mentor's self-rating of good relationship with the student | 0.39 |
| PostCommunSkills Student exhibited good communication skills. | 0.37 |
| PostMentorInstruction Mentor's self-rating of instructional own helpfulness | 0.28 |
| DIntelEngagement Chg: Student exhibited good intellectual engagement behaviors. | 0.28 |
| DEffProjectMgt Chg: Student exhibited good project management skills. | 0.25 |
| DCrThinkSkills Chg: Student exhibited good critical thinking skills. | 0.25 |
| PostRatingAcadAbil Student's self-rating of his/her academic ability. | 0.19 |
| DCommunSkills Chg: Student exhibited good communication skills. | 0.19 |
| PostCapSuccessful Overall assessment of the capstone as a successful experience. | 0.17 |
| PostMultPerspectives Using behaviors showing interest in examining ideas from multiple perspectives | 0.17 |
| PostExhibScholarlySkills During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. | 0.17 |
| PostCapMoreEngaging Rating of the capstone as more or less intellectually engaging than a regular course. | 0.16 |
| PostNeedCognLite An abbreviated version of the Need for Cognition scale designed to measure interest in or enjoyment of higher order cognition. | 0.13 |
| PostMentorRel Helpful and comfortable relationship with the mentor. | 0.12 |
| DMultPerspectives Chg: Using behaviors that exhibit an interest in examining ideas from a multiplicity of perspectives. | 0.12 |
| PostCapContDev Rating of the contribution of the capstone to the development of scholarly skills. | 0.12 |
| PostResearchOrient Student's self-rating of his/her drive to achieve and | 0.12 |

| | |
|---|---|
| persistence. | |
| DHighOrderCogn Chg: Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). | 0.11 |
| PostSatisInstr Satisfaction with instruction. | 0.10 |
| DExhibScholarlySkills Chg: During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. | 0.10 |
| PostProjMgt Exhibiting good project management skills. | 0.10 |

### ARE CAPSTONES IN THE NATURAL SCIENCES MORE CLOSELY ALIGNED WITH FACULTY RESEARCH INTERESTS?

Some have speculated that for various reasons, including laboratory and equipment needs, students in the natural sciences need to align their capstone topics closer to the research interests of faculty, and are, consequently, less involved in defining the topic. A GLM paralleling those discussed above, shows no significant effects from the academic division or school separately, but shows a significant school*division interaction. Thus, the extent of alignment is affected by varying divisional practices across the four schools, as illustrated in the GLM plot below, where the results for divisions vary by school.




Covariates appearing in the model are evaluated at the following values: College GPA - Start of capstone year = 3.2985

### ARE CAPSTONE GRADES A MEANINGFUL ASSESSMENT MEASURE?

They are helpful but not sufficient. As might be expected, the capstone grade is most highly correlated with the faculty measures of the level of performance during the capstone (>.60). It is modestly correlated with students' ratings of success (.227) and contribution to development (.149), and only weakly (<.10) associated with differences in the student scales. The grade captures much of the faculty impressions of student performance, but not student, and is not good as a measure of pre/post change.

**Summary Discussion of implications for our research questions**

Below is a recap of the project's research questions stated what the numerical analysis tells us about them. Please also refer to Part 1, which contains a synopsis of the results from all the components of our study organized into questions that are more clearly stated than our original questions and where the discussion is more thorough.

1. **What is the impact of the capstone experience on outcomes leading to lifelong learning? What is the perceived impact one, five and five-plus years after graduation?**

   The faculty scales show faculty perceive students to have gained skills that are precursors to lifelong learning: communication skills, critical thinking skills, managing a large project, showing intellectual engagement (curiosity, originality, independent thinking, pursuing learning opportunities, asking questions, making connections, etc.).

   Similarly, the overall means for the student scales indicate students perceive they have made gains in academic and project management skills, understand their own abilities and interests better, have developed more intellectual self-confidence, and report enjoyment of effortful intellectual effort, including doing research.

   In contrast, our data does not show an increase in civic mindedness during the capstone, or increased use, as compared to in prior coursework, of multiple perspectives relating to diversity, considering ideas or concepts from other courses, or generally considering the perspectives of others. Although shifts in advanced degree objectives both toward and away from higher degrees may indicate the capstone clarifies for students their interests and possibilities for success, our data did not show a net increase in interest in advanced degree attainment.

   These results are highly consistent for student groups across academic division, GPA level, SES, and gender, and the results support the use of capstones as a universal curricular feature that can benefit all students. Perceptions and results of particular types may vary, however, by factors that transcend these student groups, such as credit hour effort, duration of project, student time-on-task, and individual student motivation.

2. **How does the capstone experience benefit the student and the faculty mentor?**

   The benefits for mentors are discussed in Part 6, in the analysis of open-ended questions, and in the synthesis in Part 1. The benefits for students, as we can conclude from our numerical analysis, are those discussed for question 1.

3. **What are the similarities and the differences in how our capstone programs are formulated?**

   This is primarily covered in other project documents. Our numerical data has shown, however, some variation by school in the average credit hours for capstones and institutional grading practices, with Red having the most intense capstone as measured by credit hours, and grading for capstones by Red being generally lower than for regular courses, and for Tan higher.

4. **What resources (programs, structures, and personnel) are our colleges providing to support their capstone programs? What is the opportunity cost of our capstones?**

   This is covered elsewhere.

5. **How do faculty, students, and other college constituencies perceive and experience the capstone?**

   See question 1. Our numerical results generally show positive results. The analysis of comments adds more nuance.

6. **How do students experience the capstone? What is the range of capstone experiences for our students, and what are the conditions and practices that result in the most positive capstone experiences?**

   See question 1. Our numerical results generally show positive results. The analysis of comments adds more nuance.

7. **How do we modify our programs to implement best practices?**

   Our means confirm the overall benefits of capstones. Improvements in best practices are best discussed by combining the results of the analyses of the survey comments and focus groups. See the documents in Part 1.

8. **How can our history of universal capstones and what we learn through this study produce models for the development of similar programs at other institutions?**

   This is addressed in the documents included in Part 1.

# PART 4 TABLES: Senior and Mentor Surveys

## Data Directory

4.1 Data Directory and Overall Means by Student Subgroup (All, School, Major, GPA Group, Gender)

## Scales from Factor Analysis

4.2 Summary List of Capstone Survey Scales
4.3 Capstone Survey Scales and Component Items, Reliability Alphas and Loadings
4.4 Scale Inter-correlations: Pre-Capstone Student Survey
4.5 Scale Inter-correlations: Post-Capstone Student Survey
4.6 Scale Inter-correlations: Pre- to Post-Capstone Student Surveys
4.7 Scale Inter-correlations: Pre, Post, and Pre to Post-Capstone Faculty Surveys
4.8 Scale Inter-correlations: Post Student with Post Faculty Scales
4.9 Scale Inter-correlations: Post Mentor Survey Correlations of Scales with Summative Items

## Scale Changes: Pre to Post Capstone, By Student Groups

4.10 Scale and Item Means and Pre/Post Changes by Student Subgroup (All, School, Major, GPA Group, Gender)
4.11 Significant Pre/Post Changes for Scales and Sub-items, by Student Subgroups
4.12 Significant Pre/Post Changes for Scales, by Student Subgroups
4.13 Summary Sheet: Means of Scales and Summative Items asked only on the Post-Capstone Student and Faculty Surveys

## TABLE 4.1: DATA DIRECTORY AND OVERALL MEANS BY STUDENT SUBGROUPS

The following table is a general directory of all the project data fields (excluding the alumni survey) and the mean values for capstones in our capstone database. It forms a lookup table of information on each database item.

As shown in the table headings, the data fields come from the following sources:

- Student bio-demographic data (supplied by the institutional research offices)
- Faculty bio-demographic data (supplied by the institutional research offices)
- Student Pre-Capstone Survey
- Student Post-Capstone Survey
- Faculty Pre-Capstone Survey
- Mentor Post-Capstone Survey
- Department Capstone Policies and Administration Survey
- Capstone Course Description
- Fields derived from the above, including:
    - Pre/post capstone difference scores for items repeated on the two surveys. These start with a "D", as "DStu41" or "DFac15". Values of these are available only for capstones where both a pre and post capstone survey was available.
    - Scales derived by factor analysis
    - Convenience scales used in processing, as to select student groups

The table columns include:

- The SPSS name - this is a shorthand name used in SPSS processing. These are also used throughout our analysis to indicate variables and, for survey fields, are constructed as a reference to the survey name and a sequential number based on the order in the survey. For example, "PostStu71" is the 71st item from the Student Post-Capstone survey.
- A field description, which is the text of the question for survey item.
- For survey items that have an underlying scale, the scale range and largest value. For example, a field with scale 5 and range "SD-SA" indicates a 5-point scale with responses ranging from strongly disagree to strongly agree. In general, for questions with an underlying scale, higher values indicate more positive responses, as more agreement or a higher rating.
- Mean values by school, academic majors aggregated at divisions (natural sciences, social sciences, and humanities), low, middle and high GPA groups, and gender. Within these subgroups, if an ANOVA shows the differences in the means is statistically significant using a two-tailed t-test the "Sig." column indicates this with * = p<=.05, ** = p<=.01, *** = p<=.001.

Note that mean values for the Department Policies and Administration Survey and Capstone Description Survey are weighted by the number of capstones in our database to which they were matched, rather than equally by department. Thus departments with more student majors in our database will have their responses weighted more in the means reported in this table. (Departments are weighted equally in the discussion of these surveys in the Capstone Program Description section.

When ANOVA indicated differences in the means were statistically significant, Excel's conditional color formatting has been utilized to visually differentiate high and low values. Higher values are darker.

## Table 4.1: Data Directory and Overall Means by Student Subgroups

This document is a reference for the response scales, labels, and means of ALL the Sr and Mentor survey questions, student and faculty biodemo data, and derived scale and difference values

NOT RESTRICTED TO PAIRED PRE/POST RESPONDENTS, AS IN THE REPORT BY SCALES

Data is for all non-duplicate records 2009/10 and 2010/11 (not just paired pre/post records).

SS includes busadm, teacher ed

Conditional highlighting used only if differences are statistically signifcant.

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | MEANS BY SCHOOL | | | | | MEANS BY DIVISION | | | | MEANS BY GPA GROUP | | | | MEANS BY GENDER | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
| 1 | | STUDENT AND FACULTY BIODEMO DATA | | | | | | | | | | | | | | | | | | | | |
| 2 | SchoolNum | SchoolNum | 1=Allegheny, 2=Augie, 3=Washington, 4=Wooster | | | | | | | | | | | | | | | | | | | |
| 3 | CapID | CapID | Your unique number for each | | | | | | | | | | | | | | | | | | | |
| 4 | | Is the student record a duplicate? | See above. | | N=No, YB =yes pre, YA = yes post | | | | | | | | | | | | | | | | | |
| 5 | Year | Capstone start year | 2009/10 = 2009, 2010/11 = 2010 | | | | | | | | | | | | | | | | | | | |
| 6 | PreEqPost | Did mentor who completed the post capstone report also complete | any difference. May omit if nav. | | | | | | | | | | | | | | | | | | | |
| 7 | PrimaryCIP | Capstone primary program CIP COMCIP1 | Translate majors to a code listed in | | | | | | | | | | | | | | | | | | | |
| 8 | CredHrs | Total Capstone semester hours | | | | 5.32 | 8.00 | 5.00 | 3.78 | 3.97 | *** | 4.79 | 5.91 | 5.00 | *** | 5.23 | 5.28 | 5.43 | | 5.35 | 5.31 | |
| 9 | CapGrade | Capstone grade (if more than one , average grade) | Numeric scale, average if double | | | 3.25 | 3.05 | 3.61 | 3.15 | 3.22 | *** | 3.34 | 3.20 | 3.22 | ** | 2.66 | 3.26 | 3.66 | *** | 3.12 | 3.33 | *** |
| 10 | EntryTerm | Entry term (YYYYT) at your college | e.g. 20061 = fall 2006, 20062 = | | | | | | | | | | | | | | | | | | | |
| 11 | TransferStatus | Transfer status (T or null) | If the student entered as a first-time | | | | | | | | | | | | | | | | | | | |
| 12 | Gender | Gender (M,F) | | | | | | | | | | | | | | | | | | | | |
| 13 | Age | Age – as of Oct. 1 of capstone year | Round down to whole number. | | | | | | | | | | | | | | | | | | | |
| 14 | Ethnic | Race/Ethnicity (older IPEDS codes) | 1=Non-resident alien, 2=Black, | | | | | | | | | | | | | | | | | | | |
| 15 | ACT | ACT composite score | Caution - do not report 0 if missing. | | | 25.9 | 26.19 | 25.97 | 23.97 | 26.29 | *** | 26.42 | 25.39 | 26.24 | *** | 23.94 | 25.49 | 27.62 | *** | 25.83 | 25.93 | |
| 16 | SATM | SAT Math | Caution - do not report 0 if missing. | | | | | | | | | | | | | | | | | | | |
| 17 | SATV | SAT verbal (critical reasoning) | Caution - do not report 0 if missing. | | | | | | | | | | | | | | | | | | | |
| 18 | SATWR | SAT writing | Caution - do not report 0 if missing. | | | | | | | | | | | | | | | | | | | |
| 19 | SATTotal | SAT Total | Caution - do not report 0 if missing. | | | | | | | | | | | | | | | | | | | |
| 20 | HSPCT | HS Rank percentile | 0 to 100. Higher for better | | | 81.50 | 80.34 | 81.35 | 75.73 | 84.22 | *** | 85.75 | 79.51 | 80.19 | *** | 69.46 | 80.29 | 89.24 | *** | 76.58 | 84.29 | *** |
| 21 | TransCred | Total Transfer credits - start of capstone year | Cretits transferred from another | | | | | | | | | | | | | | | | | | | |
| 22 | InstCred | Credits earned at your institution, Start of Capstone Year | | | | | | | | | | | | | | | | | | | | |
| 23 | PreCapColGPA | College GPA - Start of capstone year | Using a 4 point scale. | | | 3.22 | 3.19 | 3.36 | 3.16 | 3.16 | *** | 3.24 | 3.19 | 3.24 | * | 2.65 | 3.22 | 3.62 | *** | 3.08 | 3.31 | *** |
| 24 | FAFSA | FAFSA (Y,N)? | Indicate whether you have a FAFSA | | | | | | | | | | | | | | | | | | | |
| 25 | EFC | EFC (from FAFSA) | Expected Family Contribution from | | | | | | | | | | | | | | | | | | | |
| 26 | Need | Financial aid: unmet need CDS method | Set to 999999 if no FAFSA. Shouuld | | | 6046 | 6130 | 3692 | 14766 | 4487 | *** | 5471 | 6640 | 6059 | * | 7318 | 5869 | 5309 | *** | 6095 | 6016 | |
| 27 | GrantAid | Financial aid: total grant awards all sources (incl. waivers) fall of | | | | 15074 | 14614 | 13888 | 12650 | 17437 | *** | 16288 | 14293 | 14619 | *** | 13512 | 14992 | 16247 | *** | 14730 | 15298 | |
| 28 | MotherEd | Mother's education level (FAFSA) | Highest educ level completed: 1 = | | | 2.68 | 2.75 | 2.63 | 2.73 | 2.67 | *** | 2.74 | 2.68 | 2.66 | * | 2.67 | 2.68 | 2.69 | | 2.69 | 2.68 | |
| 29 | FatherEd | Father's education level (FAFSA) | Highest educ level completed: 1 = | | | 2.64 | 2.68 | 2.63 | 2.66 | 2.61 | | 2.63 | 2.64 | 2.66 | | 2.59 | 2.64 | 2.66 | | 2.64 | 2.63 | |
| 30 | TutionRemissed | Tuition Remission Recipient (Y/N) | Did student receive a tuition | | | | | | | | | | | | | | | | | | | |
| 31 | GradMaj1 | Primary major COMCIP1 | Translate majors to a code as in | | | | | | | | | | | | | | | | | | | |
| 32 | RelMaj1 | capstone relevant (Y,N)? | Indicate if the capstone was | | | | | | | | | | | | | | | | | | | |
| 33 | GPAMaj1 | GPA in major, if capstone relevant | Not collecting. Code as missing | | | | | | | | | | | | | | | | | | | |
| 34 | GradMaj2 | Major 2 CIP COMCIP1 | Should be in the "maj-CIP table" | | | | | | | | | | | | | | | | | | | |
| 35 | RelMaj2 | capstone relevant (Y,N)? | | | | | | | | | | | | | | | | | | | | |
| 36 | GPAMaj2 | GPA in major, if capstone relevant | Not collecting. Code as missing | | | | | | | | | | | | | | | | | | | |
| 37 | GradMaj3 | Major 3 CIP COMCIP1 | | | | | | | | | | | | | | | | | | | | |
| 38 | RelMaj3 | capstone relevant (Y,N)? | | | | | | | | | | | | | | | | | | | | |
| 39 | GPAMaj3 | GPA in major, if capstone relevant | Not collecting. Code as missing | | | | | | | | | | | | | | | | | | | |
| 40 | GradMin1 | Primary minor CIP COMCIP1 | | | | | | | | | | | | | | | | | | | | |
| 41 | GradMin2 | minor 2 CIP COMCIP1 | | | | | | | | | | | | | | | | | | | | |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 42 | GradMin3 | minor 3 CIP COMCIP1 | | | | | | | | | | | | | | | | | | | | |
| 43 | CumLoans | Financial Aid - Cumulative loans at graduation using CDS H4 definition | The purpose is to see if debt is affecting choices like summer | | | 24271 | 18600 | 19808 | 23412 | 34315 | *** | 24885 | 23830 | 22808 | | 28678 | 25326 | 19854 | *** | 24192 | 24323 | |
| 44 | WorkAid | Financial Aid - amount of work aid awarded and actually used the capstone year | Dropped, but leave the column. | | | | | | | | | | | | | | | | | | | |
| 45 | CredOthRes | Other UG Research credits - total credit hours | Dropped, but leave the column. | | | | | | | | | | | | | | | | | | | |
| 46 | CredStudyAbrd | Study Abroad Credits - total credit hours | Dropped, but leave the column. | | | | | | | | | | | | | | | | | | | |
| 47 | GradColGPA | College GPA – final at graduation | Using a 4 point scale. | | | 3.27 | 3.24 | 3.37 | 3.20 | 3.24 | *** | 3.28 | 3.24 | 3.28 | | 2.70 | 3.26 | 3.72 | *** | 3.13 | 3.35 | *** |
| 48 | Athlete | Varsity athletic participation in year of capstone - number of teams | 0, 1, 2, 3 | | | 18.4% | 21.1% | 13.1% | 16.7% | 20.7% | ** | 19.4% | 19.8% | 15.9% | | 20.7% | 19.8% | 15.2% | * | 25.0% | 14.0% | *** |
| 49 | SurveyStatus | computed from other data | | | | | | | | | | | | | | | | | | | | |
| 50 | FacGender09 | Mentor Gender (M,F) | Use for both 2009 and 2010 data, despite name. | | | | | | | | | | | | | | | | | | | |
| 51 | FacDiscipline1 | Faculty discipline #1 COMCIP1 | For our later reference. If necessary, please add your translations to "dept-cip table" and submit your entries. | | | | | | | | | | | | | | | | | | | |
| 52 | FacDiscipline2 | Faculty discipline #2 COMCIP1 | If any. | | | | | | | | | | | | | | | | | | | |
| 53 | FacEmplFTPT09 | Fall 2009 Full-time or part-time employee? (FT, PT) | Based on employment status, not necessarily the same as full- or part-time faculty status. Report only for 2009/10. | | | | | | | | | | | | | | | | | | | |
| 54 | FacRank09 | Fall 2009 Rank (PROF, ASSOC, ASST, INST, LECTURER, ADMIN, OTHER) | "OTHER" to include all visiting regardless of rank, and those without rank. Report only for 2009/10. | | | | | | | | | | | | | | | | | | | |
| 55 | FacTenure09 | Fall 2009 Tenure status (Y, C,N) | As for AAUP report categories: Y=tenured; C=candidate,not tenured; N=untenured, not tenure track. Report only for 2009/10. | | | | | | | | | | | | | | | | | | | |
| 56 | FacEmplFTPT10 | Fall 2010 Full-time or part-time employee? | Report for 2010/11 only. | | | | | | | | | | | | | | | | | | | |
| 57 | FacRank10 | Fall 2010Rank (PROF, ASSOC, ASST, INST, LECTURER, ADMIN, OTHER) | Report for 2010/11 only. | | | | | | | | | | | | | | | | | | | |
| 58 | FacTenure10 | Fall 2010 Tenure status (Y, C,N) | Report for 2010/11 only. | | | | | | | | | | | | | | | | | | | |
| 59 | | **STUDENT PRE-CAPSTONE** | | | | | | | | | | | | | | | | | | | | |
| 60 | | **How important to you personally is each of the following?** | | | | | | | | | | | | | | | | | | | | |
| 61 | PreStu1 | Becoming accomplished in my field of expertise | Blanks will be considered missing. | 4 | Not imp-essential | 3.43 | 3.33 | 3.48 | 3.50 | 3.45 | *** | 3.49 | 3.40 | 3.40 | * | 3.41 | 3.42 | 3.45 | | 3.40 | 3.45 | |
| 62 | PreStu2 | Influencing social values | | 4 | Not imp-essential | 2.89 | 2.81 | 2.96 | 2.97 | 2.87 | * | 2.71 | 2.99 | 2.91 | *** | 2.96 | 2.94 | 2.81 | ** | 2.83 | 2.92 | * |
| 63 | PreStu3 | Raising a family | | 4 | Not imp-essential | 3.09 | 2.98 | 3.26 | 3.08 | 3.08 | *** | 3.10 | 3.20 | 2.90 | *** | 3.13 | 3.10 | 3.07 | | 3.10 | 3.09 | |
| 64 | PreStu4 | Helping others who are in difficulty | | 4 | Not imp-essential | 3.24 | 3.15 | 3.36 | 3.23 | 3.25 | *** | 3.15 | 3.33 | 3.15 | *** | 3.25 | 3.22 | 3.25 | | 3.08 | 3.32 | *** |
| 65 | PreStu5 | Creating original works | | 4 | Not imp-essential | 2.90 | 3.03 | 2.72 | 2.98 | 2.86 | *** | 2.76 | 2.82 | 3.14 | *** | 2.98 | 2.92 | 2.83 | * | 3.01 | 2.84 | *** |
| 66 | PreStu6 | Developing a meaningful philosophy of life | | 4 | Not imp-essential | 3.20 | 3.18 | 3.31 | 3.18 | 3.14 | * | 3.08 | 3.20 | 3.31 | *** | 3.20 | 3.18 | 3.22 | | 3.28 | 3.16 | ** |
| 67 | PreStu7 | Becoming a community leader | | 4 | Not imp-essential | 2.64 | 2.53 | 2.77 | 2.61 | 2.66 | *** | 2.55 | 2.74 | 2.55 | *** | 2.64 | 2.70 | 2.59 | | 2.63 | 2.65 | |
| 68 | PreStu8 | Integrating spirituality into my life | | 4 | Not imp-essential | 2.35 | 2.23 | 2.53 | 2.32 | 2.34 | *** | 2.33 | 2.39 | 2.31 | | 2.34 | 2.30 | 2.40 | | 2.23 | 2.41 | *** |
| 69 | PreStu9 | Volunteering in my community | | 4 | Not imp-essential | 2.78 | 2.68 | 2.88 | 2.80 | 2.80 | ** | 2.79 | 2.81 | 2.73 | | 2.76 | 2.80 | 2.78 | | 2.55 | 2.90 | *** |
| 70 | PreStu10 | Making a lot of money | | 4 | Not imp-essential | 2.23 | 2.19 | 2.07 | 2.47 | 2.25 | *** | 2.26 | 2.33 | 2.05 | *** | 2.46 | 2.26 | 2.08 | *** | 2.37 | 2.17 | *** |
| 71 | PreStu11 | Working in a prestigious occupation | | 4 | Not imp-essential | 2.27 | 2.18 | 2.17 | 2.47 | 2.33 | *** | 2.33 | 2.36 | 2.08 | *** | 2.44 | 2.32 | 2.14 | *** | 2.42 | 2.20 | *** |
| 72 | PreStu12 | Becoming passionate about or committed to my occupation | | 4 | Not imp-essential | 3.66 | 3.64 | 3.72 | 3.62 | 3.66 | | 3.67 | 3.65 | 3.66 | | 3.58 | 3.64 | 3.72 | *** | 3.55 | 3.71 | *** |
| 73 | PreStu13 | Obtaining recognition from my colleagues for contributions to my special field | | 4 | Not imp-essential | 2.60 | 2.61 | 2.50 | 2.70 | 2.60 | * | 2.60 | 2.63 | 2.52 | | 2.63 | 2.62 | 2.57 | | 2.71 | 2.54 | *** |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 74 | | **Indicate the extent to which you agree/disagree with each of the following statements about your views or perspectives in general.** | | | | | | | | | | | | | | | | | | | | |
| 75 | PreStu14 | I enjoy expressing my ideas in writing | | 5 | SD-SA | 3.84 | 3.97 | 3.87 | 3.84 | 3.71 | *** | 3.51 | 3.79 | 4.23 | *** | 3.69 | 3.82 | 3.96 | *** | 3.80 | 3.87 | |
| 76 | PreStu15 | I have confidence in my opinions, even if they are contrary to the general consensus | | 5 | SD-SA | 4.11 | 4.08 | 4.11 | 4.17 | 4.11 | | 3.99 | 4.11 | 4.22 | *** | 4.22 | 4.09 | 4.06 | ** | 4.32 | 4.01 | *** |
| 77 | PreStu16 | I really enjoy a task that involves coming up with new solutions to problems | | 5 | SD-SA | 4.04 | 4.03 | 3.99 | 4.11 | 4.03 | | 4.06 | 4.02 | 4.02 | | 4.09 | 4.04 | 4.00 | | 4.22 | 3.94 | *** |
| 78 | PreStu17 | The notion of thinking abstractly is appealing to me | | 5 | SD-SA | 3.86 | 3.88 | 3.86 | 3.91 | 3.82 | | 3.74 | 3.80 | 4.06 | *** | 3.87 | 3.89 | 3.83 | | 4.07 | 3.76 | *** |
| 79 | PreStu18 | I enjoy doing research | | 5 | SD-SA | 3.55 | 3.73 | 3.35 | 3.49 | 3.59 | *** | 3.76 | 3.46 | 3.48 | *** | 3.48 | 3.53 | 3.62 | | 3.60 | 3.53 | |
| 80 | | **Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself.** | | | | | | | | | | | | | | | | | | | | |
| 81 | PreStu19 | Academic ability | | 5 | Lowest 10% - Highest 10% | 3.96 | 3.96 | 3.98 | 3.89 | 3.99 | | 4.01 | 3.90 | 3.98 | * | 3.50 | 3.87 | 4.30 | *** | 3.97 | 3.95 | |
| 82 | PreStu20 | Creativity | | 5 | Lowest 10% - Highest 10% | 3.78 | 3.76 | 3.77 | 3.81 | 3.79 | | 3.64 | 3.69 | 4.04 | *** | 3.80 | 3.81 | 3.74 | | 3.87 | 3.74 | *** |
| 83 | PreStu21 | Drive to achieve | | 5 | Lowest 10% - Highest 10% | 4.06 | 3.93 | 4.14 | 4.03 | 4.12 | *** | 4.12 | 4.08 | 3.96 | ** | 3.76 | 4.01 | 4.27 | *** | 3.97 | 4.10 | *** |
| 84 | PreStu22 | Leadership ability | | 5 | Lowest 10% - Highest 10% | 3.89 | 3.83 | 3.93 | 3.83 | 3.96 | | 3.88 | 3.95 | 3.81 | * | 3.89 | 3.89 | 3.90 | | 4.03 | 3.83 | *** |
| 85 | PreStu23 | Mathematical ability | | 5 | Lowest 10% - Highest 10% | 3.12 | 3.07 | 3.13 | 3.01 | 3.23 | ** | 3.55 | 3.06 | 2.82 | *** | 2.96 | 3.01 | 3.32 | *** | 3.32 | 3.03 | *** |
| 86 | PreStu24 | Persistence | | 5 | Lowest 10% - Highest 10% | 4.02 | 3.97 | 4.07 | 3.96 | 4.07 | | 4.13 | 4.02 | 3.94 | *** | 3.95 | 3.99 | 4.09 | ** | 4.03 | 4.02 | |
| 87 | PreStu25 | Public speaking ability | | 5 | Lowest 10% - Highest 10% | 3.44 | 3.38 | 3.38 | 3.42 | 3.55 | * | 3.38 | 3.43 | 3.49 | | 3.45 | 3.38 | 3.48 | | 3.63 | 3.35 | *** |
| 88 | PreStu26 | Self-confidence (intellectual) | | 5 | Lowest 10% - Highest 10% | 3.82 | 3.79 | 3.78 | 3.83 | 3.86 | | 3.84 | 3.79 | 3.81 | | 3.69 | 3.78 | 3.93 | *** | 4.02 | 3.72 | *** |
| 89 | PreStu27 | Self-confidence (social) | | 5 | Lowest 10% - Highest 10% | 3.62 | 3.62 | 3.57 | 3.68 | 3.62 | | 3.57 | 3.68 | 3.57 | * | 3.88 | 3.66 | 3.44 | *** | 3.76 | 3.55 | *** |
| 90 | PreStu28 | Understanding of others | | 5 | Lowest 10% - Highest 10% | 4.07 | 4.06 | 4.08 | 4.11 | 4.06 | | 3.97 | 4.11 | 4.11 | ** | 4.11 | 4.12 | 4.01 | * | 4.01 | 4.11 | ** |
| 91 | PreStu29 | Self-understanding | | 5 | Lowest 10% - Highest 10% | 4.01 | 4.01 | 3.96 | 4.09 | 4.00 | | 3.96 | 4.02 | 4.04 | | 4.08 | 4.03 | 3.95 | * | 4.08 | 3.98 | * |
| 92 | PreStu30 | Ability to think critically | | 5 | Lowest 10% - Highest 10% | 3.96 | 3.95 | 3.93 | 3.92 | 4.00 | | 3.94 | 3.91 | 3.99 | | 3.82 | 3.95 | 4.04 | *** | 4.12 | 3.88 | *** |
| 93 | PreStu31 | Research skills | | 5 | Lowest 10% - Highest 10% | 3.61 | 3.66 | 3.56 | 3.55 | 3.64 | | 3.74 | 3.59 | 3.52 | *** | 3.39 | 3.59 | 3.76 | *** | 3.58 | 3.63 | |
| 94 | PreStu32 | Ability to think and act on my own | | 5 | Lowest 10% - Highest 10% | 4.21 | 4.21 | 4.17 | 4.20 | 4.24 | | 4.18 | 4.21 | 4.21 | | 4.19 | 4.24 | 4.19 | | 4.29 | 4.17 | *** |
| 95 | PreStu33 | Writing ability | | 5 | Lowest 10% - Highest 10% | 3.75 | 3.81 | 3.76 | 3.69 | 3.73 | | 3.56 | 3.70 | 3.99 | *** | 3.46 | 3.73 | 3.94 | *** | 3.71 | 3.77 | |
| 96 | | **In evaluating your typical academic work over the past year, please indicate the extent to which you agree/disagree with each of the following statements.** | | | | | | | | | | | | | | | | | | | | |
| 97 | PreStu34 | I identified manageable sets of goals for my projects | | 5 | SD-SA | 4.05 | 4.00 | 4.08 | 4.09 | 4.04 | | 4.03 | 4.07 | 4.03 | | 3.87 | 4.08 | 4.12 | *** | 3.96 | 4.09 | *** |
| 98 | PreStu35 | I properly planned tasks to achieve project goals | | 5 | SD-SA | 3.91 | 3.84 | 3.96 | 3.92 | 3.92 | | 3.91 | 3.93 | 3.85 | | 3.63 | 3.91 | 4.06 | *** | 3.74 | 3.99 | *** |
| 99 | PreStu36 | I showed evidence of independent thinking | | 5 | SD-SA | 4.25 | 4.21 | 4.28 | 4.24 | 4.28 | | 4.20 | 4.23 | 4.30 | * | 4.11 | 4.25 | 4.32 | *** | 4.26 | 4.24 | |
| 100 | PreStu37 | I persisted when faced with conceptual and practical difficulties | | 5 | SD-SA | 4.18 | 4.13 | 4.23 | 4.13 | 4.21 | * | 4.18 | 4.15 | 4.20 | | 4.00 | 4.15 | 4.30 | *** | 4.16 | 4.18 | |
| 101 | PreStu38 | I showed originality | | 5 | SD-SA | 4.08 | 4.05 | 4.10 | 4.12 | 4.06 | | 3.95 | 4.04 | 4.23 | *** | 4.04 | 4.07 | 4.10 | | 4.10 | 4.07 | |
| 102 | PreStu39 | I used feedback to assess my performance | | 5 | SD-SA | 4.18 | 4.17 | 4.21 | 4.15 | 4.20 | | 4.19 | 4.13 | 4.25 | * | 4.01 | 4.19 | 4.28 | *** | 4.07 | 4.24 | *** |
| 103 | PreStu40 | I located appropriate source material | | 5 | SD-SA | 4.20 | 4.22 | 4.20 | 4.18 | 4.21 | | 4.22 | 4.20 | 4.18 | | 4.06 | 4.21 | 4.28 | *** | 4.16 | 4.23 | * |
| 104 | PreStu41 | I used disciplinary knowledge and methods appropriately | | 5 | SD-SA | 4.12 | 4.10 | 4.20 | 4.12 | 4.09 | * | 4.12 | 4.14 | 4.10 | | 3.95 | 4.15 | 4.20 | *** | 4.08 | 4.15 | * |
| 105 | PreStu42 | I synthesized information to produce insights that expanded my understanding | | 5 | SD-SA | 4.08 | 4.08 | 4.04 | 4.12 | 4.08 | | 4.04 | 4.05 | 4.12 | | 3.90 | 4.08 | 4.18 | *** | 4.09 | 4.08 | |
| 106 | PreStu43 | I supported my arguments with appropriate evidence | | 5 | SD-SA | 4.24 | 4.23 | 4.26 | 4.24 | 4.23 | | 4.21 | 4.22 | 4.28 | | 4.06 | 4.27 | 4.32 | *** | 4.23 | 4.25 | |
| 107 | PreStu44 | I demonstrated good communication skills | | 5 | SD-SA | 4.14 | 4.03 | 4.19 | 4.23 | 4.16 | *** | 4.05 | 4.16 | 4.21 | ** | 4.00 | 4.13 | 4.24 | *** | 4.10 | 4.17 | * |
| 108 | PreStu45 | I demonstrated effective time management in completing tasks | | 5 | SD-SA | 3.68 | 3.58 | 3.74 | 3.81 | 3.66 | * | 3.71 | 3.74 | 3.58 | * | 3.39 | 3.68 | 3.85 | *** | 3.48 | 3.78 | *** |
| 109 | PreStu46 | I showed skill with quantitative reasoning | | 5 | SD-SA | 3.76 | 3.70 | 3.68 | 3.78 | 3.87 | *** | 3.95 | 3.74 | 3.59 | *** | 3.68 | 3.79 | 3.77 | | 3.86 | 3.71 | *** |
| 110 | | **Please rate your satisfaction with your college in the following areas.** | | | | | | | | | | | | | | | | | | | | |
| 111 | PreStu47 | Library facilities and services | | 5 | VDisSat - Vsat | 4.15 | 4.28 | 4.40 | 3.61 | 4.15 | *** | 4.16 | 4.12 | 4.19 | | 4.16 | 4.12 | 4.15 | | 4.14 | 4.15 | |
| 112 | PreStu48 | Computer facilities and services | | 5 | VDisSat - Vsat | 3.78 | 4.07 | 4.06 | 3.64 | 3.39 | *** | 3.85 | 3.78 | 3.84 | | 3.83 | 3.75 | 3.78 | | 3.75 | 3.80 | |
| 113 | PreStu49 | Facilities/equipment in my major field | | 5 | VDisSat - Vsat | 3.97 | 4.03 | 4.08 | 3.89 | 3.86 | *** | 4.21 | 3.96 | 3.84 | *** | 3.97 | 3.98 | 3.94 | | 3.91 | 3.99 | |
| 114 | PreStu50 | Overall quality of instruction | | 5 | VDisSat - Vsat | 4.35 | 4.40 | 4.28 | 4.29 | 4.37 | * | 4.35 | 4.30 | 4.42 | ** | 4.21 | 4.30 | 4.47 | *** | 4.29 | 4.37 | * |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 115 | PreStu51 | Quality of instruction in my major field | | 5 | VDisSat - Vsat | 4.53 | 4.50 | 4.53 | 4.54 | 4.55 | | 4.64 | 4.47 | 4.55 | *** | 4.41 | 4.51 | 4.62 | *** | 4.48 | 4.55 | * |
| 116 | PreStu52 | Overall college experience | | 5 | VDisSat - Vsat | 4.37 | 4.43 | 4.37 | 4.24 | 4.40 | ** | 4.39 | 4.39 | 4.35 | | 4.24 | 4.35 | 4.47 | *** | 4.31 | 4.40 | ** |
| 117 | | **During the past year, how much has your coursework emphasized the following mental activities?** | | | | | | | | | | | | | | | | | | | | |
| 118 | PreStu53 | Memorizing facts, ideas, or methods so you can repeat them in pretty much the same form | | 4 | Very little - Very much | 2.46 | 2.33 | 2.55 | 2.65 | 2.38 | *** | 2.67 | 2.49 | 2.23 | *** | 2.67 | 2.49 | 2.30 | *** | 2.47 | 2.45 | |
| 119 | PreStu54 | Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | | 4 | Very little - Very much | 3.25 | 3.24 | 3.29 | 3.27 | 3.23 | | 3.25 | 3.30 | 3.21 | | 3.18 | 3.30 | 3.26 | * | 3.21 | 3.27 | |
| 120 | PreStu55 | Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | | 4 | Very little - Very much | 3.30 | 3.29 | 3.34 | 3.22 | 3.31 | | 3.28 | 3.28 | 3.33 | | 3.14 | 3.31 | 3.37 | *** | 3.21 | 3.34 | *** |
| 121 | PreStu56 | Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | | 4 | Very little - Very much | 3.11 | 3.10 | 3.17 | 3.01 | 3.14 | | 3.02 | 3.19 | 3.08 | ** | 3.04 | 3.15 | 3.12 | | 3.06 | 3.14 | |
| 122 | PreStu57 | Applying theories or concepts to practical problems or in new situations | | 4 | Very little - Very much | 3.26 | 3.26 | 3.27 | 3.24 | 3.27 | | 3.41 | 3.28 | 3.12 | *** | 3.18 | 3.31 | 3.26 | * | 3.20 | 3.29 | * |
| 123 | | **During the past school year, about how often have you done each of the following?** | | | | | | | | | | | | | | | | | | | | |
| 124 | PreStu58 | Integrated ideas or information from various sources | | 4 | Never - Very Often | 3.52 | 3.54 | 3.55 | 3.41 | 3.54 | ** | 3.49 | 3.51 | 3.54 | | 3.34 | 3.55 | 3.59 | *** | 3.39 | 3.58 | *** |
| 125 | PreStu59 | Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | | 4 | Never - Very Often | 2.93 | 2.92 | 3.01 | 2.91 | 2.91 | | 2.60 | 3.03 | 3.07 | *** | 2.90 | 2.97 | 2.91 | | 2.79 | 3.01 | *** |
| 126 | PreStu60 | Put together ideas or concepts from different courses | | 4 | Never - Very Often | 3.22 | 3.14 | 3.26 | 3.22 | 3.26 | * | 3.12 | 3.23 | 3.26 | ** | 3.16 | 3.25 | 3.22 | | 3.12 | 3.26 | *** |
| 127 | PreStu61 | Discussed ideas from your readings or classes with faculty members outside of class | | 4 | Never - Very Often | 2.61 | 2.60 | 2.60 | 2.61 | 2.62 | | 2.60 | 2.56 | 2.66 | | 2.58 | 2.59 | 2.64 | | 2.68 | 2.57 | * |
| 128 | PreStu62 | Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.) | | 4 | Never - Very Often | 3.11 | 3.13 | 3.06 | 3.06 | 3.16 | | 3.07 | 3.07 | 3.19 | * | 3.02 | 3.12 | 3.15 | * | 3.09 | 3.12 | |
| 129 | PreStu63 | Examined the strengths and weaknesses of your own views on a topic or issue | | 4 | Never - Very Often | 2.95 | 2.95 | 2.97 | 2.96 | 2.93 | | 2.79 | 2.96 | 3.05 | *** | 2.89 | 3.01 | 2.93 | * | 3.01 | 2.92 | * |
| 130 | PreStu64 | Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | | 4 | Never - Very Often | 3.03 | 2.99 | 3.09 | 3.06 | 3.01 | | 2.90 | 3.04 | 3.13 | *** | 3.00 | 3.09 | 3.00 | | 3.01 | 3.04 | |
| 131 | PreStu65 | Learned something that changed the way you understand an issue or concept | | 4 | Never - Very Often | 3.12 | 3.04 | 3.19 | 3.13 | 3.16 | * | 3.05 | 3.09 | 3.22 | ** | 3.07 | 3.16 | 3.12 | | 3.07 | 3.15 | * |
| 132 | | **Please indicate how strongly you agree with each of the following statements about your expectations for your planned capstone.** | | | | | | | | | | | | | | | | | | | | |
| 133 | PreStu66 | My capstone will be intellectually challenging | | 5 | SD-SA | 4.50 | 4.61 | 4.39 | 4.47 | 4.50 | *** | 4.53 | 4.47 | 4.52 | | 4.41 | 4.50 | 4.56 | *** | 4.42 | 4.54 | *** |
| 134 | PreStu67 | My capstone will be more engaging than my regular course work | | 5 | SD-SA | 4.44 | 4.56 | 4.33 | 4.39 | 4.45 | *** | 4.47 | 4.43 | 4.44 | | 4.46 | 4.49 | 4.40 | | 4.41 | 4.46 | |
| 135 | PreStu68 | My writing skills will improve | | 5 | SD-SA | 4.16 | 4.41 | 3.99 | 4.02 | 4.12 | *** | 4.11 | 4.14 | 4.26 | ** | 4.14 | 4.18 | 4.15 | | 4.09 | 4.19 | * |
| 136 | PreStu69 | My oral presentation skills will improve | | 5 | SD-SA | 4.01 | 4.17 | 4.00 | 3.79 | 4.00 | *** | 4.14 | 4.05 | 3.87 | *** | 4.02 | 4.07 | 3.96 | | 3.94 | 4.05 | * |
| 137 | PreStu70 | My ability to think critically and analytically will improve | | 5 | SD-SA | 4.26 | 4.41 | 4.16 | 4.21 | 4.23 | *** | 4.31 | 4.28 | 4.19 | * | 4.26 | 4.29 | 4.24 | | 4.19 | 4.30 | ** |
| 138 | PreStu71 | My understanding of my discipline will improve | | 5 | SD-SA | 4.37 | 4.49 | 4.35 | 4.29 | 4.32 | *** | 4.41 | 4.38 | 4.37 | | 4.35 | 4.37 | 4.38 | | 4.33 | 4.39 | |
| 139 | PreStu72 | I expect to create new knowledge in my discipline | | 5 | SD-SA | 4.01 | 4.08 | 3.93 | 4.03 | 3.97 | | 4.10 | 4.02 | 3.90 | ** | 4.08 | 4.02 | 3.96 | | 3.95 | 4.04 | |
| 140 | PreStu73 | My capstone will lead to a better understanding of my skills, abilities and interests | | 5 | SD-SA | 4.32 | 4.44 | 4.28 | 4.31 | 4.25 | *** | 4.29 | 4.32 | 4.37 | | 4.31 | 4.36 | 4.29 | | 4.29 | 4.34 | |
| 141 | PreStu74 | My capstone will help me clarify my career or graduate school objectives | | 5 | SD-SA | 3.75 | 3.90 | 3.88 | 3.73 | 3.53 | *** | 3.77 | 3.80 | 3.70 | | 3.78 | 3.83 | 3.67 | * | 3.71 | 3.77 | |
| 142 | PreStu75 | My capstone will better prepare me for a job or graduate school | | 5 | SD-SA | 4.09 | 4.30 | 4.13 | 3.91 | 3.96 | *** | 4.19 | 4.12 | 3.95 | *** | 4.04 | 4.13 | 4.08 | | 4.06 | 4.10 | |
| 143 | PreStu76 | I expect to be comfortable working with my faculty mentor(s) | | 5 | SD-SA | 4.45 | 4.49 | 4.36 | 4.46 | 4.47 | * | 4.54 | 4.43 | 4.41 | * | 4.37 | 4.44 | 4.50 | * | 4.41 | 4.47 | |
| 144 | PreStu77 | My capstone will be very stressful | | 5 | SD-SA | 4.10 | 4.03 | 4.00 | 4.25 | 4.14 | *** | 4.06 | 4.12 | 4.09 | | 4.19 | 4.13 | 4.01 | ** | 3.99 | 4.15 | *** |
| 145 | **PreStu78** | **Open-Ended Response - How many hours/week do you expect you will work on your capsone?** | | | | 14.16 | 14.94 | 13.44 | 12.49 | 14.98 | *** | 14.19 | 14.63 | 13.32 | | 14.20 | 14.90 | 13.48 | * | 13.35 | 14.56 | * |
| 146 | **PreStu79** | **What is the highest academic degree you intnd to earn in your lifetime?** | | | | 2.61 | 2.67 | 2.51 | 2.44 | 2.75 | *** | 2.94 | 2.49 | 2.45 | *** | 2.40 | 2.58 | 2.76 | *** | 2.68 | 2.58 | |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 147 | | **Within a year after graduation I plan to (check all that apply):** | | | | | | | | | | | | | | | | | | | | |
| 148 | PreStu80 | attend graduate/professional school | Recode from 1 to 1 | | 1=yes | 59.2% | 53.9% | 55.8% | 59.3% | 66.8% | *** | 53.9% | 55.8% | 59.3% | *** | 53.9% | 55.8% | 59.3% | *** | 55.8% | 53.9% | *** |
| 149 | PreStu81 | work full-time | Recode from 2 to 1 | | 1=yes | 49.7% | 49.1% | 52.2% | 58.7% | 42.9% | *** | 49.1% | 52.2% | 58.7% | *** | 49.1% | 52.2% | 58.7% | *** | 52.2% | 49.1% | *** |
| 150 | PreStu82 | work part-time | Recode from 3 to 1 | | 1=yes | 33.1% | 34.3% | 30.8% | 33.6% | 33.2% | | 34.3% | 30.8% | 33.6% | | 34.3% | 30.8% | 33.6% | | 30.8% | 34.3% | |
| 151 | PreStu83 | work in a job related to my major discipline | Recode from 4 to 1 | | 1=yes | 52.0% | 48.1% | 57.1% | 54.7% | 50.4% | * | 48.1% | 57.1% | 54.7% | * | 48.1% | 57.1% | 54.7% | * | 57.1% | 48.1% | * |
| 152 | PreStu84 | participate in a community service organization | Recode from 5 to 1 | | 1=yes | 29.4% | 26.1% | 43.2% | 19.9% | 28.2% | *** | 26.1% | 43.2% | 19.9% | *** | 26.1% | 43.2% | 19.9% | *** | 43.2% | 26.1% | *** |
| 153 | PreStu85 | do volunteer work | Recode from 6 to 1 | | 1=yes | 39.6% | 41.0% | 39.3% | 32.3% | 43.1% | * | 41.0% | 39.3% | 32.3% | * | 41.0% | 39.3% | 32.3% | * | 39.3% | 41.0% | * |
| 154 | PreStu86 | travel | Recode from 7 to 1 | | 1=yes | 51.2% | 53.9% | 49.4% | 50.0% | 50.6% | | 53.9% | 49.4% | 50.0% | | 53.9% | 49.4% | 50.0% | | 49.4% | 53.9% | |
| 155 | PreStu87 | serve in the military | Recode from 8 to 1 | | 1=yes | 7.4% | 2.2% | nav | 3.4% | 1.4% | | 2.2% | 25.7% | 3.4% | *** | 2.2% | 25.7% | 3.4% | *** | 25.7% | 2.2% | *** |
| 156 | PreStu88 | stay at home to be with or start a family | Recode from 9 to 1 | | 1=yes | 7.0% | 6.7% | 5.7% | 9.9% | 6.6% | | 6.7% | 5.7% | 9.9% | | 6.7% | 5.7% | 9.9% | | 5.7% | 6.7% | |
| 157 | PreStu89 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 158 | | **STUDENT POST-CAPSTONE** | | | | | | | | | | | | | | | | | | | | |
| 159 | | **How important to you personally is each of the following?** | | | | | | | | | | | | | | | | | | | | |
| 160 | PostStu1 | Becoming accomplished in my field of expertise | | 4 | Not imp - Essential | 3.35 | 3.22 | 3.38 | 3.44 | 3.41 | *** | 3.43 | 3.30 | 3.32 | * | 3.32 | 3.32 | 3.39 | | 3.35 | 3.35 | |
| 161 | PostStu2 | Influencing social values | | 4 | Not imp - Essential | 2.91 | 2.86 | 2.98 | 3.00 | 2.86 | * | 2.74 | 2.99 | 2.91 | *** | 2.98 | 2.91 | 2.87 | | 2.85 | 2.94 | * |
| 162 | PostStu3 | Raising a family | | 4 | Not imp - Essential | 3.03 | 2.92 | 3.19 | 2.93 | 3.05 | *** | 3.08 | 3.12 | 2.81 | *** | 3.14 | 3.00 | 2.99 | * | 3.08 | 3.00 | |
| 163 | PostStu4 | Helping others who are in difficulty | | 4 | Not imp - Essential | 3.21 | 3.15 | 3.32 | 3.14 | 3.22 | ** | 3.18 | 3.26 | 3.16 | * | 3.14 | 3.22 | 3.24 | | 3.06 | 3.29 | *** |
| 164 | PostStu5 | Creating original works | | 4 | Not imp - Essential | 2.87 | 2.94 | 2.74 | 2.94 | 2.87 | ** | 2.74 | 2.79 | 3.11 | *** | 2.94 | 2.88 | 2.82 | | 2.97 | 2.81 | *** |
| 165 | PostStu6 | Developing a meaningful philosophy of life | | 4 | Not imp - Essential | 3.21 | 3.15 | 3.32 | 3.20 | 3.21 | * | 3.14 | 3.18 | 3.33 | ** | 3.13 | 3.19 | 3.28 | * | 3.25 | 3.20 | |
| 166 | PostStu7 | Becoming a community leader | | 4 | Not imp - Essential | 2.69 | 2.60 | 2.81 | 2.70 | 2.67 | ** | 2.58 | 2.81 | 2.57 | *** | 2.67 | 2.71 | 2.67 | | 2.68 | 2.69 | |
| 167 | PostStu8 | Integrating spirituality into my life | | 4 | Not imp - Essential | 2.36 | 2.21 | 2.58 | 2.42 | 2.32 | *** | 2.38 | 2.36 | 2.36 | | 2.31 | 2.30 | 2.44 | * | 2.24 | 2.42 | *** |
| 168 | PostStu9 | Volunteering in my community | | 4 | Not imp - Essential | 2.78 | 2.69 | 2.89 | 2.79 | 2.79 | ** | 2.78 | 2.81 | 2.72 | | 2.74 | 2.77 | 2.82 | | 2.56 | 2.89 | *** |
| 169 | PostStu10 | Making a lot of money | | 4 | Not imp - Essential | 2.23 | 2.16 | 2.12 | 2.44 | 2.29 | *** | 2.28 | 2.28 | 2.12 | ** | 2.51 | 2.25 | 2.07 | *** | 2.40 | 2.15 | *** |
| 170 | PostStu11 | Working in a prestigious occupation | | 4 | Not imp - Essential | 2.27 | 2.16 | 2.20 | 2.41 | 2.39 | *** | 2.33 | 2.31 | 2.15 | ** | 2.54 | 2.27 | 2.13 | *** | 2.45 | 2.19 | *** |
| 171 | PostStu12 | Becoming passionate about or committed to my occupation | | 4 | Not imp - Essential | 3.64 | 3.62 | 3.69 | 3.54 | 3.66 | ** | 3.65 | 3.63 | 3.62 | | 3.55 | 3.63 | 3.69 | *** | 3.57 | 3.67 | *** |
| 172 | PostStu13 | Obtaining recognition from my colleagues for contributions to my special field | | 4 | Not imp - Essential | 2.60 | 2.59 | 2.51 | 2.67 | 2.65 | * | 2.62 | 2.58 | 2.57 | | 2.64 | 2.58 | 2.60 | | 2.72 | 2.54 | *** |
| 173 | | **Indicate the extent to which you agree/disagree with each of the following statements about your views or perspectives in general.** | | | | | | | | | | | | | | | | | | | | |
| 174 | PostStu14 | I enjoy expressing my ideas in writing | | 5 | SD - SA | 3.92 | 4.03 | 3.91 | 3.90 | 3.84 | ** | 3.65 | 3.89 | 4.24 | *** | 3.78 | 3.90 | 4.02 | *** | 3.91 | 3.93 | |
| 175 | PostStu15 | I have confidence in my opinions, even if they are contrary to the general consensus | | 5 | SD - SA | 4.15 | 4.15 | 4.12 | 4.17 | 4.16 | | 4.06 | 4.14 | 4.23 | ** | 4.25 | 4.12 | 4.12 | * | 4.34 | 4.06 | *** |
| 176 | PostStu16 | I really enjoy a task that involves coming up with new solutions to problems | | 5 | SD - SA | 4.11 | 4.12 | 4.08 | 4.15 | 4.10 | | 4.18 | 4.09 | 4.05 | * | 4.12 | 4.14 | 4.07 | | 4.28 | 4.02 | *** |
| 177 | PostStu17 | The notion of thinking abstractly is appealing to me | | 5 | SD - SA | 3.96 | 3.96 | 3.89 | 4.10 | 3.94 | * | 3.85 | 3.91 | 4.10 | *** | 4.00 | 3.94 | 3.95 | | 4.22 | 3.83 | *** |
| 178 | PostStu18 | I enjoy doing research | | 5 | SD - SA | 3.72 | 3.84 | 3.53 | 3.75 | 3.74 | *** | 3.94 | 3.69 | 3.55 | *** | 3.56 | 3.72 | 3.81 | *** | 3.75 | 3.71 | |
| 179 | | **Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself.** | | | | | | | | | | | | | | | | | | | | |
| 180 | PostStu19 | Academic ability | | 5 | Lowest 10% - Highest 10% | 4.08 | 4.06 | 4.07 | 4.07 | 4.10 | | 4.15 | 4.00 | 4.10 | *** | 3.62 | 3.96 | 4.42 | *** | 4.07 | 4.08 | |
| 181 | PostStu20 | Creativity | | 5 | Lowest 10% - Highest 10% | 3.84 | 3.79 | 3.85 | 3.92 | 3.86 | | 3.68 | 3.77 | 4.09 | *** | 3.88 | 3.83 | 3.84 | | 3.92 | 3.81 | ** |
| 182 | PostStu21 | Drive to achieve | | 5 | Lowest 10% - Highest 10% | 4.12 | 4.03 | 4.15 | 4.08 | 4.19 | * | 4.22 | 4.11 | 4.00 | *** | 3.83 | 4.05 | 4.32 | *** | 4.02 | 4.16 | *** |
| 183 | PostStu22 | Leadership ability | | 5 | Lowest 10% - Highest 10% | 3.95 | 3.93 | 4.01 | 3.88 | 3.96 | | 3.88 | 4.02 | 3.89 | ** | 3.95 | 3.99 | 3.92 | | 4.10 | 3.88 | *** |
| 184 | PostStu23 | Mathematical ability | | 5 | Lowest 10% - Highest 10% | 3.15 | 3.05 | 3.13 | 3.18 | 3.24 | * | 3.61 | 3.07 | 2.86 | *** | 3.02 | 3.05 | 3.31 | *** | 3.33 | 3.06 | *** |
| 185 | PostStu24 | Persistence | | 5 | Lowest 10% - Highest 10% | 4.06 | 4.02 | 4.05 | 4.00 | 4.14 | * | 4.23 | 4.03 | 3.97 | *** | 3.98 | 4.03 | 4.14 | *** | 4.08 | 4.05 | |
| 186 | PostStu25 | Public speaking ability | | 5 | Lowest 10% - Highest 10% | 3.57 | 3.56 | 3.46 | 3.54 | 3.69 | ** | 3.48 | 3.57 | 3.61 | | 3.54 | 3.51 | 3.65 | * | 3.79 | 3.46 | *** |
| 187 | PostStu26 | Self-confidence (intellectual) | | 5 | Lowest 10% - Highest 10% | 3.88 | 3.87 | 3.85 | 3.87 | 3.93 | | 3.87 | 3.86 | 3.87 | | 3.73 | 3.81 | 4.03 | *** | 4.10 | 3.78 | *** |
| 188 | PostStu27 | Self-confidence (social) | | 5 | Lowest 10% - Highest 10% | 3.67 | 3.73 | 3.60 | 3.63 | 3.68 | | 3.61 | 3.71 | 3.65 | | 3.87 | 3.72 | 3.52 | *** | 3.84 | 3.59 | *** |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 189 | PostStu28 | Understanding of others | | 5 | Lowest 10% - Highest 10% | 4.08 | 4.08 | 4.09 | 4.02 | 4.10 | | 4.04 | 4.10 | 4.09 | | 4.15 | 4.10 | 4.03 | * | 4.07 | 4.08 | |
| 190 | PostStu29 | Self-understanding | | 5 | Lowest 10% - Highest 10% | 4.04 | 4.06 | 3.99 | 4.01 | 4.06 | | 4.00 | 4.03 | 4.05 | | 4.06 | 4.05 | 4.01 | | 4.10 | 4.01 | * |
| 191 | PostStu30 | Ability to think critically | | 5 | Lowest 10% - Highest 10% | 4.06 | 4.08 | 4.01 | 4.02 | 4.09 | | 4.07 | 4.04 | 4.05 | | 3.94 | 4.01 | 4.17 | *** | 4.20 | 3.99 | *** |
| 192 | PostStu31 | Research skills | | 5 | Lowest 10% - Highest 10% | 3.80 | 3.90 | 3.65 | 3.77 | 3.84 | *** | 3.96 | 3.79 | 3.65 | *** | 3.58 | 3.76 | 3.96 | *** | 3.81 | 3.80 | |
| 193 | PostStu32 | Ability to think and act on my own | | 5 | Lowest 10% - Highest 10% | 4.25 | 4.23 | 4.15 | 4.27 | 4.32 | *** | 4.27 | 4.23 | 4.21 | | 4.22 | 4.23 | 4.27 | | 4.32 | 4.21 | ** |
| 194 | PostStu33 | Writing ability | | 5 | Lowest 10% - Highest 10% | 3.89 | 3.96 | 3.84 | 3.81 | 3.88 | * | 3.73 | 3.84 | 4.09 | *** | 3.60 | 3.82 | 4.10 | *** | 3.87 | 3.90 | |
| 195 | | **How helpful were each of the following for completion of your capstone?** | | | | | | | | | | | | | | | | | | | | |
| 196 | PostStu34 | Courses outside my major(s) and minor(s) | | 4 | Not imp - Essential | 2.10 | 2.18 | 2.17 | 2.05 | 1.99 | ** | 1.95 | 2.13 | 2.21 | *** | 2.09 | 2.08 | 2.12 | | 2.07 | 2.11 | |
| 197 | PostStu35 | Courses in my major(s) or minors(s) | | 4 | Not imp - Essential | 3.46 | 3.46 | 3.45 | 3.43 | 3.50 | | 3.52 | 3.40 | 3.48 | ** | 3.41 | 3.44 | 3.52 | * | 3.45 | 3.47 | |
| 198 | PostStu36 | A research methods or skills course | | 4 | Not imp - Essential | 2.83 | 2.90 | 2.65 | 2.71 | 2.93 | *** | 3.04 | 2.90 | 2.46 | *** | 2.95 | 2.86 | 2.72 | ** | 2.73 | 2.88 | ** |
| 199 | PostStu37 | A junior or senior seminar | | 4 | Not imp - Essential | 2.87 | 2.98 | 2.67 | 2.50 | 3.02 | *** | 2.99 | 2.84 | 2.80 | * | 2.90 | 2.85 | 2.87 | | 2.81 | 2.90 | |
| 200 | PostStu38 | Assistance from librarians or use of library services | | 4 | Not imp - Essential | 2.31 | 2.27 | 2.41 | 2.10 | 2.37 | ** | 2.23 | 2.32 | 2.33 | | 2.34 | 2.32 | 2.28 | | 2.25 | 2.34 | |
| 201 | PostStu39 | Training in quantitative methods (statistics, tables, graphs, mathematical modeling,...) | | 4 | Not imp - Essential | 2.39 | 2.45 | 2.19 | 2.36 | 2.51 | *** | 2.81 | 2.48 | 1.55 | *** | 2.42 | 2.44 | 2.33 | | 2.39 | 2.39 | |
| 202 | PostStu40 | Training or experience with computer techniques (spreadsheets, Internet, programming, presentation software...) | | 4 | Not imp - Essential | 2.49 | 2.46 | 2.42 | 2.45 | 2.60 | | 2.92 | 2.50 | 1.93 | *** | 2.51 | 2.57 | 2.41 | * | 2.56 | 2.46 | |
| 203 | PostStu41 | Study abroad experiences | | 4 | Not imp - Essential | 2.41 | 2.55 | 2.23 | 2.43 | 2.40 | * | 2.03 | 2.44 | 2.54 | *** | 2.31 | 2.48 | 2.40 | | 2.35 | 2.44 | |
| 204 | PostStu42 | My job or internship experiences | | 4 | Not imp - Essential | 2.50 | 2.37 | 2.70 | 2.55 | 2.43 | *** | 2.65 | 2.54 | 2.26 | *** | 2.35 | 2.54 | 2.53 | * | 2.43 | 2.53 | |
| 205 | PostStu43 | Volunteer experiences | | 4 | Not imp - Essential | 2.06 | 1.98 | 2.29 | 2.08 | 1.95 | *** | 1.87 | 2.17 | 2.07 | *** | 2.17 | 2.04 | 2.03 | | 1.91 | 2.14 | *** |
| 206 | PostStu44 | My non-academic interests/experiences | | 4 | Not imp - Essential | 2.74 | 2.78 | 2.79 | 2.70 | 2.68 | | 2.41 | 2.80 | 2.95 | *** | 2.84 | 2.70 | 2.73 | | 2.73 | 2.75 | |
| 207 | PostStu201 | A research project/experience | new item 2010 | 4 | Not imp - Essential | 2.91 | 2.94 | 2.89 | 2.70 | 2.95 | | 3.11 | 2.87 | 2.77 | | 2.89 | 2.96 | 2.87 | | 2.91 | 2.91 | |
| 208 | PostStu45 | Other interest/experiences (please specify) | | | | | | | | | | | | | | | | | | | | |
| 209 | | **Please indicate prior research/performance experiences (check all that apply).** | | | | | | | | | | | | | | | | | | | | |
| 210 | PostStu202 | Course-embedded research project | Recode from 1 to 1 | | 1=yes | 77.6% | 81.3% | 74.3% | 74.2% | 77.6% | | 77.6% | 75.5% | 79.9% | | 67.0% | 78.4% | 82.0% | | 75.7% | 78.5% | |
| 211 | PostStu203 | Course-embedded performance/creative project | Recode from 2 to 1 | | 1=yes | 48.4% | 45.2% | 55.3% | 46.2% | 47.0% | | 42.3% | 44.7% | 59.4% | | 43.1% | 50.9% | 48.7% | | 53.8% | 46.0% | |
| 212 | PostStu204 | Summer research project (four weeks or fewer) | Recode from 3 to 1 | | 1=yes | 6.6% | 8.5% | 5.3% | 5.4% | 6.2% | | 7.7% | 7.6% | 3.3% | | 4.8% | 5.1% | 8.9% | | 7.5% | 6.2% | |
| 213 | PostStu205 | Summer research project (more than four weeks) | Recode from 4 to 1 | | 1=yes | 17.6% | 20.4% | 8.0% | 10.8% | 23.7% | *** | 37.0% | 10.6% | 7.4% | | 8.0% | 17.0% | 22.6% | | 19.2% | 16.8% | |
| 214 | PostStu206 | Research assistant for a faculty project | Recode from 5 to 1 | | 1=yes | 13.0% | 16.0% | 11.1% | 8.6% | 12.8% | | 22.8% | 10.6% | 8.6% | | 4.8% | 11.6% | 18.0% | | 10.6% | 14.0% | |
| 215 | PostStu207 | Independent study course/project | Recode from 6 to 1 | | 1=yes | 40.5% | 68.7% | 29.2% | 21.5% | 28.0% | *** | 44.7% | 36.4% | 43.0% | | 31.9% | 43.2% | 42.1% | | 45.5% | 38.2% | |
| 216 | PostStu208 | Research assistant during the academic year | Recode from 7 to 1 | | 1=yes | 11.7% | 16.0% | 8.4% | 4.3% | 12.1% | ** | 17.1% | 10.4% | 8.6% | | 4.8% | 11.4% | 15.2% | | 10.3% | 12.3% | |
| 217 | PostStu209 | Assistance/apprenticeship with performance/creative project | Recode from 8 to 1 | | 1=yes | 7.6% | 8.2% | 10.6% | 8.6% | 4.7% | | 3.3% | 8.1% | 12.3% | | 4.8% | 8.0% | 8.6% | | 6.5% | 8.1% | |
| 218 | PostStu210 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 219 | | **Please rate your satisfaction with your college in the following areas.** | | | | | | | | | | | | | | | | | | | | |
| 220 | PostStu46 | Library facilities and services | | 5 | VDisSat - Vsat | 4.09 | 4.20 | 4.36 | 3.44 | 4.06 | *** | 4.13 | 4.06 | 4.09 | | 4.03 | 4.06 | 4.14 | * | 4.12 | 4.07 | |
| 221 | PostStu47 | Computer facilities and services | | 5 | VDisSat - Vsat | 3.75 | 3.98 | 4.04 | 3.60 | 3.37 | *** | 3.77 | 3.79 | 3.72 | | 3.74 | 3.73 | 3.77 | | 3.74 | 3.75 | |
| 222 | PostStu48 | Facilities/equipment in my major field | | 5 | VDisSat - Vsat | 3.91 | 3.89 | 4.08 | 3.86 | 3.81 | *** | 4.17 | 3.86 | 3.79 | *** | 3.88 | 3.89 | 3.94 | | 3.87 | 3.93 | |
| 223 | PostStu49 | Overall quality of instruction | | 5 | VDisSat - Vsat | 4.37 | 4.43 | 4.26 | 4.32 | 4.41 | *** | 4.43 | 4.33 | 4.36 | * | 4.23 | 4.31 | 4.49 | *** | 4.33 | 4.39 | |
| 224 | PostStu50 | Quality of instruction in my major field | | 5 | VDisSat - Vsat | 4.52 | 4.53 | 4.47 | 4.49 | 4.58 | | 4.62 | 4.49 | 4.48 | ** | 4.39 | 4.48 | 4.63 | *** | 4.49 | 4.54 | |
| 225 | PostStu51 | Overall college experience | | 5 | VDisSat - Vsat | 4.41 | 4.50 | 4.35 | 4.33 | 4.38 | ** | 4.39 | 4.43 | 4.35 | | 4.26 | 4.39 | 4.49 | *** | 4.33 | 4.45 | ** |
| 226 | PostStu52 | **On average, how many hours per week did you spend interacting with your capstone mentor in individual or group meetings relating to the capstone?** | | | | 2.86 | 2.07 | 3.80 | 2.77 | 2.98 | *** | 3.73 | 2.55 | 2.66 | *** | 3.52 | 2.84 | 2.54 | *** | 3.18 | 2.70 | * |
| 227 | PostStu53 | **On average, how many hours per week did you spend working on ALL aspects of your capstone combined?** | | | | 14.11 | 14.73 | 11.91 | 12.65 | 15.70 | *** | 15.34 | 13.65 | 13.22 | ** | 14.56 | 13.69 | 14.27 | | 13.71 | 14.31 | |
| 228 | PostStu211 | **What was the origin of the idea for your capstone topic?** | new item 2010 | 5 | totally mentor - totally student | 3.92 | 3.93 | 3.86 | 4.14 | 3.90 | | 3.37 | 4.05 | 4.21 | | 3.88 | 3.83 | 4.03 | | 3.76 | 4.00 | |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 229 | PostStu212 | **To what extent did you participate in developing/refining the topic for your capstone?** | new item 2010 | 5 | Not al all - Very much | 4.28 | 4.26 | 4.26 | 4.11 | 4.36 | | 4.11 | 4.26 | 4.42 | | 4.10 | 4.22 | 4.42 | | 4.15 | 4.34 | |
| 230 | PostStu213 | **How satisfied were you with the process used to select your capstone topic?** | new item 2010 | 5 | Not al all - Very much | 4.05 | 4.14 | 4.00 | 4.03 | 4.01 | | 4.16 | 4.00 | 4.05 | | 3.98 | 4.06 | 4.08 | | 4.00 | 4.07 | |
| 231 | PostStu214 | **When the project started, how enthusiastic were you about your capstone topic?** | new item 2010 | 5 | Not al all - Very much | 4.21 | 4.36 | 4.03 | 4.18 | 4.22 | ** | 4.18 | 4.20 | 4.29 | | 4.19 | 4.15 | 4.29 | | 4.13 | 4.25 | |
| 232 | PostStu215 | **When the project ended, how enthusiastic were you about your capstone topic?** | new item 2010 | 5 | Not al all - Very much | 4.09 | 4.25 | 4.07 | 3.96 | 4.01 | * | 4.17 | 4.05 | 4.12 | | 4.03 | 4.10 | 4.11 | | 4.05 | 4.11 | |
| 233 | | **How much has your capstone work emphasized the following mental activities?** | | | | | | | | | | | | | | | | | | | | |
| 234 | PostStu54 | Memorizing facts, ideas, or methods so you can repeat them in pretty much the same form | | 4 | Very little - Very much | 1.94 | 1.89 | 1.82 | 2.13 | 1.99 | *** | 2.29 | 1.93 | 1.61 | *** | 2.21 | 1.99 | 1.76 | *** | 2.06 | 1.88 | *** |
| 235 | PostStu55 | Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | | 4 | Very little - Very much | 3.20 | 3.20 | 3.14 | 3.18 | 3.24 | | 3.19 | 3.24 | 3.10 | * | 3.23 | 3.20 | 3.17 | | 3.24 | 3.17 | |
| 236 | PostStu56 | Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | | 4 | Very little - Very much | 3.40 | 3.43 | 3.37 | 3.31 | 3.42 | | 3.37 | 3.36 | 3.43 | | 3.32 | 3.37 | 3.45 | * | 3.37 | 3.41 | |
| 237 | PostStu57 | Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | | 4 | Very little - Very much | 3.14 | 3.13 | 3.10 | 3.06 | 3.20 | | 3.24 | 3.22 | 2.86 | *** | 3.15 | 3.14 | 3.14 | | 3.17 | 3.12 | |
| 238 | PostStu58 | Applying theories or concepts to practical problems or in new situations | | 4 | Very little - Very much | 3.08 | 3.14 | 2.97 | 2.99 | 3.12 | * | 3.22 | 3.12 | 2.84 | *** | 3.09 | 3.04 | 3.10 | | 3.13 | 3.05 | |
| 239 | | **During your capstone, about how often have you done each of the following?** | | | | | | | | | | | | | | | | | | | | |
| 240 | PostStu59 | Integrated ideas or information from various sources | | 4 | Never - Very Often | 3.66 | 3.67 | 3.60 | 3.58 | 3.71 | ** | 3.68 | 3.65 | 3.61 | | 3.56 | 3.67 | 3.69 | ** | 3.58 | 3.69 | *** |
| 241 | PostStu60 | Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | | 4 | Never - Very Often | 2.49 | 2.48 | 2.73 | 2.50 | 2.31 | *** | 1.79 | 2.66 | 2.84 | *** | 2.50 | 2.43 | 2.53 | | 2.40 | 2.53 | * |
| 242 | PostStu61 | Put together ideas or concepts from different courses | | 4 | Never - Very Often | 2.97 | 2.95 | 2.98 | 3.09 | 2.93 | | 2.88 | 2.97 | 3.01 | | 2.94 | 2.94 | 3.02 | | 3.00 | 2.96 | |
| 243 | PostStu62 | Discussed ideas from your capstone with faculty members other than your capstone advisor | | 4 | Never - Very Often | 2.55 | 2.59 | 2.54 | 2.51 | 2.54 | | 2.47 | 2.57 | 2.57 | | 2.58 | 2.57 | 2.52 | | 2.55 | 2.55 | |
| 244 | PostStu63 | Discussed ideas from your capstone with others (students, family members, co-workers, etc.) | | 4 | Never - Very Often | 3.16 | 3.19 | 3.10 | 3.08 | 3.22 | * | 3.09 | 3.18 | 3.20 | | 3.19 | 3.15 | 3.16 | | 3.05 | 3.22 | *** |
| 245 | PostStu64 | Examined the strengths and weaknesses of your own views on a topic or issue | | 4 | Never - Very Often | 3.02 | 2.99 | 3.08 | 2.99 | 3.02 | | 2.77 | 3.04 | 3.18 | *** | 3.06 | 3.00 | 3.02 | | 2.99 | 3.04 | |
| 246 | PostStu65 | Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | | 4 | Never - Very Often | 2.75 | 2.76 | 2.94 | 2.77 | 2.61 | *** | 2.29 | 2.88 | 3.00 | *** | 2.77 | 2.70 | 2.80 | | 2.71 | 2.78 | |
| 247 | PostStu66 | Learned something that changed the way you understand an issue or concept | | 4 | Never - Very Often | 3.05 | 3.04 | 3.15 | 2.91 | 3.04 | ** | 2.88 | 3.09 | 3.11 | *** | 3.02 | 3.04 | 3.07 | | 3.02 | 3.06 | |
| 248 | | **In evaluating your capstone work specifically, please indicate the extent to which you agree/disagree with each of the following statements.** | | | | | | | | | | | | | | | | | | | | |
| 249 | PostStu67 | I identified a manageable set of project goals | | 5 | SD - SA | 4.16 | 4.17 | 4.15 | 4.16 | 4.15 | | 4.22 | 4.17 | 4.11 | | 3.99 | 4.17 | 4.23 | *** | 4.03 | 4.22 | *** |
| 250 | PostStu68 | I properly planned tasks to achieve project goals | | 5 | SD - SA | 4.05 | 4.06 | 4.09 | 3.99 | 4.06 | | 4.11 | 4.06 | 4.00 | | 3.85 | 4.06 | 4.15 | *** | 3.89 | 4.14 | *** |
| 251 | PostStu69 | I showed evidence of independent thinking | | 5 | SD - SA | 4.43 | 4.44 | 4.37 | 4.41 | 4.48 | * | 4.40 | 4.39 | 4.51 | ** | 4.32 | 4.40 | 4.52 | *** | 4.40 | 4.45 | |
| 252 | PostStu70 | I persisted when faced with conceptual and practical difficulties | | 5 | SD - SA | 4.42 | 4.41 | 4.33 | 4.41 | 4.49 | ** | 4.48 | 4.37 | 4.41 | * | 4.26 | 4.42 | 4.49 | *** | 4.36 | 4.44 | * |
| 253 | PostStu71 | I showed originality | | 5 | SD - SA | 4.23 | 4.24 | 4.17 | 4.24 | 4.25 | | 4.10 | 4.18 | 4.36 | *** | 4.12 | 4.20 | 4.31 | *** | 4.20 | 4.24 | |
| 254 | PostStu72 | I used feedback to assess my performance | | 5 | SD - SA | 4.36 | 4.36 | 4.34 | 4.35 | 4.37 | | 4.39 | 4.31 | 4.39 | | 4.28 | 4.34 | 4.41 | ** | 4.25 | 4.41 | *** |
| 255 | PostStu73 | I located appropriate source material | | 5 | SD - SA | 4.44 | 4.43 | 4.37 | 4.43 | 4.49 | * | 4.51 | 4.41 | 4.37 | ** | 4.36 | 4.42 | 4.50 | ** | 4.40 | 4.46 | |
| 256 | PostStu74 | I used disciplinary knowledge and methods appropriately | | 5 | SD - SA | 4.32 | 4.29 | 4.35 | 4.29 | 4.34 | | 4.45 | 4.29 | 4.24 | *** | 4.18 | 4.29 | 4.42 | *** | 4.24 | 4.36 | *** |
| 257 | PostStu75 | I synthesized information to produce insights that expanded my understanding | | 5 | SD - SA | 4.37 | 4.38 | 4.31 | 4.31 | 4.43 | * | 4.40 | 4.35 | 4.34 | | 4.24 | 4.33 | 4.47 | *** | 4.32 | 4.39 | |
| 258 | PostStu76 | I supported my arguments with appropriate evidence | | 5 | SD - SA | 4.42 | 4.43 | 4.37 | 4.38 | 4.47 | | 4.47 | 4.41 | 4.36 | * | 4.34 | 4.41 | 4.47 | ** | 4.35 | 4.46 | *** |
| 259 | PostStu77 | I demonstrated good communication skills | | 5 | SD - SA | 4.27 | 4.27 | 4.25 | 4.27 | 4.30 | | 4.25 | 4.27 | 4.26 | | 4.14 | 4.26 | 4.35 | *** | 4.19 | 4.31 | *** |
| 260 | PostStu78 | I demonstrated effective time management in completing tasks | | 5 | SD - SA | 3.91 | 3.85 | 3.98 | 3.90 | 3.93 | | 3.99 | 3.93 | 3.82 | | 3.65 | 3.91 | 4.05 | *** | 3.71 | 4.01 | *** |
| 261 | PostStu79 | I showed skill with quantitative reasoning | | 5 | SD - SA | 3.94 | 3.86 | 3.85 | 4.05 | 4.03 | ** | 4.24 | 3.87 | 3.66 | *** | 3.92 | 3.97 | 3.92 | | 3.94 | 3.94 | |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 262 | | **Indicate the extent to which you agree/disagree with each of the following statements about your experiences with your capstone mentor.** | | | | | | | | | | | | | | | | | | | | |
| 263 | PostStu80 | My mentor was genuinely interested in my project | | 5 | SD - SA | 4.44 | 4.50 | 4.34 | 4.38 | 4.48 | ** | 4.60 | 4.36 | 4.40 | *** | 4.38 | 4.40 | 4.51 | * | 4.44 | 4.44 | |
| 264 | PostStu81 | I had access to my mentor when I needed it | | 5 | SD - SA | 4.34 | 4.39 | 4.24 | 4.29 | 4.39 | * | 4.44 | 4.27 | 4.34 | ** | 4.31 | 4.30 | 4.40 | | 4.36 | 4.33 | |
| 265 | PostStu82 | My mentor gave me helpful advice | | 5 | SD - SA | 4.42 | 4.49 | 4.32 | 4.41 | 4.44 | * | 4.53 | 4.34 | 4.45 | *** | 4.41 | 4.38 | 4.46 | | 4.42 | 4.42 | |
| 266 | PostStu83 | I was comfortable working with my faculty mentor | | 5 | SD - SA | 4.47 | 4.49 | 4.38 | 4.46 | 4.50 | | 4.59 | 4.41 | 4.43 | ** | 4.41 | 4.41 | 4.54 | * | 4.47 | 4.46 | |
| 267 | PostStu216 | My mentor encouraged my independence | new item 2010 | 5 | SD - SA | 4.49 | 4.56 | 4.39 | 4.47 | 4.51 | | 4.58 | 4.45 | 4.50 | | 4.45 | 4.50 | 4.51 | | 4.50 | 4.49 | |
| 268 | PostStu217 | My mentor gave me useful feedback | new item 2010 | 5 | SD - SA | 4.39 | 4.50 | 4.31 | 4.42 | 4.34 | | 4.58 | 4.27 | 4.43 | | 4.38 | 4.36 | 4.43 | | 4.43 | 4.37 | |
| 269 | PostStu218 | My mentor met with me regularly | new item 2010 | 5 | SD - SA | 4.18 | 4.60 | 4.00 | 3.90 | 4.02 | *** | 4.50 | 4.08 | 4.16 | | 4.21 | 4.19 | 4.16 | | 4.18 | 4.18 | |
| 270 | PostStu219 | My mentor and I communicated well | new item 2010 | 5 | SD - SA | 4.32 | 4.49 | 4.23 | 4.16 | 4.27 | *** | 4.46 | 4.25 | 4.32 | | 4.36 | 4.23 | 4.38 | | 4.37 | 4.29 | |
| 271 | PostStu220 | My mentor had reasonable expectations for my performance | new item 2010 | 5 | SD - SA | 4.41 | 4.51 | 4.34 | 4.34 | 4.38 | | 4.55 | 4.34 | 4.39 | | 4.38 | 4.38 | 4.44 | | 4.44 | 4.39 | |
| 272 | PostStu221 | My mentor gave me sufficient feedback | new item 2010 | 5 | SD - SA | 4.29 | 4.39 | 4.19 | 4.28 | 4.26 | | 4.53 | 4.13 | 4.34 | | 4.29 | 4.25 | 4.32 | | 4.34 | 4.26 | |
| 273 | PostStu222 | My mentor effectively guided me through the capstone | new item 2010 | 5 | SD - SA | 4.19 | 4.36 | 4.09 | 4.11 | 4.13 | ** | 4.41 | 4.10 | 4.22 | | 4.23 | 4.13 | 4.23 | | 4.18 | 4.19 | |
| 274 | PostStu223 | My mentor provided helpful subject matter expertise | new item 2010 | 5 | SD - SA | 4.26 | 4.39 | 4.13 | 4.24 | 4.24 | * | 4.50 | 4.15 | 4.29 | | 4.26 | 4.28 | 4.25 | | 4.23 | 4.28 | |
| 275 | PostStu224 | My mentor gave me timely feedback | new item 2010 | 5 | SD - SA | 4.26 | 4.38 | 4.17 | 4.22 | 4.23 | | 4.49 | 4.14 | 4.30 | | 4.24 | 4.21 | 4.32 | | 4.29 | 4.25 | |
| 276 | PostStu225 | My mentor was experienced in capstone advising | new item 2010 | 5 | SD - SA | 4.34 | 4.47 | 4.08 | 4.43 | 4.37 | *** | 4.46 | 4.33 | 4.25 | | 4.32 | 4.31 | 4.37 | | 4.36 | 4.33 | |
| 277 | | **Please indicate to what extent your capstone experience contributed to your development in the following areas.** | | | | | | | | | | | | | | | | | | | | |
| 278 | PostStu84 | Seeing the connection between my intended career and how it affects society | | 5 | Not al all - Very much | 3.54 | 3.41 | 3.96 | 3.64 | 3.30 | *** | 3.50 | 3.66 | 3.37 | *** | 3.50 | 3.52 | 3.58 | | 3.44 | 3.59 | * |
| 279 | PostStu85 | Learning effectively on my own | | 5 | Not al all - Very much | 4.30 | 4.29 | 4.30 | 4.18 | 4.36 | * | 4.38 | 4.25 | 4.28 | * | 4.23 | 4.33 | 4.31 | | 4.26 | 4.32 | |
| 280 | PostStu86 | Acquiring research related skills | | 5 | Not al all - Very much | 4.17 | 4.24 | 3.99 | 4.04 | 4.29 | *** | 4.38 | 4.20 | 3.86 | *** | 4.15 | 4.20 | 4.16 | | 4.14 | 4.18 | |
| 281 | PostStu87 | Managing a large project | | 5 | Not al all - Very much | 4.45 | 4.54 | 4.30 | 4.32 | 4.53 | *** | 4.47 | 4.41 | 4.46 | | 4.30 | 4.47 | 4.51 | *** | 4.36 | 4.49 | *** |
| 282 | PostStu88 | Having confidence in my own abilities | | 5 | Not al all - Very much | 4.29 | 4.32 | 4.23 | 4.25 | 4.31 | | 4.31 | 4.29 | 4.24 | | 4.20 | 4.31 | 4.31 | | 4.25 | 4.30 | |
| 283 | PostStu89 | Skill in the interpreting of data, evidence, texts, and/or works | | 5 | Not al all - Very much | 4.19 | 4.28 | 4.09 | 4.18 | 4.19 | ** | 4.34 | 4.21 | 4.03 | *** | 4.13 | 4.24 | 4.18 | | 4.22 | 4.18 | |
| 284 | PostStu90 | Learning ethical conduct in my field | | 5 | Not al all - Very much | 3.45 | 3.36 | 3.67 | 3.55 | 3.33 | *** | 3.43 | 3.64 | 3.16 | *** | 3.63 | 3.47 | 3.34 | *** | 3.37 | 3.49 | |
| 285 | PostStu91 | Ability to interpret primary literature | | 5 | Not al all - Very much | 4.09 | 4.16 | 3.99 | 4.00 | 4.12 | * | 4.26 | 4.05 | 3.96 | *** | 4.11 | 4.08 | 4.08 | | 4.06 | 4.10 | |
| 286 | PostStu92 | Ability to make an effective oral presentation | | 5 | Not al all - Very much | 3.74 | 3.71 | 3.80 | 3.38 | 3.87 | *** | 4.22 | 3.69 | 3.38 | *** | 3.80 | 3.82 | 3.64 | * | 3.69 | 3.76 | |
| 287 | PostStu93 | Ability to write effectively | | 5 | Not al all - Very much | 4.20 | 4.29 | 4.02 | 4.18 | 4.25 | *** | 4.19 | 4.13 | 4.30 | ** | 4.11 | 4.16 | 4.28 | ** | 4.09 | 4.26 | *** |
| 288 | PostStu94 | Ability to think critically and analytically | | 5 | Not al all - Very much | 4.29 | 4.30 | 4.21 | 4.27 | 4.35 | | 4.36 | 4.28 | 4.22 | * | 4.19 | 4.31 | 4.33 | * | 4.25 | 4.31 | |
| 289 | PostStu95 | Ability to think creatively | | 5 | Not al all - Very much | 4.09 | 4.09 | 4.03 | 4.18 | 4.09 | | 3.97 | 4.02 | 4.31 | *** | 4.09 | 4.07 | 4.11 | | 4.07 | 4.10 | |
| 290 | PostStu96 | Ability to reason quantitatively | | 5 | Not al all - Very much | 3.44 | 3.29 | 3.28 | 3.63 | 3.61 | *** | 4.07 | 3.52 | 2.69 | *** | 3.71 | 3.50 | 3.24 | *** | 3.53 | 3.39 | * |
| 291 | | **Please indicate how strongly you agree with each of the following statements about your capstone experience.** | | | | | | | | | | | | | | | | | | | | |
| 292 | PostStu97 | My capstone was more engaging than my regular coursework | | 5 | SD - SA | 4.27 | 4.36 | 4.15 | 4.03 | 4.38 | *** | 4.37 | 4.22 | 4.25 | * | 4.30 | 4.23 | 4.30 | | 4.26 | 4.28 | |
| 293 | PostStu98 | My capstone was more stressful than my regular coursework | | 5 | SD - SA | 4.32 | 4.32 | 4.25 | 4.25 | 4.39 | | 4.29 | 4.29 | 4.36 | | 4.38 | 4.29 | 4.31 | | 4.29 | 4.33 | |
| 294 | PostStu99 | I worked harder on my capstone than on my regular coursework | | 5 | SD - SA | 4.30 | 4.31 | 4.13 | 4.11 | 4.48 | *** | 4.32 | 4.26 | 4.29 | | 4.35 | 4.28 | 4.29 | | 4.27 | 4.31 | |
| 295 | PostStu100 | My capstone was more intellectually challenging than my regular coursework | | 5 | SD - SA | 4.16 | 4.23 | 3.99 | 4.00 | 4.27 | *** | 4.16 | 4.12 | 4.20 | | 4.22 | 4.11 | 4.17 | | 4.14 | 4.17 | |
| 296 | PostStu101 | I developed more academically from my capstone than from a regular course | | 5 | SD - SA | 4.01 | 4.20 | 3.81 | 3.74 | 4.08 | *** | 4.07 | 3.98 | 3.97 | | 4.06 | 3.97 | 4.02 | | 4.04 | 3.99 | |
| 297 | PostStu102 | Understanding of my discipline improved | | 5 | SD - SA | 4.18 | 4.27 | 4.14 | 4.04 | 4.20 | ** | 4.28 | 4.15 | 4.14 | * | 4.13 | 4.17 | 4.23 | | 4.19 | 4.18 | |
| 298 | PostStu103 | I created new knowledge in my discipline | | 5 | SD - SA | 3.92 | 4.00 | 3.92 | 3.87 | 3.88 | | 4.01 | 3.91 | 3.86 | | 3.91 | 3.93 | 3.92 | | 3.87 | 3.95 | |
| 299 | PostStu104 | My capstone has led me to a better understanding of my skills, abilities and interests | | 5 | SD - SA | 4.28 | 4.33 | 4.24 | 4.15 | 4.30 | * | 4.30 | 4.25 | 4.26 | | 4.23 | 4.26 | 4.31 | | 4.22 | 4.31 | * |
| 300 | PostStu105 | My capstone has helped me clarify my career or graduate school objectives | | 5 | SD - SA | 3.59 | 3.59 | 3.73 | 3.54 | 3.51 | * | 3.78 | 3.54 | 3.46 | *** | 3.64 | 3.51 | 3.63 | | 3.64 | 3.56 | |
| 301 | PostStu106 | My capstone has better prepared me for a job or graduate school | | 5 | SD - SA | 3.93 | 4.05 | 3.92 | 3.72 | 3.92 | ** | 4.15 | 3.92 | 3.73 | *** | 3.86 | 3.88 | 4.02 | * | 3.97 | 3.91 | |
| 302 | PostStu107 | My capstone had a positive influence on my intellectual growth and interest in ideas | | 5 | SD - SA | 4.26 | 4.34 | 4.22 | 4.09 | 4.27 | *** | 4.28 | 4.22 | 4.26 | | 4.23 | 4.23 | 4.30 | | 4.20 | 4.28 | * |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 303 | PostStu108 | My capstone had a positive influence on my personal growth, attitudes, and values | | 5 | SD - SA | 4.11 | 4.22 | 4.11 | 3.97 | 4.06 | ** | 4.09 | 4.10 | 4.12 | | 4.14 | 4.10 | 4.10 | | 4.05 | 4.13 | |
| 304 | PostStu109 | My capstone product (e.g. thesis, paper, art work) was of high quality | | 5 | SD - SA | 4.25 | 4.25 | 4.26 | 4.27 | 4.23 | | 4.29 | 4.22 | 4.24 | | 4.06 | 4.18 | 4.40 | *** | 4.16 | 4.29 | ** |
| 305 | PostStu110 | Overall, I had a good capstone experience | | 5 | SD - SA | 4.24 | 4.38 | 4.14 | 4.16 | 4.21 | *** | 4.34 | 4.20 | 4.19 | * | 4.18 | 4.18 | 4.31 | ** | 4.19 | 4.26 | |
| 306 | PostStu111 | **What is the highest academic degree you intend to earn in your lifetime?** | | | | 2.59 | 2.60 | 2.44 | 2.45 | 2.74 | *** | 2.90 | 2.48 | 2.40 | *** | 2.36 | 2.53 | 2.76 | *** | 2.69 | 2.54 | ** |
| 307 | | **Within a year after graduation I plan to (check all that apply):** | | | | | | | | | | | | | | | | | | | | |
| 308 | PostStu112 | attend graduate/professional school (error for Red?) | Recode from 1 to 1 | | 1=yes | 55.3% | 38.3% | 61.8% | 65.9% | 66.7% | *** | 38.3% | 61.8% | 65.9% | *** | 38.3% | 61.8% | 65.9% | *** | 61.8% | 38.3% | *** |
| 309 | PostStu113 | work full-time | Recode from 2 to 1 | | 1=yes | 58.2% | 57.9% | 55.9% | 71.3% | 54.9% | *** | 57.9% | 55.9% | 71.3% | *** | 57.9% | 55.9% | 71.3% | *** | 55.9% | 57.9% | *** |
| 310 | PostStu114 | work part-time | Recode from 3 to 1 | | 1=yes | 27.7% | 26.6% | 27.3% | 28.7% | 28.7% | | 26.6% | 27.3% | 28.7% | | 26.6% | 27.3% | 28.7% | | 27.3% | 26.6% | |
| 311 | PostStu115 | work in a job related to my major discipline | Recode from 4 to 1 | | 1=yes | 45.4% | 41.9% | 50.0% | 50.7% | 42.9% | * | 41.9% | 50.0% | 50.7% | * | 41.9% | 50.0% | 50.7% | * | 50.0% | 41.9% | * |
| 312 | PostStu116 | participate in a community service organization | Recode from 5 to 1 | | 1=yes | 24.1% | 24.2% | 26.8% | 23.0% | 22.2% | | 24.2% | 26.8% | 23.0% | | 24.2% | 26.8% | 23.0% | | 26.8% | 24.2% | |
| 313 | PostStu117 | do volunteer work | Recode from 6 to 1 | | 1=yes | 40.6% | 36.7% | 46.6% | 42.1% | 39.1% | * | 36.7% | 46.6% | 42.1% | * | 36.7% | 46.6% | 42.1% | * | 46.6% | 36.7% | * |
| 314 | PostStu118 | travel | Recode from 7 to 1 | | 1=yes | 43.3% | 43.3% | 43.8% | 50.7% | 39.8% | | 43.3% | 43.8% | 50.7% | | 43.3% | 43.8% | 50.7% | | 43.8% | 43.3% | |
| 315 | PostStu119 | serve in the military | Recode from 8 to 1 | | 1=yes | 1.2% | 1.0% | 1.5% | 0.0% | 1.7% | | 1.0% | 1.5% | 0.0% | | 1.0% | 1.5% | 0.0% | | 1.5% | 1.0% | |
| 316 | PostStu120 | stay at home to be with or start a family | Recode from 9 to 1 | | 1=yes | 7.8% | 7.1% | 7.9% | 9.6% | 7.7% | | 7.1% | 7.9% | 9.6% | | 7.1% | 7.9% | 9.6% | | 7.9% | 7.1% | |
| 317 | PostStu121 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 318 | PostStu226 | **Please describe any particularly <I>positive</I> aspects of your capstone experience.** | Positive aspects. | | | | | | | | | | | | | | | | | | | |
| 319 | PostStu122 | **Please describe any particularly <I>negative</I> aspects of your capstone experience.** | Negative aspects. | | | | | | | | | | | | | | | | | | | |
| 320 | PostStu123 | **What did you learn about yourself as a result of your capstone experience?** | | | | | | | | | | | | | | | | | | | | |
| 321 | PostStu124 | **What aspects of your capstone experience do you think will be of most value to you after you graduate?** | | | | | | | | | | | | | | | | | | | | |
| 322 | PostStu125 | **Please tell us about any other aspects of your capstone experience that might be helpful to our study of the benefits of capstones.** | | | | | | | | | | | | | | | | | | | | |
| 323 | | **FACTULY PRE-CAPSTONE** | | | | | | | | | | | | | | | | | | | | |
| 324 | | **Project Behavior: Conceiving and managing a project** | | | | | | | | | | | | | | | | | | | | |
| 325 | PreFac1 | Identifies a manageable set of project goals | | 5 | SD - SA | 3.80 | 3.86 | 3.89 | 3.92 | 3.64 | *** | 3.63 | 3.92 | 3.82 | *** | 3.30 | 3.81 | 4.12 | *** | 3.67 | 3.89 | *** |
| 326 | PreFac2 | Properly plans tasks to achieve project goals | | 5 | SD - SA | 3.79 | 3.93 | 3.86 | 3.85 | 3.62 | *** | 3.68 | 3.85 | 3.85 | ** | 3.14 | 3.83 | 4.17 | *** | 3.59 | 3.92 | *** |
| 327 | PreFac3 | Demonstrates effective time management in completing tasks | | 5 | SD - SA | 3.74 | 3.82 | 3.84 | 3.76 | 3.61 | ** | 3.65 | 3.79 | 3.81 | * | 3.04 | 3.77 | 4.17 | *** | 3.49 | 3.90 | *** |
| 328 | PreFac4 | Persists when faced with conceptual and practical difficulties | | 5 | SD - SA | 3.92 | 3.97 | 3.96 | 3.95 | 3.86 | | 3.83 | 3.94 | 3.98 | * | 3.38 | 3.91 | 4.29 | *** | 3.80 | 4.00 | *** |
| 329 | PreFac5 | Shows evidence of independent thinking | | 5 | SD - SA | 3.90 | 3.95 | 3.91 | 3.91 | 3.86 | | 3.74 | 3.89 | 4.02 | *** | 3.37 | 3.86 | 4.28 | *** | 3.88 | 3.92 | |
| 330 | PreFac6 | Asks probing questions | | 5 | SD - SA | 3.71 | 3.79 | 3.69 | 3.76 | 3.65 | | 3.54 | 3.75 | 3.79 | *** | 3.13 | 3.66 | 4.14 | *** | 3.69 | 3.73 | |
| 331 | PreFac7 | Actively pursues learning opportunities | | 5 | SD - SA | 3.93 | 4.04 | 3.95 | 3.90 | 3.85 | * | 3.85 | 3.92 | 3.99 | | 3.28 | 3.93 | 4.35 | *** | 3.80 | 4.01 | *** |
| 332 | PreFac8 | Demonstrates intellectual curiosity | | 5 | SD - SA | 3.99 | 4.10 | 3.94 | 3.98 | 3.94 | * | 3.88 | 3.96 | 4.10 | *** | 3.49 | 3.94 | 4.36 | *** | 3.96 | 4.00 | |
| 333 | PreFac9 | Shows originality | | 5 | SD - SA | 3.70 | 3.72 | 3.74 | 3.73 | 3.63 | | 3.52 | 3.67 | 3.84 | *** | 3.20 | 3.65 | 4.06 | *** | 3.66 | 3.72 | |
| 334 | PreFac10 | Uses feedback to assess performance | | 5 | SD - SA | 3.93 | 4.02 | 3.89 | 3.92 | 3.90 | | 3.82 | 3.94 | 4.03 | ** | 3.44 | 3.93 | 4.25 | *** | 3.77 | 4.03 | *** |
| 335 | PreFac11 | Demonstrates accurate awareness of own abilities and limitations | | 5 | SD - SA | 3.69 | 3.77 | 3.66 | 3.77 | 3.61 | ** | 3.57 | 3.70 | 3.79 | ** | 3.20 | 3.66 | 4.03 | *** | 3.56 | 3.77 | *** |
| 336 | PreFac12 | Demonstrates appropriate confidence in own intellectual ability | | 5 | SD - SA | 3.68 | 3.75 | 3.71 | 3.73 | 3.57 | ** | 3.58 | 3.67 | 3.78 | ** | 3.22 | 3.65 | 3.99 | *** | 3.63 | 3.71 | |
| 337 | | **Research: Investigating in a manner appropriate to the discipline** | | | | | | | | | | | | | | | | | | | | |
| 338 | PreFac13 | Locates appropriate source material | | 5 | SD - SA | 3.91 | 4.00 | 3.97 | 3.90 | 3.80 | *** | 3.87 | 3.96 | 3.86 | * | 3.44 | 3.89 | 4.21 | *** | 3.77 | 3.99 | *** |
| 339 | PreFac14 | Logically interprets and evaluates main points of source material | | 5 | SD - SA | 3.82 | 3.88 | 3.88 | 3.86 | 3.72 | ** | 3.75 | 3.85 | 3.83 | | 3.30 | 3.80 | 4.17 | *** | 3.73 | 3.87 | *** |
| 340 | PreFac15 | Uses disciplinary knowledge and methods appropriately | | 5 | SD - SA | 3.81 | 3.89 | 3.93 | 3.78 | 3.70 | *** | 3.82 | 3.83 | 3.79 | | 3.29 | 3.80 | 4.15 | *** | 3.71 | 3.87 | *** |
| 341 | PreFac16 | Synthesizes information to produce insights that expand the student's understanding | | 5 | SD - SA | 3.73 | 3.78 | 3.79 | 3.78 | 3.62 | ** | 3.62 | 3.73 | 3.81 | ** | 3.17 | 3.68 | 4.12 | *** | 3.64 | 3.78 | *** |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 342 | | **Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence** | | | | | | | | | | | | | | | | | | | | |
| 343 | PreFac17 | Supports arguments with appropriate evidence | | 5 | SD - SA | 3.87 | 3.96 | 3.87 | 3.85 | 3.83 | | 3.79 | 3.90 | 3.90 | * | 3.41 | 3.82 | 4.22 | *** | 3.79 | 3.93 | *** |
| 344 | PreFac18 | Addresses opposing arguments or alternative explanations | | 5 | SD - SA | 3.51 | 3.57 | 3.63 | 3.53 | 3.37 | *** | 3.46 | 3.53 | 3.52 | | 2.96 | 3.48 | 3.87 | *** | 3.43 | 3.56 | ** |
| 345 | PreFac19 | Develops convincing arguments to support conclusions | | 5 | SD - SA | 3.71 | 3.74 | 3.74 | 3.77 | 3.63 | * | 3.60 | 3.72 | 3.78 | ** | 3.15 | 3.67 | 4.10 | *** | 3.60 | 3.77 | *** |
| 346 | PreFac20 | Makes connections to other contexts (across courses, disciplines, experiences, etc.) | | 5 | SD - SA | 3.73 | 3.76 | 3.86 | 3.74 | 3.62 | ** | 3.58 | 3.72 | 3.86 | *** | 3.20 | 3.71 | 4.08 | *** | 3.63 | 3.79 | *** |
| 347 | PreFac21 | Shows skill in quantitative reasoning | | 5 | SD - SA | 3.72 | 3.74 | 3.91 | 3.75 | 3.56 | *** | 3.81 | 3.68 | 3.66 | | 3.16 | 3.67 | 4.10 | *** | 3.76 | 3.69 | |
| 348 | | **Communication: Presenting ideas effectively in written, oral, or other forms** | | | | | | | | | | | | | | | | | | | | |
| 349 | PreFac22 | Writes without distracting errors in spelling grammar, punctuation, usage, etc. | | 5 | SD - SA | 3.82 | 3.92 | 3.86 | 3.82 | 3.73 | * | 3.77 | 3.86 | 3.81 | | 3.28 | 3.80 | 4.20 | *** | 3.64 | 3.94 | *** |
| 350 | PreFac23 | Writes in a well-organized manner | | 5 | SD - SA | 3.80 | 3.81 | 3.85 | 3.84 | 3.73 | | 3.70 | 3.83 | 3.81 | * | 3.21 | 3.76 | 4.22 | *** | 3.64 | 3.90 | *** |
| 351 | PreFac24 | Writes in a clear, articulate manner | | 5 | SD - SA | 3.77 | 3.79 | 3.84 | 3.80 | 3.69 | | 3.62 | 3.80 | 3.84 | ** | 3.16 | 3.74 | 4.18 | *** | 3.59 | 3.88 | *** |
| 352 | PreFac25 | Delivers an effective oral presentation | | 5 | SD - SA | 3.79 | 3.78 | 3.81 | 3.81 | 3.77 | | 3.67 | 3.75 | 3.96 | *** | 3.28 | 3.81 | 4.08 | *** | 3.66 | 3.87 | *** |
| 353 | PreFac26 | Delivers an effective poster presentation | | 5 | SD - SA | 3.84 | 3.72 | 3.82 | 3.97 | 3.81 | | 3.73 | 3.80 | 4.01 | * | 3.15 | 3.74 | 4.19 | *** | 3.75 | 3.89 | |
| 354 | | **MENTOR POST-CAPSTONE** | | | | | | | | | | | | | | | | | | | | |
| 355 | | **Project Behavior: Conceiving and managing a project** | | | | | | | | | | | | | | | | | | | | |
| 356 | PostFac1 | Identifies a manageable set of project goals | | 5 | SD - SA | 4.05 | 4.02 | 4.10 | 4.06 | 4.04 | | 4.11 | 4.02 | 4.03 | | 3.58 | 4.04 | 4.40 | *** | 3.93 | 4.13 | *** |
| 357 | PostFac2 | Properly plans tasks to achieve project goals | | 5 | SD - SA | 3.98 | 3.99 | 4.02 | 3.93 | 3.97 | | 4.08 | 3.91 | 3.97 | * | 3.34 | 3.98 | 4.42 | *** | 3.82 | 4.08 | *** |
| 358 | PostFac3 | Demonstrates effective time management in completing tasks | | 5 | SD - SA | 3.87 | 3.88 | 3.95 | 3.81 | 3.87 | | 3.97 | 3.82 | 3.84 | | 3.15 | 3.90 | 4.36 | *** | 3.62 | 4.03 | *** |
| 359 | PostFac4 | Persists when faced with conceptual and practical difficulties | | 5 | SD - SA | 4.23 | 4.27 | 4.15 | 4.21 | 4.25 | | 4.25 | 4.19 | 4.23 | | 3.76 | 4.23 | 4.56 | *** | 4.12 | 4.29 | *** |
| 360 | PostFac5 | Shows evidence of independent thinking | | 5 | SD - SA | 4.14 | 4.27 | 4.13 | 4.10 | 4.07 | ** | 4.18 | 4.07 | 4.19 | * | 3.61 | 4.12 | 4.53 | *** | 4.10 | 4.16 | |
| 361 | PostFac6 | Asks probing questions | | 5 | SD - SA | 3.89 | 3.98 | 3.92 | 3.90 | 3.79 | * | 3.95 | 3.82 | 3.92 | | 3.30 | 3.84 | 4.37 | *** | 3.87 | 3.90 | |
| 362 | PostFac7 | Actively pursues learning opportunities | | 5 | SD - SA | 4.03 | 4.11 | 4.06 | 4.01 | 3.96 | | 4.07 | 3.95 | 4.06 | | 3.38 | 4.04 | 4.48 | *** | 3.90 | 4.11 | *** |
| 363 | PostFac8 | Displays intellectual curiosity | | 5 | SD - SA | 4.14 | 4.29 | 4.11 | 4.10 | 4.08 | ** | 4.17 | 4.07 | 4.22 | * | 3.65 | 4.08 | 4.57 | *** | 4.09 | 4.18 | |
| 364 | PostFac9 | Shows originality | | 5 | SD - SA | 3.94 | 4.05 | 4.01 | 3.91 | 3.86 | * | 3.97 | 3.87 | 4.04 | * | 3.40 | 3.91 | 4.38 | *** | 3.90 | 3.98 | |
| 365 | PostFac10 | Uses feedback to assess performance | | 5 | SD - SA | 4.17 | 4.22 | 4.13 | 4.20 | 4.12 | | 4.23 | 4.12 | 4.17 | | 3.72 | 4.11 | 4.55 | *** | 4.06 | 4.23 | *** |
| 366 | PostFac11 | Demonstrates accurate awareness of own abilities and limitations | | 5 | SD - SA | 3.96 | 4.00 | 3.99 | 3.98 | 3.89 | | 4.04 | 3.87 | 3.99 | ** | 3.46 | 3.91 | 4.35 | *** | 3.88 | 4.00 | * |
| 367 | PostFac12 | Demonstrates appropriate confidence in own intellectual ability | | 5 | SD - SA | 3.93 | 3.94 | 4.00 | 4.00 | 3.84 | * | 4.00 | 3.85 | 3.98 | * | 3.43 | 3.88 | 4.34 | *** | 3.90 | 3.95 | |
| 368 | | **Research: Investigating in a manner appropriate to the discipline** | | | | | | | | | | | | | | | | | | | | |
| 369 | PostFac13 | Locates appropriate source material | | 5 | SD - SA | 4.09 | 4.18 | 4.14 | 4.02 | 4.06 | | 4.16 | 4.04 | 4.09 | | 3.64 | 4.06 | 4.45 | *** | 4.00 | 4.15 | ** |
| 370 | PostFac14 | Logically interprets and evaluates main points of source material | | 5 | SD - SA | 4.06 | 4.12 | 4.08 | 4.07 | 4.00 | | 4.10 | 4.02 | 4.08 | | 3.52 | 4.05 | 4.47 | *** | 3.98 | 4.11 | ** |
| 371 | PostFac15 | Uses disciplinary knowledge and methods appropriately | | 5 | SD - SA | 4.09 | 4.11 | 4.13 | 4.12 | 4.02 | | 4.18 | 4.05 | 4.05 | * | 3.58 | 4.05 | 4.50 | *** | 4.01 | 4.14 | ** |
| 372 | PostFac16 | Synthesizes information to produce insights that expand the student's understanding | | 5 | SD - SA | 4.05 | 4.12 | 4.07 | 4.06 | 3.96 | * | 4.08 | 4.00 | 4.08 | | 3.49 | 4.00 | 4.50 | *** | 3.98 | 4.08 | * |
| 373 | | **Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence** | | | | | | | | | | | | | | | | | | | | |
| 374 | PostFac17 | Supports arguments with appropriate evidence | | 5 | SD - SA | 4.07 | 4.09 | 4.09 | 4.10 | 4.02 | | 4.18 | 4.01 | 4.02 | ** | 3.53 | 4.05 | 4.48 | *** | 3.98 | 4.13 | ** |
| 375 | PostFac18 | Addresses opposing arguments or alternative explanations | | 5 | SD - SA | 3.76 | 3.82 | 3.87 | 3.77 | 3.65 | ** | 3.96 | 3.66 | 3.72 | *** | 3.17 | 3.70 | 4.25 | *** | 3.70 | 3.80 | |
| 376 | PostFac19 | Develops convincing arguments to support conclusions | | 5 | SD - SA | 3.96 | 4.02 | 4.00 | 3.95 | 3.90 | | 4.06 | 3.89 | 3.94 | ** | 3.37 | 3.91 | 4.43 | *** | 3.85 | 4.02 | *** |
| 377 | PostFac20 | Makes connections to other contexts (across courses, disciplines, experiences, etc.) | | 5 | SD - SA | 3.96 | 4.05 | 4.08 | 3.85 | 3.90 | ** | 4.07 | 3.85 | 4.00 | *** | 3.41 | 3.93 | 4.38 | *** | 3.88 | 4.01 | ** |
| 378 | PostFac21 | Shows skill in quantitative reasoning | | 5 | SD - SA | 3.95 | 3.95 | 3.90 | 3.95 | 3.99 | | 4.16 | 3.76 | 3.88 | *** | 3.34 | 3.95 | 4.36 | *** | 3.98 | 3.94 | |
| 379 | | **Communication: Presenting ideas effectively in written, oral, or other forms** | | | | | | | | | | | | | | | | | | | | |
| 380 | PostFac22 | Writes without distracting errors in spelling grammar, punctuation, usage, etc. | | 5 | SD - SA | 3.94 | 3.93 | 4.09 | 3.88 | 3.91 | | 3.95 | 3.87 | 4.00 | | 3.27 | 3.88 | 4.47 | *** | 3.82 | 4.01 | *** |
| 381 | PostFac23 | Writes in a well-organized manner | | 5 | SD - SA | 4.01 | 3.99 | 4.10 | 4.01 | 3.96 | | 4.00 | 3.98 | 4.04 | | 3.38 | 3.97 | 4.50 | *** | 3.89 | 4.08 | *** |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 382 | PostFac24 | Writes in a clear, articulate manner | | 5 | SD - SA | 3.97 | 3.91 | 4.07 | 3.97 | 3.94 | | 3.95 | 3.90 | 4.04 | | 3.29 | 3.93 | 4.49 | *** | 3.84 | 4.05 | *** |
| 383 | PostFac25 | Delivers an effective oral presentation | | 5 | SD - SA | 4.13 | 4.20 | 4.16 | 4.11 | 4.08 | | 4.18 | 4.08 | 4.15 | | 3.65 | 4.08 | 4.51 | *** | 4.05 | 4.19 | ** |
| 384 | PostFac26 | Delivers an effective poster presentation | | 5 | SD - SA | 4.24 | 4.33 | 3.96 | 4.19 | 4.45 | *** | 4.26 | 4.16 | 4.29 | | 3.79 | 4.20 | 4.48 | *** | 4.18 | 4.28 | |
| 385 | | **Please estimate how much you think the capstone experience contributed to the development of the student in each of the areas below** | | | | | | | | | | | | | | | | | | | | |
| 386 | PostFac27 | Independence: Showing autonomy and initiative in thought and actions | | 5 | Not al all - Very much | 4.01 | 4.14 | 4.00 | 3.95 | 3.97 | * | 4.08 | 3.93 | 4.07 | ** | 3.56 | 4.01 | 4.34 | *** | 3.91 | 4.07 | *** |
| 387 | PostFac28 | Intellectual Engagement: Demonstrating an interest in learning | | 5 | Not al all - Very much | 4.05 | 4.20 | 4.03 | 3.94 | 4.04 | *** | 4.09 | 3.96 | 4.13 | ** | 3.59 | 4.04 | 4.40 | *** | 3.95 | 4.12 | *** |
| 388 | PostFac29 | Self-understanding: Developing an awareness of self (skills, abilities, interests) | | 5 | Not al all - Very much | 3.98 | 4.10 | 4.04 | 3.91 | 3.90 | ** | 4.05 | 3.86 | 4.07 | *** | 3.49 | 3.95 | 4.35 | *** | 3.85 | 4.06 | *** |
| 389 | PostFac30 | Project Management: Conceiving and managing a project | | 5 | Not al all - Very much | 3.98 | 4.09 | 3.99 | 3.90 | 3.95 | * | 4.07 | 3.91 | 3.98 | * | 3.44 | 3.98 | 4.36 | *** | 3.81 | 4.09 | *** |
| 390 | PostFac31 | Research: Investigating in a manner appropriate to the discipline | | 5 | Not al all - Very much | 4.00 | 4.13 | 4.03 | 3.92 | 3.95 | ** | 4.16 | 3.92 | 3.97 | *** | 3.50 | 3.98 | 4.38 | *** | 3.89 | 4.07 | *** |
| 391 | PostFac32 | Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence | | 5 | Not al all - Very much | 3.92 | 4.01 | 3.94 | 3.86 | 3.87 | | 3.99 | 3.82 | 3.95 | ** | 3.37 | 3.89 | 4.33 | *** | 3.81 | 3.98 | *** |
| 392 | PostFac33 | Communication: Presenting ideas effectively (written, oral, and other forms) | | 5 | Not al all - Very much | 4.01 | 4.12 | 4.08 | 3.90 | 3.95 | *** | 4.09 | 3.91 | 4.05 | ** | 3.48 | 4.00 | 4.39 | *** | 3.87 | 4.09 | *** |
| 393 | **PostFac34** | **Estimate the average hours per week you spent meeting (individually or in a group setting) with this student as mentor [Please provide an answer as a decimal number in the range 0.0 to 50.0]:** | | | | 1.72 | 1.58 | 2.12 | 1.41 | 1.81 | ** | 1.97 | 1.41 | 1.90 | *** | 1.67 | 1.69 | 1.79 | | 1.86 | 1.63 | |
| 394 | **PostFac35** | **Estimate the average total hours per week you spent working on this student's capstone (meetings, email, reading drafts, etc.) [Please provide an answer as a decimal number in the range 0.0 to 50.0]:** | | | | 2.97 | 3.06 | 4.24 | 2.88 | 2.25 | *** | 3.37 | 2.51 | 3.41 | ** | 3.05 | 2.98 | 2.90 | | 2.80 | 3.08 | |
| 395 | **PostFac36** | **What was the origin of the idea for your capstone topic?** | | 5 | totally mentor - totally student | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | | 100.0% | 100.0% | 100.0% | | 100.0% | 100.0% | 100.0% | | 100.0% | 100.0% | |
| 396 | **PostFac37** | **To what extent did you participate in developing/refining the topic for this student's capstone?** | | 5 | Not al all - Very much | 3.43 | 3.50 | 3.31 | 3.39 | 3.48 | * | 3.35 | 3.47 | 3.47 | * | 3.45 | 3.44 | 3.41 | | 3.41 | 3.44 | |
| 397 | **PostFac38** | **To what extent did the student participate in developing / refining his /her capstone topic?** | | 5 | Not al all - Very much | 4.00 | 4.12 | 3.98 | 3.87 | 4.02 | *** | 3.93 | 3.93 | 4.15 | *** | 3.69 | 3.96 | 4.26 | *** | 3.93 | 4.04 | * |
| 398 | **PostFac39** | **When the project <I>started</I>, how enthusiastic was the student about the topic?** | | 5 | Not al all - Very much | 4.24 | 4.48 | 4.06 | 4.13 | 4.25 | *** | 4.22 | 4.16 | 4.36 | *** | 3.98 | 4.26 | 4.42 | *** | 4.18 | 4.28 | * |
| 399 | **PostFac40** | **When the project <I>ended</I>, how enthusiastic was the student about the topic?** | | 5 | Not al all - Very much | 4.27 | 4.48 | 4.20 | 4.10 | 4.26 | *** | 4.31 | 4.16 | 4.37 | *** | 4.02 | 4.25 | 4.46 | *** | 4.22 | 4.29 | |
| 400 | | **Keeping in mind that each mentoring experience is unique, and the students we mentor have differing abilities, interests, motivations, expectations, etc., how would you rate your level of agreement with the following statements about your capstone mentoring experience with this student?** | | | | | | | | | | | | | | | | | | | | |
| 401 | PostFac202 | I was interested in this student's project | new item | 5 | SD - SA | 4.37 | 4.42 | 4.30 | 4.23 | 4.46 | ** | 4.40 | 4.28 | 4.47 | ** | 4.23 | 4.32 | 4.51 | *** | 4.32 | 4.40 | |
| 402 | PostFac203 | I gave this student sufficient access | new item | 5 | SD - SA | 4.64 | 4.65 | 4.57 | 4.60 | 4.71 | ** | 4.53 | 4.62 | 4.78 | *** | 4.60 | 4.64 | 4.68 | | 4.60 | 4.67 | |
| 403 | PostFac204 | I gave this student useful advice | new item | 5 | SD - SA | 4.55 | 4.54 | 4.41 | 4.62 | 4.59 | *** | 4.47 | 4.54 | 4.62 | ** | 4.54 | 4.53 | 4.57 | | 4.50 | 4.57 | |
| 404 | PostFac205 | I felt comfortable working with this student | new item | 5 | SD - SA | 4.59 | 4.62 | 4.55 | 4.51 | 4.65 | | 4.64 | 4.51 | 4.68 | ** | 4.37 | 4.59 | 4.76 | *** | 4.53 | 4.63 | * |
| 405 | PostFac206 | I encouraged this student to work independently | new item | 5 | SD - SA | 4.55 | 4.61 | 4.54 | 4.46 | 4.57 | | 4.60 | 4.48 | 4.62 | ** | 4.39 | 4.58 | 4.63 | *** | 4.47 | 4.60 | ** |
| 406 | PostFac207 | I gave this student useful feedback | new item | 5 | SD - SA | 4.52 | 4.55 | 4.43 | 4.59 | nav | nav | 4.42 | 4.53 | 4.61 | * | 4.53 | 4.50 | 4.55 | | 4.50 | 4.54 | |
| 407 | PostFac208 | I met with this student regularly | new item | 5 | SD - SA | 4.32 | 4.74 | 4.27 | 3.98 | 4.27 | *** | 4.44 | 4.19 | 4.45 | *** | 4.10 | 4.39 | 4.42 | *** | 4.23 | 4.38 | * |
| 408 | PostFac209 | I communicated well with this student | new item | 5 | SD - SA | 4.48 | 4.54 | 4.46 | 4.47 | 4.46 | | 4.44 | 4.44 | 4.59 | * | 4.32 | 4.46 | 4.62 | *** | 4.41 | 4.52 | ** |
| 409 | PostFac210 | I had reasonable expectations for the student's capstone performance | new item | 5 | SD - SA | 4.49 | 4.55 | 4.41 | 4.50 | 4.50 | | 4.45 | 4.46 | 4.57 | * | 4.39 | 4.47 | 4.59 | *** | 4.47 | 4.51 | |
| 410 | PostFac211 | I gave useful feedback to this student | new item | 5 | SD - SA | 4.52 | 4.55 | 4.44 | 4.56 | 4.53 | | 4.49 | 4.50 | 4.59 | | 4.52 | 4.50 | 4.54 | | 4.46 | 4.56 | * |
| 411 | PostFac212 | I effectively guided the student through the capstone | new item | 5 | SD - SA | 4.28 | 4.36 | 4.21 | 4.31 | 4.24 | | 4.23 | 4.28 | 4.38 | | 4.17 | 4.26 | 4.37 | ** | 4.18 | 4.33 | ** |
| 412 | PostFac213 | I provided helpful subject matter expertise for this student's project | new item | 5 | SD - SA | 4.30 | 4.33 | 4.02 | 4.34 | 4.43 | *** | 4.21 | 4.28 | 4.39 | * | 4.24 | 4.30 | 4.34 | | 4.26 | 4.32 | |
| 413 | PostFac214 | I gave timely feedback to this student | new item | 5 | SD - SA | 4.47 | 4.58 | 4.39 | 4.39 | 4.50 | ** | 4.46 | 4.43 | 4.57 | * | 4.41 | 4.49 | 4.51 | | 4.41 | 4.51 | * |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 414 | PostFac215 | Overall, I felt comfortable supervising this capstone | new item | 5 | SD - SA | 4.52 | 4.60 | 4.51 | 4.43 | 4.53 | | 4.52 | 4.50 | 4.60 | | 4.33 | 4.53 | 4.65 | *** | 4.46 | 4.55 | |
| 415 | **PostFac216** | **Please describe any notable <I>positive</I> aspects of this capstone experience for you as the mentor.** | new item | | | | | | | | | | | | | | | | | | | |
| 416 | **PostFac41** | **Please describe any notable <I>negative</I> aspects of this capstone experience for you as the mentor.** | Negative aspects. | | | | | | | | | | | | | | | | | | | |
| 417 | **PostFac42** | **Please note any particularly significant benefits you think the student gained from this capstone.** | | | | | | | | | | | | | | | | | | | | |
| 418 | **PostFac43** | **Please describe areas where the student should have been better prepared for this capstone.** | | | | | | | | | | | | | | | | | | | | |
| 419 | **PostFac44** | **Please describe areas where the student was exceptionally well prepared.** | | | | | | | | | | | | | | | | | | | | |
| 420 | **PostFac45** | **Please share any other observations you have about this capstone you think may be of interest to the study.** | | | | | | | | | | | | | | | | | | | | |
| 421 | | **DEPARTMENT CAPSTONE POLICIES AND ADMINISTRATION** | PLEAS SEE NOTE [1] BELOW | | | | | | | | | | | | | | | | | | | |
| 422 | **DeptCap1** | **Your college:** | | | | | | | | | | | | | | | | | | | | |
| 423 | **DeptCap2** | **Your department:** | | | | | | | | | | | | | | | | | | | | |
| 424 | **DeptCap3** | **Name of the person completing this form (in case we need to contact you to clarify any responses):** | | | | | | | | | | | | | | | | | | | | |
| 425 | **DeptCap4** | **Is there a course specifically designed to prepare students for the capstone? If so, what is the name of that course?** | | | | 1.24 | 1.19 | 1.44 | 1.30 | 1.08 | *** | 1.15 | 1.35 | 1.12 | *** | 1.14 | 1.26 | 1.28 | *** | 1.17 | 1.28 | *** |
| 426 | DeptCap5 | Course name | | | | | | | | | | | | | | | | | | | | |
| 427 | | **Please describe to what extent the following items are covered in this preparatory course:** | | | | | | | | | | | | | | | | | | | | |
| 428 | DeptCap6 | Learning methods useful for the senior capstone | | 4 | not al all - to a great extent | 3.50 | 3.90 | 3.70 | 2.44 | 3.61 | *** | 3.38 | 3.55 | 3.56 | * | 3.58 | 3.53 | 3.42 | | 3.49 | 3.52 | |
| 429 | DeptCap7 | Determining the topic for the senior capstone | | 4 | not al all - to a great extent | 3.28 | 3.27 | 3.47 | 2.20 | 3.65 | *** | 3.39 | 3.35 | 3.03 | *** | 3.36 | 3.30 | 3.19 | | 3.33 | 3.24 | |
| 430 | DeptCap8 | Creating a senior capstone proposal | | 4 | not al all - to a great extent | 3.24 | 3.43 | 3.05 | 2.32 | 3.62 | *** | 3.31 | 3.40 | 2.93 | *** | 3.39 | 3.28 | 3.08 | ** | 3.25 | 3.24 | |
| 431 | DeptCap9 | Starting work on the senior capstone | | 4 | not al all - to a great extent | 2.68 | 2.61 | 3.28 | 2.25 | 2.60 | *** | 2.08 | 2.93 | 2.84 | *** | 2.77 | 2.66 | 2.62 | | 2.73 | 2.64 | |
| 432 | DeptCap10 | Refining discipline-specific communication skills | | 4 | not al all - to a great extent | 3.53 | 3.86 | 3.56 | 2.46 | 3.77 | *** | 3.69 | 3.43 | 3.51 | ** | 3.56 | 3.57 | 3.47 | | 3.50 | 3.55 | |
| 433 | DeptCap11 | Assigning students to senior capstone advisors | | 4 | not al all - to a great extent | 2.48 | 2.08 | 2.32 | 2.13 | 2.97 | *** | 3.22 | 2.29 | 2.08 | *** | 2.59 | 2.47 | 2.39 | | 2.51 | 2.46 | |
| 434 | DeptCap12 | Preparation for a comprehensive exam | | 4 | not al all - to a great extent | 1.14 | 1.15 | 1.41 | 1.07 | 1.00 | *** | 1.35 | 0.94 | 1.20 | *** | 1.14 | 1.15 | 1.12 | | 1.11 | 1.16 | |
| 435 | DeptCap13 | Other (please specify) | | 4 | not al all - to a great extent | | | | | | | | | | | | | | | | | |
| 436 | | **How many credit hours does a student receive for a completed capstone in your department?** | | | | | | | | | | | | | | | | | | | | |
| 437 | DeptCap14 | Credit hour choices - number of credit hours (if variable then leave blank and choose the range in next 2 columns) | | | | 5.06 | 5.08 | 5.75 | 4.00 | 4.73 | *** | 4.09 | 6.27 | 3.85 | *** | 4.64 | 5.20 | 5.20 | * | 4.92 | 5.14 | |
| 438 | DeptCap15 | Credit hour choices - minimum credit hours | | | | 5.08 | 5.03 | 6.80 | 2.58 | 5.31 | *** | 5.52 | 5.20 | 3.21 | *** | 4.96 | 5.31 | 4.93 | | 5.07 | 5.10 | |
| 439 | DeptCap16 | Credit hour choices - maximum credit hours | | | | 6.04 | 5.03 | 7.15 | 4.00 | 6.60 | *** | 6.42 | 6.08 | 4.55 | *** | 5.87 | 6.24 | 5.96 | | 5.93 | 6.11 | |
| 440 | | **For the credits indicated above, how many weeks will a student work on a completed capstone?** | | | | | | | | | | | | | | | | | | | | |
| 441 | DeptCap17 | Number of weeks choices - number of weeks (if variable then leave blank and choose the range in next 2 columns) | | | | 20.83 | 23.74 | 19.74 | 19.56 | 19.99 | *** | 22.59 | 20.04 | 20.67 | *** | 20.56 | 20.64 | 21.20 | | 20.43 | 21.07 | |
| 442 | DeptCap18 | Number of weeks choices - minimum number of weeks | | | | 19.97 | 23.08 | 21.14 | 19.21 | 18.08 | *** | 21.63 | 18.96 | 19.22 | *** | 20.14 | 20.32 | 19.40 | | 20.22 | 19.77 | |
| 443 | DeptCap19 | Number of weeks choices - maximum number of weeks | | | | 22.32 | 23.93 | 17.11 | 28.26 | 20.76 | *** | 23.41 | 19.18 | 26.26 | *** | 22.89 | 21.97 | 22.26 | | 22.37 | 22.29 | |
| 444 | | **What best describes how the capstone mentoring workload is distributed among department faculty?** | | | | | | | | | | | | | | | | | | | | |
| 445 | DeptCap20 | What best describes how the capstone mentoring workload is distributed among department faculty? | | | | 1.58 | 1.78 | 1.84 | 1.94 | 1.07 | *** | 1.12 | 2.03 | 1.25 | *** | 1.70 | 1.62 | 1.45 | *** | 1.74 | 1.48 | *** |
| 446 | DeptCap21 | Other (please specify) | | | | | | | | | | | | | | | | | | | | |
| 447 | DeptCap22 | How often does a student in your department who is a double major do a single combined capstone? | | 5 | Rarely/never - Always | 3.14 | 4.04 | 2.01 | 2.84 | 3.56 | *** | 3.19 | 3.38 | 2.52 | *** | 3.28 | 3.15 | 3.02 | * | 3.21 | 3.09 | |
| 448 | DeptCap23 | Please add any comments that might be needed to explain any of your responses for this section: | | | | | | | | | | | | | | | | | | | | |
| 449 | | **What grading system is used for the capstone? Check all that apply.** | | | | | | | | | | | | | | | | | | | | |
| 450 | DeptCap24 | Pass/Fail | Recode from 1 to 1 | | | 4.2% | 9.6% | 0.0% | 1.6% | 4.5% | *** | 2.9% | 5.2% | 4.3% | | 3.4% | 4.9% | 4.2% | | 4.3% | 4.2% | |
| 451 | DeptCap25 | Pass/Fail/Honors | Recode from 2 to 1 | | | 11.6% | 0.0% | 0.0% | 89.0% | 0.0% | *** | 6.4% | 14.4% | 12.8% | *** | 14.5% | 11.3% | 9.7% | | 11.5% | 11.7% | |
| 452 | DeptCap26 | Honors/Good/Satisfactory/No Credit | Recode from 3 to 1 | | | 25.1% | 92.6% | 0.0% | 0.0% | 3.0% | *** | 26.0% | 28.7% | 20.7% | * | 29.2% | 26.0% | 21.1% | * | 28.5% | 22.9% | * |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 453 | DeptCap27 | Traditional letter grades | Recode from 4 to 1 | | | 59.4% | 0.0% | 97.2% | 0.0% | 97.8% | *** | 61.7% | 54.3% | 62.8% | * | 50.0% | 59.8% | 66.2% | *** | 54.7% | 62.6% | ** |
| 454 | DeptCap28 | Traditional letter grades/honors | Recode from 5 to 1 | | | 4.4% | 0.0% | 2.8% | 22.5% | 2.2% | *** | 3.5% | 6.1% | 1.7% | ** | 5.8% | 3.7% | 4.2% | | 5.6% | 3.7% | |
| 455 | DeptCap29 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 456 | | **If honors can be awarded in the capstone, what are the requirements? Check all that apply.** | | | | | | | | | | | | | | | | | | | | |
| 457 | DeptCap30 | Exceptional project work, e.g. A-level or above | Recode from 1 to 1 | | | 52.5% | 92.6% | 6.7% | 92.9% | 43.7% | *** | 56.7% | 50.3% | 54.0% | | 56.8% | 54.1% | 47.6% | * | 51.8% | 53.0% | |
| 458 | DeptCap31 | Passing an exam at a high level | Recode from 2 to 1 | | | 6.8% | 11.8% | 0.0% | 28.6% | 0.0% | *** | 10.8% | 3.6% | 9.7% | *** | 7.6% | 5.9% | 7.1% | | 7.3% | 6.4% | |
| 459 | DeptCap32 | A public presentation or publication | Recode from 3 to 1 | | | 7.7% | 15.9% | 6.7% | 4.9% | 3.0% | *** | 19.3% | 0.9% | 9.9% | *** | 8.7% | 8.6% | 5.9% | | 9.9% | 6.2% | * |
| 460 | DeptCap33 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 461 | | **Who reviews the capstone for grading? Check all that apply.** | | | | | | | | | | | | | | | | | | | | |
| 462 | DeptCap34 | No selection made. | Recode from 1 to 1 | | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | |
| 463 | DeptCap35 | Mentor only | Recode from 2 to 1 | | | 26.5% | 0.0% | 56.2% | 83.5% | 0.0% | *** | 17.8% | 29.3% | 33.2% | *** | 25.8% | 27.1% | 26.5% | | 25.8% | 27.0% | |
| 464 | DeptCap36 | Mentor and second reader | Recode from 3 to 1 | | | 56.3% | 90.1% | 13.1% | 28.6% | 77.1% | *** | 69.0% | 54.3% | 46.3% | *** | 61.1% | 53.1% | 55.9% | | 60.0% | 53.8% | * |
| 465 | DeptCap37 | Committee of department faculty | Recode from 4 to 1 | | | 3.9% | 2.5% | 8.7% | 0.0% | 2.4% | *** | 2.0% | 3.8% | 6.0% | * | 3.4% | 4.5% | 3.6% | | 4.3% | 3.6% | |
| 466 | DeptCap38 | Committee of department and external faculty | Recode from 5 to 1 | | | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | |
| 467 | DeptCap39 | The entire department | Recode from 6 to 1 | | | 13.7% | 13.5% | 3.8% | 28.6% | 16.2% | *** | 16.7% | 12.0% | 11.6% | | 13.9% | 12.7% | 14.4% | | 15.4% | 12.5% | |
| 468 | DeptCap40 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 469 | | **If reviewers other than the mentor are used for grading, who has input in the selection? Check all that apply.** | | | | | | | | | | | | | | | | | | | | |
| 470 | DeptCap41 | The department | Recode from 1 to 1 | | | 35.5% | 62.6% | 27.2% | 29.7% | 23.4% | *** | 55.6% | 35.3% | 17.9% | *** | 34.5% | 37.3% | 34.4% | | 37.6% | 34.0% | |
| 471 | DeptCap42 | The mentor | Recode from 2 to 1 | | | 14.4% | 13.7% | 4.4% | 15.4% | 23.2% | *** | 30.7% | 3.2% | 18.2% | *** | 12.9% | 11.9% | 18.2% | * | 13.8% | 14.9% | |
| 472 | DeptCap43 | The student | Recode from 3 to 1 | | | 10.4% | 4.4% | 9.0% | 0.0% | 20.6% | *** | 26.9% | 2.7% | 7.7% | *** | 7.6% | 9.4% | 13.6% | ** | 9.3% | 11.2% | |
| 473 | DeptCap44 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 474 | **DeptCap45** | **Does your department use a rubric to determine capstone grades?** | Recode so yes=1, no=0 | | 0=no, 1=yes | 49.4% | 43.6% | 45.4% | 70.3% | 48.7% | *** | 62.0% | 44.1% | 47.7% | *** | 44.6% | 51.8% | 50.5% | | 45.8% | 51.8% | * |
| 475 | **DeptCap46** | **Please add any comments that might be needed to explain any of your responses for this section on capstone grading:** | | | | | | | | | | | | | | | | | | | | |
| 476 | **DeptCap47** | **Please indicate any notable DEPARTMENTAL facilities or other resources that are primarily used for the support of your department's capstones.** | | | | | | | | | | | | | | | | | | | | |
| 477 | **DeptCap48** | **Please indicate any notable INSTITUTIONAL facilities or resources that are primarily used for the support of your department's capstones.** | | | | | | | | | | | | | | | | | | | | |
| 478 | **DeptCap49** | **What funding is available to seniors completing a capstone in your department?** | | | | | | | | | | | | | | | | | | | | |
| 479 | **DeptCap50** | **Roughly what percentage of students in your department receive funding to support their capstone? [Please provide a single number as your answer.]** | | | | 23.70 | 41.78 | 9.35 | 12.25 | 27.33 | *** | 51.21 | 11.46 | 17.43 | *** | 25.91 | 24.09 | 21.60 | | 23.10 | 24.09 | |
| 480 | **DeptCap51** | **Please indicate any areas where you think support for your department's capstones is strong or inadequate.** | | | | | | | | | | | | | | | | | | | | |
| 481 | **DeptCap52** | **Please add any comments that might be needed to explain any of your responses above for this section about capstone support.** | | | | | | | | | | | | | | | | | | | | |
| 482 | **DeptCap53** | **Roughly what percentage of students who attempt your department's capstone either do not complete it or complete it, but do not receive a passing grade? [Please provide a single number as your answer.]** | | | | 6.16 | 2.50 | 1.52 | 1.93 | 13.70 | *** | 1.51 | 9.78 | 4.02 | *** | 10.32 | 4.23 | 5.09 | *** | 9.90 | 3.80 | *** |
| 483 | **DeptCap54** | **Roughly what percentage of majors in your department fail to graduate because they were unable to complete a capstone? [Please provide a single number as your answer.]** | | | | 1.26 | 1.13 | 0.33 | 1.74 | 1.85 | *** | 0.92 | 1.24 | 1.55 | *** | 1.44 | 1.26 | 1.14 | * | 1.32 | 1.23 | |
| 484 | **DeptCap55** | **Before beginning their capstone, roughly what percentage of your majors had one or more undergraduate research experiences beyond the context of a course classroom? [Please provide a single number as your answer.]** | | | | 24.68 | 48.95 | 13.99 | 20.19 | 18.02 | *** | 34.26 | 23.13 | 17.53 | *** | 28.15 | 24.29 | 22.45 | * | 27.70 | 22.71 | ** |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 485 | **DeptCap56** | **Before beginning their capstone, roughly what percentage of your majors had one or more performances, exhibits or presentations given beyond the context of a course classroom? [Please provide a single number as your answer.]** | | | | 14.26 | 21.46 | 18.29 | 11.71 | 6.20 | *** | 20.77 | 8.78 | 20.07 | *** | 12.75 | 14.46 | 15.17 | | 12.51 | 15.45 | |
| 486 | **DeptCap57** | **Roughly what percentage of your majors present their capstone work at a professional or undergraduate conference? [Please provide a single number as your answer.]** | | | | 18.42 | 20.60 | 19.99 | 3.32 | 22.21 | *** | 38.91 | 11.00 | 10.31 | *** | 17.11 | 19.19 | 18.61 | | 18.41 | 18.43 | |
| 487 | **DeptCap58** | **Roughly what percentage of your majors exhibit / perform /present their capstone projects in professional venues outside of the college? [Please provide a single number as your answer.]** | | | | 9.03 | 11.66 | 11.10 | 2.77 | 8.18 | *** | 21.11 | 3.64 | 6.77 | *** | 9.30 | 9.73 | 8.13 | | 9.39 | 8.79 | |
| 488 | **DeptCap59** | **Roughly what percentage of your majors publish their capstone work in professional journals? [Please provide a single number as your answer.]** | | | | 3.63 | 5.60 | 0.60 | 1.21 | 5.76 | *** | 10.05 | 1.20 | 1.33 | *** | 3.42 | 3.91 | 3.49 | | 4.21 | 3.25 | |
| 489 | **DeptCap60** | **Does your department have stated learning outcomes for the capstone?** | Recode so yes=1, no=0 | | 0=no, 1=yes | 79.3% | 86.1% | 93.4% | 95.1% | 57.2% | *** | 72.2% | 80.4% | 91.1% | *** | 80.0% | 79.4% | 78.6% | | 77.9% | 80.1% | |
| 490 | **DeptCap61** | **If yes, what are those outcomes?** | | | | | | | | | | | | | | | | | | | | |
| 491 | **DeptCap62** | **Does your department assess the effectiveness of its capstone? Yes** | Recode so yes=1, no=0 | | 0=no, 1=yes | 93.9% | 100.0% | 100.0% | 65.4% | 100.0% | *** | 99.5% | 88.9% | 100.0% | *** | 90.5% | 93.5% | 97.0% | ** | 92.5% | 94.8% | |
| 492 | **DeptCap63** | **Does your department assess the effectiveness of its capstone? No** | Recode so yes=1, no=0 | | 0=no, 1=yes | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | 0.0% | | 0.0% | 0.0% | |
| 493 | **DeptCap64** | **If yes, what methods are used to assess the effectiveness of your capstone course(s)?** | | | | | | | | | | | | | | | | | | | | |
| 494 | **DeptCap65** | **Please add any comments that might be needed to explain any of your responses for this section or make comments on any aspects of your department's administration of capstones:** | | | | | | | | | | | | | | | | | | | | |
| 495 | | **CAPSTONE COURSE DESCRIPTION** | PLEAS SEE NOTE [1] BELOW | | | | | | [2] | | | | | | | | | | | | | |
| 496 | **CapType1** | **Please identify your institution.** | | | | | | | | | | | | | | | | | | | | |
| 497 | **CapType2** | **Please identify your department.** | | | | | | | | | | | | | | | | | | | | |
| 498 | **CapType3** | **Please supply a word, phrase, course code and/or short description for this type of capstone that will identify it and, if applicable, differentiate it from others in your department:** | | | | | | | | | | | | | | | | | | | | |
| 499 | **CapType4** | **In case we need to contact you to clarify responses, who is completing this survey?** | | | | | | | | | | | | | | | | | | | | |
| 500 | | **Please indicate the degree of importance each of the following has as part of capstones of this type:** | | | | | | | | | | | | | | | | | | | | |
| 501 | CapType5 | Collaboration with other students - essential | | 4 | Not imp - Essential | 2.33 | 1.65 | 2.85 | nav | 2.17 | nav | 1.77 | 2.65 | 2.66 | *** | 2.33 | 2.32 | 2.33 | | 2.34 | 2.32 | |
| 502 | CapType6 | A literature search and review - essential | | 4 | Not imp - Essential | 3.82 | 3.85 | 3.72 | nav | 3.88 | nav | 3.79 | 3.88 | 3.72 | *** | 3.84 | 3.82 | 3.81 | | 3.82 | 3.82 | |
| 503 | CapType7 | Use of other library services (e.g. library instruction, reference librarian assistance, special collections) - essential | | 4 | Not imp - Essential | 2.50 | 2.24 | 3.00 | nav | 2.26 | nav | 2.16 | 2.46 | 2.91 | *** | 2.32 | 2.47 | 2.63 | ** | 2.46 | 2.52 | |
| 504 | CapType8 | Generation of data through direct measurement (e.g. through experiments, observation, questionnaires, interviews, etc.) - essential | | 4 | Not imp - Essential | 2.62 | 3.23 | 2.24 | nav | 2.48 | nav | 3.41 | 2.25 | 2.07 | *** | 2.72 | 2.62 | 2.57 | | 2.59 | 2.65 | |
| 505 | CapType9 | Laboratory experimentation - essential | | 4 | Not imp - Essential | 2.71 | 2.72 | 2.03 | nav | 3.01 | nav | 3.11 | 2.41 | 1.83 | *** | 2.68 | 2.77 | 2.67 | | 2.73 | 2.70 | |
| 506 | CapType10 | Statistical analysis of data - essential | | 4 | Not imp - Essential | 2.40 | 2.81 | 1.84 | nav | 2.53 | nav | 2.67 | 2.37 | 1.82 | *** | 2.67 | 2.33 | 2.28 | *** | 2.54 | 2.31 | ** |
| 507 | CapType11 | Questionnaire construction and analysis - essential | | 4 | Not imp - Essential | 1.59 | 1.67 | 1.86 | nav | 1.23 | nav | 1.45 | 1.63 | 1.63 | * | 1.43 | 1.63 | 1.63 | ** | 1.43 | 1.68 | *** |
| 508 | CapType12 | Field study (e.g. research or projects carried out on location) - essential | | 4 | Not imp - Essential | 1.81 | 1.91 | 1.77 | nav | 1.78 | nav | 2.06 | 1.78 | 1.63 | *** | 1.85 | 1.82 | 1.78 | | 1.84 | 1.79 | |
| 509 | CapType13 | Clinical or practicum experiences - essential | | 4 | Not imp - Essential | 2.10 | 1.18 | 2.82 | nav | 1.19 | nav | 1.89 | 2.57 | 1.62 | *** | 1.51 | 2.21 | 2.27 | *** | 1.88 | 2.21 | * |
| 510 | CapType14 | Civic engagement or service learning experiences - essential | | 4 | Not imp - Essential | 1.87 | 1.05 | 3.01 | nav | 1.30 | nav | 1.23 | 2.19 | 2.05 | *** | 1.64 | 1.91 | 1.97 | * | 1.78 | 1.93 | |
| 511 | CapType15 | Internship experiences - essential | | 4 | Not imp - Essential | 1.82 | 1.15 | 2.52 | nav | 1.42 | nav | 1.70 | 2.20 | 1.18 | *** | 1.44 | 1.94 | 1.94 | *** | 1.61 | 1.96 | *** |
| 512 | CapType16 | Production of a written thesis or substantial paper - essential | | 4 | Not imp - Essential | 3.95 | 3.96 | 3.85 | nav | 4.00 | nav | 4.00 | 4.00 | 3.81 | *** | 3.95 | 3.95 | 3.94 | | 3.96 | 3.94 | |
| 513 | CapType17 | A written examination - essential | | 4 | Not imp - Essential | 1.55 | 1.41 | 1.70 | nav | 1.40 | nav | 1.43 | 1.12 | 2.52 | *** | 1.62 | 1.48 | 1.57 | | 1.62 | 1.49 | |
| 514 | CapType18 | Creation of or contribution to an artistic performance or product (music, art, theater, literary work ...) - essential | | 4 | Not imp - Essential | 2.38 | 1.93 | 1.63 | nav | 3.27 | nav | 1.27 | 1.28 | 2.64 | *** | 2.15 | 2.55 | 2.36 | | 2.09 | 2.55 | * |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 515 | CapType19 | An oral presentation of project progress or results - essential | | 4 | Not imp - Essential | 3.50 | 3.53 | 3.48 | nav | 3.49 | nav | 3.59 | 3.36 | 3.62 | ** | 3.51 | 3.47 | 3.51 | | 3.59 | 3.43 | * |
| 516 | CapType20 | An oral examination of the project - essential | | 4 | Not imp - Essential | 3.62 | 3.62 | 3.00 | nav | 4.00 | nav | 3.72 | 3.67 | 3.32 | *** | 3.62 | 3.65 | 3.58 | | 3.61 | 3.62 | |
| 517 | CapType21 | A poster presentation of project results - essential | | 4 | Not imp - Essential | 2.10 | 2.41 | 2.78 | nav | 1.25 | nav | 3.09 | 1.92 | 1.44 | *** | 2.11 | 2.25 | 1.95 | * | 2.05 | 2.15 | |
| 518 | CapType22 | A reflective analysis concerning the project (e.g., its value, lessons learned, contribution to the discipline or to self-knowledge, etc.) - essential | | 4 | Not imp - Essential | 3.15 | 2.39 | 3.38 | nav | 3.25 | nav | 3.23 | 2.74 | 3.69 | *** | 3.14 | 3.16 | 3.14 | | 3.03 | 3.22 | * |
| 519 | **CapType23** | **If additional context is needed to understand the responses in this section, please provide it here.** | | | | | | | | | | | | | | | | | | | | |
| 520 | **CapType24** | **When is the faculty mentor typically chosen/assigned?** | | | | 96.9% | 104.4% | 95.3% | nav | 93.7% | nav | 91.5% | 98.4% | 103.7% | ** | 98.6% | 96.7% | 96.0% | | 98.9% | 95.6% | |
| 521 | CapType25 | Other (please specify) | | | | | | | | | | | | | | | | | | | | |
| 522 | **CapType26** | **How is a student typically paired with a mentor for the capstone?** | | | | 2.06 | 2.68 | 1.33 | nav | 2.24 | nav | 2.62 | 1.79 | 1.81 | *** | 2.12 | 2.08 | 1.99 | | 2.06 | 2.05 | |
| 523 | CapType27 | Other (please specify) | | | | | | | | | | | | | | | | | | | | |
| 524 | **CapType28** | **How often are students assigned to the mentor of their first choice?** | | 5 | Rarely never - Always | 3.86 | 3.44 | 3.57 | nav | 4.22 | nav | 3.86 | 3.96 | 3.52 | *** | 3.79 | 3.82 | 3.94 | | 3.82 | 3.88 | |
| 525 | | **When the mentor paired with a student is NOT the student's first choice, how often is the reason:** | | | | | | | | | | | | | | | | | | | | |
| 526 | CapType29 | To distribute the mentoring workload more evenly? | | 5 | Rarely never - Always | 3.47 | 3.54 | 4.23 | nav | 3.07 | nav | 4.05 | 3.20 | 3.37 | *** | 3.30 | 3.63 | 3.44 | * | 3.28 | 3.61 | ** |
| 527 | CapType30 | To better match faculty interests or expertise | | 5 | Rarely never - Always | 3.36 | 3.65 | 2.01 | nav | 3.63 | nav | 2.94 | 3.63 | 3.47 | *** | 3.38 | 3.32 | 3.39 | | 3.44 | 3.31 | |
| 528 | CapType31 | The first choice is on leave or otherwise temporarily unavailable | | 5 | Rarely never - Always | 2.49 | 2.21 | 1.65 | nav | 2.94 | nav | 2.59 | 2.39 | 2.20 | | 2.36 | 2.50 | 2.58 | | 2.38 | 2.56 | |
| 529 | CapType32 | The faculty member would prefer not work with the student | | 5 | Rarely never - Always | 1.55 | 1.92 | 1.33 | nav | 1.40 | nav | 1.39 | 1.87 | 1.20 | *** | 1.56 | 1.57 | 1.54 | | 1.51 | 1.58 | |
| 530 | CapType33 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 531 | **CapType34** | **If mentors supervise multiple students at one time, how is the mentoring typically structured (select the best option):** | | | | 2.34 | 2.14 | 2.73 | nav | 2.16 | nav | 3.07 | 2.30 | 1.56 | *** | 2.25 | 2.43 | 2.32 | | 2.16 | 2.46 | ** |
| 532 | **CapType35** | **If additional context is needed to understand the responses in this section, please provide it here.** | | | | | | | | | | | | | | | | | | | | |
| 533 | **CapType36** | **Typically, how is the capstone topic determined?** | | | | 2.22 | 2.23 | 2.11 | nav | 2.31 | nav | 2.32 | 2.35 | 1.81 | *** | 2.40 | 2.17 | 2.17 | * | 2.28 | 2.19 | |
| 534 | CapType37 | Other (please specify) | text | | | | | | | | | | | | | | | | | | | |
| 535 | **CapType38** | **How often are students' projects allied with faculty mentors' creative, scholarly, or research projects?** | | 5 | Rarely never - Always | 2.36 | 2.23 | 1.73 | nav | 3.04 | nav | 3.05 | 2.20 | 1.87 | *** | 2.50 | 2.32 | 2.30 | | 2.34 | 2.37 | |
| 536 | **CapType39** | **How often are student's projects allied with faculty mentors' interests or expertise?** | | 5 | Rarely never - Always | 3.29 | 3.50 | 2.65 | nav | 3.78 | nav | 3.74 | 3.24 | 2.86 | *** | 3.34 | 3.29 | 3.26 | | 3.26 | 3.31 | |
| 537 | **CapType40** | **If additional context is needed to understand the responses in this section, please provide it here.** | | | | | | | | | | | | | | | | | | | | |
| 538 | [2] White's Captype data could not be linked to the student data due to an anomoly with SurveyMonkey. | | | | | | | | | | | | | | | | | | | | | |
| 539 | [1] The means indicated are for the cases in the capstone database with a value, N =1037. Note that this is different than the means based on one survey response per department. In effect, the means shown weight the departmental repsonses by the number of students in the database experiencing their capstone. | | | | | | | | | | | | | | | | | | | | | |
| 540 | | **DERIVED DIFFERENCE SCORES, SCALES, AND MISC.** | | | | | | | | | | | | | | | | | | | | |
| 541 | PreStu79Bach | bachelors | | | | 10.9% | 9.4% | 9.9% | 16.6% | 9.4% | ** | 9.0% | 10.4% | 14.3% | * | 17.5% | 10.5% | 7.9% | *** | 14.2% | 9.3% | ** |
| 542 | PreStu79Masters | masters | | | | 48.8% | 48.3% | 58.0% | 46.1% | 44.4% | *** | 37.8% | 54.4% | 51.0% | *** | 50.6% | 50.5% | 46.3% | | 38.0% | 54.1% | *** |
| 543 | PreStu79Law | law (JD) | | | | 6.7% | 6.9% | 3.3% | 10.4% | 6.7% | ** | 1.4% | 9.4% | 7.1% | *** | 5.8% | 7.0% | 7.0% | | 9.7% | 5.3% | *** |
| 544 | PreStu79Doc | doctorate | | | | 33.6% | 35.4% | 28.8% | 27.0% | 39.6% | *** | 51.8% | 25.7% | 27.6% | *** | 26.1% | 32.0% | 38.8% | *** | 38.1% | 31.3% | ** |
| 545 | PreAdvDeg | Planning advanced degree | | | | 89.1% | 90.6% | 90.1% | 83.4% | 90.6% | ** | 91.0% | 89.6% | 85.7% | * | 82.5% | 89.5% | 92.1% | *** | 85.8% | 90.7% | ** |
| 546 | PreGradProfSchl | Plans to attend grad/prof school | | | | 59.2% | 53.9% | 55.8% | 59.3% | 66.8% | *** | 53.9% | 55.8% | 59.3% | *** | 53.9% | 55.8% | 59.3% | *** | 55.8% | 53.9% | *** |
| 547 | PostStu111Bach | bachelors | | | | 12.8% | 13.0% | 11.6% | 18.0% | 11.3% | | 10.3% | 11.6% | 17.1% | ** | 18.4% | 14.7% | 8.3% | *** | 14.0% | 12.2% | |
| 548 | PostStu111Masters | masters | | | | 48.4% | 46.9% | 59.4% | 46.4% | 42.7% | *** | 39.1% | 54.0% | 51.5% | *** | 51.4% | 48.6% | 46.6% | | 40.3% | 52.4% | *** |
| 549 | PostStu111Law | law (JD) | | | | 5.8% | 7.2% | 2.1% | 7.7% | 6.3% | ** | 1.0% | 8.7% | 5.4% | *** | 6.2% | 5.1% | 6.2% | | 0.08 | 0.05 | ** |
| 550 | PostStu111Doc | doctorate | | | | 33.0% | 32.9% | 27.0% | 27.9% | 39.7% | *** | 49.6% | 25.7% | 26.0% | *** | 24.0% | 31.5% | 38.9% | *** | 37.8% | 30.7% | ** |
| 551 | PostGradProfSchl | Plans to attend grad/prof school | | | | 55.3% | 38.3% | 61.8% | 65.9% | 66.7% | *** | 38.3% | 61.8% | 65.9% | *** | 38.3% | 61.8% | 65.9% | *** | 61.8% | 38.3% | *** |
| 552 | PostAdvDeg | Planning advanced degree | | | | 87.2% | 87.0% | 88.4% | 82.0% | 88.7% | | 89.7% | 88.4% | 82.9% | ** | 81.6% | 85.3% | 91.7% | *** | 86.0% | 87.8% | |
| 553 | DStu1 | CHG: Becoming accomplished in my field of expertise | | | | -0.10 | -0.14 | -0.14 | -0.06 | -0.06 | | -0.11 | -0.11 | -0.11 | | -0.17 | -0.09 | -0.09 | | -0.09 | -0.11 | |
| 554 | Dstu2 | CHG: Influencing social values | | | | 0.03 | 0.07 | 0.02 | 0.05 | 0.01 | | 0.03 | 0.01 | 0.04 | | 0.03 | -0.03 | 0.08 | | 0.03 | 0.04 | |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 555 | DStu3 | CHG: Raising a family | | | | -0.05 | -0.06 | -0.08 | -0.05 | -0.01 | | -0.01 | -0.05 | -0.06 | | -0.03 | -0.06 | -0.05 | | -0.04 | -0.05 | |
| 556 | DStu4 | CHG: Helping others who are in difficulty | | | | -0.01 | 0.01 | -0.05 | 0.00 | -0.02 | | 0.00 | -0.04 | 0.02 | | -0.16 | 0.00 | 0.03 | ** | -0.01 | -0.01 | |
| 557 | DStu5 | CHG: Creating original works | | | | -0.04 | -0.08 | 0.02 | -0.04 | -0.04 | | -0.07 | -0.01 | -0.05 | | -0.03 | -0.02 | -0.05 | | -0.08 | -0.02 | |
| 558 | DStu6 | CHG: Developing a meaningful philosophy of life | | | | 0.02 | -0.02 | 0.02 | 0.04 | 0.05 | | 0.04 | -0.01 | 0.02 | | -0.03 | -0.01 | 0.06 | | -0.01 | 0.03 | |
| 559 | DStu7 | CHG: Becoming a community leader | | | | 0.04 | 0.02 | 0.02 | 0.16 | 0.01 | | 0.00 | 0.07 | 0.03 | | -0.05 | 0.00 | 0.10 | * | 0.02 | 0.04 | |
| 560 | DStu8 | CHG: Integrating spirituality into my life | | | | 0.00 | -0.03 | 0.02 | 0.12 | -0.04 | | 0.04 | -0.02 | 0.02 | | -0.06 | 0.01 | 0.01 | | -0.04 | 0.01 | |
| 561 | DStu9 | CHG: Volunteering in my community | | | | -0.01 | -0.03 | 0.02 | 0.07 | -0.06 | | -0.02 | 0.00 | 0.00 | | -0.05 | -0.04 | 0.03 | | 0.02 | -0.02 | |
| 562 | DStu10 | CHG: Making a lot of money | | | | 0.01 | -0.03 | 0.01 | 0.04 | 0.04 | | 0.01 | -0.01 | 0.04 | | -0.05 | 0.02 | 0.03 | | 0.00 | 0.01 | |
| 563 | DStu11 | CHG: Working in a prestigious occupation | | | | 0.01 | 0.00 | 0.02 | 0.02 | 0.01 | | 0.01 | -0.01 | 0.06 | | 0.00 | -0.03 | 0.04 | | 0.00 | 0.01 | |
| 564 | DStu12 | CHG: Becoming passionate about or committed to my occupation | | | | -0.03 | -0.03 | -0.03 | -0.08 | -0.01 | | -0.06 | -0.02 | -0.05 | | -0.05 | -0.04 | -0.02 | | -0.02 | -0.04 | |
| 565 | DStu13 | CHG: Obtaining recognition from my colleagues for contributions to my special field | | | | 0.00 | -0.06 | -0.05 | 0.09 | 0.05 | | 0.02 | -0.02 | -0.01 | | -0.11 | -0.02 | 0.05 | | -0.08 | 0.03 | * |
| 566 | DStu14 | CHG: I enjoy expressing my ideas in writing | | | | 0.06 | 0.05 | 0.04 | 0.08 | 0.07 | | 0.08 | 0.09 | 0.01 | | 0.09 | 0.07 | 0.04 | | 0.08 | 0.05 | |
| 567 | DStu15 | CHG: I have confidence in my opinions, even if they are contrary to the general consensus | | | | 0.05 | 0.06 | 0.05 | 0.05 | 0.04 | | 0.10 | 0.05 | 0.00 | | 0.08 | 0.04 | 0.05 | | 0.04 | 0.06 | |
| 568 | DStu16 | CHG: I really enjoy a task that involves coming up with new solutions to problems | | | | 0.07 | 0.09 | 0.09 | 0.01 | 0.06 | | 0.09 | 0.07 | 0.05 | | 0.03 | 0.09 | 0.06 | | 0.03 | 0.09 | |
| 569 | DStu17 | CHG: The notion of thinking abstractly is appealing to me | | | | 0.08 | 0.08 | 0.00 | 0.16 | 0.10 | | 0.10 | 0.06 | 0.07 | | 0.13 | 0.03 | 0.11 | | 0.11 | 0.07 | |
| 570 | DStu18 | CHG: I enjoy doing research | | | | 0.16 | 0.13 | 0.17 | 0.22 | 0.15 | | 0.16 | 0.22 | 0.09 | | 0.11 | 0.17 | 0.17 | | 0.16 | 0.16 | |
| 571 | DStu19 | CHG: Academic ability | | | | 0.09 | 0.10 | 0.07 | 0.08 | 0.09 | | 0.10 | 0.08 | 0.10 | | 0.08 | 0.08 | 0.09 | | 0.04 | 0.10 | |
| 572 | DStu20 | CHG: Creativity | | | | 0.06 | 0.04 | 0.05 | 0.12 | 0.06 | | 0.04 | 0.07 | 0.08 | | 0.10 | 0.02 | 0.08 | | 0.05 | 0.07 | |
| 573 | DStu21 | CHG: Drive to achieve | | | | 0.05 | 0.08 | 0.03 | 0.03 | 0.06 | | 0.09 | 0.04 | 0.04 | | 0.00 | 0.03 | 0.09 | | 0.01 | 0.07 | |
| 574 | DStu22 | CHG: Leadership ability | | | | 0.03 | 0.03 | 0.06 | -0.01 | 0.03 | | 0.02 | 0.04 | 0.02 | | 0.03 | 0.04 | 0.02 | | 0.01 | 0.04 | |
| 575 | DStu23 | CHG: Mathematical ability | | | | 0.02 | -0.01 | -0.02 | 0.09 | 0.03 | | 0.03 | 0.01 | 0.02 | | 0.06 | 0.01 | 0.00 | | 0.05 | 0.00 | |
| 576 | DStu24 | CHG: Persistence | | | | 0.04 | 0.04 | -0.02 | 0.03 | 0.08 | | 0.07 | 0.00 | 0.05 | | -0.03 | 0.04 | 0.07 | | 0.02 | 0.04 | |
| 577 | DStu25 | CHG: Public speaking ability | | | | 0.14 | 0.17 | 0.11 | 0.08 | 0.16 | | 0.15 | 0.13 | 0.13 | | 0.08 | 0.12 | 0.18 | | 0.13 | 0.15 | |
| 578 | DStu26 | CHG: Self-confidence (intellectual) | | | | 0.09 | 0.08 | 0.14 | 0.05 | 0.08 | | 0.06 | 0.09 | 0.10 | | 0.03 | 0.08 | 0.12 | | 0.08 | 0.09 | |
| 579 | DStu27 | CHG: Self-confidence (social) | | | | 0.05 | 0.08 | 0.08 | -0.04 | 0.05 | | 0.07 | -0.01 | 0.11 | | -0.05 | 0.04 | 0.10 | * | 0.07 | 0.05 | |
| 580 | DStu28 | CHG: Understanding of others | | | | 0.02 | 0.00 | 0.05 | -0.06 | 0.05 | | 0.04 | 0.03 | -0.03 | | 0.00 | 0.00 | 0.03 | | 0.07 | -0.01 | |
| 581 | DStu29 | CHG: Self-understanding | | | | 0.05 | 0.09 | 0.05 | -0.07 | 0.07 | | 0.06 | 0.03 | 0.07 | | 0.01 | 0.04 | 0.07 | | 0.04 | 0.05 | |
| 582 | DStu30 | CHG: Ability to think critically | | | | 0.10 | 0.13 | 0.11 | 0.03 | 0.10 | | 0.12 | 0.12 | 0.05 | | 0.15 | 0.06 | 0.12 | | 0.09 | 0.11 | |
| 583 | DStu31 | CHG: Research skills | | | | 0.20 | 0.26 | 0.11 | 0.23 | 0.19 | * | 0.24 | 0.22 | 0.15 | | 0.20 | 0.18 | 0.22 | | 0.23 | 0.19 | |
| 584 | DStu32 | CHG: Ability to think and act on my own | | | | 0.04 | 0.03 | 0.00 | 0.07 | 0.05 | | 0.07 | 0.03 | 0.02 | | -0.01 | 0.02 | 0.07 | | -0.01 | 0.06 | |
| 585 | DStu33 | CHG: Writing ability | | | | 0.13 | 0.15 | 0.10 | 0.06 | 0.18 | | 0.18 | 0.13 | 0.08 | | 0.09 | 0.12 | 0.16 | | 0.14 | 0.13 | |
| 586 | DStu34 | CHG: I identified manageable sets of goals for my projects | | | | 0.08 | 0.17 | 0.02 | 0.08 | 0.03 | | 0.13 | 0.10 | 0.04 | | 0.05 | 0.09 | 0.09 | | -0.01 | 0.12 | * |
| 587 | DStu35 | CHG: I properly planned tasks to achieve project goals | | | | 0.10 | 0.19 | 0.09 | 0.05 | 0.03 | | 0.15 | 0.10 | 0.10 | | 0.19 | 0.11 | 0.06 | | 0.05 | 0.12 | |
| 588 | DStu36 | CHG: I showed evidence of independent thinking | | | | 0.20 | 0.23 | 0.12 | 0.18 | 0.23 | | 0.20 | 0.20 | 0.20 | | 0.20 | 0.19 | 0.21 | | 0.09 | 0.24 | *** |
| 589 | DStu37 | CHG: I persisted when faced with conceptual and practical difficulties | | | | 0.23 | 0.29 | 0.08 | 0.24 | 0.26 | ** | 0.27 | 0.22 | 0.21 | | 0.21 | 0.30 | 0.18 | | 0.15 | 0.26 | * |
| 590 | DStu38 | CHG: I showed originality | | | | 0.16 | 0.23 | 0.06 | 0.11 | 0.20 | * | 0.16 | 0.16 | 0.17 | | 0.12 | 0.15 | 0.19 | | 0.08 | 0.20 | * |
| 591 | DStu39 | CHG: I used feedback to assess my performance | | | | 0.17 | 0.15 | 0.14 | 0.18 | 0.21 | | 0.17 | 0.16 | 0.17 | | 0.21 | 0.16 | 0.16 | | 0.14 | 0.18 | |
| 592 | DStu40 | CHG: I located appropriate source material | | | | 0.21 | 0.22 | 0.14 | 0.21 | 0.26 | | 0.25 | 0.22 | 0.16 | | 0.32 | 0.20 | 0.17 | * | 0.22 | 0.20 | |
| 593 | DStu41 | CHG: I used disciplinary knowledge and methods appropriately | | | | 0.19 | 0.18 | 0.14 | 0.22 | 0.20 | | 0.30 | 0.19 | 0.12 | ** | 0.27 | 0.13 | 0.19 | | 0.14 | 0.20 | |
| 594 | DStu42 | CHG: I synthesized information to produce insights that expanded my understanding | | | | 0.30 | 0.30 | 0.25 | 0.25 | 0.35 | | 0.36 | 0.31 | 0.24 | | 0.37 | 0.27 | 0.28 | | 0.23 | 0.32 | |
| 595 | DStu43 | CHG: I supported my arguments with appropriate evidence | | | | 0.18 | 0.19 | 0.10 | 0.15 | 0.23 | | 0.23 | 0.21 | 0.08 | * | 0.25 | 0.17 | 0.15 | | 0.08 | 0.22 | ** |
| 596 | DStu44 | CHG: I demonstrated good communication skills | | | | 0.13 | 0.18 | 0.09 | 0.00 | 0.14 | | 0.20 | 0.14 | 0.02 | ** | 0.09 | 0.15 | 0.12 | | 0.04 | 0.16 | * |
| 597 | DStu45 | CHG: I demonstrated effective time management in completing tasks | | | | 0.20 | 0.25 | 0.20 | 0.06 | 0.23 | | 0.27 | 0.19 | 0.19 | | 0.22 | 0.24 | 0.17 | | 0.22 | 0.20 | |
| 598 | DStu46 | CHG: I showed skill with quantitative reasoning | | | | 0.12 | 0.05 | 0.05 | 0.20 | 0.21 | | 0.30 | 0.13 | -0.13 | *** | 0.11 | 0.15 | 0.11 | | 0.02 | 0.17 | * |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 599 | DStu47 | CHG: Library facilities and services | | | | -0.09 | -0.10 | -0.07 | -0.14 | -0.06 | | -0.03 | -0.12 | -0.11 | | -0.19 | -0.10 | -0.04 | | -0.04 | -0.11 | |
| 600 | DStu48 | CHG: Computer facilities and services | | | | -0.05 | -0.10 | -0.02 | 0.00 | -0.04 | | -0.07 | -0.01 | -0.09 | | -0.07 | -0.06 | -0.03 | | 0.02 | -0.07 | |
| 601 | DStu49 | CHG: Facilities/equipment in my major field | | | | -0.07 | -0.12 | -0.02 | 0.00 | -0.06 | | -0.05 | -0.11 | -0.06 | | -0.14 | -0.13 | 0.01 | * | -0.03 | -0.08 | |
| 602 | DStu50 | CHG: Overall quality of instruction | | | | 0.00 | 0.01 | -0.03 | 0.00 | 0.00 | | 0.05 | 0.00 | -0.06 | | 0.04 | -0.03 | 0.00 | | 0.00 | 0.00 | |
| 603 | DStu51 | CHG: Quality of instruction in my major field | | | | -0.03 | 0.01 | -0.09 | -0.08 | -0.01 | | -0.04 | -0.02 | -0.07 | | -0.02 | -0.08 | 0.00 | | -0.04 | -0.03 | |
| 604 | DStu52 | CHG: Overall college experience | | | | 0.00 | 0.02 | -0.08 | 0.08 | -0.02 | | -0.02 | 0.01 | -0.05 | | -0.04 | -0.01 | 0.02 | | -0.04 | 0.01 | |
| 605 | DStu53 | CHG: Memorizing facts, ideas, or methods so you can repeat them in pretty much the same form | | | | -0.52 | -0.42 | -0.75 | -0.49 | -0.47 | *** | -0.42 | -0.53 | -0.60 | | -0.41 | -0.56 | -0.53 | | -0.45 | -0.55 | |
| 606 | DStu54 | CHG: Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | | | | -0.07 | -0.03 | -0.16 | -0.10 | -0.03 | | -0.09 | -0.04 | -0.13 | | 0.01 | -0.11 | -0.07 | | 0.03 | -0.11 | * |
| 607 | DStu55 | CHG: Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | | | | 0.08 | 0.14 | 0.01 | 0.07 | 0.08 | | 0.05 | 0.06 | 0.11 | | 0.07 | 0.08 | 0.09 | | 0.13 | 0.06 | |
| 608 | DStu56 | CHG: Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | | | | 0.02 | 0.03 | -0.08 | 0.09 | 0.04 | | 0.21 | 0.04 | -0.18 | *** | 0.05 | -0.04 | 0.05 | | 0.13 | -0.03 | * |
| 609 | DStu57 | CHG: Applying theories or concepts to practical problems or in new situations | | | | -0.20 | -0.07 | -0.38 | -0.29 | -0.15 | *** | -0.24 | -0.16 | -0.25 | | -0.19 | -0.25 | -0.16 | | -0.06 | -0.25 | ** |
| 610 | DStu58 | CHG: Integrated ideas or information from various sources | | | | 0.12 | 0.10 | 0.03 | 0.20 | 0.18 | * | 0.17 | 0.13 | 0.07 | | 0.25 | 0.09 | 0.10 | * | 0.18 | 0.10 | |
| 611 | DStu59 | CHG: Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | | | | -0.44 | -0.50 | -0.29 | -0.30 | -0.55 | ** | -0.76 | -0.39 | -0.24 | *** | -0.39 | -0.49 | -0.41 | | -0.38 | -0.46 | |
| 612 | DStu60 | CHG: Put together ideas or concepts from different courses | | | | -0.26 | -0.23 | -0.27 | -0.16 | -0.33 | | -0.24 | -0.27 | -0.28 | | -0.17 | -0.35 | -0.22 | | -0.16 | -0.30 | * |
| 613 | DStu61 | CHG: Discussed ideas from your capstone with faculty members other than your capstone advisor | | | | -0.06 | -0.04 | -0.08 | -0.08 | -0.05 | | -0.14 | 0.02 | -0.09 | | -0.02 | 0.00 | -0.12 | | -0.16 | -0.02 | * |
| 614 | DStu62 | CHG: Discussed ideas from your capstone with others (students, family members, co-workers, etc.) | | | | 0.05 | 0.06 | 0.00 | 0.03 | 0.09 | | -0.03 | 0.16 | 0.01 | ** | 0.19 | 0.02 | 0.03 | | -0.03 | 0.09 | |
| 615 | DStu63 | CHG: Examined the strengths and weaknesses of your own views on a topic or issue | | | | 0.08 | 0.07 | 0.11 | 0.09 | 0.05 | | -0.06 | 0.10 | 0.17 | ** | 0.18 | -0.02 | 0.11 | * | -0.09 | 0.14 | *** |
| 616 | DStu64 | CHG: Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | | | | -0.27 | -0.25 | -0.12 | -0.21 | -0.44 | ** | -0.63 | -0.17 | -0.07 | *** | -0.19 | -0.36 | -0.22 | | -0.29 | -0.26 | |
| 617 | DStu65 | CHG: Learned something that changed the way you understand an issue or concept | | | | -0.07 | -0.01 | -0.03 | -0.15 | -0.12 | | -0.15 | -0.02 | -0.06 | | -0.07 | -0.09 | -0.05 | | -0.09 | -0.06 | |
| 618 | DStu111 | Chg: Highest degree level (1=BA,2=MA,3=JD, 4=Phd) | | | | -0.04 | -0.09 | -0.01 | -0.10 | 0.04 | | -0.03 | -0.03 | -0.07 | | -0.06 | -0.06 | -0.01 | | 0.01 | -0.06 | |
| 619 | DBach | Chg: % highest degree bachelors | | | | 0.02 | 0.04 | 0.02 | 0.03 | -0.01 | | 0.01 | 0.03 | 0.01 | | 0.02 | 0.04 | 0.01 | | -0.01 | 0.03 | |
| 620 | DMasters | Chg: % highest degree masters | | | | -0.01 | -0.02 | -0.03 | 0.01 | 0.00 | | 0.00 | -0.02 | 0.02 | | 0.00 | -0.03 | -0.01 | | 0.00 | -0.02 | |
| 621 | DLaw | Chg: % highest degree law | | | | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | | 0.00 | -0.01 | 0.01 | | 0.00 | 0.00 | 0.00 | | 0.00 | 0.00 | |
| 622 | DDoc | Chg: % highest degree doc | | | | -0.01 | -0.02 | 0.00 | -0.04 | 0.01 | | -0.01 | 0.00 | -0.04 | | -0.02 | -0.01 | -0.01 | | 0.00 | -0.01 | |
| 623 | DAdvDeg | Chg: % planning advanced degree | | | | -0.02 | -0.04 | -0.02 | -0.03 | 0.01 | | -0.01 | -0.03 | -0.01 | | -0.02 | -0.04 | -0.01 | | 0.01 | -0.03 | |
| 624 | DGradProfSchl | Chg: % planning attend grad/prof school within 1 year | | | | -0.08 | -0.16 | 0.02 | -0.04 | -0.04 | *** | -0.11 | -0.06 | -0.07 | | -0.11 | -0.09 | -0.06 | | -0.13 | -0.06 | * |
| 625 | DFac1 | CHG: Identifies a manageable set of project goals | | | | 0.23 | 0.18 | 0.38 | 0.14 | 0.27 | * | 0.32 | 0.22 | 0.20 | | 0.20 | 0.24 | 0.24 | | 0.24 | 0.22 | |
| 626 | DFac2 | CHG: Properly plans tasks to achieve project goals | | | | 0.17 | 0.11 | 0.29 | 0.10 | 0.20 | | 0.25 | 0.17 | 0.13 | | 0.11 | 0.17 | 0.20 | | 0.22 | 0.13 | |
| 627 | DFac3 | CHG: Demonstrates effective time management in completing tasks | | | | 0.11 | 0.10 | 0.20 | 0.05 | 0.11 | | 0.20 | 0.14 | 0.02 | | 0.02 | 0.17 | 0.10 | | 0.12 | 0.10 | |
| 628 | DFac4 | CHG: Persists when faced with conceptual and practical difficulties | | | | 0.30 | 0.34 | 0.31 | 0.26 | 0.28 | | 0.31 | 0.32 | 0.27 | | 0.37 | 0.34 | 0.20 | | 0.32 | 0.28 | |
| 629 | DFac5 | CHG: Shows evidence of independent thinking | | | | 0.27 | 0.34 | 0.45 | 0.18 | 0.20 | ** | 0.42 | 0.23 | 0.23 | ** | 0.26 | 0.31 | 0.22 | | 0.23 | 0.29 | |
| 630 | DFac6 | CHG: Asks probing questions | | | | 0.21 | 0.27 | 0.48 | 0.10 | 0.11 | *** | 0.39 | 0.13 | 0.22 | ** | 0.25 | 0.20 | 0.20 | | 0.22 | 0.21 | |
| 631 | DFac7 | CHG: Actively pursues learning opportunities | | | | 0.12 | 0.10 | 0.31 | 0.10 | 0.05 | * | 0.16 | 0.10 | 0.15 | | 0.14 | 0.14 | 0.08 | | 0.11 | 0.12 | |
| 632 | DFac8 | CHG: Demonstrates intellectual curiosity | | | | 0.20 | 0.24 | 0.45 | 0.10 | 0.10 | *** | 0.29 | 0.18 | 0.20 | | 0.26 | 0.18 | 0.18 | | 0.17 | 0.22 | |
| 633 | DFac9 | CHG: Shows originality | | | | 0.27 | 0.27 | 0.51 | 0.15 | 0.26 | *** | 0.41 | 0.23 | 0.28 | * | 0.18 | 0.31 | 0.30 | | 0.22 | 0.31 | |
| 634 | DFac10 | CHG: Uses feedback to assess performance | | | | 0.23 | 0.20 | 0.41 | 0.30 | 0.08 | ** | 0.33 | 0.26 | 0.13 | * | 0.25 | 0.19 | 0.25 | | 0.25 | 0.21 | |
| 635 | DFac11 | CHG: Demonstrates accurate awareness of own abilities and limitations | | | | 0.28 | 0.27 | 0.47 | 0.26 | 0.21 | * | 0.43 | 0.27 | 0.19 | * | 0.21 | 0.30 | 0.31 | | 0.33 | 0.25 | |
| 636 | DFac12 | CHG: Demonstrates appropriate confidence in own intellectual ability | | | | 0.28 | 0.23 | 0.48 | 0.29 | 0.19 | ** | 0.39 | 0.26 | 0.22 | | 0.22 | 0.26 | 0.34 | | 0.27 | 0.28 | |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 637 | DFac13 | CHG: Locates appropriate source material | | | | 0.21 | 0.24 | 0.30 | 0.13 | 0.19 | | 0.24 | 0.14 | 0.31 | * | 0.21 | 0.21 | 0.20 | | 0.27 | 0.17 | |
| 638 | DFac14 | CHG: Logically interprets and evaluates main points of source material | | | | 0.27 | 0.30 | 0.34 | 0.24 | 0.24 | | 0.31 | 0.27 | 0.32 | | 0.26 | 0.30 | 0.26 | | 0.32 | 0.25 | |
| 639 | DFac15 | CHG: Uses disciplinary knowledge and methods appropriately | | | | 0.29 | 0.27 | 0.34 | 0.34 | 0.24 | | 0.29 | 0.35 | 0.29 | | 0.25 | 0.29 | 0.31 | | 0.30 | 0.29 | |
| 640 | DFac16 | CHG: Synthesizes information to produce insights that expand the student's understanding | | | | 0.34 | 0.42 | 0.43 | 0.25 | 0.30 | | 0.42 | 0.32 | 0.33 | | 0.31 | 0.36 | 0.33 | | 0.36 | 0.32 | |
| 641 | DFac17 | CHG: Supports arguments with appropriate evidence | | | | 0.23 | 0.20 | 0.40 | 0.26 | 0.12 | ** | 0.33 | 0.24 | 0.14 | * | 0.14 | 0.26 | 0.26 | | 0.21 | 0.24 | |
| 642 | DFac18 | CHG: Addresses opposing arguments or alternative explanations | | | | 0.27 | 0.32 | 0.38 | 0.25 | 0.17 | | 0.44 | 0.21 | 0.23 | ** | 0.20 | 0.26 | 0.31 | | 0.28 | 0.26 | |
| 643 | DFac19 | CHG: Develops convincing arguments to support conclusions | | | | 0.26 | 0.33 | 0.40 | 0.19 | 0.20 | * | 0.38 | 0.26 | 0.16 | * | 0.21 | 0.26 | 0.29 | | 0.27 | 0.25 | |
| 644 | DFac20 | CHG: Makes connections to other contexts (across courses, disciplines, experiences, etc.) | | | | 0.23 | 0.32 | 0.37 | 0.11 | 0.20 | * | 0.38 | 0.22 | 0.17 | * | 0.27 | 0.20 | 0.24 | | 0.25 | 0.22 | |
| 645 | DFac21 | CHG: Shows skill in quantitative reasoning | | | | 0.22 | 0.25 | 0.20 | 0.13 | 0.32 | | 0.29 | 0.16 | 0.25 | | 0.11 | 0.23 | 0.29 | | 0.19 | 0.25 | |
| 646 | DFac22 | CHG: Writes without distracting errors in spelling grammar, punctuation, usage, etc. | | | | 0.09 | 0.05 | 0.28 | 0.04 | 0.04 | * | 0.09 | 0.08 | 0.16 | | -0.05 | 0.08 | 0.18 | * | 0.12 | 0.07 | |
| 647 | DFac23 | CHG: Writes in a well-organized manner | | | | 0.20 | 0.23 | 0.36 | 0.17 | 0.11 | * | 0.21 | 0.20 | 0.23 | | 0.11 | 0.25 | 0.20 | | 0.23 | 0.17 | |
| 648 | DFac24 | CHG: Writes in a clear, articulate manner | | | | 0.17 | 0.16 | 0.31 | 0.15 | 0.13 | | 0.21 | 0.17 | 0.18 | | 0.07 | 0.20 | 0.22 | | 0.19 | 0.16 | |
| 649 | DFac25 | CHG: Delivers an effective oral presentation | | | | 0.35 | 0.47 | 0.48 | 0.25 | 0.27 | * | 0.45 | 0.37 | 0.26 | | 0.39 | 0.29 | 0.39 | | 0.42 | 0.31 | |
| 650 | DFac26 | CHG: Delivers an effective poster presentation | | | | 0.42 | 0.66 | 0.76 | 0.08 | 0.53 | *** | 0.43 | 0.43 | 0.50 | | 0.69 | 0.48 | 0.29 | | 0.60 | 0.31 | * |
| 651 | gradcolgpagrp | graduating college gpa group | | | | | | | | | | | | | | | | | | | | |
| 652 | Capmajdiv | capstone primary major by division (excl bus and teacher educ) | | | | | | | | | | | | | | | | | | | | |
| 653 | Capmajdivall | capstone primary major by division (excl bus teacher educ) | | | | | | | | | | | | | | | | | | | | |
| 654 | genderN | gender(M=1, F=0) | | | | 0.40 | 0.46 | 0.34 | 0.37 | 0.39 | *** | 41% | 40% | 38% | | 0.57 | 0.37 | 0.30 | *** | 1.00 | 0.00 | #N/A |
| 655 | NonWhiteAm | Non White Am (Y=1, N=0) | | | | 0.10 | 0.14 | 0.09 | 0.09 | 0.08 | *** | 0.07 | 0.12 | 0.09 | ** | 0.16 | 0.10 | 0.06 | *** | 0.12 | 0.09 | * |
| 656 | surveystatusgrp | survey status groups | | | | | | | | | | | | | | | | | | | | |
| 657 | filter_$ | Duplicaterecordflag ~= "Y" and Duplicaterecordflag ~= "b" and Duplicaterecordflag ~= "c" and Duplicaterecordflag >= "Ypre" (FILTER) | | | | | | | | | | | | | | | | | | | | |
| 658 | PostFac36Reversed | PostFac36 with the responses reversed | | | | | | | | | | | | | | | | | | | | |
| 659 | PreExpectGoodCapstone | Student expects capstone experience to be helpful | | | | 4.19 | 4.34 | 4.15 | 4.12 | 4.13 | *** | 4.23 | 4.20 | 4.18 | | 4.19 | 4.22 | 4.17 | | 4.14 | 4.22 | ** |
| 660 | PreSatisInstr | Satisfaction with instruction | | | | 4.42 | 4.45 | 4.39 | 4.36 | 4.45 | * | 4.46 | 4.39 | 4.45 | * | 4.29 | 4.38 | 4.53 | *** | 4.36 | 4.45 | ** |
| 661 | PreSatisSuppSrv | Satisfaction with academic support services | | | | 3.96 | 4.14 | 4.18 | 3.70 | 3.79 | *** | 4.07 | 3.95 | 3.96 | ** | 4.00 | 3.94 | 3.95 | | 3.92 | 3.98 | |
| 662 | PreCivicOrient | Orientation toward civic engagement | | | | 2.85 | 2.76 | 2.97 | 2.85 | 2.84 | *** | 2.75 | 2.91 | 2.83 | *** | 2.86 | 2.86 | 2.83 | | 2.76 | 2.89 | *** |
| 663 | PreHighOrderCogn | Use of higher order cognitive thinking skills | | | | 3.23 | 3.23 | 3.27 | 3.21 | 3.24 | | 3.24 | 3.27 | 3.20 | | 3.14 | 3.27 | 3.25 | *** | 3.18 | 3.26 | ** |
| 664 | PreExhibScholarlySkills | During the past year, student exhibited scholarly skills | | | | 4.15 | 4.13 | 4.17 | 4.16 | 4.16 | | 4.12 | 4.14 | 4.18 | | 4.00 | 4.16 | 4.23 | *** | 4.12 | 4.17 | * |
| 665 | PreNeedCognLite | Abbreviated version of Need for Cognition | | | | 3.90 | 3.96 | 3.84 | 3.97 | 3.85 | *** | 3.75 | 3.85 | 4.10 | *** | 3.92 | 3.91 | 3.89 | | 4.04 | 3.84 | *** |
| 666 | PreMultPerspectives2 | Using behaviors showing interest in examining ideas from multiple perspectives | | | | 3.06 | 3.01 | 3.11 | 3.07 | 3.06 | | 2.88 | 3.08 | 3.15 | *** | 3.01 | 3.10 | 3.04 | * | 3.00 | 3.08 | ** |
| 667 | PreProjMgt | Exhibiting good project management skills | | | | 3.88 | 3.81 | 3.93 | 3.96 | 3.87 | * | 3.88 | 3.91 | 3.84 | | 3.63 | 3.90 | 4.01 | *** | 3.73 | 3.96 | *** |
| 668 | PreRatingAcadAbil | Self rating of academic ability | | | | 3.87 | 3.87 | 3.84 | 3.86 | 3.89 | | 3.80 | 3.82 | 3.98 | *** | 3.66 | 3.83 | 4.01 | *** | 3.95 | 3.83 | *** |
| 669 | PreRatingCollabSkills | Self rating of group collaboration skills | | | | 3.66 | 3.64 | 3.63 | 3.65 | 3.71 | | 3.60 | 3.70 | 3.63 | * | 3.75 | 3.65 | 3.62 | * | 3.81 | 3.58 | *** |
| 670 | PreRatingIndepVoice | Self rating of understanding of self/others and ability to think on their own | | | | 4.10 | 4.10 | 4.07 | 4.14 | 4.10 | | 4.03 | 4.12 | 4.13 | ** | 4.13 | 4.13 | 4.06 | * | 4.13 | 4.09 | |
| 671 | PreRatingStriver | Self rating of drive to achieve and persistence | | | | 4.04 | 3.95 | 4.10 | 4.03 | 4.09 | ** | 4.13 | 4.06 | 3.95 | *** | 3.85 | 4.00 | 4.17 | *** | 4.00 | 4.06 | |
| 672 | PreResearchOrient | Enjoyment of research | | | | 3.60 | 3.71 | 3.45 | 3.56 | 3.62 | *** | 3.76 | 3.54 | 3.53 | *** | 3.44 | 3.58 | 3.71 | *** | 3.60 | 3.60 | |
| 673 | PreStatusCareerOrient | Desire to have a prestigious, high paying, high achieving career | | | | 2.64 | 2.59 | 2.56 | 2.79 | 2.65 | *** | 2.67 | 2.68 | 2.53 | *** | 2.74 | 2.66 | 2.56 | *** | 2.73 | 2.59 | *** |
| 674 | PostPrepBreadth | Helpfulness as preparation for the capstone of areas that add educational breadth. | | | | 2.35 | 2.36 | 2.44 | 2.34 | 2.27 | ** | 2.17 | 2.41 | 2.40 | *** | 2.35 | 2.35 | 2.34 | | 2.28 | 2.38 | * |
| 675 | PostPrepDisc | Helpfulness as preparation for the capstone of areas that are grounded in the disciplinary major of the capstone. | | | | 2.88 | 2.91 | 2.83 | 2.73 | 2.97 | *** | 2.97 | 2.87 | 2.81 | *** | 2.91 | 2.87 | 2.88 | | 2.83 | 2.91 | ** |
| 676 | PostPrepQuant | Helpfulness as preparation for the capstone of quantitative or computer based techniques. | | | | 2.43 | 2.45 | 2.29 | 2.39 | 2.54 | ** | 2.86 | 2.48 | 1.76 | *** | 2.46 | 2.50 | 2.35 | * | 2.47 | 2.41 | |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 677 | PostMentorRel | Helpful and comfortable relationship with the mentor. | | | | 4.38 | 4.46 | 4.27 | 4.37 | 4.40 | ** | 4.52 | 4.31 | 4.37 | *** | 4.35 | 4.34 | 4.43 | * | 4.38 | 4.38 | |
| 678 | PostCapContDev | Rating of the contribution of the capstone to the development of scholarly skills. | | | | 4.11 | 4.14 | 4.06 | 4.05 | 4.15 | * | 4.21 | 4.11 | 4.02 | *** | 4.08 | 4.13 | 4.11 | | 4.07 | 4.14 | * |
| 679 | PostCapMoreEngaging | Rating of the capstone as more or less intellectually engaging than a regular course. | | | | 4.15 | 4.25 | 3.98 | 3.95 | 4.28 | *** | 4.18 | 4.12 | 4.15 | | 4.21 | 4.12 | 4.16 | | 4.15 | 4.15 | |
| 680 | PostCapSuccessful | Overall assessment of the capstone as a successful experience. | | | | 4.03 | 4.09 | 4.05 | 3.92 | 4.00 | * | 4.11 | 4.02 | 3.96 | * | 4.01 | 4.00 | 4.07 | | 4.00 | 4.05 | |
| 681 | PostSatisInstr | Satisfaction with instruction. | | | | 4.43 | 4.49 | 4.36 | 4.38 | 4.46 | ** | 4.48 | 4.41 | 4.39 | | 4.30 | 4.40 | 4.54 | *** | 4.38 | 4.46 | * |
| 682 | PostSatisSuppSrv | Satisfaction with academic support services (library, computer, facilities/equipment supporting their major). | | | | 3.91 | 4.02 | 4.16 | 3.64 | 3.74 | *** | 4.03 | 3.91 | 3.87 | ** | 3.88 | 3.89 | 3.95 | | 3.91 | 3.91 | |
| 683 | PostCivicOrient | Orientation toward civic engagement. | | | | 2.86 | 2.77 | 2.98 | 2.88 | 2.85 | *** | 2.80 | 2.90 | 2.84 | ** | 2.83 | 2.85 | 2.89 | | 2.77 | 2.90 | *** |
| 684 | PostHighOrderCogn | Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). | | | | 3.20 | 3.23 | 3.14 | 3.13 | 3.25 | * | 3.25 | 3.24 | 3.06 | *** | 3.20 | 3.19 | 3.22 | | 3.23 | 3.19 | |
| 685 | PostExhibScholarlySkills | During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. | | | | 4.34 | 4.35 | 4.29 | 4.32 | 4.38 | * | 4.39 | 4.31 | 4.33 | * | 4.23 | 4.33 | 4.41 | *** | 4.28 | 4.38 | *** |
| 686 | PostNeedCognLite | An abbreviated version of the Need for Cognition scale designed to measure interest in or enjoyment of higher order cognition. | | | | 3.94 | 3.98 | 3.88 | 4.00 | 3.92 | * | 3.83 | 3.90 | 4.10 | *** | 3.97 | 3.94 | 3.93 | | 4.09 | 3.87 | *** |
| 687 | PostMultPerspectives2 | Using behaviors showing interest in examining ideas from multiple perspectives | | | | 2.86 | 2.84 | 2.98 | 2.85 | 2.78 | *** | 2.52 | 2.93 | 3.03 | *** | 2.86 | 2.82 | 2.89 | | 2.82 | 2.87 | |
| 688 | PostProjMgt | Exhibiting good project management skills. | | | | 4.04 | 4.02 | 4.06 | 4.02 | 4.05 | | 4.11 | 4.05 | 3.97 | * | 3.82 | 4.04 | 4.14 | *** | 3.87 | 4.12 | *** |
| 689 | PostRatingAcadAbil | Student's self rating of his/her academic ability. | | | | 3.95 | 3.95 | 3.92 | 3.94 | 3.97 | | 3.90 | 3.90 | 4.04 | *** | 3.76 | 3.88 | 4.11 | *** | 4.03 | 3.91 | *** |
| 690 | PostRatingCollabSkills | Student's self rating of his/her group collaboration skills. | | | | 3.73 | 3.74 | 3.69 | 3.69 | 3.78 | | 3.66 | 3.76 | 3.72 | | 3.79 | 3.74 | 3.70 | | 3.91 | 3.64 | *** |
| 691 | PostRatingIndepVoice | Student's self rating of his/her understanding of themselves and others and ability to think on their own. | | | | 4.12 | 4.12 | 4.08 | 4.10 | 4.16 | | 4.10 | 4.12 | 4.12 | | 4.14 | 4.13 | 4.10 | | 4.16 | 4.10 | * |
| 692 | PostResearchOrient | Student's self rating of his/her drive to achieve and persistence. | | | | 3.76 | 3.87 | 3.59 | 3.76 | 3.79 | *** | 3.95 | 3.74 | 3.60 | *** | 3.57 | 3.74 | 3.88 | *** | 3.78 | 3.76 | |
| 693 | PostRatingStriver | Enjoyment of research. | | | | 4.09 | 4.03 | 4.10 | 4.04 | 4.16 | ** | 4.22 | 4.07 | 3.99 | *** | 3.90 | 4.04 | 4.23 | *** | 4.05 | 4.11 | |
| 694 | PostStatusCareerOrient | Desire to have a prestigious, high paying, and high achieving career. | | | | 2.61 | 2.53 | 2.55 | 2.74 | 2.69 | *** | 2.67 | 2.62 | 2.54 | ** | 2.75 | 2.61 | 2.55 | *** | 2.73 | 2.56 | *** |
| 695 | DSatisInstr | Chg: Satisfaction with instruction. | | | | -0.01 | 0.01 | -0.07 | -0.01 | -0.01 | | 0.00 | -0.01 | -0.06 | | -0.01 | -0.04 | 0.00 | | -0.03 | -0.01 | |
| 696 | DSatisSuppSrv | Chg: Satisfaction with academic support services (library, computer, facilities/equipment supporting their major). | | | | -0.07 | -0.11 | -0.04 | -0.04 | -0.05 | | -0.05 | -0.08 | -0.08 | | -0.13 | -0.10 | -0.02 | * | -0.02 | -0.09 | |
| 697 | DCivicOrient | Chg: Orientation toward civic engagement. | | | | 0.01 | 0.00 | 0.01 | 0.07 | -0.01 | | 0.01 | 0.00 | 0.02 | | -0.05 | -0.01 | 0.05 | ** | 0.00 | 0.01 | |
| 698 | DHighOrderCogn | Chg: Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). | | | | -0.04 | 0.02 | -0.15 | -0.06 | -0.02 | ** | -0.02 | -0.02 | -0.11 | | -0.01 | -0.08 | -0.02 | | 0.06 | -0.08 | *** |
| 699 | DExhibScholarlySkills | Chg: During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. | | | | 0.19 | 0.21 | 0.12 | 0.17 | 0.23 | * | 0.24 | 0.19 | 0.16 | | 0.23 | 0.19 | 0.18 | | 0.12 | 0.22 | *** |
| 700 | DNeedCognLite | Chg: An abbreviated version of the Need for Cognition scale designed to measure interest in or enjoyment of higher order cognition. | | | | 0.05 | 0.05 | 0.04 | 0.05 | 0.05 | | 0.06 | 0.06 | 0.01 | | 0.07 | 0.04 | 0.04 | | 0.04 | 0.05 | |
| 701 | DMultPerspectives2 | Chg: Using behaviors that exhibit an interest in examining ideas from a multiplicity of perspectives. | | | | -0.19 | -0.18 | -0.12 | -0.15 | -0.28 | * | -0.37 | -0.15 | -0.10 | *** | -0.13 | -0.26 | -0.16 | * | -0.20 | -0.19 | |
| 702 | DProjMgt | Chg: Exhibiting good project management skills. | | | | 0.12 | 0.20 | 0.09 | 0.06 | 0.09 | | 0.18 | 0.13 | 0.11 | | 0.14 | 0.14 | 0.10 | | 0.08 | 0.14 | |
| 703 | DRatingAcadAbil | Chg: Student's self rating of his/her academic ability. | | | | 0.09 | 0.10 | 0.09 | 0.07 | 0.10 | | 0.10 | 0.10 | 0.08 | | 0.09 | 0.07 | 0.11 | | 0.08 | 0.10 | |
| 704 | DRatingCollabSkills | Chg: Student's self rating of his/her group collaboration skills. | | | | 0.08 | 0.10 | 0.08 | 0.01 | 0.08 | | 0.08 | 0.05 | 0.09 | | 0.03 | 0.07 | 0.10 | | 0.07 | 0.08 | |
| 705 | DRatingIndepVoice | Chg: Student's self rating of his/her understanding of themselves and others and ability to think on their own. | | | | 0.03 | 0.04 | 0.03 | -0.02 | 0.06 | | 0.06 | 0.03 | 0.02 | | 0.00 | 0.02 | 0.06 | | 0.04 | 0.03 | |
| 706 | DRatingStriver | Chg: Student's self rating of his/her drive to achieve and persistence. | | | | 0.04 | 0.06 | 0.00 | 0.03 | 0.07 | | 0.07 | 0.02 | 0.05 | | -0.02 | 0.03 | 0.08 | | 0.01 | 0.06 | |
| 707 | DResearchOrient | Chg: Enjoyment of research. | | | | 0.18 | 0.19 | 0.14 | 0.22 | 0.16 | | 0.20 | 0.21 | 0.12 | | 0.15 | 0.17 | 0.19 | | 0.19 | 0.17 | |
| 708 | DStatusCareerOrient | Chg: Desire to have a prestigious, high paying, and high achieving career. | | | | -0.02 | -0.06 | -0.04 | 0.02 | 0.01 | | -0.01 | -0.04 | 0.00 | | -0.09 | -0.02 | 0.01 | * | -0.04 | -0.01 | |
| 709 | PreCommunSkills | Student exhibited good communication skills. | | | | 3.80 | 3.83 | 3.85 | 3.82 | 3.73 | | 3.70 | 3.81 | 3.85 | * | 3.24 | 3.77 | 4.18 | *** | 3.64 | 3.90 | *** |
| 710 | PreEffProjectMgt | Student exhibited good project management skills. | | | | 3.80 | 3.89 | 3.84 | 3.84 | 3.69 | *** | 3.71 | 3.84 | 3.85 | ** | 3.26 | 3.80 | 4.15 | *** | 3.65 | 3.90 | *** |
| 711 | PreIntelEngagement | Student exhibited good intellectual engagement behaviors. | | | | 3.83 | 3.90 | 3.85 | 3.83 | 3.75 | * | 3.70 | 3.81 | 3.93 | *** | 3.28 | 3.80 | 4.21 | *** | 3.76 | 3.87 | ** |
| 712 | PreCrThinkSkills | Student exhibited good critical thinking skills. | | | | 3.74 | 3.81 | 3.79 | 3.75 | 3.65 | ** | 3.68 | 3.76 | 3.76 | | 3.22 | 3.71 | 4.10 | *** | 3.65 | 3.80 | *** |
| 713 | PostCommunSkills | Student exhibited good communication skills. | | | | 4.02 | 4.02 | 4.10 | 3.99 | 3.98 | | 4.03 | 3.95 | 4.07 | | 3.42 | 3.97 | 4.49 | *** | 3.91 | 4.08 | *** |

| line | SPSS Name | Description or Question Text | Remarks: | Scale: | Range values from 1 to ?? | ALL | R | T | W | Y | Sig | NS | SS+ | HUM | Sig | L | M | H | Sig | M | F | Sig |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 714 | PostEffProjectMgt | Student exhibited good project management skills. | | | | 4.03 | 4.06 | 4.06 | 4.02 | 4.00 | | 4.10 | 3.97 | 4.04 | * | 3.51 | 4.01 | 4.42 | *** | 3.91 | 4.10 | *** |
| 715 | PostIntelEngagement | Student exhibited good intellectual engagement behaviors. | | | | 4.02 | 4.12 | 4.05 | 3.99 | 3.94 | ** | 4.07 | 3.95 | 4.07 | * | 3.47 | 3.98 | 4.46 | *** | 3.96 | 4.06 | * |
| 716 | PostCrThinkSkills | Student exhibited good critical thinking skills. | | | | 3.98 | 4.03 | 4.03 | 4.00 | 3.91 | | 4.09 | 3.93 | 3.96 | ** | 3.44 | 3.95 | 4.42 | *** | 3.90 | 4.04 | *** |
| 717 | PostStudentTopicMotiv | Mentor rating of students enthusiasm for the topic | | | | 4.17 | 4.36 | 4.08 | 4.02 | 4.18 | *** | 4.15 | 4.07 | 4.29 | *** | 3.89 | 4.15 | 4.38 | *** | 4.11 | 4.20 | * |
| 718 | PostMentorInstruction | Mentor's self-rating of instructional own helpfulness | | | | 4.45 | 4.54 | 4.34 | 4.42 | 4.47 | ** | 4.41 | 4.42 | 4.54 | ** | 4.38 | 4.45 | 4.49 | * | 4.39 | 4.48 | ** |
| 719 | PostMentorRapport | Mentor's self-rating of good relationship with the student | | | | 4.50 | 4.56 | 4.46 | 4.43 | 4.53 | * | 4.51 | 4.44 | 4.59 | ** | 4.34 | 4.49 | 4.63 | *** | 4.44 | 4.53 | ** |
| 720 | DCommunSkills | Chg: Student exhibited good critical thinking skills. | | | | 0.20 | 0.24 | 0.33 | 0.15 | 0.14 | * | 0.24 | 0.20 | 0.22 | | 0.13 | 0.21 | 0.24 | | 0.23 | 0.18 | |
| 721 | DEffProjectMgt | Chg: Student exhibited good project management skills. | | | | 0.22 | 0.21 | 0.35 | 0.19 | 0.19 | | 0.30 | 0.22 | 0.19 | | 0.20 | 0.23 | 0.23 | | 0.25 | 0.20 | |
| 722 | DIntelEngagement | Chg: Student exhibited good intellectual engagement behaviors. | | | | 0.21 | 0.25 | 0.39 | 0.14 | 0.15 | *** | 0.32 | 0.19 | 0.20 | * | 0.21 | 0.21 | 0.21 | | 0.21 | 0.22 | |
| 723 | DCrThinkSkills | Chg: Student exhibited good critical thinking skills. | | | | 0.25 | 0.28 | 0.36 | 0.24 | 0.18 | | 0.33 | 0.26 | 0.22 | | 0.19 | 0.26 | 0.28 | | 0.26 | 0.24 | |
| 724 | dblmajor | double major (0=no, 1=yes) | | | | 0.38 | 0.33 | 0.57 | 0.29 | 0.30 | *** | 0.21 | 0.32 | 0.45 | *** | 0.17 | 0.40 | 0.47 | *** | 0.38 | 0.38 | |

## TABLES 4.2 to 4.9: SCALES DERIVED BY FACTOR ANALYSIS

These tables list and report values for a set of scales derived from factor analyses of the pre/and post student and mentor surveys. Appendix 4.3 below describes the methodology.


4.2 Summary List of Capstone Survey Scales
4.3 Capstone Survey Scales and Component Items, Reliability Alphas and Loadings
4.4 Scale Inter-correlations: Pre-Capstone Student Survey
4.5 Scale Inter-correlations: Post-Capstone Student Survey
4.6 Scale Inter-correlations: Pre- to Post-Capstone Student Surveys
4.7 Scale Inter-correlations: Pre, Post, and Pre to Post-Capstone Faculty Surveys
4.8 Scale Inter-correlations: Post Student with Post Faculty Scales
4.9 Scale Inter-correlations: Post Mentor Survey Correlations of Scales with Summative Items

**Table 4.2: Summary List of Capstone Survey Scales**

The scales below were developed based on factor analysis of the data from the pre- and post-capstone surveys for 2009/10 and 2010/11. The names given to the scales are intended to capture the underlying factor causing the variation in the responses to the questions included in the scale.

**Student Pre-capstone Only Scale**

| | |
|---|---|
| ExpectGoodCapstone | Student expects that the capstone experience will help them develop disciplinary knowledge, general intellectual skills, and prepare for post-graduate careers or graduate school. |

**Student Pre/Post Satisfaction Scales**

| | |
|---|---|
| SatisInstr | Satisfaction with instruction. |
| SatisSuppSrv | Satisfaction with academic support services (library, computer, facilities/equipment supporting their major). |

**Student Pre/Post Outcome Scales**

| | |
|---|---|
| CivicOrient | Orientation toward civic engagement. |
| HighOrderCogn | Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). |
| ExhibScholarlySkills | During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills, including critical thinking, disciplinary knowledge and methods, communication skills, indepence and persistence. |
| NeedCognLite | An abbreviated version of the Need for Cognition scale designed to measure interest in or enjoyment of higher order cognition. |
| MultPerspectives | Using behaviors that exhibit an interest in examining ideas from a multiplicity of perspectives, including understanding the views of others, diversity perspectives, the strengths/weaknesses of one's own views, and integration of ideas from different courses. |
| ProjMgt | Exhibiting good project management skills, including planning, goal setting, and time management. |
| RatingAcadAbil | Student's self rating of his/her academic ability, including critical thinking, writing, creativity, and general acabemic ability and self-confidence. |
| RatingLeadCollabSkills | Student's self rating of his/her group leadership/collaboration skills, including public speaking, leadership and social self-confidence. |
| RatingIndepVoice | Student's self rating of his/her understanding of themselves and others and ability to think on their own. |
| RatingStriver | Student's self rating of his/her drive to achieve and persistence. |
| ResearchOrient | Enjoyment of research and self-rating of research skills. |
| StatusCareerOrient | Desire to have a prestigious, high paying, and high achieving career. |

**Student Post-Capstone Only Scales**

| | |
|---|---|
| PrepBreadth | Helpfulness as preparation for the capstone of areas that add educational breadth. |
| PrepDisc | Helpfulness as preparation for the capstone of areas that are grounded in the disciplinary major of the capstone. |
| PrepQuant | Helpfulness as preparation for the capstone of quantitative or computer based techniques. |
| MentorRel | Helpful and comfortable relationship with the mentor. |
| CapContDev | Rating of the contribution of the capstone to the development of scholarly skills. |
| CapMoreEngaging | Rating of the capstone as more or less intellectually engaging than a regular course. |
| CapSuccessful | Overall assessment of the capstone as a successful experience. |
| StuRatingMentorRel | Student's rating of the mentor relationship for helpfulness. |

**Faculty Survey Pre/Post Scales**

| | |
|---|---|
| CommunSkills | Student exhibited good communication skills. |
| EffProjectMgt | Student exhibited good project management skills. |
| IntelEngagement | Student exhibited good intellectual engagement behaviors. |
| CrThinkSkills | Student exhibited good critical thinking skills. |
| summative | Individual items rating the students performance in research skill areas. |

**Faculty Post Scales**

| | |
|---|---|
| StudentTopicMotiv | Mentor's rating of the students enthusiasm for the capstone topic |
| MentorTopicInfluence | Mentor's rating of their influence, vs. the student's, on the selection and honing of the capstone topic. |
| MentorInstruction | Mentor's rating of the usefulness of their feedback, advice, and expertise. |
| MentorRapport | Mentor's rating of their rapport in working with the student: comfort, good communications, reasonable expectations, student's independence |
| MentorTime | Average hours/week relating to this capstone. |

**Table 4.3: Capstone Survey Scales and Component Items, Reliability Alphas and Loadings**

(Based on the combined data from 2009/10 and 2010/11.)

The scales below were developed based on factor analysis of the data from the pre- and post-capstone surveys. The names given to the scales are intended to capture the underlying factor causing the variation in the responses to the questions included in the scale. The scale values used for analysis are the averages of the values of the component questions [1]. Several scales are replicated for both the pre and post surveys using items that correspond on the two surveys.

| Line | Scale Alpha | Scale name | Item response range, 1 to: | SPSS Variable | factor loading or scale corr [2] | Survey Question Text |
|---|---|---|---|---|---|---|
| | PRE STUDENT | | | | | |
| 1 | 0.880 | **ExpectGoodCapstone** | 5 | PreStu73 | 0.769 | My capstone will lead to a better understanding of my skills, abilities and interests |
| 2 | | | 5 | PreStu70 | 0.750 | My ability to think critically and analytically will improve |
| 3 | | | 5 | PreStu75 | 0.737 | My capstone will better prepare me for a job or graduate school |
| 4 | | | 5 | PreStu74 | 0.724 | My capstone will help me clarify my career or graduate school objectives |
| 5 | | | 5 | PreStu71 | 0.712 | My understanding of my discipline will improve |
| 6 | | | 5 | PreStu69 | 0.710 | My oral presentation skills will improve |
| 7 | | | 5 | PreStu68 | 0.701 | My writing skills will improve |
| 8 | | | 5 | PreStu72 | 0.664 | I expect to create new knowledge in my discipline |
| 9 | | | 5 | PreStu67 | 0.654 | My capstone will be more engaging than my regular course work |
| 10 | | | 5 | PreStu66 | 0.593 | My capstone will be intellectually challenging |
| 11 | The scales in this section have parallel scales on the Post-Capstone Student Survey | | | | | |
| 12 | 0.736 | **SatisInstr** | 5 | PreStu51 | 0.817 | Quality of instruction in my major field |
| 13 | | | 5 | PreStu50 | 0.782 | Overall quality of instruction |
| 14 | | | 5 | PreStu52 | 0.622 | Overall college experience |
| 15 | 0.690 | **SatisSuppSrv** | 5 | PreStu48 | 0.816 | Computer facilities and services |
| 16 | | | 5 | PreStu47 | 0.765 | Library facilities and services |
| 17 | | | 5 | PreStu49 | 0.634 | Facilities/equipment in my major field |
| 18 | 0.755 | **CivicOrient** | 4 | PreStu4 | 0.746 | Helping others who are in difficulty |
| 19 | | | 4 | PreStu9 | 0.745 | Volunteering in my community |
| 20 | | | 4 | PreStu7 | 0.644 | Becoming a community leader |
| 21 | | | 4 | PreStu2 | 0.612 | Influencing social values |
| 22 | | | 4 | PreStu8 | 0.603 | Integrating spirituality into my life |
| 23 | | | 4 | PreStu6 | 0.442 | Developing a meaningful philosophy of life |
| 24 | 0.721 | **HighOrderCogn** | 4 | PreStu54 | 0.700 | Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components |
| 25 | | | 4 | PreStu55 | 0.689 | Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships |
| 26 | | | 4 | PreStu56 | 0.670 | Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions |
| 27 | | | 4 | PreStu57 | 0.647 | Applying theories or concepts to practical problems or in new situations |
| 28 | 0.854 | **ExhibScholarlySkills** | 5 | PreStu40 | 0.760 | I located appropriate source material |
| 29 | | | 5 | PreStu41 | 0.732 | I used disciplinary knowledge and methods appropriately |
| 30 | | | 5 | PreStu43 | 0.668 | I supported my arguments with appropriate evidence |
| 31 | | | 5 | PreStu42 | 0.605 | I synthesized information to produce insights that expanded my understanding |
| 32 | | | 5 | PreStu39 | 0.604 | I used feedback to assess my performance |
| 33 | | | 5 | PreStu36 | 0.526 | I showed evidence of independent thinking |
| 34 | | | 5 | PreStu44 | 0.505 | I demonstrated good communication skills |
| 35 | | | 5 | PreStu37 | 0.489 | I persisted when faced with conceptual and practical difficulties |
| 36 | | | 5 | PreStu38 | 0.433 | I showed originality |
| 37 | | | 4 [1] | PreStu58 | 0.420 | Integrated ideas or information from various sources |
| 38 | | | 5 | PreStu46 | 0.313 | I showed skill with quantitative reasoning |
| 39 | 0.679 | **NeedCognLite** | 5 | PreStu17 | 0.729 | The notion of thinking abstractly is appealing to me |
| 40 | | | 4 [1] | PreStu5 | 0.685 | Creating original works |
| 41 | | | 5 | PreStu16 | 0.674 | I really enjoy a task that involves coming up with new solutions to problems |
| 42 | | | 5 | PreStu14 | 0.627 | I enjoy expressing my ideas in writing |
| 43 | | | 5 | PreStu15 | 0.602 | I have confidence in my opinions, even if they are contrary to the general consensus |
| 44 | 0.759 | **MultPerspectives** | 4 | PreStu64 | 0.734 | Tried to better understand someone else's views by imagining how an issue looks from his or her perspective |
| 45 | | | 4 | PreStu63 | 0.661 | Examined the strengths and weaknesses of your own views on a topic or issue |
| 46 | | | 4 | PreStu59 | 0.644 | Included diverse perspectives (different races, religions, gender, political beliefs, etc.) |
| 47 | | | 4 | PreStu65 | 0.630 | Learned something that changed the way you understand an issue or concept |
| 48 | | | 4 | PreStu60 | 0.590 | Put together ideas or concepts from different courses |
| 49 | | | | | 0.000 | *This scale revised 11/27/10 to remove two items relating to discussing ideas with others.* |
| 50 | 0.807 | **ProjMgt** | 5 | PreStu35 | 0.824 | I properly planned tasks to achieve project goals |
| 51 | | | 5 | PreStu45 | 0.783 | I demonstrated effective time management in completing tasks |
| 52 | | | 5 | PreStu34 | 0.728 | I identified manageable sets of goals for my projects |

| Line | Scale Alpha | Scale name | Item response range, 1 to: | SPSS Variable | factor loading or scale corr [2] | Survey Question Text |
|---|---|---|---|---|---|---|
| 53 | 0.704 | **RatingAcadAbil** | 5 | PreStu26 | 0.722 | Self-confidence (intellectual) |
| 54 | | | 5 | PreStu30 | 0.722 | Ability to think critically |
| 55 | | | 5 | PreStu33 | 0.692 | Writing ability |
| 56 | | | 5 | PreStu19 | 0.691 | Academic ability |
| 57 | | | 5 | PreStu20 | 0.571 | Creativity |
| 58 | 0.706 | **RatingLeadCollabSkills** | 5 | PreStu25 | 0.743 | Public speaking ability |
| 59 | | | 5 | PreStu22 | 0.707 | Leadership ability |
| 60 | | | 5 | PreStu27 | 0.605 | Self-confidence (social) |
| 61 | 0.605 | **RatingIndepVoice** | 5 | PreStu29 | 0.758 | Self-understanding |
| 62 | | | 5 | PreStu28 | 0.705 | Understanding of others |
| 63 | | | 5 | PreStu32 | 0.371 | Ability to think and act on my own |
| 64 | 0.701 | **RatingStriver** | 5 | PreStu21 | 0.522 | Drive to achieve |
| 65 | | | 5 | PreStu24 | 0.488 | Persistence |
| 66 | 0.692 | **ResearchOrient** | 5 | PreStu18 | 0.702 | I enjoy doing research |
| 67 | | | 5 | PreStu31 | 0.607 | Research skills |
| 68 | 0.714 | **StatusCareerOrient** | 4 | PreStu11 | 0.823 | Working in a prestigious occupation |
| 69 | | | 4 | PreStu10 | 0.734 | Making a lot of money |
| 70 | | | 4 | PreStu13 | 0.728 | Obtaining recognition from my colleagues for contributions to my special field |
| 71 | | | 4 | PreStu1 | 0.473 | Becoming accomplished in my field of expertise |
| 72 | | | 5 | PreStu76 | | I expect to be comfortable working with my faculty mentor(s) |
| 73 | | **independent items** | 5 | PreStu77 | | My capstone will be very stressful |
| 74 | | | 4 | PreStu53 | | Memorizing facts, ideas, or methods so you can repeat them in pretty much the same form |
| 75 | | | 4 | PreStu12 | | Becoming passionate about or committed to my occupation |
| 76 | | | 4 | PreStu3 | | Raising a family |
| 77 | | | 5 | PreStu23 | | Mathematical ability |
| 78 | POST STUDENT | | | | | |
| 79 | 0.761 | **PrepBreadth** | 4 | PostStu43 | 0.781 | Volunteer experiences |
| 80 | | | 4 | PostStu41 | 0.715 | Study abroad experiences |
| 81 | | | 4 | PostStu44 | 0.694 | My non-academic interests/experiences |
| 82 | | | 4 | PostStu42 | 0.631 | My job or internship experiences |
| 83 | | | 4 | PostStu34 | 0.503 | Courses outside my major(s) and minor(s) |
| 84 | 0.576 | **PrepDisc** | 4 | PostStu37 | 0.700 | A junior or senior seminar |
| 85 | | | 4 | PostStu36 | 0.627 | A research methods or skills course |
| 86 | | | 4 | PostStu35 | 0.529 | Courses in my major(s) or minors(s) |
| 87 | | | 4 | PostStu38 | 0.367 | Assistance from librarians or use of library services |
| 88 | 0.799 | **PrepQuant** | 4 | PostStu39 | 0.825 | Training in quantitative methods (statistics, tables, graphs, mathematical modeling,…) |
| 89 | | | 4 | PostStu40 | 0.802 | Training or experience with computer techniques (spreadsheets, Internet, programming, presentation software…) |
| 90 | 0.959 | **MentorRel** | 5 | PostStu82 | 0.878 | My mentor gave me helpful advice |
| 91 | | | 5 | PostStu221 | 0.876 | My mentor gave me sufficient feedback |
| 92 | | | 5 | PostStu217 | 0.867 | My mentor gave me useful feedback |
| 93 | | | 5 | PostStu222 | 0.864 | My mentor effectively guided me through the capstone |
| 94 | | | 5 | PostStu219 | 0.837 | My mentor and I communicated well |
| 95 | | | 5 | PostStu83 | 0.820 | I was comfortable working with my faculty mentor |
| 96 | | | 5 | PostStu81 | 0.805 | I had access to my mentor when I needed it |
| 97 | | | 5 | PostStu224 | 0.786 | My mentor gave me timely feedback |
| 98 | | | 5 | PostStu223 | 0.778 | My mentor provided helpful subject matter expertise |
| 99 | | | 5 | PostStu220 | 0.767 | My mentor had reasonable expectations for my performance |
| 100 | | | 5 | PostStu218 | 0.752 | My mentor met with me regularly |
| 101 | | | 5 | PostStu80 | 0.725 | My mentor was genuinely interested in my project |
| 102 | | | 5 | PostStu216 | 0.687 | My mentor encouraged my independence |
| 103 | | | 5 | PostStu225 | 0.633 | My mentor was experienced in capstone advising |
| 104 | 0.897 | **CapContDev** | 5 | PostStu94 | 0.818 | Ability to think critically and analytically |
| 105 | | | 5 | PostStu93 | 0.770 | Ability to write effectively |
| 106 | | | 5 | PostStu89 | 0.758 | Skill in the interpreting of data, evidence, texts, and/or works |
| 107 | | | 5 | PostStu88 | 0.753 | Having confidence in my own abilities |
| 108 | | | 5 | PostStu85 | 0.731 | Learning effectively on my own |
| 109 | | | 5 | PostStu86 | 0.719 | Acquiring research related skills |
| 110 | | | 5 | PostStu87 | 0.712 | Managing a large project |
| 111 | | | 5 | PostStu91 | 0.697 | Ability to interpret primary literature |
| 112 | | | 5 | PostStu95 | 0.667 | Ability to think creatively |
| 113 | | | 5 | PostStu92 | 0.655 | Ability to make an effective oral presentation |

| Line | Scale Alpha | Scale name | Item response range, 1 to: | SPSS Variable | factor loading or scale corr [2] | Survey Question Text |
|---|---|---|---|---|---|---|
| 114 | | | 5 | PostStu90 | 0.626 | Learning ethical conduct in my field |
| 115 | 0.814 | **CapMoreEngaging** | 5 | PostStu99 | 0.806 | I worked harder on my capstone than on my regular coursework |
| 116 | | | 5 | PostStu100 | 0.804 | My capstone was more intellectually challenging than my regular coursework |
| 117 | | | 5 | PostStu101 | 0.649 | I developed more academically from my capstone than from a regular course |
| 118 | 0.902 | **CapSuccessful** | 5 | PostStu107 | 0.837 | My capstone had a positive influence on my intellectual growth and interest in ideas |
| 119 | | | 5 | PostStu108 | 0.796 | My capstone had a positive influence on my personal growth, attitudes, and values |
| 120 | | | 5 | PostStu104 | 0.790 | My capstone has led me to a better understanding of my skills, abilities and interests |
| 121 | | | 5 | PostStu106 | 0.790 | My capstone has better prepared me for a job or graduate school |
| 122 | | | 5 | PostStu105 | 0.766 | My capstone has helped me clarify my career or graduate school objectives |
| 123 | | | 5 | PostStu102 | 0.751 | Understanding of my discipline improved |
| 124 | | | 5 | PostStu110 | 0.739 | Overall, I had a good capstone experience |
| 125 | | | 5 | PostStu97 | 0.665 | My capstone was more engaging than my regular coursework |
| 126 | | | 5 | PostStu103 | 0.640 | I created new knowledge in my discipline |
| 127 | | | 5 | PostStu84 | 0.640 | Seeing the connection between my intended career and how it affects society |
| 128 | The scales in this section have parallel scales on the Pre-Capstone Student Survey | | | | | |
| 129 | 0.791 | **SatisInstr** | 5 | PostStu50 | 0.829 | Quality of instruction in my major field |
| 130 | | | 5 | PostStu49 | 0.826 | Overall quality of instruction |
| 131 | | | 5 | PostStu51 | 0.693 | Overall college experience |
| 132 | 0.681 | **SatisSuppSrv** | 5 | PostStu47 | 0.829 | Computer facilities and services |
| 133 | | | 5 | PostStu46 | 0.743 | Library facilities and services |
| 134 | | | 5 | PostStu48 | 0.630 | Facilities/equipment in my major field |
| 135 | 0.772 | **CivicOrient** | 4 | PostStu9 | 0.765 | Volunteering in my community |
| 136 | | | 4 | PostStu4 | 0.754 | Helping others who are in difficulty |
| 137 | | | 4 | PostStu7 | 0.672 | Becoming a community leader |
| 138 | | | 4 | PostStu8 | 0.633 | Integrating spirituality into my life |
| 139 | | | 4 | PostStu2 | 0.614 | Influencing social values |
| 140 | | | 4 | PostStu6 | 0.470 | Developing a meaningful philosophy of life |
| 141 | 0.712 | **HighOrderCogn** | 4 | PostStu57 | 0.742 | Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions |
| 142 | | | 4 | PostStu58 | 0.738 | Applying theories or concepts to practical problems or in new situations |
| 143 | | | 4 | PostStu56 | 0.732 | Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships |
| 144 | | | 4 | PostStu55 | 0.723 | Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components |
| 145 | 0.874 | **ExhibScholarlySkills** | 5 | PostStu76 | 0.764 | I supported my arguments with appropriate evidence |
| 146 | | | 5 | PostStu73 | 0.761 | I located appropriate source material |
| 147 | | | 5 | PostStu74 | 0.718 | I used disciplinary knowledge and methods appropriately |
| 148 | | | 5 | PostStu75 | 0.715 | I synthesized information to produce insights that expanded my understanding |
| 149 | | | 5 | PostStu69 | 0.645 | I showed evidence of independent thinking |
| 150 | | | 5 | PostStu70 | 0.600 | I persisted when faced with conceptual and practical difficulties |
| 151 | | | 5 | PostStu77 | 0.586 | I demonstrated good communication skills |
| 152 | | | 5 | PostStu72 | 0.554 | I used feedback to assess my performance |
| 153 | | | 5 | PostStu71 | 0.495 | I showed originality |
| 154 | | | 5 | PostStu79 | 0.414 | I showed skill with quantitative reasoning |
| 155 | | | 4 [1] | PostStu59 | 0.333 | Integrated ideas or information from various sources |
| 156 | 0.702 | **NeedCognLite** | 5 | PostStu17 | 0.739 | The notion of thinking abstractly is appealing to me |
| 157 | | | 4 [1] | PostStu5 | 0.688 | Creating original works |
| 158 | | | 5 | PostStu16 | 0.678 | I really enjoy a task that involves coming up with new solutions to problems |
| 159 | | | 5 | PostStu14 | 0.659 | I enjoy expressing my ideas in writing |
| 160 | | | 5 | PostStu15 | 0.617 | I have confidence in my opinions, even if they are contrary to the general consensus |
| 161 | 0.751 | **MultPerspectives** | 4 | PostStu65 | 0.784 | Tried to better understand someone else's views by imagining how an issue looks from his or her perspective |
| 162 | | | 4 | PostStu60 | 0.711 | Included diverse perspectives (different races, religions, gender, political beliefs, etc.) |
| 163 | | | 4 | PostStu64 | 0.676 | Examined the strengths and weaknesses of your own views on a topic or issue |
| 164 | | | 4 | PostStu66 | 0.582 | Learned something that changed the way you understand an issue or concept |
| 165 | | | 4 | PostStu61 | 0.492 | Put together ideas or concepts from different courses |
| 166 | 0.809 | **ProjMgt** | 5 | PostStu68 | 0.794 | I properly planned tasks to achieve project goals |
| 167 | | | 5 | PostStu78 | 0.748 | I demonstrated effective time management in completing tasks |
| 168 | | | 5 | PostStu67 | 0.693 | I identified a manageable set of project goals |
| 169 | 0.723 | **RatingAcadAbil** | 5 | PostStu26 | 0.727 | Self-confidence (intellectual) |
| 170 | | | 5 | PostStu30 | 0.727 | Ability to think critically |
| 171 | | | 5 | PostStu33 | 0.726 | Writing ability |
| 172 | | | 5 | PostStu19 | 0.706 | Academic ability |

| Line | Scale Alpha | Scale name | Item response range, 1 to: | SPSS Variable | factor loading or scale corr [2] | Survey Question Text |
|---|---|---|---|---|---|---|
| 173 | | | 5 | PostStu20 | 0.570 | Creativity |
| 174 | 0.704 | **RatingCollabSkills** | 5 | PostStu25 | 0.751 | Public speaking ability |
| 175 | | | 5 | PostStu22 | 0.728 | Leadership ability |
| 176 | | | 5 | PostStu27 | 0.595 | Self-confidence (social) |
| 177 | 0.632 | **RatingIndepVoice** | 5 | PostStu29 | 0.768 | Self-understanding |
| 178 | | | 5 | PostStu28 | 0.700 | Understanding of others |
| 179 | | | 5 | PostStu32 | 0.399 | Ability to think and act on my own |
| 180 | 0.684 | **RatingStriver** | 5 | PostStu21 | 0.433 | Drive to achieve |
| 181 | | | 5 | PostStu24 | 0.332 | Persistence |
| 182 | 0.710 | **ResearchOrient** | 5 | PostStu31 | 0.696 | Research skills |
| 183 | | | 5 | PostStu18 | 0.651 | I enjoy doing research |
| 184 | 0.723 | **StatusCareerOrient** | 4 | PostStu11 | 0.838 | Working in a prestigious occupation |
| 185 | | | 4 | PostStu10 | 0.753 | Making a lot of money |
| 186 | | | 4 | PostStu13 | 0.728 | Obtaining recognition from my colleagues for contributions to my special field |
| 187 | | | 4 | PostStu1 | 0.489 | Becoming accomplished in my field of expertise |
| 188 | | | 4 | PostStu12 | | Becoming passionate about or committed to my occupation |
| 189 | | | 5 | PostStu109 | | My capstone product (e.g. thesis, paper, art work) was of high quality |
| 190 | | | 5 | PostStu98 | | My capstone was more stressful than my regular coursework |
| 191 | | **independent items** | 4 | PostStu54 | | Memorizing facts, ideas, or methods so you can repeat them in pretty much the same form |
| 192 | | | - | PostStu52 | | On average, how many hours per week did you spend interacting with your capstone mentor in individual or group meetings relating to the capstone? |
| 193 | | | - | PostStu53 | | On average, how many hours per week did you spend working on ALL aspects of your capstone combined? |
| 194 | | | 4 | PostStu3 | | Raising a family |
| 195 | | | 5 | PostStu96 | | Ability to reason quantitatively |
| 196 | | | 5 | PostStu23 | | Mathematical ability |
| 197 | PRE FACULTY | | | | | |
| 198 | **0.917** | **CommunSkills** | 5 | PreFac24 | 0.936 | Writes in a clear, articulate manner |
| 199 | | | 5 | PreFac23 | 0.928 | Writes in a well-organized manner |
| 200 | | | 5 | PreFac22 | 0.897 | Writes without distracting errors in spelling grammar, punctuation, usage, etc. |
| 201 | | | 5 | PreFac26 | 0.800 | Delivers an effective poster presentation |
| 202 | | | 5 | PreFac25 | 0.768 | Delivers an effective oral presentation |
| 203 | **0.93** | **EffProjectMgt** | 5 | PreFac3 | 0.802 | Demonstrates effective time management in completing tasks |
| 204 | | | 5 | PreFac2 | 0.795 | Properly plans tasks to achieve project goals |
| 205 | | | 5 | PreFac1 | 0.737 | Identifies a manageable set of project goals |
| 206 | | | 5 | PreFac10 | 0.659 | Uses feedback to assess performance |
| 207 | | | 5 | PreFac11 | 0.648 | Demonstrates accurate awareness of own abilities and limitations |
| 208 | | | 5 | PreFac4 | 0.635 | Persists when faced with conceptual and practical difficulties |
| 209 | | | 5 | PreFac13 | 0.551 | Locates appropriate source material |
| 210 | | | 5 | PreFac12 | 0.524 | Demonstrates appropriate confidence in own intellectual ability |
| 211 | 0.941 | **IntelEngagement** | 5 | PreFac6 | 0.802 | Asks probing questions |
| 212 | | | 5 | PreFac9 | 0.802 | Shows originality |
| 213 | | | 5 | PreFac8 | 0.794 | Demonstrates intellectual curiosity |
| 214 | | | 5 | PreFac5 | 0.784 | Shows evidence of independent thinking |
| 215 | | | 5 | PreFac20 | 0.666 | Makes connections to other contexts (across courses, disciplines, experiences, etc.) |
| 216 | | | 5 | PreFac7 | 0.662 | Actively pursues learning opportunities |
| 217 | | | 5 | PreFac16 | 0.603 | Synthesizes information to produce insights that expand the student's understanding |
| 218 | 0.933 | **CrThinkSkills** | 5 | PreFac19 | 0.911 | Develops convincing arguments to support conclusions |
| 219 | | | 5 | PreFac14 | 0.893 | Logically interprets and evaluates main points of source material |
| 220 | | | 5 | PreFac17 | 0.888 | Supports arguments with appropriate evidence |
| 221 | | | 5 | PreFac15 | 0.878 | Uses disciplinary knowledge and methods appropriately |
| 222 | | | 5 | PreFac18 | 0.870 | Addresses opposing arguments or alternative explanations |
| 223 | | **independent item** | 5 | PreFac21 | | Shows skill in quantitative reasoning |

| Line | Scale Alpha | Scale name | Item response range, 1 to: | SPSS Variable | factor loading or scale corr [2] | Survey Question Text |
|---|---|---|---|---|---|---|
| 224 | POST FACULTY | | | | | |
| 225 | The following scales are from question repeated from the Pre-Capstone survey. | | | | | |
| 226 | 0.917 | **CommunSkills** | 5 | PostFac24 | 0.938 | Writes in a clear, articulate manner |
| 227 | | | 5 | PostFac23 | 0.928 | Writes in a well-organized manner |
| 228 | | | 5 | PostFac22 | 0.917 | Writes without distracting errors in spelling grammar, punctuation, usage, etc. |
| 229 | | | 5 | PostFac26 | 0.791 | Delivers an effective poster presentation |
| 230 | | | 5 | PostFac25 | 0.753 | Delivers an effective oral presentation |
| 231 | 0.939 | **EffProjectMgt** | 5 | PostFac3 | 0.829 | Demonstrates effective time management in completing tasks |
| 232 | | | 5 | PostFac2 | 0.818 | Properly plans tasks to achieve project goals |
| 233 | | | 5 | PostFac1 | 0.715 | Identifies a manageable set of project goals |
| 234 | | | 5 | PostFac11 | 0.639 | Demonstrates accurate awareness of own abilities and limitations |
| 235 | | | 5 | PostFac10 | 0.595 | Uses feedback to assess performance |
| 236 | | | 5 | PostFac4 | 0.594 | Persists when faced with conceptual and practical difficulties |
| 237 | | | 5 | PostFac12 | 0.586 | Demonstrates appropriate confidence in own intellectual ability |
| 238 | | | 5 | PostFac13 | 0.582 | Locates appropriate source material |
| 239 | 0.951 | **IntelEngagement** | 5 | PostFac6 | 0.911 | Asks probing questions |
| 240 | | | 5 | PostFac8 | 0.903 | Demonstrates intellectual curiosity |
| 241 | | | 5 | PostFac5 | 0.899 | Shows evidence of independent thinking |
| 242 | | | 5 | PostFac7 | 0.891 | Actively pursues learning opportunities |
| 243 | | | 5 | PostFac9 | 0.872 | Shows originality |
| 244 | | | 5 | PostFac16 | 0.869 | Synthesizes information to produce insights that expand the student's understanding |
| 245 | | | 5 | PostFac20 | 0.816 | Makes connections to other contexts (across courses, disciplines, experiences, etc.) |
| 246 | 0.943 | **CrThinkSkills** | 5 | PostFac19 | 0.923 | Develops convincing arguments to support conclusions |
| 247 | | | 5 | PostFac17 | 0.918 | Supports arguments with appropriate evidence |
| 248 | | | 5 | PostFac14 | 0.908 | Logically interprets and evaluates main points of source material |
| 249 | | | 5 | PostFac15 | 0.901 | Uses disciplinary knowledge and methods appropriately |
| 250 | | | 5 | PostFac18 | 0.873 | Addresses opposing arguments or alternative explanations |
| 251 | The following scales are from questions only on the Post-Capstone survey for faculty. | | | | | |
| 252 | 0.761 | **StudentTopicMotiv** | 5 | PostFac40 | 0.842 | When the project ended, how enthusiastic was the student about the topic? |
| 253 | | | 5 | PostFac39 | 0.832 | When the project started, how enthusiastic was the student about the topic? |
| 254 | | | **5** | PostFac38 | 0.757 | To what extent did the student participate in developing / refining his /her capstone topic? |
| 255 | 0.883 | **MentorInstruction** | **5** | PostFac211 | 0.888 | I gave useful feedback to this student |
| 256 | | | **5** | PostFac207 | 0.857 | I gave this student useful feedback |
| 257 | | | **5** | PostFac214 | 0.775 | I gave timely feedback to this student |
| 258 | | | **5** | PostFac204 | 0.775 | I gave this student useful advice |
| 259 | | | **5** | PostFac212 | 0.660 | I effectively guided the student through the capstone |
| 260 | | | **5** | PostFac203 | 0.590 | I gave this student sufficient access |
| 261 | | | **5** | PostFac213 | 0.543 | I provided helpful subject matter expertise for this student's project |
| 262 | | | **5** | PostFac208 | 0.519 | I met with this student regularly |
| 263 | 0.851 | **MentorRapport** | **5** | PostFac205 | 0.846 | I felt comfortable working with this student |
| 264 | | | **5** | PostFac215 | 0.768 | Overall, I felt comfortable supervising this capstone |
| 265 | | | **5** | PostFac202 | 0.643 | I was interested in this student's project |
| 266 | | | **5** | PostFac209 | 0.614 | I communicated well with this student |
| 267 | | | **5** | PostFac210 | 0.562 | I had reasonable expectations for the student's capstone performance |
| 268 | | | **5** | PostFac206 | 0.560 | I encouraged this student to work independently |
| 269 | | **mentor hours** | | PostFac34 | | Estimate the average hours per week you spent meeting (individually or in a group setting) with this student as mentor: |
| 270 | | | | PostFac34 | | Estimate the average total hours per week you spent working on this student's capstone (meetings, email, reading drafts, etc.): |
| 271 | | **topic involvement** | **5** | PostFac37 | | To what extent did you participate in developing/refining the topic for his / her capstone? |
| 272 | | | 5 | PostFac36 | | What was the origin of the idea for your capstone topic? |
| 273 | | | 5 | PostFac27 | | Independence: Showing autonomy and initiative in thought and actions |
| 274 | | **Summative Ratings** | 5 | PostFac28 | | Intellectual Engagement: Demonstrating an interest in learning |
| 275 | | **of student performance** | 5 | PostFac29 | | Self-understanding: Developing an awareness of self (skills, abilities, interests) |
| 276 | | | 5 | PostFac30 | | Project Management: Conceiving and managing a project |
| 277 | | | 5 | PostFac31 | | Research: Investigating in a manner appropriate to the discipline |
| 278 | | | 5 | PostFac32 | | Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence |
| 279 | | | 5 | PostFac33 | | Communication: Presenting ideas effectively (written, oral, and other forms) |
| 280 | | **independent other** | 5 | PostFac21 | | Shows skill in quantitative reasoning |

[1] In the few cases where a question with a 4 point scale was combined with items using a 5-point scale (Pre/PostStu5, PreStu39, PostStu79), the 4-point response was converted pro-rata to a 5-point basis to preserve the predominant 5-point scaling.

[2] The purpose of this column is to give an indication of the relative importance of each sub-item to the overall scale. Where the general factorization of the items produced exactly the scale indicated, the factor loadings have been utilized. Where adjustments to the scale, as for simplification purposes, resulted in a scale not exactly matching a factor, the correlations of each item with the scale values have been utilized. The items in each scale are sorted in descending order by these values.

**Table 4.4: Scale Inter-Correlations - Pre-Student Survey**

Correlations Larger cell values correspond with darker shading

| | **PreExpect GoodCapstone** | PreSatisInstr | PreSatisSuppSrv | PreCivicOrient | PreHighOrderCogn | PreExhibScholarlySkills | PreNeedCognLite | PreMultPerspectives | PreProjMgt | PreRating AcadAbil | PreRatingLeadCollabSkills | PreRatingIndepVoice | PreRatingStriver | PreResearchOrient | PreStatus CareerOrient |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PreExpectGoodCapstone | | 0.30 | 0.30 | 0.24 | 0.34 | 0.37 | 0.28 | 0.33 | 0.25 | 0.13 | 0.15 | 0.16 | 0.21 | 0.31 | 0.21 |
| PreSatisInstr | **0.30** | | 0.42 | 0.08 | 0.29 | 0.27 | 0.11 | 0.20 | 0.17 | 0.15 | 0.10 | 0.09 | 0.14 | 0.20 | 0.01 |
| PreSatisSuppSrv | **0.30** | 0.42 | | 0.11 | 0.18 | 0.14 | 0.07 | 0.11 | 0.10 | 0.00 | 0.02 | 0.04 | 0.06 | 0.10 | 0.00 |
| PreCivicOrient | **0.24** | 0.08 | 0.11 | | 0.23 | 0.26 | 0.24 | 0.35 | 0.24 | 0.10 | 0.31 | 0.29 | 0.29 | 0.06 | 0.12 |
| PreHighOrderCogn | **0.34** | 0.29 | 0.18 | 0.23 | | 0.43 | 0.25 | 0.42 | 0.23 | 0.20 | 0.16 | 0.19 | 0.23 | 0.24 | 0.12 |
| PreExhibScholarlySkills | **0.37** | 0.27 | 0.14 | 0.26 | 0.43 | | 0.42 | 0.45 | 0.51 | 0.48 | 0.30 | 0.35 | 0.41 | 0.42 | 0.18 |
| PreNeedCognLite | **0.28** | 0.11 | 0.07 | 0.24 | 0.25 | 0.42 | | 0.39 | 0.10 | 0.48 | 0.24 | 0.30 | 0.15 | 0.32 | 0.18 |
| PreMultPerspectives2 | **0.33** | 0.20 | 0.11 | 0.35 | 0.42 | 0.45 | 0.39 | | 0.21 | 0.26 | 0.20 | 0.28 | 0.18 | 0.23 | 0.06 |
| PreProjMgt | **0.25** | 0.17 | 0.10 | 0.24 | 0.23 | 0.51 | 0.10 | 0.21 | | 0.19 | 0.21 | 0.20 | 0.46 | 0.26 | 0.18 |
| PreRatingAcadAbil | **0.13** | 0.15 | 0.00 | 0.10 | 0.20 | 0.48 | 0.48 | 0.26 | 0.19 | | 0.36 | 0.43 | 0.32 | 0.36 | 0.17 |
| PreRatingLeadCollabSkills | **0.15** | 0.10 | 0.02 | 0.31 | 0.16 | 0.30 | 0.24 | 0.20 | 0.21 | 0.36 | | 0.41 | 0.38 | 0.10 | 0.27 |
| PreRatingIndepVoice | **0.16** | 0.09 | 0.04 | 0.29 | 0.19 | 0.35 | 0.30 | 0.28 | 0.20 | 0.43 | 0.41 | | 0.29 | 0.17 | 0.13 |
| PreRatingStriver | **0.21** | 0.14 | 0.06 | 0.29 | 0.23 | 0.41 | 0.15 | 0.18 | 0.46 | 0.32 | 0.38 | 0.29 | | 0.27 | 0.27 |
| PreResearchOrient | **0.31** | 0.20 | 0.10 | 0.06 | 0.24 | 0.42 | 0.32 | 0.23 | 0.26 | 0.36 | 0.10 | 0.17 | 0.27 | | 0.18 |
| PreStatusCareerOrient | **0.21** | 0.01 | 0.00 | 0.12 | 0.12 | 0.18 | 0.18 | 0.06 | 0.18 | 0.17 | 0.27 | 0.13 | 0.27 | 0.18 | |

Notes:

The highest correlates of expecting to have a good capstone experience are feeling one has exhibited scholarly skills, and used higher order cognition and multiple perspectives in prior work. Also important are having a higher research orientation and being satisfied with instruction and support services. That is, a combination of having an interest in research, having exhibited the types of scholarly activities expected to be needed for a capstone, having confidence in their abilities, and feeling good about faculty and other support. The student's rating of their academic ability has a surprisingly low correlation (0.13), although it is still positive, and, given the great importance on project management that emerges in the post-capstone surveys, the somewhat lower correlation with PreProjMgt, 0.25, may indicate that students go into the capstone undervaluing this skill. Also low are PreRatingIndepVoice (0.16) and PreRatingStriver (0.21). Students may not have developed these "skills" yet or may not fully appreciate the role they will play in their capstone.

**Table 4.5: Scale Inter-Correlations - Post Student Survey**

These correlations may help answer our questions about what makes a successful capstone.

**Post-Student Survey**

**Scale Inter-Correlations**

Data based on all capstones with a post-capstone student survey.

Correlations

| | PostMentorRel | **PostCapContDev** | PostCapMoreEngaging | **PostCapSuccessful** | PostSatisInstr | PostSatisSuppSrv | PostCivicOrient | PostExhibScholarlySkills | PostNeedCognLite | PostMultPerspectives2 | PostProjMgt | PostRatingLeadCollabSkills | PostRatingIndepVoice | PostResearchOrient |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PostPrepBreadth | .11 | **.27** | .09 | **.31** | .16 | .11 | .37 | .16 | .21 | .38 | .11 | .14 | .17 | .11 |
| PostPrepDisc | .24 | **.43** | .27 | **.33** | .32 | .26 | .21 | .29 | .12 | .17 | .17 | .07 | .13 | .22 |
| PostPrepQuant | .10 | **.22** | .09 | **.16** | .09 | .11 | .10 | .14 | .00 | -.06 | .15 | .06 | .07 | .13 |
| PostMentorRel | | **.37** | .23 | **.41** | .44 | .23 | .05 | .34 | .09 | .10 | .32 | .06 | .07 | .15 |
| **PostCapContDev** | **.37** | | **.47** | **.70** | **.38** | **.24** | **.28** | **.60** | **.28** | **.41** | **.39** | **.19** | **.23** | **.35** |
| PostCapMoreEngaging | .23 | **.47** | | **.58** | .23 | .07 | .10 | .38 | .16 | .28 | .23 | .07 | .09 | .18 |
| **PostCapSuccessful** | **.41** | **.70** | **.58** | | **.39** | **.19** | **.26** | **.51** | **.29** | **.40** | **.42** | **.17** | **.18** | **.33** |
| PostSatisInstr | .44 | **.38** | .23 | **.39** | | .36 | .15 | .34 | .13 | .18 | .25 | .12 | .09 | .19 |
| PostSatisSuppSrv | .23 | **.24** | .07 | **.19** | .36 | | .14 | .16 | .05 | .10 | .12 | .01 | .06 | .05 |
| PostCivicOrient | .05 | **.28** | .10 | **.26** | .15 | .14 | | .21 | .26 | .33 | .20 | .28 | .30 | .10 |
| PostHighOrderCogn | .20 | **.51** | .32 | **.42** | .22 | .13 | .23 | .43 | .26 | .38 | .21 | .14 | .19 | .31 |
| PostExhibScholarlySkills | .34 | **.60** | .38 | **.51** | .34 | .16 | .21 | | .32 | .41 | .54 | .22 | .29 | .35 |
| PostNeedCognLite | .09 | **.28** | .16 | **.29** | .13 | .05 | .26 | .32 | | .34 | .12 | .25 | .32 | .36 |
| PostMultPerspectives2 | .10 | **.41** | .28 | **.40** | .18 | .10 | .33 | .41 | .34 | | .18 | .18 | .22 | .16 |
| PostProjMgt | .32 | **.39** | .23 | **.42** | .25 | .12 | .20 | .54 | .12 | .18 | | .16 | .17 | .20 |
| PostRatingAcadAbil | .06 | **.21** | .07 | **.16** | .14 | .00 | .13 | .32 | .51 | .22 | .13 | .40 | .47 | .37 |
| PostRatingLeadCollabSkills | .06 | **.19** | .07 | **.17** | .12 | .01 | .28 | .22 | .25 | .18 | .16 | | .46 | .10 |
| PostRatingIndepVoice | .07 | **.23** | .09 | **.18** | .09 | .06 | .30 | .29 | .32 | .22 | .17 | .46 | | .19 |
| PostResearchOrient | .15 | **.35** | .18 | **.33** | .19 | .05 | .10 | .35 | .36 | .16 | .20 | .10 | .19 | |
| PostRatingStriver | .12 | **.29** | .13 | **.27** | .21 | .04 | .29 | .35 | .21 | .15 | .39 | .39 | .37 | .27 |
| PostStatusCareerOrient | .11 | **.21** | .12 | **.21** | .05 | -.03 | .13 | .17 | .23 | .05 | .18 | .22 | .12 | .16 |

Notes:

The correlations with PostCapSuccessful and PostCapContDev have been bolded since these are arguably the two most important outcome scales. Of note is that these two scales are the most highly correlated of the scales, with r=0.699. PostCapContDev incorporates eleven items covering skills, knowledge, and dispositional traits that are characteristically requirements of the great majority of types of capstones (disciplines in the performing arts being an example of the exception). While PostCapContDev is largely about development as a result of the capstone, PostCapSuccessful is more forward looking, linking the growth experienced during the capstone with the student's future.

A perception that the capstone experience was successful is correlated most highly with the capstone contributing to the student's development, feeling that the capstone was more engaging than a regular course, and using scholarly skills. Perceptions about preparation are positively but more modestly correlated with preparation in the discipline and preparation breadth at .327 and .313, respectively. Quantitative preparation is a much weaker correlate, .163, although one expects this would be higher for capstones in the natural and social science. The correlation of PostCapSuccessful with the mentor relationship, .415, shows this is important, but while it is above the correlations with the preparation scales, it is, perhaps surprisingly, only on a par with project management, .421, and using higher order cognition, .417. Consistent with the pre-capstone correlations, PostRatingAcadAbil (.164), PostRatingIndepVoice (0.180) and PostRatingStriver (0.270) have low correlations with PostCapSuccessful.

**Table 4.6: Scale Inter-Correlations - Pre- to Post-Student Surveys**

Correlations

| Pre-Capstone Survey Scales | Post-Capstone Survey Scales | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PostPrepBreadth | PostPrepDisc | PostPrepQuant | PostMentorRel | **PostCapContDev** | PostCapMoreEngaging | **PostCapSuccessful** | PostSatisInstr | PostSatisSuppSrv | PostCivicOrient | PostHighOrderCogn | PostExhibScholarlySkills |
| PreExpectGoodCapstone | 0.25 | 0.30 | 0.12 | 0.18 | **0.48** | 0.39 | **0.52** | 0.27 | 0.15 | 0.15 | 0.27 | 0.33 |
| PreSatisInstr | 0.10 | 0.24 | 0.04 | 0.24 | **0.25** | 0.12 | **0.23** | 0.58 | 0.25 | 0.06 | 0.14 | 0.24 |
| PreSatisSuppSrv | 0.09 | 0.19 | 0.07 | 0.19 | **0.18** | 0.05 | **0.18** | 0.25 | 0.51 | 0.07 | 0.05 | 0.12 |
| PreCivicOrient | 0.31 | 0.16 | 0.07 | 0.06 | **0.26** | 0.12 | **0.25** | 0.09 | 0.10 | 0.72 | 0.17 | 0.16 |
| PreHighOrderCogn | 0.17 | 0.16 | 0.07 | 0.11 | **0.29** | 0.14 | **0.23** | 0.18 | 0.10 | 0.21 | 0.31 | 0.30 |
| PreExhibScholarlySkills | 0.15 | 0.14 | 0.03 | 0.18 | **0.28** | 0.11 | **0.27** | 0.23 | 0.10 | 0.20 | 0.23 | 0.44 |
| PreNeedCognLite | 0.18 | 0.10 | -0.02 | 0.07 | **0.20** | 0.15 | **0.21** | 0.08 | 0.01 | 0.15 | 0.20 | 0.25 |
| PreMultPerspectives | 0.30 | 0.11 | -0.06 | 0.03 | **0.21** | 0.10 | **0.21** | 0.13 | 0.07 | 0.28 | 0.20 | 0.22 |
| PreProjMgt | 0.13 | 0.11 | 0.03 | 0.18 | **0.24** | 0.10 | **0.29** | 0.19 | 0.07 | 0.17 | 0.12 | 0.30 |
| PreRatingAcadAbil | 0.06 | 0.02 | -0.07 | 0.04 | **0.12** | 0.03 | **0.10** | 0.10 | 0.00 | 0.09 | 0.14 | 0.22 |
| PreRatingLeadCollabSkills | 0.13 | 0.04 | 0.03 | 0.07 | **0.17** | 0.08 | **0.17** | 0.12 | 0.02 | 0.28 | 0.11 | 0.12 |
| PreRatingIndepVoice | 0.14 | 0.08 | 0.03 | 0.03 | **0.15** | 0.06 | **0.15** | 0.07 | 0.05 | 0.27 | 0.11 | 0.19 |
| PreRatingStriver | 0.12 | 0.14 | 0.15 | 0.09 | **0.27** | 0.12 | **0.27** | 0.16 | 0.03 | 0.26 | 0.19 | 0.27 |
| PreResearchOrient | 0.09 | 0.16 | 0.09 | 0.13 | **0.24** | 0.17 | **0.26** | 0.19 | 0.04 | 0.03 | 0.20 | 0.25 |
| PreStatusCareerOrient | 0.01 | 0.08 | 0.10 | 0.09 | **0.16** | 0.12 | **0.16** | 0.01 | -0.07 | 0.05 | 0.10 | 0.11 |

Notes:

A perception that the capstone contributed to the student's development and that the capstone was successful are mostly highly correlated with expecting a good capstone, .48 and .52, respectively. Perhaps this reflects a combination of students correctly judging they have the required skills and motivation.

**Table 4.6: Scale Inter-Corr**

Correlations

| Pre-Capstone Survey Scales | Post-Capstone Survey Scales: PostNeedCognLite | PostMultPerspectives | PostProjMgt | PostRatingAcadAbil | PostRatingLeadCollabSkills | PostRatingIndepVoice | PostResearchOrient | PostRatingStriver | PostStatusCareerOrient |
|---|---|---|---|---|---|---|---|---|---|
| PreExpectGoodCapstone | 0.26 | 0.26 | 0.23 | 0.10 | 0.13 | 0.10 | 0.27 | 0.18 | 0.16 |
| PreSatisInstr | 0.12 | 0.09 | 0.15 | 0.14 | 0.10 | 0.05 | 0.12 | 0.15 | 0.03 |
| PreSatisSuppSrv | 0.03 | 0.07 | 0.09 | -0.01 | 0.03 | 0.01 | 0.03 | 0.05 | 0.01 |
| PreCivicOrient | 0.18 | 0.29 | 0.20 | 0.06 | 0.27 | 0.23 | 0.04 | 0.26 | 0.02 |
| PreHighOrderCogn | 0.22 | 0.24 | 0.18 | 0.16 | 0.10 | 0.15 | 0.19 | 0.17 | 0.10 |
| PreExhibScholarlySkills | 0.35 | 0.24 | 0.29 | 0.37 | 0.26 | 0.25 | 0.28 | 0.33 | 0.10 |
| PreNeedCognLite | 0.70 | 0.27 | 0.07 | 0.42 | 0.24 | 0.24 | 0.24 | 0.14 | 0.15 |
| PreMultPerspectives | 0.31 | 0.44 | 0.10 | 0.20 | 0.16 | 0.21 | 0.14 | 0.12 | 0.01 |
| PreProjMgt | 0.08 | 0.14 | 0.51 | 0.13 | 0.16 | 0.13 | 0.18 | 0.40 | 0.10 |
| PreRatingAcadAbil | 0.44 | 0.16 | 0.10 | 0.74 | 0.33 | 0.35 | 0.26 | 0.27 | 0.13 |
| PreRatingLeadCollabSkills | 0.22 | 0.15 | 0.12 | 0.29 | 0.80 | 0.32 | 0.02 | 0.27 | 0.20 |
| PreRatingIndepVoice | 0.28 | 0.17 | 0.13 | 0.29 | 0.38 | 0.58 | 0.08 | 0.23 | 0.09 |
| PreRatingStriver | 0.15 | 0.11 | 0.31 | 0.26 | 0.32 | 0.26 | 0.21 | 0.64 | 0.22 |
| PreResearchOrient | 0.27 | 0.10 | 0.14 | 0.29 | 0.08 | 0.08 | 0.69 | 0.21 | 0.11 |
| PreStatusCareerOrient | 0.14 | 0.00 | 0.14 | 0.09 | 0.18 | 0.08 | 0.14 | 0.14 | 0.70 |

**Table 4.7: Scale Inter-Correlations - Pre- to Post-Faculty Survey**

| Correlations | Pre- | | | | Post- | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PreCommunSkills | PreEffProjectMgt | PreIntelEngagement | PreCrThinkSkills | PostCommunSkills | PostEffProjectMgt | PostIntelEngagement | PostCrThinkSkills | StudentTopicMotiv | MentorInstruction | MentorRapport |
| PreCommunSkills | | 0.72 | 0.67 | 0.76 | **0.53** | 0.45 | 0.44 | 0.48 | 0.24 | 0.10 | 0.21 |
| PreEffProjectMgt | 0.72 | | 0.77 | 0.82 | 0.43 | **0.54** | 0.48 | 0.52 | 0.30 | 0.11 | 0.29 |
| PreIntelEngagement | 0.67 | 0.77 | | 0.81 | 0.41 | 0.43 | **0.55** | 0.50 | 0.37 | 0.12 | 0.26 |
| PreCrThinkSkills | 0.76 | 0.82 | 0.81 | | 0.45 | 0.47 | 0.49 | **0.53** | 0.29 | 0.11 | 0.24 |
| PostCommunSkills | 0.53 | 0.43 | 0.41 | 0.45 | | 0.73 | 0.71 | 0.77 | 0.41 | 0.23 | 0.46 |
| PostEffProjectMgt | 0.45 | 0.54 | 0.43 | 0.47 | 0.73 | | 0.83 | 0.85 | 0.57 | 0.36 | 0.58 |
| PostIntelEngagement | 0.44 | 0.48 | 0.55 | 0.49 | 0.71 | 0.83 | | 0.87 | 0.63 | 0.31 | 0.54 |
| Table 4. 4: Scale Inter-Correlations - Pre-Student Survey | 0.48 | 0.52 | 0.50 | 0.53 | 0.77 | 0.85 | 0.87 | | 0.54 | 0.31 | 0.55 |
| StudentTopicMotiv | 0.24 | 0.30 | 0.37 | 0.29 | 0.41 | 0.57 | 0.63 | 0.54 | | 0.38 | 0.49 |
| MentorInstruction | 0.10 | 0.11 | 0.12 | 0.11 | 0.23 | 0.36 | 0.31 | 0.31 | 0.38 | | 0.74 |
| MentorRapport | 0.21 | 0.29 | 0.26 | 0.24 | 0.46 | 0.58 | 0.54 | 0.55 | 0.49 | 0.74 | |

Notes:

The correlations of the four pre scales to their corresponding post scales are about 0.53-0.55, which seems a bit low. It could be this is because in some cases the mentor who did the post survey was not the same as the faculty member doing the pre-capstone survey, or the nature of the capstone may draw out different skills than a regular course.

The inter-correlations of the four student performance rating scales are high (0.66 - 0.87) for each of the pre and post sets of scales. Are these areas that inter-related or are faculty not able to make the distinctions we would anticipate?

The correlations of both StudentTopicMotiv and the mentor's rating of their instruction (MentorInstruction) and rapport with the student (MentorRapport) are positively correlated with the student performance scales. MentorRapport, which touches more on affective aspects of the student-mentor relationship (feeling comfortable with the student, having an interest in the student's topic, providing encouragement), is more highly correlated with student performance than MentorInstruction, which focuses on more pragmatic aspects (providing access, advice, feedback and scholarly expertise).

**Table 4.8: Post Student and Post Faculty Scale Inter-Correlations**

Based on all capstone data. Ns are approximately 1600 for student to student item correlations, 500 for faculty to student item correlations.

| | Correlations | PostMentorRel | **PostCapContDev** | PostCapMoreEngaging | **PostCapSuccessful** | PostSatisInstr | PostHighOrderCogn | PostExhibScholarlySkills | PostNeedCognLite | PostMultPerspectives2 | PostProjMgt | PostRatingAcadAbil | PostRatingCollabSkills | PostRatingIndepVoice | PostResearchOrient | PostRatingStriver | PostStatusCareerOrient |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stu | PostPrepBreadth | .11 | **.27** | .09 | **.31** | .16 | .19 | .16 | .21 | .38 | .11 | .09 | .14 | .17 | .11 | .14 | .05 |
| | PostPrepDisc | .24 | **.43** | .27 | **.33** | .32 | .30 | .29 | .12 | .17 | .17 | .06 | .07 | .13 | .22 | .20 | .13 |
| | PostPrepQuant | .10 | **.22** | .09 | **.16** | .09 | .22 | .14 | .00 | -.06 | .15 | -.02 | .06 | .07 | .13 | .20 | .16 |
| | PostMentorRel | | .37 | .23 | .41 | .44 | .20 | .34 | .09 | .10 | .32 | .06 | .06 | .07 | .15 | **.12** | .11 |
| | **PostCapContDev** | .37 | | **.47** | **.70** | **.38** | **.51** | **.60** | **.28** | **.41** | **.39** | **.21** | **.19** | **.23** | **.35** | **.29** | **.21** |
| | PostCapMoreEngaging | .23 | **.47** | | **.58** | .23 | .32 | .38 | .16 | .28 | .23 | .07 | .07 | .09 | .18 | .13 | .12 |
| | **PostCapSuccessful** | .41 | **.70** | **.58** | | **.39** | **.42** | **.51** | **.29** | **.40** | **.42** | **.16** | **.17** | **.18** | **.33** | **.27** | **.21** |
| | PostSatisInstr | .44 | **.38** | .23 | **.39** | | .22 | .34 | .13 | .18 | .25 | .14 | .12 | .09 | .19 | .21 | .05 |
| | PostSatisSuppSrv | .23 | **.24** | .07 | **.19** | .36 | .13 | .16 | .05 | .10 | .12 | .00 | .01 | .06 | .05 | .04 | -.03 |
| | PostCivicOrient | .05 | **.28** | .10 | **.26** | .15 | .23 | .21 | .26 | .33 | .20 | .13 | .28 | .30 | .10 | .29 | .13 |
| | PostHighOrderCogn | .20 | **.51** | .32 | **.42** | .22 | | .43 | .26 | .38 | .21 | .20 | .14 | .19 | .31 | .21 | .16 |
| | PostExhibScholarlySkills | .34 | **.60** | .38 | **.51** | .34 | .43 | | .32 | .41 | .54 | .32 | .22 | .29 | .35 | .35 | .17 |
| | PostNeedCognLite | .09 | **.28** | .16 | **.29** | .13 | .26 | .32 | | .34 | .12 | .51 | .25 | .32 | .36 | .21 | .23 |
| | PostMultPerspectives2 | .10 | **.41** | .28 | **.40** | .18 | .38 | .41 | .34 | | .18 | .22 | .18 | .22 | .16 | .15 | .05 |
| | PostProjMgt | .32 | **.39** | .23 | **.42** | .25 | .21 | .54 | .12 | .18 | | .13 | .16 | .17 | .20 | .39 | .18 |
| | PostRatingAcadAbil | .06 | **.21** | .07 | **.16** | .14 | .20 | .32 | .51 | .22 | .13 | | .40 | .47 | .37 | .36 | .14 |
| | PostRatingCollabSkills | .06 | **.19** | .07 | **.17** | .12 | .14 | .22 | .25 | .18 | .16 | .40 | | .46 | .10 | .39 | .22 |
| | PostRatingIndepVoice | .07 | **.23** | .09 | **.18** | .09 | .19 | .29 | .32 | .22 | .17 | .47 | .46 | | .19 | .37 | .12 |
| | PostResearchOrient | .15 | **.35** | .18 | **.33** | .19 | .31 | .35 | .36 | .16 | .20 | .37 | .10 | .19 | | .27 | .16 |
| | PostRatingStriver | .12 | **.29** | .13 | **.27** | .21 | .21 | .35 | .21 | .15 | .39 | .36 | .39 | .37 | .27 | | .23 |
| | PostStatusCareerOrient | .11 | **.21** | .12 | **.21** | | .16 | .17 | .23 | .05 | .18 | .14 | .22 | .12 | .16 | .23 | |
| Fac | PostCommunSkills | .18 | **.15** | | **.20** | .20 | .09 | .23 | .10 | .02 | .20 | .28 | | | .26 | .16 | .06 |
| | PostEffProjectMgt | .26 | **.21** | .12 | **.27** | .22 | .09 | .27 | .07 | | .33 | .19 | | | .30 | .22 | .08 |
| | PostIntelEngagement | .23 | **.16** | .10 | **.24** | .18 | | .23 | .14 | .07 | .20 | .28 | | | .32 | .17 | |
| | PostCrThinkSkills | .24 | **.18** | .09 | **.25** | .21 | .10 | .26 | .11 | | .25 | .25 | | | .31 | .19 | .08 |
| | PostStudentTopicMotiv | .23 | **.22** | .22 | **.31** | .18 | .12 | .26 | .18 | .19 | .21 | .20 | .12 | .09 | .22 | .14 | |
| | PostMentorInstruction | .28 | **.16** | .16 | **.14** | .08 | | .16 | | | .17 | .05 | | | | | |
| | PostMentorRapport | .320 | **.187** | .209 | **.226** | .177 | .104 | .189 | | | .174 | .143 | | | .161 | .108 | |

**Table 4.9: Faculty Summative Assessments to Faculty Scales Inter-Correlations**

| | | Summative Ratings of Capstone Cont. to Development | | | | | | | Scale Ratings of Performance | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Correlations | Independence | Intellectual Engagement | Self-understanding | Project Management | Research | Critical Thinking and Reasoning | Communication | PostCommunSkills | PostEffProjectMgt | PostIntelEngagement | PostCrThinkSkills | PostStudentTopicMotiv | PostMentorInstruction | PostMentorRapport |
| Summative Ratings | Independence | | 0.77 | 0.74 | 0.71 | 0.73 | 0.76 | 0.70 | 0.54 | 0.68 | 0.74 | 0.68 | 0.60 | 0.24 | 0.41 |
| | Intellectual Engagement | 0.77 | | 0.75 | 0.70 | 0.75 | 0.76 | 0.70 | 0.51 | 0.69 | 0.75 | 0.67 | 0.65 | 0.36 | 0.52 |
| | Self-understanding | 0.74 | 0.75 | | 0.75 | 0.76 | 0.77 | 0.74 | 0.57 | 0.73 | 0.72 | 0.70 | 0.58 | 0.33 | 0.52 |
| | Project Management | 0.71 | 0.70 | 0.75 | | 0.80 | 0.76 | 0.73 | 0.60 | 0.78 | 0.70 | 0.71 | 0.59 | 0.30 | 0.48 |
| | Research | 0.73 | 0.75 | 0.76 | 0.80 | | **0.83** | 0.75 | 0.62 | 0.75 | 0.75 | 0.76 | 0.58 | 0.34 | 0.54 |
| | Critical Thinking and Reasoning | 0.76 | 0.76 | 0.77 | 0.76 | **0.83** | | **0.81** | 0.65 | 0.75 | 0.77 | 0.79 | 0.56 | 0.33 | 0.52 |
| | Communication | 0.70 | 0.70 | 0.74 | 0.73 | 0.75 | **0.81** | | 0.68 | 0.69 | 0.69 | 0.71 | 0.53 | 0.34 | 0.52 |
| Scales | PostCommunSkills | 0.54 | 0.51 | 0.57 | 0.60 | 0.62 | 0.65 | 0.68 | | 0.73 | 0.71 | 0.77 | 0.41 | 0.23 | 0.46 |
| | PostEffProjectMgt | 0.68 | 0.69 | 0.73 | 0.78 | 0.75 | 0.75 | 0.69 | 0.73 | | **0.83** | **0.85** | 0.57 | 0.36 | 0.58 |
| | PostIntelEngagement | 0.74 | 0.75 | 0.72 | 0.70 | 0.75 | 0.77 | 0.69 | 0.71 | **0.83** | | **0.87** | 0.63 | 0.31 | 0.54 |
| | PostCrThinkSkills | 0.68 | 0.67 | 0.70 | 0.71 | 0.76 | 0.79 | 0.71 | 0.77 | **0.85** | **0.87** | | 0.54 | 0.31 | 0.55 |
| | PostStudentTopicMotiv | 0.60 | 0.65 | 0.58 | 0.59 | 0.58 | 0.56 | 0.53 | 0.41 | 0.57 | 0.63 | 0.54 | | 0.38 | 0.49 |
| | PostMentorInstruction | 0.24 | 0.36 | 0.33 | 0.30 | 0.34 | 0.33 | 0.34 | 0.23 | 0.36 | 0.31 | 0.31 | 0.38 | | 0.74 |
| | PostMentorRapport | 0.41 | 0.52 | 0.52 | 0.48 | 0.54 | 0.52 | 0.52 | 0.46 | 0.58 | 0.54 | 0.55 | 0.49 | 0.74 | |

Notes:

This shows the correlations of the seven single question summative items (independence to communication above) to the related post-student scales. The correlations of the four matched items are high. Future surveys might reasonably use just the summative items when survey length is a consideration.

All correlations are significant p<=.001. Ns ranged from about 900 to 1500.

## TABLES 4.10 – 4.13: PRE to POST CAPSTONE CHANGES
## Overall and by School, Major Division, GPA, and Gender

This set of tables concerns pre- to post-capstone changes in our scales and for individual survey questions. The data is based on the subset of about 1240 capstones in our database for which there was both a pre- and post-capstone survey returned.

### Table 4.10: Scale and Item Means and Pre/Post Changes by Student Subgroup (All, School, Major, GPA Group, Gender)

Scales and their component items are listed first for the student scales, then the faculty scales. The "Pre" and "Post" columns indicate the means from the pre- and post-capstone surveys, respectively. Some scales/items have only a Pre or Post value they were only asked on the pre or post-capstone survey, respectively. The "D" column indicates the mean of the difference scores computed for each individual capstone where both a pre and post response was available, computed as the post value minus the pre value. Thus the "D" values are based on a repeat measures design for individual capstones and, arguably, our best measure for change. The "Post" minus "Pre" value may not equal the "D" value because of rounding and students responding to a question only one or the pre or post surveys. Asterisks indicated statistically significant differences.

### Table 4.11: Significant Pre/Post Changes for Scales and Sub-items, by Student Subgroups Pre/Post Capstone Change: Significant Changes for Scales and Individual Items

Table 4.11 summarizes statistically significant differences with and up or down arrow indicating the direction of change.

### Table 4.12: Significant Pre/Post Changes for Scales, by Student Subgroups Pre/Post Capstone Change: Significant Changes for Scales

Table 4.12 summarizes statistically significant differences among the scales only (dropping individual items) with and up or down arrow indicating the direction of change.

### Table 4.13: Summary Sheet: Means of Scales and Summative Items asked only on the Post-Capstone Student and Faculty Surveys

## Table 4.10: Pre/Post Capstone Change: Changes in Survey Means, Overall and by School, Major Division, GPA Group and Gender

**Combined 2009/10 and 2010/11 Data**

Exel Conditional Formatting color scales have been used to highlight variation within each scale row.

Based on capstones for which there was both a pre- and post-capstone survey.

Pre-post differences, "D", are based on difference scores for paired responses for individual capstones.

Sig of D: * p<.05, ** p<.01, *** p<.001, using 2-tailed T-test for dependent samples. eff=effect size using avg. D/stdev D

Note that the Pre/Post differences of the means may not equal D for some questions, due to respondents that did not respond to the question on both surveys.

| Line | | All | | | | | | Red | | | | | | Tan | | | | | | White | | | | | | Yellow | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 2 | **Student Scales [1]** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | *5 point scale* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | **ExpectGoodCapstone** | 4.20 | | | | | 1201 | 4.33 | | | | | 385 | 4.14 | | | | | 291 | 4.10 | | | | | 168 | 4.16 | | | | | 357 |
| 5 | My capstone will lead to a better understanding of my skills, abilities and interests | 4.33 | | | | | 1201 | 4.43 | | | | | 385 | 4.27 | | | | | 291 | 4.33 | | | | | 168 | 4.26 | | | | | 357 |
| 6 | My ability to think critically and analytically will improve | 4.26 | | | | | 1200 | 4.39 | | | | | 384 | 4.15 | | | | | 291 | 4.21 | | | | | 168 | 4.25 | | | | | 357 |
| 7 | My understanding of my discipline will improve | 4.37 | | | | | 1200 | 4.49 | | | | | 385 | 4.34 | | | | | 291 | 4.25 | | | | | 167 | 4.34 | | | | | 357 |
| 8 | My capstone will better prepare me for a job or graduate school | 4.12 | | | | | 1195 | 4.31 | | | | | 383 | 4.14 | | | | | 290 | 3.87 | | | | | 166 | 4.01 | | | | | 356 |
| 9 | My capstone will help me clarify my career or graduate school objectives | 3.76 | | | | | 1200 | 3.86 | | | | | 385 | 3.89 | | | | | 290 | 3.69 | | | | | 168 | 3.57 | | | | | 357 |
| 10 | My oral presentation skills will improve | 4.02 | | | | | 1199 | 4.13 | | | | | 384 | 3.99 | | | | | 291 | 3.75 | | | | | 167 | 4.04 | | | | | 357 |
| 11 | My writing skills will improve | 4.17 | | | | | 1201 | 4.41 | | | | | 385 | 4.00 | | | | | 291 | 4.00 | | | | | 168 | 4.14 | | | | | 357 |
| 12 | My capstone will be more engaging than my regular course work | 4.46 | | | | | 1200 | 4.55 | | | | | 385 | 4.33 | | | | | 290 | 4.39 | | | | | 168 | 4.49 | | | | | 357 |
| 13 | I expect to create new knowledge in my discipline | 3.99 | | | | | 1198 | 4.09 | | | | | 384 | 3.90 | | | | | 290 | 4.01 | | | | | 167 | 3.97 | | | | | 357 |
| 14 | My capstone will be intellectually challenging | 4.52 | | | | | 1200 | 4.62 | | | | | 385 | 4.39 | | | | | 291 | 4.51 | | | | | 168 | 4.51 | | | | | 356 |
| 15 | *4 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | **CivicOrient** | 2.84 | 2.85 | .01 | | .02 | 1229 | 2.74 | 2.74 | .00 | | .00 | 390 | 2.97 | 2.98 | .01 | | .02 | 296 | 2.83 | 2.89 | .06 | | .13 | 171 | 2.84 | 2.83 | -.01 | | -.01 | 372 |
| 17 | Volunteering in my community | 2.79 | 2.78 | -.01 | | -.01 | 1224 | 2.67 | 2.65 | -.02 | | -.02 | 388 | 2.90 | 2.92 | .02 | | .03 | 296 | 2.78 | 2.85 | .07 | | .09 | 171 | 2.83 | 2.78 | -.05 | | -.07 | 369 |
| 18 | Helping others who are in difficulty | 3.22 | 3.20 | -.02 | | -.03 | 1226 | 3.12 | 3.13 | .01 | | .01 | 390 | 3.36 | 3.31 | -.05 | | -.07 | 295 | 3.22 | 3.20 | -.02 | | -.03 | 171 | 3.22 | 3.20 | -.03 | | -.04 | 370 |
| 19 | Becoming a community leader | 2.63 | 2.65 | .03 | | .04 | 1225 | 2.53 | 2.54 | .01 | | .01 | 389 | 2.79 | 2.80 | .02 | | .03 | 294 | 2.52 | 2.66 | .14 | * | .17 | 170 | 2.64 | 2.65 | .01 | | .01 | 372 |
| 20 | Influencing social values | 2.86 | 2.88 | .03 | | .04 | 1229 | 2.76 | 2.82 | .05 | | .07 | 390 | 2.94 | 2.96 | .02 | | .02 | 296 | 2.94 | 2.97 | .03 | | .04 | 171 | 2.85 | 2.85 | .01 | | .01 | 372 |
| 21 | Integrating spirituality into my life | 2.36 | 2.35 | .00 | | .00 | 1225 | 2.21 | 2.17 | -.04 | | -.05 | 390 | 2.55 | 2.57 | .02 | | .03 | 294 | 2.34 | 2.44 | .11 | | .13 | 171 | 2.36 | 2.33 | -.02 | | -.04 | 370 |
| 22 | Developing a meaningful philosophy of life | 3.18 | 3.20 | .02 | | .03 | 1228 | 3.17 | 3.14 | -.02 | | -.03 | 390 | 3.28 | 3.31 | .02 | | .03 | 296 | 3.15 | 3.20 | .05 | | .06 | 171 | 3.14 | 3.19 | .05 | | .07 | 371 |
| 23 | **StatusCareerOrient** | 2.61 | 2.58 | -.02 | | -.04 | 1229 | 2.55 | 2.50 | -.06 | * | -.11 | 390 | 2.55 | 2.51 | -.04 | | -.09 | 296 | 2.71 | 2.72 | .02 | | .03 | 171 | 2.66 | 2.67 | .01 | | .03 | 372 |
| 24 | Becoming accomplished in my field of expertise | 3.43 | 3.32 | -.11 | *** | -.16 | 1229 | 3.33 | 3.19 | -.14 | *** | -.20 | 390 | 3.48 | 3.34 | -.14 | *** | -.20 | 296 | 3.49 | 3.44 | -.05 | | -.07 | 171 | 3.47 | 3.40 | -.07 | * | -.11 | 372 |
| 25 | Working in a prestigious occupation | 2.23 | 2.24 | .01 | | .02 | 1225 | 2.13 | 2.13 | .00 | | .00 | 390 | 2.13 | 2.15 | .02 | | .03 | 295 | 2.37 | 2.37 | .01 | | .01 | 171 | 2.34 | 2.37 | .02 | | .03 | 369 |
| 26 | Making a lot of money | 2.19 | 2.21 | .01 | | .02 | 1229 | 2.15 | 2.14 | -.01 | | -.02 | 390 | 2.08 | 2.10 | .01 | | .02 | 296 | 2.37 | 2.39 | .02 | | .03 | 171 | 2.23 | 2.27 | .04 | | .06 | 372 |
| 27 | Obtaining recognition from my colleagues for contributions to my special field | 2.58 | 2.57 | -.01 | | -.01 | 1225 | 2.60 | 2.53 | -.07 | | -.08 | 387 | 2.52 | 2.47 | -.05 | | -.06 | 296 | 2.60 | 2.69 | .09 | | .10 | 171 | 2.58 | 2.63 | .05 | | .06 | 371 |
| 28 | **HighOrderCogn** | 3.24 | 3.20 | -.05 | * | -.07 | 1199 | 3.21 | 3.20 | .01 | | .01 | 383 | 3.30 | 3.15 | -.15 | *** | -.22 | 291 | 3.21 | 3.15 | -.07 | | -.11 | 168 | 3.24 | 3.24 | -.01 | | -.01 | 357 |
| 29 | Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | 3.31 | 3.39 | .08 | ** | .09 | 1198 | 3.30 | 3.41 | .13 | ** | .15 | 383 | 3.35 | 3.38 | .01 | | .01 | 291 | 3.26 | 3.33 | .06 | | .07 | 167 | 3.32 | 3.42 | .09 | | .10 | 357 |
| 30 | Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | 3.12 | 3.14 | .02 | | .02 | 1199 | 3.09 | 3.10 | .02 | | .02 | 383 | 3.19 | 3.13 | -.08 | | -.08 | 291 | 2.99 | 3.10 | .08 | | .07 | 168 | 3.15 | 3.20 | .07 | | .06 | 357 |
| 31 | Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | 3.26 | 3.19 | -.07 | * | -.07 | 1199 | 3.23 | 3.19 | -.02 | | -.03 | 383 | 3.30 | 3.14 | -.16 | ** | -.16 | 291 | 3.30 | 3.20 | -.11 | | -.12 | 168 | 3.25 | 3.23 | -.03 | | -.03 | 357 |
| 32 | Applying theories or concepts to practical problems or in new situations | 3.27 | 3.06 | -.21 | *** | -.20 | 1196 | 3.22 | 3.11 | -.10 | | -.10 | 381 | 3.34 | 2.97 | -.38 | *** | -.34 | 291 | 3.30 | 2.97 | -.31 | *** | -.30 | 168 | 3.25 | 3.11 | -.15 | ** | -.15 | 356 |
| 33 | **MultPerspectives** | 3.04 | 2.84 | -.19 | *** | -.30 | 1200 | 3.01 | 2.82 | -.19 | *** | -.33 | 383 | 3.12 | 3.01 | -.12 | ** | -.17 | 291 | 3.03 | 2.86 | -.17 | ** | -.24 | 168 | 3.01 | 2.74 | -.27 | *** | -.42 | 358 |
| 34 | Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | 3.01 | 2.74 | -.26 | *** | -.25 | 1197 | 2.98 | 2.73 | -.24 | *** | -.24 | 381 | 3.09 | 2.97 | -.12 | | -.11 | 291 | 3.02 | 2.76 | -.26 | ** | -.23 | 168 | 2.97 | 2.57 | -.41 | *** | -.38 | 357 |
| 35 | Examined the strengths and weaknesses of your own views on a topic or issue | 2.94 | 3.02 | .08 | ** | .08 | 1197 | 2.93 | 2.98 | .06 | | .07 | 383 | 2.98 | 3.10 | .11 | * | .12 | 290 | 2.94 | 3.00 | .07 | | .07 | 168 | 2.92 | 3.00 | .07 | | .07 | 356 |
| 36 | Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | 2.92 | 2.46 | -.44 | *** | -.40 | 1200 | 2.93 | 2.43 | -.51 | *** | -.49 | 383 | 3.05 | 2.77 | -.29 | *** | -.24 | 291 | 2.85 | 2.53 | -.33 | *** | -.29 | 168 | 2.82 | 2.24 | -.56 | *** | -.52 | 358 |
| 37 | Learned something that changed the way you understand an issue or concept | 3.10 | 3.04 | -.07 | * | -.08 | 1200 | 3.03 | 3.01 | -.02 | | -.03 | 383 | 3.18 | 3.18 | -.03 | | -.03 | 291 | 3.07 | 2.91 | -.16 | * | -.16 | 168 | 3.12 | 3.02 | -.11 | * | -.11 | 358 |
| 38 | Put together ideas or concepts from different courses | 3.22 | 2.96 | -.26 | *** | -.26 | 1200 | 3.16 | 2.94 | -.23 | *** | -.23 | 383 | 3.28 | 3.01 | -.27 | *** | -.25 | 291 | 3.24 | 3.08 | -.17 | * | -.17 | 168 | 3.22 | 2.87 | -.34 | *** | -.34 | 358 |
| 39 | *5 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | **SatisInstr** | 4.46 | 4.44 | -.01 | | -.03 | 1203 | 4.46 | 4.47 | .01 | | .03 | 385 | 4.44 | 4.37 | -.07 | * | -.13 | 292 | 4.43 | 4.43 | .00 | | .00 | 168 | 4.48 | 4.47 | .00 | | -.01 | 358 |
| 41 | Quality of instruction in my major field | 4.57 | 4.53 | -.03 | | -.05 | 1201 | 4.51 | 4.52 | .01 | | .01 | 383 | 4.58 | 4.49 | -.09 | * | -.14 | 292 | 4.59 | 4.54 | -.05 | | -.08 | 168 | 4.59 | 4.58 | -.01 | | -.01 | 358 |
| 42 | Overall quality of instruction | 4.38 | 4.39 | .00 | | .00 | 1200 | 4.41 | 4.42 | .01 | | .02 | 385 | 4.33 | 4.29 | -.03 | | -.04 | 290 | 4.36 | 4.38 | .02 | | .02 | 168 | 4.41 | 4.42 | .01 | | .02 | 357 |
| 43 | Overall college experience | 4.42 | 4.41 | -.01 | | -.01 | 1201 | 4.46 | 4.48 | .02 | | .04 | 384 | 4.41 | 4.33 | -.08 | * | -.12 | 292 | 4.35 | 4.39 | .05 | | .08 | 167 | 4.42 | 4.40 | -.01 | | -.02 | 358 |

| Line | | All | | | | | | Red | | | | | | Tan | | | | | | White | | | | | | Yellow | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 44 | **SatisSuppSrv** | 3.99 | 3.92 | -.07 | *** | -.10 | 1203 | 4.11 | 4.01 | -.10 | ** | -.16 | 385 | 4.20 | 4.16 | -.04 | | -.07 | 292 | 3.76 | 3.71 | -.05 | | -.07 | 168 | 3.79 | 3.73 | -.06 | | -.09 | 358 |
| 45 | Computer facilities and services | 3.81 | 3.76 | -.05 | | -.05 | 1202 | 4.05 | 3.96 | -.09 | * | -.10 | 385 | 4.07 | 4.05 | -.02 | | -.02 | 291 | 3.69 | 3.67 | -.01 | | -.01 | 168 | 3.40 | 3.37 | -.03 | | -.04 | 358 |
| 46 | Library facilities and services | 4.18 | 4.10 | -.08 | *** | -.10 | 1203 | 4.28 | 4.20 | -.08 | * | -.11 | 385 | 4.42 | 4.35 | -.07 | | -.10 | 292 | 3.65 | 3.53 | -.14 | | -.14 | 168 | 4.13 | 4.06 | -.07 | | -.08 | 358 |
| 47 | Facilities/equipment in my major field | 3.98 | 3.91 | -.07 | ** | -.08 | 1201 | 4.02 | 3.88 | -.13 | ** | -.15 | 383 | 4.12 | 4.09 | -.02 | | -.03 | 292 | 3.93 | 3.94 | -.01 | | -.01 | 168 | 3.84 | 3.77 | -.08 | | -.08 | 358 |
| 48 | **ExhibScholarlySkills** | 4.15 | 4.35 | .19 | *** | .42 | 1228 | 4.13 | 4.34 | .22 | *** | .52 | 389 | 4.18 | 4.31 | .12 | *** | .25 | 296 | 4.14 | 4.33 | .17 | *** | .35 | 171 | 4.17 | 4.40 | .23 | *** | .49 | 372 |
| 49 | I located appropriate source material | 4.22 | 4.45 | .21 | *** | .30 | 1225 | 4.22 | 4.45 | .22 | *** | .30 | 389 | 4.23 | 4.38 | .14 | ** | .19 | 295 | 4.20 | 4.46 | .23 | *** | .36 | 171 | 4.22 | 4.49 | .25 | *** | .35 | 370 |
| 50 | I used disciplinary knowledge and methods appropriately | 4.13 | 4.32 | .19 | *** | .25 | 1217 | 4.09 | 4.28 | .19 | *** | .24 | 385 | 4.22 | 4.37 | .14 | ** | .19 | 294 | 4.10 | 4.34 | .24 | *** | .33 | 171 | 4.11 | 4.32 | .21 | *** | .26 | 367 |
| 51 | I supported my arguments with appropriate evidence | 4.24 | 4.43 | .17 | *** | .23 | 1220 | 4.22 | 4.43 | .19 | *** | .25 | 387 | 4.28 | 4.38 | .10 | * | .13 | 295 | 4.24 | 4.40 | .15 | ** | .22 | 170 | 4.24 | 4.47 | .23 | *** | .30 | 368 |
| 52 | I showed originality | 4.07 | 4.23 | .16 | *** | .20 | 1221 | 4.03 | 4.24 | .22 | *** | .27 | 387 | 4.12 | 4.18 | .06 | | .07 | 295 | 4.12 | 4.27 | .12 | * | .16 | 171 | 4.05 | 4.23 | .20 | *** | .25 | 368 |
| 53 | I synthesized information to produce insights that expanded my understanding | 4.07 | 4.36 | .29 | *** | .37 | 1214 | 4.07 | 4.35 | .28 | *** | .37 | 383 | 4.06 | 4.32 | .25 | *** | .31 | 294 | 4.09 | 4.35 | .26 | *** | .34 | 170 | 4.08 | 4.42 | .35 | *** | .44 | 367 |
| 54 | I demonstrated good communication skills | 4.14 | 4.28 | .12 | *** | .16 | 1223 | 4.05 | 4.25 | .18 | *** | .26 | 387 | 4.17 | 4.26 | .09 | | .12 | 295 | 4.25 | 4.29 | .01 | | .01 | 171 | 4.17 | 4.31 | .14 | ** | .16 | 370 |
| 55 | I showed evidence of independent thinking | 4.24 | 4.45 | .20 | *** | .29 | 1224 | 4.20 | 4.44 | .25 | *** | .36 | 389 | 4.26 | 4.39 | .12 | ** | .16 | 295 | 4.22 | 4.44 | .19 | *** | .27 | 171 | 4.28 | 4.51 | .23 | *** | .34 | 369 |
| 56 | I showed skill with quantitative reasoning | 3.74 | 3.94 | .12 | *** | .14 | 1186 | 3.70 | 3.85 | .07 | | .07 | 371 | 3.66 | 3.83 | .05 | | .05 | 284 | 3.79 | 4.00 | .19 | ** | .25 | 169 | 3.83 | 4.07 | .20 | *** | .23 | 362 |
| 57 | I persisted when faced with conceptual and practical difficulties | 4.19 | 4.43 | .23 | *** | .30 | 1221 | 4.12 | 4.42 | .30 | *** | .40 | 385 | 4.24 | 4.34 | .08 | | .10 | 295 | 4.14 | 4.41 | .24 | *** | .32 | 171 | 4.23 | 4.51 | .27 | *** | .36 | 370 |
| 58 | I used feedback to assess my performance | 4.20 | 4.39 | .17 | *** | .20 | 1222 | 4.20 | 4.38 | .17 | *** | .21 | 386 | 4.24 | 4.37 | .14 | * | .14 | 296 | 4.16 | 4.39 | .19 | ** | .23 | 171 | 4.19 | 4.40 | .20 | *** | .23 | 369 |
| 59 | Integrated ideas or information from various sources | 3.55 | 3.67 | .12 | *** | .17 | 1199 | 3.58 | 3.67 | .09 | * | .13 | 383 | 3.58 | 3.63 | .03 | | .04 | 291 | 3.42 | 3.61 | .19 | ** | .25 | 168 | 3.55 | 3.73 | .18 | *** | .26 | 357 |
| 60 | **NeedCognLite** | 3.88 | 3.92 | .05 | *** | .11 | 1229 | 3.93 | 3.97 | .05 | * | .10 | 390 | 3.82 | 3.86 | .04 | | .09 | 296 | 3.94 | 4.00 | .06 | | .12 | 171 | 3.84 | 3.89 | .05 | * | .11 | 372 |
| 61 | The notion of thinking abstractly is appealing to me | 3.85 | 3.92 | .08 | *** | .10 | 1218 | 3.87 | 3.95 | .08 | | .09 | 386 | 3.85 | 3.85 | .00 | | .00 | 294 | 3.92 | 4.09 | .17 | ** | .23 | 170 | 3.80 | 3.88 | .09 | * | .11 | 368 |
| 62 | I enjoy expressing my ideas in writing | 3.85 | 3.92 | .07 | ** | .09 | 1218 | 3.96 | 4.01 | .05 | | .08 | 385 | 3.87 | 3.91 | .04 | | .05 | 294 | 3.87 | 3.96 | .11 | | .13 | 170 | 3.72 | 3.81 | .09 | * | .12 | 369 |
| 63 | I really enjoy a task that involves coming up with new solutions to problems | 4.02 | 4.09 | .08 | *** | .10 | 1220 | 4.01 | 4.11 | .10 | * | .13 | 386 | 3.99 | 4.07 | .09 | * | .14 | 295 | 4.08 | 4.11 | .03 | | .04 | 170 | 4.02 | 4.07 | .06 | | .08 | 369 |
| 64 | Creating original works | 2.88 | 2.84 | -.04 | | -.04 | 1228 | 3.00 | 2.92 | -.08 | * | -.11 | 390 | 2.68 | 2.70 | .02 | | .03 | 296 | 2.99 | 2.94 | -.05 | | -.06 | 171 | 2.87 | 2.84 | -.03 | | -.03 | 371 |
| 65 | I have confidence in my opinions, even if they are contrary to the general consensus | 4.09 | 4.14 | .05 | * | .07 | 1220 | 4.07 | 4.15 | .07 | * | .10 | 386 | 4.09 | 4.14 | .05 | | .07 | 295 | 4.13 | 4.18 | .06 | | .08 | 170 | 4.10 | 4.12 | .03 | | .04 | 369 |
| 66 | **ProjMgt** | 3.91 | 4.04 | .13 | *** | .17 | 1226 | 3.83 | 4.02 | .19 | *** | .27 | 389 | 3.95 | 4.06 | .09 | | .12 | 296 | 3.92 | 4.00 | .07 | | .09 | 171 | 3.96 | 4.08 | .12 | ** | .16 | 370 |
| 67 | I properly planned tasks to achieve project goals | 3.94 | 4.06 | .10 | *** | .11 | 1222 | 3.87 | 4.06 | .18 | *** | .21 | 387 | 3.98 | 4.09 | .09 | | .09 | 296 | 3.89 | 3.97 | .06 | | .07 | 171 | 4.01 | 4.07 | .06 | | .06 | 368 |
| 68 | I demonstrated effective time management in completing tasks | 3.72 | 3.92 | .21 | *** | .20 | 1225 | 3.61 | 3.85 | .25 | *** | .25 | 388 | 3.76 | 3.96 | .20 | ** | .17 | 296 | 3.80 | 3.87 | .07 | | .07 | 171 | 3.76 | 3.99 | .24 | *** | .25 | 370 |
| 69 | I identified manageable sets of goals for my projects | 4.07 | 4.17 | .08 | ** | .09 | 1224 | 4.02 | 4.16 | .15 | *** | .18 | 388 | 4.12 | 4.16 | .02 | | .02 | 296 | 4.06 | 4.16 | .07 | | .08 | 171 | 4.10 | 4.18 | .06 | | .07 | 369 |
| 70 | **RatingAcadAbil** | 3.86 | 3.95 | .10 | *** | .27 | 1229 | 3.85 | 3.96 | .10 | *** | .28 | 390 | 3.85 | 3.94 | .09 | *** | .26 | 296 | 3.86 | 3.94 | .08 | ** | .23 | 171 | 3.86 | 3.97 | .11 | *** | .31 | 372 |
| 71 | Writing ability | 3.77 | 3.90 | .13 | *** | .19 | 1225 | 3.83 | 3.97 | .14 | *** | .22 | 389 | 3.77 | 3.87 | .10 | * | .14 | 295 | 3.76 | 3.82 | .06 | | .09 | 170 | 3.71 | 3.88 | .17 | *** | .25 | 371 |
| 72 | Creativity | 3.77 | 3.84 | .07 | *** | .11 | 1226 | 3.75 | 3.79 | .05 | | .08 | 390 | 3.79 | 3.84 | .05 | | .08 | 295 | 3.78 | 3.89 | .12 | * | .20 | 170 | 3.77 | 3.85 | .07 | * | .12 | 371 |
| 73 | Academic ability | 4.00 | 4.09 | .09 | *** | .16 | 1229 | 3.98 | 4.08 | .09 | ** | .17 | 390 | 4.01 | 4.08 | .07 | * | .14 | 296 | 4.00 | 4.10 | .10 | * | .18 | 171 | 4.02 | 4.11 | .09 | ** | .17 | 372 |
| 74 | Ability to think critically | 3.95 | 4.06 | .12 | *** | .17 | 1228 | 3.95 | 4.09 | .14 | *** | .21 | 389 | 3.91 | 4.02 | .11 | ** | .18 | 296 | 3.94 | 4.02 | .08 | | .11 | 171 | 3.97 | 4.09 | .12 | ** | .17 | 372 |
| 75 | Self-confidence (intellectual) | 3.79 | 3.88 | .09 | *** | .13 | 1228 | 3.77 | 3.85 | .09 | * | .12 | 390 | 3.74 | 3.88 | .14 | *** | .20 | 296 | 3.82 | 3.88 | .06 | | .08 | 171 | 3.82 | 3.90 | .08 | * | .11 | 371 |
| 76 | **RatingLeadCollabSkills** | 3.63 | 3.71 | .08 | *** | .17 | 1229 | 3.61 | 3.71 | .10 | *** | .22 | 390 | 3.60 | 3.68 | .08 | ** | .18 | 296 | 3.63 | 3.65 | .02 | | .04 | 171 | 3.69 | 3.76 | .08 | ** | .16 | 372 |
| 77 | Public speaking ability | 3.42 | 3.56 | .14 | *** | .20 | 1226 | 3.36 | 3.54 | .18 | *** | .26 | 390 | 3.36 | 3.47 | .11 | ** | .16 | 295 | 3.40 | 3.47 | .07 | | .10 | 171 | 3.54 | 3.68 | .15 | *** | .22 | 370 |
| 78 | Leadership ability | 3.90 | 3.94 | .04 | * | .06 | 1227 | 3.86 | 3.91 | .04 | | .07 | 388 | 3.95 | 4.01 | .06 | | .09 | 296 | 3.85 | 3.85 | .01 | | .01 | 171 | 3.94 | 3.97 | .03 | | .05 | 372 |
| 79 | Self-confidence (social) | 3.58 | 3.63 | .05 | * | .07 | 1228 | 3.59 | 3.67 | .07 | | .10 | 390 | 3.49 | 3.57 | .08 | | .11 | 296 | 3.65 | 3.63 | -.02 | | -.03 | 171 | 3.60 | 3.63 | .04 | | .06 | 371 |
| 80 | **RatingIndepVoice** | 4.09 | 4.12 | .03 | * | .07 | 1229 | 4.08 | 4.10 | .03 | | .05 | 390 | 4.08 | 4.12 | .03 | | .06 | 296 | 4.14 | 4.13 | -.01 | | -.01 | 171 | 4.09 | 4.15 | .06 | * | .12 | 372 |
| 81 | Self-understanding | 4.00 | 4.05 | .05 | * | .06 | 1228 | 3.98 | 4.04 | .06 | | .08 | 389 | 3.99 | 4.04 | .05 | | .06 | 296 | 4.13 | 4.08 | -.05 | | -.06 | 171 | 3.98 | 4.05 | .08 | * | .11 | 372 |
| 82 | Understanding of others | 4.07 | 4.08 | .02 | | .02 | 1227 | 4.06 | 4.06 | -.01 | | -.01 | 389 | 4.09 | 4.14 | .05 | | .06 | 295 | 4.09 | 4.03 | -.06 | | -.08 | 171 | 4.04 | 4.09 | .05 | | .07 | 372 |
| 83 | Ability to think and act on my own | 4.20 | 4.24 | .04 | | .05 | 1227 | 4.19 | 4.22 | .02 | | .03 | 389 | 4.17 | 4.17 | .00 | | .00 | 296 | 4.19 | 4.28 | .09 | | .12 | 171 | 4.23 | 4.29 | .05 | | .08 | 371 |
| 84 | **RatingStriver** | 4.05 | 4.09 | .04 | * | .07 | 1229 | 3.96 | 4.02 | .06 | * | .11 | 390 | 4.11 | 4.11 | .00 | | .00 | 296 | 4.03 | 4.06 | .03 | | .06 | 171 | 4.12 | 4.18 | .06 | * | .11 | 372 |
| 85 | Drive to achieve | 4.08 | 4.13 | .05 | * | .07 | 1229 | 3.94 | 4.02 | .08 | * | .11 | 390 | 4.14 | 4.17 | .03 | | .04 | 296 | 4.09 | 4.13 | .04 | | .05 | 171 | 4.17 | 4.22 | .04 | | .07 | 372 |
| 86 | Persistence | 4.03 | 4.06 | .03 | | .05 | 1226 | 3.98 | 4.02 | .04 | | .05 | 389 | 4.07 | 4.05 | -.02 | | -.03 | 295 | 3.96 | 3.99 | .03 | | .04 | 171 | 4.06 | 4.13 | .08 | * | .12 | 371 |
| 87 | **ResearchOrient** | 3.60 | 3.78 | .18 | *** | .29 | 1229 | 3.69 | 3.89 | .20 | *** | .34 | 390 | 3.46 | 3.60 | .14 | *** | .21 | 296 | 3.57 | 3.80 | .23 | *** | .37 | 171 | 3.62 | 3.79 | .16 | *** | .26 | 372 |
| 88 | I enjoy doing research | 3.56 | 3.73 | .17 | *** | .20 | 1219 | 3.73 | 3.86 | .14 | *** | .18 | 385 | 3.35 | 3.51 | .17 | *** | .20 | 295 | 3.52 | 3.79 | .27 | *** | .29 | 170 | 3.59 | 3.73 | .15 | *** | .17 | 369 |
| 89 | Research skills | 3.63 | 3.82 | .19 | *** | .27 | 1224 | 3.66 | 3.92 | .26 | *** | .37 | 389 | 3.58 | 3.68 | .11 | ** | .15 | 294 | 3.61 | 3.81 | .20 | *** | .30 | 171 | 3.66 | 3.84 | .19 | *** | .26 | 370 |
| 90 | Student Experience Scales (Post Only) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 91 | *4 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92 | **PrepBreadth** | | 2.33 | | | | 1217 | | 2.34 | | | | 387 | | 2.45 | | | | 295 | | 2.32 | | | | 171 | | 2.20 | | | | 364 |
| 93 | Study abroad experiences | | 2.35 | | | | 677 | | 2.53 | | | | 230 | | 2.24 | | | | 182 | | 2.39 | | | | 93 | | 2.21 | | | | 172 |

| Line | | All | | | | | | Red | | | | | | Tan | | | | | | White | | | | | | Yellow | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 94 | Volunteer experiences | | 2.03 | | | | 1018 | | 1.92 | | | | 319 | | 2.32 | | | | 259 | | 2.08 | | | | 140 | | 1.87 | | | | 300 |
| 95 | My non-academic interests/experiences | | 2.73 | | | | 1140 | | 2.76 | | | | 370 | | 2.83 | | | | 267 | | 2.69 | | | | 162 | | 2.62 | | | | 341 |
| 96 | My job or internship experiences | | 2.46 | | | | 1023 | | 2.37 | | | | 315 | | 2.67 | | | | 261 | | 2.55 | | | | 137 | | 2.34 | | | | 310 |
| 97 | Courses outside my major(s) and minor(s) | | 2.10 | | | | 1195 | | 2.18 | | | | 379 | | 2.19 | | | | 289 | | 2.03 | | | | 170 | | 1.97 | | | | 357 |
| 98 | **PrepDisc** | | 2.91 | | | | 1218 | | 2.91 | | | | 388 | | 2.87 | | | | 295 | | 2.78 | | | | 171 | | 2.99 | | | | 364 |
| 99 | A junior or senior seminar | | 2.91 | | | | 1072 | | 2.97 | | | | 347 | | 2.71 | | | | 232 | | 2.56 | | | | 131 | | 3.10 | | | | 362 |
| 100 | A research methods or skills course | | 2.86 | | | | 1038 | | 2.91 | | | | 336 | | 2.69 | | | | 242 | | 2.70 | | | | 145 | | 3.00 | | | | 315 |
| 101 | Assistance from librarians or use of library services | | 2.32 | | | | 1114 | | 2.29 | | | | 368 | | 2.45 | | | | 271 | | 2.14 | | | | 148 | | 2.33 | | | | 327 |
| 102 | Courses in my major(s) or minors(s) | | 3.48 | | | | 1214 | | 3.47 | | | | 386 | | 3.48 | | | | 294 | | 3.46 | | | | 170 | | 3.49 | | | | 364 |
| 103 | **PrepQuant** | | 2.42 | | | | 1068 | | 2.44 | | | | 337 | | 2.28 | | | | 261 | | 2.34 | | | | 155 | | 2.55 | | | | 315 |
| 104 | Training in quantitative methods (statistics, tables, graphs, mathematical | | 2.39 | | | | 986 | | 2.43 | | | | 314 | | 2.20 | | | | 239 | | 2.32 | | | | 144 | | 2.53 | | | | 289 |
| 105 | Training or experience with computer techniques (spreadsheets, Internet, programming, presentation software…) | | 2.48 | | | | 1046 | | 2.47 | | | | 327 | | 2.39 | | | | 256 | | 2.40 | | | | 153 | | 2.59 | | | | 310 |
| 106 | *5 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 107 | **MentorRel** | | 4.41 | | | | 1157 | | 4.46 | | | | 366 | | 4.33 | | | | 278 | | 4.41 | | | | 161 | | 4.40 | | | | 352 |
| 108 | My mentor gave me helpful advice | | 4.45 | | | | 1157 | | 4.50 | | | | 366 | | 4.37 | | | | 278 | | 4.45 | | | | 161 | | 4.45 | | | | 352 |
| 109 | My mentor gave me sufficient feedback | | 4.30 | | | | 611 | | 4.41 | | | | 196 | | 4.24 | | | | 143 | | 4.27 | | | | 73 | | 4.24 | | | | 199 |
| 110 | My mentor gave me useful feedback | | 4.41 | | | | 612 | | 4.55 | | | | 196 | | 4.34 | | | | 143 | | 4.41 | | | | 74 | | 4.34 | | | | 199 |
| 111 | My mentor effectively guided me through the capstone | | 4.21 | | | | 610 | | 4.39 | | | | 195 | | 4.19 | | | | 143 | | 4.09 | | | | 74 | | 4.11 | | | | 198 |
| 112 | My mentor and I communicated well | | 4.35 | | | | 610 | | 4.53 | | | | 196 | | 4.29 | | | | 143 | | 4.18 | | | | 72 | | 4.28 | | | | 199 |
| 113 | I was comfortable working with my faculty mentor | | 4.48 | | | | 1157 | | 4.50 | | | | 366 | | 4.41 | | | | 278 | | 4.50 | | | | 161 | | 4.52 | | | | 352 |
| 114 | I had access to my mentor when I needed it | | 4.35 | | | | 1157 | | 4.38 | | | | 366 | | 4.32 | | | | 278 | | 4.35 | | | | 161 | | 4.36 | | | | 352 |
| 115 | My mentor gave me timely feedback | | 4.29 | | | | 611 | | 4.42 | | | | 196 | | 4.27 | | | | 142 | | 4.28 | | | | 74 | | 4.19 | | | | 199 |
| 116 | My mentor provided helpful subject matter expertise | | 4.29 | | | | 611 | | 4.39 | | | | 195 | | 4.17 | | | | 143 | | 4.27 | | | | 74 | | 4.28 | | | | 199 |
| 117 | My mentor had reasonable expectations for my performance | | 4.42 | | | | 612 | | 4.55 | | | | 196 | | 4.36 | | | | 143 | | 4.34 | | | | 74 | | 4.38 | | | | 199 |
| 118 | My mentor met with me regularly | | 4.22 | | | | 612 | | 4.62 | | | | 196 | | 4.07 | | | | 143 | | 3.93 | | | | 74 | | 4.03 | | | | 199 |
| 119 | My mentor was genuinely interested in my project | | 4.47 | | | | 1157 | | 4.52 | | | | 366 | | 4.39 | | | | 278 | | 4.43 | | | | 161 | | 4.50 | | | | 352 |
| 120 | My mentor encouraged my independence | | 4.50 | | | | 612 | | 4.58 | | | | 196 | | 4.43 | | | | 143 | | 4.43 | | | | 74 | | 4.50 | | | | 199 |
| 121 | My mentor was experienced in capstone advising | | 4.36 | | | | 610 | | 4.48 | | | | 196 | | 4.15 | | | | 142 | | 4.47 | | | | 73 | | 4.36 | | | | 199 |
| 122 | **CapContDev** | | 4.11 | | | | 1166 | | 4.12 | | | | 369 | | 4.08 | | | | 279 | | 4.08 | | | | 161 | | 4.16 | | | | 357 |
| 123 | Ability to think critically and analytically | | 4.30 | | | | 1165 | | 4.26 | | | | 369 | | 4.27 | | | | 279 | | 4.30 | | | | 161 | | 4.36 | | | | 356 |
| 124 | Ability to write effectively | | 4.22 | | | | 1163 | | 4.30 | | | | 368 | | 4.06 | | | | 279 | | 4.22 | | | | 161 | | 4.27 | | | | 355 |
| 125 | Skill in the interpreting of data, evidence, texts, and/or works | | 4.18 | | | | 1163 | | 4.24 | | | | 369 | | 4.12 | | | | 278 | | 4.14 | | | | 160 | | 4.19 | | | | 356 |
| 126 | Ability to interpret primary literature | | 4.09 | | | | 1162 | | 4.11 | | | | 368 | | 4.00 | | | | 277 | | 4.11 | | | | 161 | | 4.12 | | | | 356 |
| 127 | Acquiring research related skills | | 4.15 | | | | 1165 | | 4.22 | | | | 369 | | 3.98 | | | | 279 | | 4.04 | | | | 161 | | 4.27 | | | | 356 |
| 128 | Ability to think creatively | | 4.10 | | | | 1164 | | 4.07 | | | | 369 | | 4.06 | | | | 279 | | 4.24 | | | | 161 | | 4.09 | | | | 355 |
| 129 | Having confidence in my own abilities | | 4.29 | | | | 1164 | | 4.30 | | | | 369 | | 4.24 | | | | 278 | | 4.27 | | | | 161 | | 4.33 | | | | 356 |
| 130 | Managing a large project | | 4.45 | | | | 1165 | | 4.54 | | | | 369 | | 4.29 | | | | 279 | | 4.35 | | | | 161 | | 4.54 | | | | 356 |
| 131 | Ability to make an effective oral presentation | | 3.72 | | | | 1164 | | 3.68 | | | | 369 | | 3.79 | | | | 278 | | 3.42 | | | | 161 | | 3.86 | | | | 356 |
| 132 | Learning ethical conduct in my field | | 3.43 | | | | 1166 | | 3.27 | | | | 369 | | 3.67 | | | | 279 | | 3.59 | | | | 161 | | 3.33 | | | | 357 |
| 133 | Learning effectively on my own | | 4.32 | | | | 1165 | | 4.28 | | | | 369 | | 4.34 | | | | 279 | | 4.19 | | | | 161 | | 4.38 | | | | 356 |
| 134 | **CapMoreEngaging** | | 4.17 | | | | 1169 | | 4.24 | | | | 370 | | 4.00 | | | | 279 | | 3.95 | | | | 161 | | 4.31 | | | | 359 |
| 135 | I worked harder on my capstone than on my regular coursework | | 4.30 | | | | 1166 | | 4.30 | | | | 369 | | 4.16 | | | | 278 | | 4.10 | | | | 161 | | 4.51 | | | | 358 |
| 136 | My capstone was more intellectually challenging than my regular coursework | | 4.17 | | | | 1165 | | 4.22 | | | | 369 | | 4.02 | | | | 278 | | 4.03 | | | | 160 | | 4.32 | | | | 358 |
| 137 | I developed more academically from my capstone than from a regular course | | 4.02 | | | | 1169 | | 4.20 | | | | 370 | | 3.82 | | | | 279 | | 3.74 | | | | 161 | | 4.12 | | | | 359 |
| 138 | **CapSuccessful** | | 4.03 | | | | 1169 | | 4.07 | | | | 370 | | 4.07 | | | | 279 | | 3.93 | | | | 161 | | 4.00 | | | | 359 |
| 139 | My capstone has better prepared me for a job or graduate school | | 3.92 | | | | 1168 | | 4.01 | | | | 370 | | 3.94 | | | | 279 | | 3.74 | | | | 161 | | 3.91 | | | | 358 |
| 140 | My capstone had a positive influence on my intellectual growth and interest in | | 4.26 | | | | 1166 | | 4.32 | | | | 369 | | 4.24 | | | | 279 | | 4.11 | | | | 161 | | 4.29 | | | | 357 |
| 141 | My capstone has helped me clarify my career or graduate school objectives | | 3.56 | | | | 1169 | | 3.55 | | | | 370 | | 3.75 | | | | 279 | | 3.55 | | | | 161 | | 3.43 | | | | 359 |
| 142 | My capstone had a positive influence on my personal growth, attitudes, and values | | 4.11 | | | | 1166 | | 4.19 | | | | 370 | | 4.12 | | | | 278 | | 4.01 | | | | 161 | | 4.05 | | | | 357 |
| 143 | My capstone has led me to a better understanding of my skills, abilities and | | 4.28 | | | | 1167 | | 4.31 | | | | 369 | | 4.27 | | | | 279 | | 4.18 | | | | 161 | | 4.30 | | | | 358 |
| 144 | Understanding of my discipline improved | | 4.19 | | | | 1167 | | 4.23 | | | | 370 | | 4.18 | | | | 278 | | 4.04 | | | | 161 | | 4.22 | | | | 358 |
| 145 | Overall, I had a good capstone experience | | 4.25 | | | | 1167 | | 4.37 | | | | 369 | | 4.16 | | | | 279 | | 4.16 | | | | 161 | | 4.25 | | | | 358 |





Table 4.8

| Line | | All | | | | | | Red | | | | | | Tan | | | | | | White | | | | | | Yellow | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 146 | Seeing the connection between my intended career and how it affects society | | 3.51 | | | | 1165 | | 3.34 | | | | 369 | | 3.96 | | | | 279 | | 3.61 | | | | 161 | | 3.29 | | | | 356 |
| 147 | My capstone was more engaging than my regular coursework | | 4.29 | | | | 1169 | | 4.36 | | | | 370 | | 4.19 | | | | 279 | | 4.04 | | | | 161 | | 4.42 | | | | 359 |
| 148 | I created new knowledge in my discipline | | 3.91 | | | | 1168 | | 3.97 | | | | 370 | | 3.90 | | | | 279 | | 3.88 | | | | 160 | | 3.88 | | | | 359 |
| 149 | **Faculty Scales [1]** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | *5 point scales* | | | | | | N (pre)[3] | | | | | | | | | | | | | | | | | | | | | | | | |
| 151 | **CommunSkills** | 3.89 | 4.11 | .22 | *** | .27 | 737 | 3.92 | 4.10 | .19 | ** | .24 | 201 | 3.85 | 4.18 | .32 | *** | .42 | 189 | 3.99 | 4.16 | .16 | * | .20 | 150 | 3.81 | 4.05 | .22 | ** | .25 | 197 |
| 152 | Writes in a clear, articulate manner | 3.75 | 3.93 | .18 | *** | .19 | 720 | 3.67 | 3.86 | .05 | | .05 | 195 | 3.83 | 4.13 | .33 | *** | .39 | 183 | 3.80 | 3.93 | .18 | * | .19 | 148 | 3.73 | 3.86 | .20 | * | .19 | 194 |
| 153 | Writes in a well-organized manner | 3.79 | 3.98 | .18 | *** | .20 | 718 | 3.71 | 3.97 | .15 | | .15 | 194 | 3.83 | 4.17 | .32 | *** | .40 | 183 | 3.83 | 3.98 | .14 | | .16 | 148 | 3.78 | 3.88 | .15 | | .15 | 193 |
| 154 | Writes without distracting errors in spelling grammar, punctuation, usage, etc. | 3.82 | 3.91 | .14 | ** | .13 | 722 | 3.83 | 3.88 | .03 | | .03 | 194 | 3.86 | 4.16 | .29 | ** | .31 | 186 | 3.81 | 3.84 | .09 | | .10 | 148 | 3.79 | 3.84 | .17 | | .15 | 194 |
| 155 | Delivers an effective poster presentation | 3.80 | 4.22 | .53 | *** | .61 | 169 | [2] | | | | .86 | 40 | [2] | | | | 1.31 | 40 | 4.04 | 4.13 | .04 | | .06 | 43 | 3.81 | 4.41 | .58 | * | .87 | 46 |
| 156 | Delivers an effective oral presentation | 3.77 | 4.12 | .35 | *** | .39 | 621 | 3.68 | 4.19 | .40 | *** | .46 | 168 | 3.74 | 4.20 | .44 | *** | .48 | 152 | 3.83 | 4.08 | .24 | * | .25 | 124 | 3.79 | 4.06 | .32 | *** | .35 | 177 |
| 157 | **EffProjectMgt** | 3.92 | 4.15 | .25 | *** | .35 | 752 | 3.94 | 4.16 | .30 | *** | .44 | 202 | 3.90 | 4.19 | .36 | *** | .51 | 196 | 4.02 | 4.15 | .16 | * | .21 | 154 | 3.86 | 4.13 | .22 | ** | .28 | 200 |
| 158 | Properly plans tasks to achieve project goals | 3.79 | 3.97 | .22 | *** | .22 | 743 | 3.83 | 4.01 | .26 | ** | .27 | 202 | 3.80 | 4.09 | .29 | ** | .31 | 190 | 3.85 | 3.92 | .14 | | .14 | 153 | 3.69 | 3.91 | .21 | * | .18 | 198 |
| 159 | Demonstrates effective time management in completing tasks | 3.75 | 3.87 | .16 | ** | .14 | 740 | 3.74 | 3.89 | .23 | * | .22 | 198 | 3.84 | 4.04 | .19 | * | .19 | 192 | 3.78 | 3.79 | .02 | | .02 | 152 | 3.67 | 3.81 | .20 | | .15 | 198 |
| 160 | Demonstrates accurate awareness of own abilities and limitations | 3.69 | 3.97 | .32 | *** | .32 | 716 | 3.73 | 4.02 | .38 | *** | .41 | 190 | 3.61 | 4.06 | .49 | *** | .49 | 182 | 3.77 | 3.99 | .19 | * | .20 | 148 | 3.64 | 3.86 | .24 | * | .22 | 196 |
| 161 | Identifies a manageable set of project goals | 3.82 | 4.04 | .24 | *** | .25 | 741 | 3.80 | 4.00 | .18 | * | .19 | 201 | 3.83 | 4.17 | .30 | *** | .35 | 190 | 3.93 | 4.05 | .18 | * | .19 | 151 | 3.71 | 3.98 | .31 | *** | .30 | 199 |
| 162 | Persists when faced with conceptual and practical difficulties | 3.91 | 4.22 | .34 | *** | .34 | 726 | 3.90 | 4.28 | .45 | *** | .44 | 195 | 3.94 | 4.24 | .39 | *** | .40 | 185 | 3.93 | 4.20 | .20 | * | .20 | 150 | 3.88 | 4.19 | .32 | *** | .32 | 196 |
| 163 | Uses feedback to assess performance | 3.92 | 4.15 | .25 | *** | .25 | 717 | 3.97 | 4.21 | .33 | *** | .34 | 196 | 3.80 | 4.21 | .45 | *** | .45 | 177 | 3.93 | 4.19 | .17 | | .17 | 148 | 3.95 | 4.03 | .09 | | .08 | 196 |
| 164 | Locates appropriate source material | 3.90 | 4.10 | .25 | *** | .30 | 716 | 3.98 | 4.21 | .30 | *** | .35 | 198 | 3.94 | 4.24 | .41 | *** | .59 | 184 | 3.92 | 4.01 | .12 | | .14 | 142 | 3.80 | 4.00 | .21 | * | .22 | 192 |
| 165 | Demonstrates appropriate confidence in own intellectual ability | 3.66 | 3.93 | .30 | *** | .31 | 728 | 3.65 | 3.93 | .26 | ** | .28 | 197 | 3.61 | 4.04 | .50 | *** | .45 | 185 | 3.74 | 4.00 | .28 | *** | .31 | 150 | 3.61 | 3.80 | .21 | * | .21 | 196 |
| 166 | **IntelEngagement** | 3.90 | 4.11 | .25 | *** | .34 | 750 | 3.91 | 4.14 | .31 | *** | .44 | 202 | 3.88 | 4.17 | .43 | *** | .61 | 196 | 4.01 | 4.11 | .08 | | .11 | 152 | 3.82 | 4.04 | .23 | ** | .28 | 200 |
| 167 | Demonstrates intellectual curiosity | 3.95 | 4.15 | .22 | *** | .23 | 745 | 4.07 | 4.33 | .26 | *** | .30 | 201 | 3.79 | 4.21 | .46 | *** | .47 | 194 | 3.99 | 4.10 | .03 | | .04 | 151 | 3.91 | 4.02 | .15 | | .16 | 199 |
| 168 | Shows originality | 3.65 | 3.95 | .34 | *** | .34 | 733 | 3.75 | 4.08 | .36 | *** | .38 | 200 | 3.64 | 4.12 | .54 | *** | .53 | 192 | 3.72 | 3.89 | .13 | | .13 | 144 | 3.53 | 3.80 | .35 | *** | .36 | 197 |
| 169 | Shows evidence of independent thinking | 3.86 | 4.13 | .30 | *** | .33 | 743 | 3.94 | 4.28 | .41 | *** | .48 | 201 | 3.81 | 4.22 | .48 | *** | .53 | 191 | 3.90 | 4.08 | .11 | | .12 | 151 | 3.80 | 4.02 | .25 | ** | .25 | 200 |
| 170 | Synthesizes information to produce insights that expand the student's understanding | 3.69 | 4.03 | .42 | *** | .43 | 711 | 3.71 | 4.13 | .49 | *** | .48 | 197 | 3.71 | 4.12 | .47 | *** | .55 | 179 | 3.81 | 4.04 | .24 | ** | .26 | 138 | 3.57 | 3.89 | .48 | *** | .46 | 197 |
| 171 | Actively pursues learning opportunities | 3.89 | 4.01 | .15 | *** | .16 | 734 | 4.03 | 4.14 | .15 | | .17 | 199 | 3.82 | 4.12 | .37 | *** | .47 | 190 | 3.89 | 3.98 | .06 | | .07 | 149 | 3.83 | 3.88 | .07 | | .07 | 196 |
| 172 | Asks probing questions | 3.67 | 3.88 | .26 | *** | .25 | 744 | 3.72 | 3.97 | .33 | *** | .33 | 200 | 3.59 | 4.05 | .55 | *** | .57 | 193 | 3.75 | 3.88 | .05 | | .05 | 151 | 3.59 | 3.72 | .16 | | .15 | 200 |
| 173 | Makes connections to other contexts (across courses, disciplines, experiences, | 3.68 | 3.93 | .23 | *** | .23 | 693 | 3.64 | 3.99 | .32 | *** | .34 | 190 | 3.80 | 4.13 | .40 | *** | .45 | 177 | 3.73 | 3.83 | .02 | | .02 | 144 | 3.59 | 3.83 | .19 | | .17 | 182 |
| 174 | **CrThinkSkills** | 3.82 | 4.08 | .31 | *** | .42 | 738 | 3.86 | 4.08 | .31 | *** | .44 | 199 | 3.81 | 4.15 | .43 | *** | .65 | 190 | 3.94 | 4.12 | .21 | ** | .28 | 150 | 3.70 | 4.01 | .32 | *** | .39 | 199 |
| 175 | Develops convincing arguments to support conclusions | 3.70 | 3.95 | .30 | *** | .34 | 717 | 3.66 | 4.04 | .35 | *** | .40 | 194 | 3.70 | 4.05 | .48 | *** | .62 | 181 | 3.78 | 3.94 | .11 | | .12 | 147 | 3.64 | 3.83 | .30 | *** | .31 | 195 |
| 176 | Logically interprets and evaluates main points of source material | 3.79 | 4.05 | .34 | *** | .40 | 714 | 3.80 | 4.11 | .34 | *** | .38 | 198 | 3.81 | 4.13 | .39 | *** | .53 | 182 | 3.87 | 4.07 | .21 | ** | .27 | 139 | 3.68 | 3.94 | .43 | *** | .45 | 195 |
| 177 | Supports arguments with appropriate evidence | 3.86 | 4.08 | .28 | *** | .33 | 722 | 3.89 | 4.10 | .22 | ** | .25 | 197 | 3.82 | 4.16 | .50 | *** | .66 | 181 | 3.85 | 4.10 | .26 | *** | .35 | 148 | 3.87 | 3.99 | .19 | * | .20 | 196 |
| 178 | Uses disciplinary knowledge and methods appropriately | 3.79 | 4.09 | .35 | *** | .38 | 715 | 3.87 | 4.13 | .27 | ** | .29 | 197 | 3.88 | 4.20 | .41 | *** | .50 | 179 | 3.78 | 4.10 | .30 | *** | .34 | 144 | 3.70 | 3.96 | .42 | *** | .42 | 195 |
| 179 | Addresses opposing arguments or alternative explanations | 3.49 | 3.75 | .33 | *** | .35 | 704 | 3.51 | 3.86 | .45 | *** | .48 | 191 | 3.56 | 3.92 | .40 | *** | .43 | 181 | 3.56 | 3.78 | .23 | ** | .25 | 143 | 3.38 | 3.55 | .25 | ** | .24 | 189 |
| 180 | Faculty Scales - Post Only | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 181 | **StudentTopicMotiv** | | 4.24 | | | | 728 | | 4.39 | | | | 209 | | 4.17 | | | | 147 | | 4.09 | | | | 154 | | 4.24 | | | | 218 |
| 182 | When the project ended, how enthusiastic was the student about the topic? | | 4.33 | | | | 723 | | 4.49 | | | | 208 | | 4.33 | | | | 147 | | 4.10 | | | | 151 | | 4.34 | | | | 217 |
| 183 | When the project started, how enthusiastic was the student about the topic? | | 4.30 | | | | 726 | | 4.48 | | | | 209 | | 4.12 | | | | 146 | | 4.20 | | | | 153 | | 4.31 | | | | 218 |
| 184 | To what extent did the student participate in developing / refining his /her capstone topic? | | 4.08 | | | | 727 | | 4.19 | | | | 208 | | 4.05 | | | | 147 | | 3.97 | | | | 154 | | 4.07 | | | | 218 |
| 185 | **MentorInstruction** | | 4.49 | | | | 416 | | 4.57 | | | | 111 | | 4.39 | | | | 97 | | 4.39 | | | | 65 | | 4.56 | | | | 143 |
| 186 | I gave useful feedback to this student | | 4.54 | | | | 416 | | 4.58 | | | | 111 | | 4.44 | | | | 97 | | 4.46 | | | | 65 | | 4.62 | | | | 143 |
| 187 | I gave this student useful feedback | | 4.49 | | | | 273 | | 4.54 | | | | 111 | | 4.41 | | | | 97 | | 4.51 | | | | 65 | | .00 | | | | |
| 188 | I gave timely feedback to this student | | 4.54 | | | | 415 | | 4.68 | | | | 111 | | 4.36 | | | | 96 | | 4.46 | | | | 65 | | 4.59 | | | | 143 |
| 189 | I gave this student useful advice | | 4.57 | | | | 416 | | 4.58 | | | | 111 | | 4.47 | | | | 97 | | 4.57 | | | | 65 | | 4.64 | | | | 143 |
| 190 | I effectively guided the student through the capstone | | 4.35 | | | | 416 | | 4.39 | | | | 111 | | 4.31 | | | | 97 | | 4.23 | | | | 65 | | 4.39 | | | | 143 |
| 191 | I gave this student sufficient access | | 4.69 | | | | 416 | | 4.68 | | | | 111 | | 4.62 | | | | 97 | | 4.63 | | | | 65 | | 4.76 | | | | 143 |
| 192 | I provided helpful subject matter expertise for this student's project | | 4.31 | | | | 415 | | 4.33 | | | | 110 | | 4.04 | | | | 97 | | 4.34 | | | | 65 | | 4.45 | | | | 143 |
| 193 | I met with this student regularly | | 4.45 | | | | 415 | | 4.77 | | | | 111 | | 4.42 | | | | 97 | | 3.94 | | | | 64 | | 4.43 | | | | 143 |
| 194 | **MentorRapport** | | 4.54 | | | | 416 | | 4.61 | | | | 111 | | 4.46 | | | | 97 | | 4.45 | | | | 65 | | 4.59 | | | | 143 |
| 195 | I felt comfortable working with this student | | 4.63 | | | | 415 | | 4.65 | | | | 110 | | 4.56 | | | | 97 | | 4.51 | | | | 65 | | 4.73 | | | | 143 |

| Line | | All | | | | | | Red | | | | | | Tan | | | | | | White | | | | | | Yellow | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 196 | Overall, I felt comfortable supervising this capstone | | 4.58 | | | | 410 | | 4.65 | | | | 111 | | 4.55 | | | | 96 | | 4.41 | | | | 64 | | 4.62 | | | | 139 |
| 197 | I was interested in this student's project | | 4.40 | | | | 414 | | 4.46 | | | | 111 | | 4.26 | | | | 97 | | 4.35 | | | | 63 | | 4.46 | | | | 143 |
| 198 | I communicated well with this student | | 4.53 | | | | 415 | | 4.59 | | | | 111 | | 4.51 | | | | 97 | | 4.40 | | | | 65 | | 4.55 | | | | 142 |
| 199 | I had reasonable expectations for the student's capstone performance | | 4.53 | | | | 415 | | 4.62 | | | | 111 | | 4.41 | | | | 97 | | 4.55 | | | | 65 | | 4.54 | | | | 142 |
| 200 | I encouraged this student to work independently | | 4.59 | | | | 415 | | 4.72 | | | | 111 | | 4.49 | | | | 97 | | 4.48 | | | | 64 | | 4.61 | | | | 143 |
| 201 | **Independent Summative** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 202 | Independence: Showing autonomy and initiative in thought and actions | | 4.10 | | | | 722 | | 4.14 | | | | 209 | | 4.09 | | | | 147 | | 4.07 | | | | 148 | | 4.08 | | | | 218 |
| 203 | Intellectual Engagement: Demonstrating an interest in learning | | 4.17 | | | | 722 | | 4.23 | | | | 208 | | 4.16 | | | | 147 | | 4.07 | | | | 150 | | 4.19 | | | | 217 |
| 204 | Self-understanding: Developing an awareness of self (skills, abilities, interests) | | 4.08 | | | | 718 | | 4.15 | | | | 208 | | 4.17 | | | | 146 | | 4.04 | | | | 149 | | 3.98 | | | | 215 |
| 205 | Project Management: Conceiving and managing a project | | 4.14 | | | | 722 | | 4.20 | | | | 209 | | 4.13 | | | | 147 | | 4.04 | | | | 148 | | 4.15 | | | | 218 |
| 206 | Research: Investigating in a manner appropriate to the discipline | | 4.12 | | | | 721 | | 4.16 | | | | 209 | | 4.18 | | | | 147 | | 4.08 | | | | 148 | | 4.09 | | | | 217 |
| 207 | Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence | | 4.04 | | | | 717 | | 4.09 | | | | 209 | | 4.06 | | | | 145 | | 3.99 | | | | 147 | | 4.01 | | | | 216 |
| 208 | Communication: Presenting ideas effectively (written, oral, and other forms) | | 4.13 | | | | 719 | | 4.18 | | | | 208 | | 4.21 | | | | 146 | | 4.10 | | | | 148 | | 4.07 | | | | 217 |
| 209 | **Post Graduate Plans (Advanced degrees planned during lifetime)** | Pre | Post | Chg | | | | Pre | Post | Chg | | | | Pre | Post | Chg | | | | Pre | Post | Chg | | | | Pre | Post | Chg | | | |
| 210 | **GradProfSchl** | 62% | 60% | -2% | | | | 54% | 38% | -16% | | | | 73% | 95% | 22% | | | | 57% | 63% | 6% | | | | 67% | 70% | 3% | | | |
| 211 | **AdvDeg** | 90% | 88% | -2% | | | | 91% | 87% | -4% | | | | 91% | 89% | -2% | | | | 85% | 83% | -1% | | | | 90% | 92% | 2% | | | |
| 212 | bachelors | 13% | 14% | 1% | | | | 10% | 14% | 4% | | | | 12% | 15% | 2% | | | | 16% | 17% | 1% | | | | 11% | 11% | 0% | | | |
| 213 | masters | 49% | 50% | 1% | | | | 42% | 43% | 0% | | | | 56% | 59% | 2% | | | | 50% | 49% | -1% | | | | 46% | 49% | 3% | | | |
| 214 | law (JD) | 5% | 5% | 0% | | | | 5% | 5% | 0% | | | | 4% | 2% | -1% | | | | 7% | 6% | 0% | | | | 4% | 5% | 1% | | | |
| 215 | doctorate | 34% | 32% | -2% | | | | 42% | 38% | -4% | | | | 28% | 24% | -3% | | | | 28% | 28% | 0% | | | | 39% | 35% | -4% | | | |

[1] Some respondents may not have completed some individual questions, resulting in some apparent discrepencies between the D value and the difference of the indicated Post and Pre values.

[2] Means for subgroups on this item have been omitted due to a small number of usable responses, after excluding "Unable to rate" responses.

[3] For simplicity only the Ns shown for the pre-faculty data are shown. For "All" data, the Ns for the post survey vaied around 720 and for the Ds around 500.

## Table 4.10: Pre/Post Capstone Change: Changes in S

**Combined 2009/10 and 2010/11 Data**

Exel Conditional Formatting color scales have been used to highlight variation within each scale row.

Results by student major for school(s):
All

| Line | | All- NatSci | | | | | | All- SocSci | | | | | | All- Humanities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 2 | **Student Scales [1]** | | | | | | | | | | | | | | | | | | |
| 3 | *5 point scale* | | | | | | | | | | | | | | | | | | |
| 4 | **ExpectGoodCapstone** | 4.26 | | | | | 317 | 4.22 | | | | | 408 | 4.17 | | | | | 328 |
| 5 | My capstone will lead to a better understanding of my skills, abilities and interests | 4.31 | | | | | 317 | 4.32 | | | | | 408 | 4.39 | | | | | 328 |
| 6 | My ability to think critically and analytically will improve | 4.33 | | | | | 317 | 4.33 | | | | | 407 | 4.17 | | | | | 328 |
| 7 | My understanding of my discipline will improve | 4.41 | | | | | 317 | 4.41 | | | | | 408 | 4.37 | | | | | 327 |
| 8 | My capstone will better prepare me for a job or graduate school | 4.25 | | | | | 316 | 4.13 | | | | | 404 | 3.99 | | | | | 327 |
| 9 | My capstone will help me clarify my career or graduate school objectives | 3.83 | | | | | 317 | 3.70 | | | | | 408 | 3.72 | | | | | 327 |
| 10 | My oral presentation skills will improve | 4.18 | | | | | 317 | 4.05 | | | | | 407 | 3.85 | | | | | 327 |
| 11 | My writing skills will improve | 4.14 | | | | | 317 | 4.23 | | | | | 408 | 4.29 | | | | | 328 |
| 12 | My capstone will be more engaging than my regular course work | 4.48 | | | | | 317 | 4.50 | | | | | 408 | 4.44 | | | | | 327 |
| 13 | I expect to create new knowledge in my discipline | 4.09 | | | | | 316 | 3.99 | | | | | 407 | 3.91 | | | | | 327 |
| 14 | My capstone will be intellectually challenging | 4.56 | | | | | 317 | 4.51 | | | | | 408 | 4.54 | | | | | 327 |
| 15 | *4 point scales* | | | | | | | | | | | | | | | | | | |
| 16 | **CivicOrient** | 2.78 | 2.79 | .01 | | .02 | 327 | 2.88 | 2.87 | -.01 | | -.02 | 416 | 2.81 | 2.83 | .02 | | .04 | 336 |
| 17 | Volunteering in my community | 2.81 | 2.79 | -.02 | | -.04 | 326 | 2.79 | 2.79 | .00 | | .00 | 415 | 2.71 | 2.71 | .00 | | .00 | 334 |
| 18 | Helping others who are in difficulty | 3.15 | 3.14 | -.01 | | -.01 | 326 | 3.32 | 3.27 | -.06 | | -.08 | 414 | 3.14 | 3.16 | .02 | | .02 | 336 |
| 19 | Becoming a community leader | 2.55 | 2.54 | -.01 | | -.01 | 326 | 2.69 | 2.74 | .06 | | .08 | 415 | 2.53 | 2.55 | .02 | | .02 | 334 |
| 20 | Influencing social values | 2.70 | 2.73 | .03 | | .04 | 327 | 2.96 | 2.95 | .00 | | -.01 | 416 | 2.87 | 2.90 | .03 | | .03 | 336 |
| 21 | Integrating spirituality into my life | 2.37 | 2.39 | .02 | | .03 | 327 | 2.35 | 2.32 | -.03 | | -.04 | 413 | 2.29 | 2.32 | .02 | | .03 | 335 |
| 22 | Developing a meaningful philosophy of life | 3.09 | 3.13 | .04 | | .05 | 327 | 3.17 | 3.14 | -.03 | | -.03 | 416 | 3.30 | 3.32 | .02 | | .02 | 336 |
| 23 | **StatusCareerOrient** | 2.67 | 2.65 | -.02 | | -.05 | 327 | 2.62 | 2.57 | -.05 | * | -.10 | 416 | 2.51 | 2.51 | .00 | | .01 | 336 |
| 24 | Becoming accomplished in my field of expertise | 3.52 | 3.42 | -.11 | ** | -.17 | 327 | 3.33 | 3.23 | -.09 | * | -.13 | 416 | 3.40 | 3.28 | -.12 | ** | -.16 | 336 |
| 25 | Working in a prestigious occupation | 2.32 | 2.31 | -.01 | | -.01 | 326 | 2.30 | 2.27 | -.03 | | -.03 | 414 | 2.05 | 2.13 | .08 | | .10 | 335 |
| 26 | Making a lot of money | 2.25 | 2.26 | .01 | | .01 | 327 | 2.28 | 2.24 | -.04 | | -.05 | 416 | 2.03 | 2.09 | .05 | | .09 | 336 |
| 27 | Obtaining recognition from my colleagues for contributions to my special field | 2.60 | 2.61 | .01 | | .01 | 327 | 2.57 | 2.53 | -.03 | | -.04 | 413 | 2.55 | 2.54 | -.01 | | -.01 | 335 |
| 28 | **HighOrderCogn** | 3.28 | 3.24 | -.03 | | -.05 | 317 | 3.26 | 3.28 | .02 | | .02 | 407 | 3.19 | 3.06 | -.13 | ** | -.18 | 328 |
| 29 | Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | 3.32 | 3.36 | .04 | | .04 | 317 | 3.29 | 3.41 | .11 | * | .12 | 406 | 3.33 | 3.45 | .10 | | .11 | 328 |
| 30 | Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | 3.07 | 3.24 | .19 | *** | .19 | 317 | 3.18 | 3.27 | .08 | | .08 | 407 | 3.09 | 2.88 | -.20 | ** | -.16 | 328 |
| 31 | Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | 3.28 | 3.17 | -.11 | * | -.11 | 317 | 3.32 | 3.30 | -.02 | | -.02 | 407 | 3.21 | 3.09 | -.12 | * | -.12 | 328 |
| 32 | Applying theories or concepts to practical problems or in new situations | 3.44 | 3.20 | -.25 | *** | -.26 | 316 | 3.24 | 3.14 | -.11 | * | -.11 | 405 | 3.13 | 2.82 | -.30 | *** | -.25 | 328 |
| 33 | **MultPerspectives** | 2.89 | 2.52 | -.36 | *** | -.53 | 317 | 3.07 | 2.91 | -.16 | *** | -.27 | 407 | 3.13 | 3.03 | -.10 | ** | -.16 | 328 |
| 34 | Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | 2.91 | 2.29 | -.61 | *** | -.55 | 315 | 3.01 | 2.84 | -.19 | *** | -.20 | 407 | 3.09 | 3.03 | -.05 | | -.05 | 327 |
| 35 | Examined the strengths and weaknesses of your own views on a topic or issue | 2.80 | 2.77 | -.03 | | -.03 | 317 | 2.96 | 3.05 | .10 | * | .11 | 406 | 3.03 | 3.19 | .18 | ** | .19 | 327 |
| 36 | Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | 2.59 | 1.80 | -.77 | *** | -.68 | 317 | 3.04 | 2.65 | -.40 | *** | -.40 | 407 | 3.09 | 2.84 | -.26 | *** | -.23 | 328 |
| 37 | Learned something that changed the way you understand an issue or concept | 3.04 | 2.88 | -.16 | ** | -.16 | 317 | 3.09 | 3.09 | .00 | | .00 | 407 | 3.18 | 3.11 | -.08 | | -.09 | 328 |
| 38 | Put together ideas or concepts from different courses | 3.09 | 2.85 | -.25 | *** | -.23 | 317 | 3.26 | 2.95 | -.31 | *** | -.31 | 407 | 3.28 | 2.99 | -.29 | *** | -.28 | 328 |
| 39 | *5 point scales* | | | | | | | | | | | | | | | | | | |
| 40 | **SatisInstr** | 4.49 | 4.49 | -.01 | | -.02 | 318 | 4.43 | 4.42 | -.01 | | -.03 | 408 | 4.47 | 4.42 | -.05 | | -.10 | 329 |
| 41 | Quality of instruction in my major field | 4.66 | 4.64 | -.03 | | -.06 | 318 | 4.51 | 4.48 | -.03 | | -.04 | 407 | 4.56 | 4.50 | -.06 | | -.08 | 328 |
| 42 | Overall quality of instruction | 4.38 | 4.44 | .04 | | .06 | 317 | 4.34 | 4.36 | .01 | | .02 | 408 | 4.45 | 4.39 | -.05 | | -.07 | 329 |
| 43 | Overall college experience | 4.43 | 4.40 | -.03 | | -.05 | 318 | 4.44 | 4.41 | -.02 | | -.03 | 406 | 4.40 | 4.36 | -.04 | | -.06 | 329 |

| Line | | All- NatSci | | | | | | All- SocSci | | | | | | All- Humanities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 44 | **SatisSuppSrv** | 4.09 | 4.04 | -.06 | | -.09 | 318 | 3.95 | 3.87 | -.08 | * | -.12 | 408 | 3.96 | 3.88 | -.09 | * | -.13 | 329 |
| 45 | Computer facilities and services | 3.87 | 3.79 | -.07 | | -.08 | 318 | 3.76 | 3.74 | -.01 | | -.02 | 407 | 3.83 | 3.75 | -.09 | | -.09 | 329 |
| 46 | Library facilities and services | 4.19 | 4.16 | -.04 | | -.05 | 318 | 4.16 | 4.06 | -.10 | * | -.12 | 408 | 4.20 | 4.12 | -.10 | * | -.12 | 329 |
| 47 | Facilities/equipment in my major field | 4.21 | 4.15 | -.06 | | -.07 | 318 | 3.94 | 3.81 | -.12 | * | -.13 | 406 | 3.84 | 3.76 | -.08 | | -.07 | 329 |
| 48 | **ExhibScholarlySkills** | 4.15 | 4.39 | .23 | *** | .52 | 327 | 4.13 | 4.35 | .23 | *** | .52 | 415 | 4.17 | 4.34 | .16 | *** | .36 | 336 |
| 49 | I located appropriate source material | 4.27 | 4.54 | .25 | *** | .37 | 326 | 4.23 | 4.46 | .23 | *** | .33 | 414 | 4.18 | 4.35 | .16 | *** | .20 | 336 |
| 50 | I used disciplinary knowledge and methods appropriately | 4.13 | 4.44 | .30 | *** | .38 | 322 | 4.11 | 4.30 | .19 | *** | .25 | 411 | 4.10 | 4.23 | .13 | ** | .16 | 334 |
| 51 | I supported my arguments with appropriate evidence | 4.23 | 4.46 | .23 | *** | .31 | 323 | 4.22 | 4.48 | .26 | *** | .37 | 412 | 4.27 | 4.37 | .08 | | .10 | 335 |
| 52 | I showed originality | 3.95 | 4.11 | .15 | ** | .17 | 322 | 4.02 | 4.20 | .20 | *** | .25 | 414 | 4.22 | 4.39 | .17 | *** | .22 | 336 |
| 53 | I synthesized information to produce insights that expanded my understanding | 4.05 | 4.39 | .35 | *** | .47 | 322 | 4.03 | 4.37 | .34 | *** | .44 | 412 | 4.12 | 4.34 | .22 | *** | .27 | 330 |
| 54 | I demonstrated good communication skills | 4.06 | 4.26 | .19 | *** | .23 | 325 | 4.13 | 4.28 | .16 | *** | .21 | 413 | 4.21 | 4.27 | .03 | | .04 | 335 |
| 55 | I showed evidence of independent thinking | 4.22 | 4.41 | .20 | *** | .29 | 325 | 4.22 | 4.44 | .22 | *** | .32 | 414 | 4.29 | 4.52 | .20 | *** | .29 | 336 |
| 56 | I showed skill with quantitative reasoning | 3.96 | 4.24 | .29 | *** | .40 | 324 | 3.66 | 3.87 | .17 | ** | .18 | 405 | 3.57 | 3.61 | -.14 | * | -.15 | 311 |
| 57 | I persisted when faced with conceptual and practical difficulties | 4.20 | 4.47 | .27 | *** | .37 | 324 | 4.16 | 4.44 | .28 | *** | .35 | 413 | 4.20 | 4.42 | .21 | *** | .29 | 334 |
| 58 | I used feedback to assess my performance | 4.23 | 4.40 | .16 | *** | .19 | 325 | 4.13 | 4.38 | .23 | *** | .27 | 413 | 4.23 | 4.44 | .19 | *** | .24 | 334 |
| 59 | Integrated ideas or information from various sources | 3.54 | 3.69 | .16 | *** | .23 | 317 | 3.56 | 3.73 | .17 | *** | .24 | 407 | 3.56 | 3.63 | .06 | | .08 | 327 |
| 60 | **NeedCognLite** | 3.76 | 3.82 | .06 | * | .13 | 327 | 3.85 | 3.90 | .06 | * | .12 | 416 | 4.07 | 4.09 | .02 | | .05 | 336 |
| 61 | The notion of thinking abstractly is appealing to me | 3.72 | 3.81 | .10 | * | .12 | 325 | 3.82 | 3.90 | .08 | * | .10 | 411 | 4.05 | 4.11 | .07 | | .09 | 333 |
| 62 | I enjoy expressing my ideas in writing | 3.58 | 3.65 | .08 | | .11 | 325 | 3.83 | 3.93 | .10 | ** | .13 | 410 | 4.21 | 4.22 | .02 | | .03 | 334 |
| 63 | I really enjoy a task that involves coming up with new solutions to problems | 4.07 | 4.16 | .10 | * | .14 | 326 | 4.00 | 4.07 | .07 | | .09 | 411 | 3.98 | 4.04 | .06 | | .09 | 334 |
| 64 | Creating original works | 2.79 | 2.71 | -.08 | | -.09 | 326 | 2.84 | 2.78 | -.05 | | -.06 | 416 | 3.13 | 3.09 | -.04 | | -.06 | 336 |
| 65 | I have confidence in my opinions, even if they are contrary to the general consensus | 3.97 | 4.07 | .11 | ** | .16 | 326 | 4.09 | 4.14 | .06 | | .08 | 411 | 4.22 | 4.23 | .01 | | .01 | 334 |
| 66 | **ProjMgt** | 3.92 | 4.11 | .19 | *** | .26 | 326 | 3.88 | 4.03 | .15 | *** | .20 | 414 | 3.85 | 3.98 | .11 | ** | .15 | 336 |
| 67 | I properly planned tasks to achieve project goals | 3.95 | 4.11 | .15 | ** | .17 | 325 | 3.91 | 4.05 | .14 | ** | .15 | 412 | 3.86 | 4.01 | .12 | * | .13 | 336 |
| 68 | I demonstrated effective time management in completing tasks | 3.75 | 4.02 | .28 | *** | .28 | 325 | 3.67 | 3.87 | .21 | *** | .20 | 414 | 3.63 | 3.82 | .19 | ** | .18 | 336 |
| 69 | I identified manageable sets of goals for my projects | 4.06 | 4.20 | .13 | ** | .16 | 326 | 4.05 | 4.19 | .13 | ** | .15 | 413 | 4.07 | 4.11 | .04 | | .04 | 335 |
| 70 | **RatingAcadAbil** | 3.80 | 3.90 | .10 | *** | .28 | 327 | 3.81 | 3.91 | .10 | *** | .29 | 416 | 3.97 | 4.06 | .09 | *** | .24 | 336 |
| 71 | Writing ability | 3.58 | 3.76 | .17 | *** | .26 | 327 | 3.73 | 3.86 | .13 | *** | .19 | 414 | 4.02 | 4.10 | .09 | * | .14 | 335 |
| 72 | Creativity | 3.64 | 3.69 | .03 | | .06 | 326 | 3.66 | 3.73 | .07 | * | .11 | 414 | 4.03 | 4.12 | .09 | * | .14 | 336 |
| 73 | Academic ability | 4.04 | 4.14 | .09 | ** | .17 | 327 | 3.94 | 4.03 | .09 | *** | .17 | 416 | 4.03 | 4.13 | .10 | *** | .19 | 336 |
| 74 | Ability to think critically | 3.92 | 4.06 | .13 | *** | .20 | 327 | 3.94 | 4.06 | .12 | *** | .18 | 415 | 4.00 | 4.07 | .07 | | .10 | 336 |
| 75 | Self-confidence (intellectual) | 3.83 | 3.88 | .05 | | .08 | 327 | 3.76 | 3.85 | .09 | ** | .14 | 416 | 3.77 | 3.88 | .11 | ** | .15 | 335 |
| 76 | **RatingLeadCollabSkills** | 3.59 | 3.67 | .08 | ** | .16 | 327 | 3.65 | 3.71 | .06 | ** | .13 | 416 | 3.63 | 3.72 | .09 | *** | .20 | 336 |
| 77 | Public speaking ability | 3.36 | 3.50 | .14 | *** | .20 | 325 | 3.39 | 3.54 | .15 | *** | .23 | 415 | 3.49 | 3.61 | .13 | *** | .19 | 336 |
| 78 | Leadership ability | 3.88 | 3.90 | .03 | | .04 | 327 | 3.92 | 3.97 | .05 | | .07 | 415 | 3.87 | 3.89 | .02 | | .03 | 335 |
| 79 | Self-confidence (social) | 3.54 | 3.60 | .06 | | .08 | 327 | 3.65 | 3.63 | -.01 | | -.02 | 416 | 3.53 | 3.65 | .12 | ** | .17 | 336 |
| 80 | **RatingIndepVoice** | 4.03 | 4.08 | .04 | | .09 | 327 | 4.12 | 4.15 | .03 | | .07 | 416 | 4.11 | 4.14 | .02 | | .05 | 336 |
| 81 | Self-understanding | 3.93 | 3.98 | .05 | | .06 | 326 | 4.05 | 4.09 | .04 | | .06 | 416 | 4.01 | 4.08 | .07 | | .09 | 336 |
| 82 | Understanding of others | 3.98 | 4.00 | .02 | | .03 | 327 | 4.10 | 4.14 | .04 | | .06 | 416 | 4.13 | 4.10 | -.03 | | -.04 | 334 |
| 83 | Ability to think and act on my own | 4.20 | 4.26 | .06 | | .08 | 327 | 4.21 | 4.23 | .01 | | .01 | 415 | 4.20 | 4.23 | .03 | | .04 | 336 |
| 84 | **RatingStriver** | 4.15 | 4.22 | .07 | * | .13 | 327 | 4.04 | 4.06 | .02 | | .04 | 416 | 3.96 | 4.00 | .03 | | .05 | 336 |
| 85 | Drive to achieve | 4.16 | 4.24 | .08 | * | .13 | 327 | 4.05 | 4.11 | .06 | | .09 | 416 | 3.99 | 4.01 | .02 | | .02 | 336 |
| 86 | Persistence | 4.15 | 4.21 | .06 | | .09 | 326 | 4.03 | 4.01 | -.02 | | -.02 | 415 | 3.93 | 3.98 | .05 | | .06 | 336 |
| 87 | **ResearchOrient** | 3.75 | 3.95 | .19 | *** | .33 | 327 | 3.61 | 3.82 | .22 | *** | .34 | 416 | 3.49 | 3.61 | .12 | *** | .20 | 336 |
| 88 | I enjoy doing research | 3.77 | 3.92 | .15 | *** | .19 | 325 | 3.55 | 3.77 | .22 | *** | .25 | 411 | 3.46 | 3.56 | .10 | * | .13 | 334 |
| 89 | Research skills | 3.73 | 3.98 | .24 | *** | .35 | 324 | 3.66 | 3.88 | .23 | *** | .31 | 416 | 3.52 | 3.65 | .13 | *** | .18 | 335 |
| 90 | Student Experience Scales (Post Only) | | | | | | | | | | | | | | | | | | |
| 91 | *4 point scales* | | | | | | | | | | | | | | | | | | |
| 92 | **PrepBreadth** | | 2.15 | | | | 323 | | 2.35 | | | | 413 | | 2.39 | | | | 332 |
| 93 | Study abroad experiences | | 1.94 | | | | 139 | | 2.41 | | | | 241 | | 2.52 | | | | 213 |

| Line | | All- NatSci | | | | | | All- SocSci | | | | | | All- Humanities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 94 | Volunteer experiences | | 1.83 | | | | 265 | | 2.07 | | | | 347 | | 2.07 | | | | 269 |
| 95 | My non-academic interests/experiences | | 2.36 | | | | 297 | | 2.81 | | | | 386 | | 2.99 | | | | 317 |
| 96 | My job or internship experiences | | 2.61 | | | | 276 | | 2.33 | | | | 341 | | 2.25 | | | | 269 |
| 97 | Courses outside my major(s) and minor(s) | | 1.95 | | | | 319 | | 2.10 | | | | 404 | | 2.20 | | | | 327 |
| 98 | **PrepDisc** | | 3.00 | | | | 324 | | 2.93 | | | | 413 | | 2.83 | | | | 332 |
| 99 | A junior or senior seminar | | 3.06 | | | | 286 | | 2.94 | | | | 370 | | 2.81 | | | | 287 |
| 100 | A research methods or skills course | | 3.05 | | | | 285 | | 3.04 | | | | 370 | | 2.46 | | | | 258 |
| 101 | Assistance from librarians or use of library services | | 2.27 | | | | 296 | | 2.38 | | | | 387 | | 2.36 | | | | 299 |
| 102 | Courses in my major(s) or minors(s) | | 3.52 | | | | 324 | | 3.40 | | | | 410 | | 3.49 | | | | 331 |
| 103 | **PrepQuant** | | 2.82 | | | | 313 | | 2.51 | | | | 381 | | 1.71 | | | | 239 |
| 104 | Training in quantitative methods (statistics, tables, graphs, mathematical | | 2.77 | | | | 303 | | 2.56 | | | | 359 | | 1.50 | | | | 202 |
| 105 | Training or experience with computer techniques (spreadsheets, Internet, programming, presentation software…) | | 2.87 | | | | 308 | | 2.48 | | | | 370 | | 1.88 | | | | 233 |
| 106 | *5 point scales* | | | | | | | | | | | | | | | | | | |
| 107 | **MentorRel** | | 4.53 | | | | 309 | | 4.32 | | | | 392 | | 4.41 | | | | 316 |
| 108 | My mentor gave me helpful advice | | 4.54 | | | | 309 | | 4.35 | | | | 392 | | 4.48 | | | | 316 |
| 109 | My mentor gave me sufficient feedback | | 4.53 | | | | 172 | | 4.11 | | | | 208 | | 4.35 | | | | 166 |
| 110 | My mentor gave me useful feedback | | 4.61 | | | | 173 | | 4.24 | | | | 208 | | 4.45 | | | | 166 |
| 111 | My mentor effectively guided me through the capstone | | 4.41 | | | | 172 | | 4.10 | | | | 208 | | 4.24 | | | | 165 |
| 112 | My mentor and I communicated well | | 4.49 | | | | 173 | | 4.25 | | | | 208 | | 4.36 | | | | 164 |
| 113 | I was comfortable working with my faculty mentor | | 4.61 | | | | 309 | | 4.41 | | | | 392 | | 4.45 | | | | 316 |
| 114 | I had access to my mentor when I needed it | | 4.44 | | | | 309 | | 4.27 | | | | 392 | | 4.36 | | | | 316 |
| 115 | My mentor gave me timely feedback | | 4.49 | | | | 172 | | 4.13 | | | | 208 | | 4.33 | | | | 166 |
| 116 | My mentor provided helpful subject matter expertise | | 4.48 | | | | 173 | | 4.12 | | | | 208 | | 4.32 | | | | 165 |
| 117 | My mentor had reasonable expectations for my performance | | 4.55 | | | | 173 | | 4.34 | | | | 208 | | 4.41 | | | | 166 |
| 118 | My mentor met with me regularly | | 4.51 | | | | 173 | | 4.14 | | | | 208 | | 4.13 | | | | 166 |
| 119 | My mentor was genuinely interested in my project | | 4.62 | | | | 309 | | 4.39 | | | | 392 | | 4.44 | | | | 316 |
| 120 | My mentor encouraged my independence | | 4.58 | | | | 173 | | 4.41 | | | | 208 | | 4.54 | | | | 166 |
| 121 | My mentor was experienced in capstone advising | | 4.53 | | | | 171 | | 4.35 | | | | 208 | | 4.23 | | | | 166 |
| 122 | **CapContDev** | | 4.21 | | | | 312 | | 4.12 | | | | 397 | | 4.04 | | | | 315 |
| 123 | Ability to think critically and analytically | | 4.36 | | | | 311 | | 4.29 | | | | 397 | | 4.27 | | | | 315 |
| 124 | Ability to write effectively | | 4.22 | | | | 311 | | 4.19 | | | | 397 | | 4.36 | | | | 314 |
| 125 | Skill in the interpreting of data, evidence, texts, and/or works | | 4.33 | | | | 311 | | 4.23 | | | | 396 | | 4.03 | | | | 315 |
| 126 | Ability to interpret primary literature | | 4.28 | | | | 311 | | 4.14 | | | | 396 | | 3.97 | | | | 313 |
| 127 | Acquiring research related skills | | 4.36 | | | | 311 | | 4.29 | | | | 397 | | 3.88 | | | | 315 |
| 128 | Ability to think creatively | | 3.95 | | | | 310 | | 3.99 | | | | 397 | | 4.36 | | | | 315 |
| 129 | Having confidence in my own abilities | | 4.31 | | | | 312 | | 4.32 | | | | 396 | | 4.25 | | | | 314 |
| 130 | Managing a large project | | 4.45 | | | | 311 | | 4.49 | | | | 397 | | 4.47 | | | | 315 |
| 131 | Ability to make an effective oral presentation | | 4.21 | | | | 311 | | 3.61 | | | | 397 | | 3.38 | | | | 314 |
| 132 | Learning ethical conduct in my field | | 3.45 | | | | 312 | | 3.57 | | | | 397 | | 3.14 | | | | 315 |
| 133 | Learning effectively on my own | | 4.40 | | | | 311 | | 4.25 | | | | 397 | | 4.31 | | | | 315 |
| 134 | **CapMoreEngaging** | | 4.19 | | | | 313 | | 4.22 | | | | 399 | | 4.19 | | | | 315 |
| 135 | I worked harder on my capstone than on my regular coursework | | 4.31 | | | | 312 | | 4.39 | | | | 398 | | 4.30 | | | | 315 |
| 136 | My capstone was more intellectually challenging than my regular coursework | | 4.18 | | | | 312 | | 4.22 | | | | 398 | | 4.23 | | | | 315 |
| 137 | I developed more academically from my capstone than from a regular course | | 4.09 | | | | 313 | | 4.06 | | | | 399 | | 4.03 | | | | 315 |
| 138 | **CapSuccessful** | | 4.10 | | | | 313 | | 3.99 | | | | 399 | | 3.99 | | | | 315 |
| 139 | My capstone has better prepared me for a job or graduate school | | 4.11 | | | | 312 | | 3.92 | | | | 399 | | 3.75 | | | | 315 |
| 140 | My capstone had a positive influence on my intellectual growth and interest in | | 4.27 | | | | 312 | | 4.22 | | | | 398 | | 4.31 | | | | 315 |
| 141 | My capstone has helped me clarify my career or graduate school objectives | | 3.73 | | | | 313 | | 3.47 | | | | 399 | | 3.45 | | | | 315 |
| 142 | My capstone had a positive influence on my personal growth, attitudes, and values | | 4.07 | | | | 312 | | 4.08 | | | | 399 | | 4.18 | | | | 313 |
| 143 | My capstone has led me to a better understanding of my skills, abilities and | | 4.28 | | | | 312 | | 4.28 | | | | 398 | | 4.29 | | | | 315 |
| 144 | Understanding of my discipline improved | | 4.27 | | | | 312 | | 4.15 | | | | 399 | | 4.18 | | | | 314 |
| 145 | Overall, I had a good capstone experience | | 4.36 | | | | 312 | | 4.23 | | | | 399 | | 4.23 | | | | 314 |

| Line | | All- NatSci | | | | | | All- SocSci | | | | | | All- Humanities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 146 | Seeing the connection between my intended career and how it affects society | | 3.51 | | | | 311 | | 3.46 | | | | 397 | | 3.37 | | | | 315 |
| 147 | My capstone was more engaging than my regular coursework | | 4.38 | | | | 313 | | 4.28 | | | | 399 | | 4.29 | | | | 315 |
| 148 | I created new knowledge in my discipline | | 4.01 | | | | 313 | | 3.86 | | | | 398 | | 3.89 | | | | 315 |
| 149 | **Faculty Scales [1]** | | | | | | | | | | | | | | | | | | |
| 150 | *5 point scales* | | | | | | | | | | | | | | | | | | |
| 151 | **CommunSkills** | 3.80 | 4.15 | .24 | *** | .29 | 208 | 3.87 | 4.03 | .24 | *** | .29 | 237 | 3.91 | 4.12 | .17 | * | .22 | 198 |
| 152 | Writes in a clear, articulate manner | 3.67 | 3.87 | .22 | ** | .22 | 200 | 3.73 | 3.84 | .23 | ** | .23 | 234 | 3.79 | 3.98 | .09 | | .10 | 193 |
| 153 | Writes in a well-organized manner | 3.73 | 3.93 | .24 | ** | .23 | 199 | 3.77 | 3.95 | .18 | * | .19 | 234 | 3.75 | 3.97 | .13 | | .15 | 193 |
| 154 | Writes without distracting errors in spelling grammar, punctuation, usage, etc. | 3.82 | 3.89 | .15 | | .14 | 203 | 3.81 | 3.81 | .09 | | .08 | 233 | 3.77 | 3.92 | .17 | * | .18 | 193 |
| 155 | Delivers an effective poster presentation | 3.72 | 4.22 | .49 | ** | .49 | 74 | 3.83 | 4.23 | .44 | * | .63 | 30 | 3.91 | 4.25 | .67 | * | .94 | 37 |
| 156 | Delivers an effective oral presentation | 3.71 | 4.15 | .46 | *** | .49 | 165 | 3.72 | 4.07 | .35 | *** | .38 | 201 | 3.87 | 4.11 | .23 | * | .26 | 167 |
| 157 | **EffProjectMgt** | 3.81 | 4.24 | .34 | *** | .45 | 213 | 3.95 | 4.09 | .27 | *** | .40 | 240 | 3.96 | 4.11 | .13 | * | .19 | 205 |
| 158 | Properly plans tasks to achieve project goals | 3.75 | 4.04 | .35 | *** | .36 | 210 | 3.75 | 3.88 | .24 | ** | .24 | 235 | 3.77 | 3.91 | .11 | | .10 | 204 |
| 159 | Demonstrates effective time management in completing tasks | 3.71 | 3.93 | .28 | *** | .26 | 209 | 3.69 | 3.79 | .27 | ** | .23 | 234 | 3.76 | 3.79 | -.09 | | -.08 | 203 |
| 160 | Demonstrates accurate awareness of own abilities and limitations | 3.62 | 4.02 | .48 | *** | .46 | 203 | 3.69 | 3.84 | .25 | *** | .28 | 222 | 3.75 | 3.96 | .14 | | .14 | 198 |
| 161 | Identifies a manageable set of project goals | 3.73 | 4.04 | .34 | *** | .35 | 209 | 3.84 | 4.00 | .25 | *** | .29 | 233 | 3.77 | 3.98 | .13 | | .13 | 205 |
| 162 | Persists when faced with conceptual and practical difficulties | 3.87 | 4.20 | .38 | *** | .35 | 209 | 3.90 | 4.21 | .44 | *** | .46 | 229 | 3.92 | 4.19 | .21 | * | .23 | 195 |
| 163 | Uses feedback to assess performance | 3.86 | 4.17 | .38 | *** | .35 | 198 | 3.93 | 4.09 | .22 | ** | .26 | 232 | 3.99 | 4.13 | .08 | | .08 | 194 |
| 164 | Locates appropriate source material | 3.92 | 4.14 | .27 | *** | .30 | 205 | 3.98 | 4.04 | .15 | * | .17 | 223 | 3.76 | 4.05 | .31 | *** | .39 | 198 |
| 165 | Demonstrates appropriate confidence in own intellectual ability | 3.57 | 3.96 | .42 | *** | .42 | 204 | 3.63 | 3.80 | .29 | *** | .29 | 231 | 3.73 | 3.94 | .13 | | .14 | 200 |
| 166 | **IntelEngagement** | 3.73 | 4.14 | .36 | *** | .44 | 213 | 3.93 | 4.05 | .17 | ** | .24 | 239 | 3.97 | 4.14 | .24 | *** | .36 | 205 |
| 167 | Demonstrates intellectual curiosity | 3.87 | 4.16 | .34 | *** | .31 | 212 | 4.03 | 4.12 | .11 | | .13 | 238 | 4.01 | 4.20 | .21 | ** | .27 | 202 |
| 168 | Shows originality | 3.54 | 3.95 | .46 | *** | .44 | 207 | 3.65 | 3.84 | .19 | * | .20 | 233 | 3.71 | 4.03 | .38 | *** | .42 | 200 |
| 169 | Shows evidence of independent thinking | 3.75 | 4.16 | .43 | *** | .43 | 213 | 3.88 | 4.08 | .26 | *** | .28 | 236 | 3.92 | 4.15 | .27 | *** | .34 | 201 |
| 170 | Synthesizes information to produce insights that expand the student's understanding | 3.65 | 4.04 | .50 | *** | .49 | 195 | 3.72 | 3.98 | .41 | *** | .41 | 225 | 3.69 | 4.01 | .35 | *** | .37 | 198 |
| 171 | Actively pursues learning opportunities | 3.88 | 4.03 | .23 | ** | .24 | 208 | 3.95 | 3.95 | .06 | | .08 | 235 | 3.86 | 4.02 | .16 | | .17 | 199 |
| 172 | Asks probing questions | 3.53 | 3.93 | .44 | *** | .41 | 213 | 3.74 | 3.80 | .13 | | .14 | 236 | 3.67 | 3.88 | .22 | * | .23 | 202 |
| 173 | Makes connections to other contexts (across courses, disciplines, experiences, | 3.59 | 4.00 | .39 | *** | .40 | 201 | 3.71 | 3.84 | .16 | | .15 | 215 | 3.73 | 3.91 | .15 | | .17 | 186 |
| 174 | **CrThinkSkills** | 3.74 | 4.19 | .38 | *** | .48 | 208 | 3.83 | 4.00 | .29 | *** | .40 | 236 | 3.82 | 4.03 | .26 | *** | .38 | 201 |
| 175 | Develops convincing arguments to support conclusions | 3.63 | 4.02 | .49 | *** | .50 | 196 | 3.69 | 3.88 | .25 | *** | .28 | 232 | 3.73 | 3.87 | .13 | | .16 | 196 |
| 176 | Logically interprets and evaluates main points of source material | 3.76 | 4.03 | .32 | *** | .35 | 201 | 3.83 | 4.02 | .33 | *** | .39 | 226 | 3.71 | 4.02 | .39 | *** | .47 | 196 |
| 177 | Supports arguments with appropriate evidence | 3.82 | 4.13 | .39 | *** | .43 | 199 | 3.91 | 4.03 | .22 | *** | .27 | 233 | 3.83 | 3.97 | .18 | * | .22 | 197 |
| 178 | Uses disciplinary knowledge and methods appropriately | 3.88 | 4.14 | .32 | *** | .32 | 201 | 3.78 | 4.06 | .36 | *** | .42 | 225 | 3.69 | 3.97 | .36 | *** | .41 | 196 |
| 179 | Addresses opposing arguments or alternative explanations | 3.48 | 3.91 | .54 | *** | .62 | 193 | 3.52 | 3.66 | .23 | ** | .22 | 228 | 3.39 | 3.62 | .23 | * | .22 | 190 |
| 180 | Faculty Scales - Post Only | | | | | | | | | | | | | | | | | | |
| 181 | **StudentTopicMotiv** | | 4.20 | | | | 237 | | 4.24 | | | | 232 | | 4.35 | | | | 188 |
| 182 | When the project ended, how enthusiastic was the student about the topic? | | 4.34 | | | | 236 | | 4.25 | | | | 232 | | 4.43 | | | | 185 |
| 183 | When the project started, how enthusiastic was the student about the topic? | | 4.25 | | | | 237 | | 4.31 | | | | 232 | | 4.44 | | | | 188 |
| 184 | To what extent did the student participate in developing / refining his /her capstone topic? | | 4.00 | | | | 237 | | 4.15 | | | | 231 | | 4.19 | | | | 188 |
| 185 | **MentorInstruction** | | 4.49 | | | | 135 | | 4.48 | | | | 131 | | 4.57 | | | | 105 |
| 186 | I gave useful feedback to this student | | 4.54 | | | | 135 | | 4.49 | | | | 131 | | 4.65 | | | | 105 |
| 187 | I gave this student useful feedback | | 4.48 | | | | 90 | | 4.45 | | | | 83 | | 4.58 | | | | 67 |
| 188 | I gave timely feedback to this student | | 4.53 | | | | 135 | | 4.52 | | | | 131 | | 4.66 | | | | 105 |
| 189 | I gave this student useful advice | | 4.53 | | | | 135 | | 4.59 | | | | 131 | | 4.62 | | | | 105 |
| 190 | I effectively guided the student through the capstone | | 4.36 | | | | 135 | | 4.31 | | | | 131 | | 4.46 | | | | 105 |
| 191 | I gave this student sufficient access | | 4.64 | | | | 135 | | 4.67 | | | | 131 | | 4.77 | | | | 105 |
| 192 | I provided helpful subject matter expertise for this student's project | | 4.28 | | | | 135 | | 4.31 | | | | 131 | | 4.34 | | | | 104 |
| 193 | I met with this student regularly | | 4.55 | | | | 135 | | 4.44 | | | | 131 | | 4.48 | | | | 104 |
| 194 | **MentorRapport** | | 4.58 | | | | 135 | | 4.48 | | | | 131 | | 4.60 | | | | 105 |
| 195 | I felt comfortable working with this student | | 4.67 | | | | 135 | | 4.58 | | | | 130 | | 4.67 | | | | 105 |

| Line | | All- NatSci | | | | | | All- SocSci | | | | | | All- Humanities | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 196 | Overall, I felt comfortable supervising this capstone | | 4.63 | | | | 134 | | 4.53 | | | | 128 | | 4.61 | | | | 104 |
| 197 | I was interested in this student's project | | 4.46 | | | | 135 | | 4.28 | | | | 130 | | 4.47 | | | | 105 |
| 198 | I communicated well with this student | | 4.53 | | | | 135 | | 4.45 | | | | 130 | | 4.66 | | | | 105 |
| 199 | I had reasonable expectations for the student's capstone performance | | 4.52 | | | | 135 | | 4.51 | | | | 130 | | 4.59 | | | | 105 |
| 200 | I encouraged this student to work independently | | 4.65 | | | | 135 | | 4.55 | | | | 130 | | 4.62 | | | | 105 |
| 201 | **Independent Summative** | | | | | | | | | | | | | | | | | | |
| 202 | Independence: Showing autonomy and initiative in thought and actions | | 4.12 | | | | 234 | | 4.06 | | | | 231 | | 4.11 | | | | 186 |
| 203 | Intellectual Engagement: Demonstrating an interest in learning | | 4.19 | | | | 234 | | 4.13 | | | | 230 | | 4.24 | | | | 187 |
| 204 | Self-understanding: Developing an awareness of self (skills, abilities, interests) | | 4.16 | | | | 230 | | 3.96 | | | | 230 | | 4.14 | | | | 187 |
| 205 | Project Management: Conceiving and managing a project | | 4.21 | | | | 234 | | 4.10 | | | | 231 | | 4.08 | | | | 186 |
| 206 | Research: Investigating in a manner appropriate to the discipline | | 4.27 | | | | 233 | | 4.05 | | | | 231 | | 4.05 | | | | 186 |
| 207 | Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence | | 4.10 | | | | 234 | | 3.96 | | | | 228 | | 4.04 | | | | 184 |
| 208 | Communication: Presenting ideas effectively (written, oral, and other forms) | | 4.21 | | | | 236 | | 4.04 | | | | 230 | | 4.17 | | | | 182 |
| 209 | **Post Graduate Plans (Advanced degrees planned during lifetime)** | Pre | Post | Chg | | | | Pre | Post | Chg | | | | Pre | Post | Chg | | | |
| 210 | **GradProfSchl** | 77% | 72% | -5% | | | | 58% | 54% | -4% | | | | 59% | 56% | -3% | | | |
| 211 | **AdvDeg** | 92% | 90% | -2% | | | | 92% | 90% | -2% | | | | 86% | 86% | 0% | | | |
| 212 | bachelors | 9% | 8% | -1% | | | | 9% | 10% | 1% | | | | 18% | 22% | 4% | | | |
| 213 | masters | 42% | 44% | 3% | | | | 46% | 50% | 4% | | | | 53% | 53% | 0% | | | |
| 214 | law (JD) | 0% | 0% | 0% | | | | 9% | 8% | -2% | | | | 6% | 6% | 1% | | | |
| 215 | doctorate | 50% | 47% | -2% | | | | 35% | 32% | -3% | | | | 23% | 19% | -4% | | | |

[1] Some respondents may not have completed some individual questions, resulting

[2] Means for subgroups on this item have been omitted due to a small number of us

[3] For simplicity only the Ns shown for the pre-faculty data are shown. For "All" dat

## Table 4.10: Pre/Post Capstone Change: Changes in S

**Combined 2009/10 and 2010/11 Data**

Exel Conditional Formatting color scales have been used to highlight variation within each scale row.

Results by student graduating overall GPA for school(s):
All

Results by sudent gender
All

| Line | | All- 2.99 and under | | | | | | All- 3-3.49 | | | | | | All- 3.5 and up | | | | | | All- Males | | | | | | All- Females | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 2 | **Student Scales [1]** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | *5 point scale* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | **ExpectGoodCapstone** | 4.22 | | | | | 437 | 4.23 | | | | | 226 | 4.18 | | | | | 538 | 4.17 | | | | | 349 | 4.21 | | | | | 852 |
| 5 | My capstone will lead to a better understanding of my skills, abilities and interests | 4.35 | | | | | 437 | 4.35 | | | | | 226 | 4.29 | | | | | 538 | 4.31 | | | | | 349 | 4.33 | | | | | 852 |
| 6 | My ability to think critically and analytically will improve | 4.28 | | | | | 436 | 4.29 | | | | | 226 | 4.24 | | | | | 538 | 4.20 | | | | | 349 | 4.29 | | | | | 851 |
| 7 | My understanding of my discipline will improve | 4.36 | | | | | 437 | 4.37 | | | | | 226 | 4.38 | | | | | 537 | 4.34 | | | | | 349 | 4.39 | | | | | 851 |
| 8 | My capstone will better prepare me for a job or graduate school | 4.12 | | | | | 435 | 4.16 | | | | | 225 | 4.10 | | | | | 535 | 4.15 | | | | | 348 | 4.11 | | | | | 847 |
| 9 | My capstone will help me clarify my career or graduate school objectives | 3.81 | | | | | 437 | 3.85 | | | | | 226 | 3.68 | | | | | 537 | 3.78 | | | | | 349 | 3.75 | | | | | 851 |
| 10 | My oral presentation skills will improve | 4.06 | | | | | 436 | 4.07 | | | | | 226 | 3.95 | | | | | 537 | 3.97 | | | | | 348 | 4.03 | | | | | 851 |
| 11 | My writing skills will improve | 4.19 | | | | | 437 | 4.18 | | | | | 226 | 4.16 | | | | | 538 | 4.11 | | | | | 349 | 4.20 | | | | | 852 |
| 12 | My capstone will be more engaging than my regular course work | 4.49 | | | | | 437 | 4.49 | | | | | 226 | 4.42 | | | | | 537 | 4.43 | | | | | 349 | 4.47 | | | | | 851 |
| 13 | I expect to create new knowledge in my discipline | 3.99 | | | | | 435 | 4.11 | | | | | 225 | 3.95 | | | | | 538 | 3.97 | | | | | 348 | 4.01 | | | | | 850 |
| 14 | My capstone will be intellectually challenging | 4.49 | | | | | 436 | 4.40 | | | | | 226 | 4.58 | | | | | 538 | 4.46 | | | | | 349 | 4.54 | | | | | 851 |
| 15 | *4 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 16 | **CivicOrient** | 2.85 | 2.84 | -.01 | | -.02 | 451 | 2.86 | 2.80 | -.05 | | -.11 | 235 | 2.82 | 2.87 | .05 | ** | .12 | 543 | 2.75 | 2.75 | .00 | | .00 | 356 | 2.87 | 2.89 | .01 | | .03 | 873 |
| 17 | Volunteering in my community | 2.80 | 2.78 | -.02 | | -.03 | 449 | 2.78 | 2.73 | -.04 | | -.06 | 232 | 2.78 | 2.81 | .02 | | .04 | 543 | 2.52 | 2.55 | .03 | | .03 | 354 | 2.90 | 2.88 | -.02 | | -.03 | 870 |
| 18 | Helping others who are in difficulty | 3.20 | 3.20 | .00 | | -.01 | 450 | 3.26 | 3.10 | -.16 | *** | -.23 | 234 | 3.22 | 3.25 | .03 | | .04 | 542 | 3.05 | 3.03 | -.02 | | -.03 | 353 | 3.29 | 3.27 | -.02 | | -.03 | 873 |
| 19 | Becoming a community leader | 2.70 | 2.69 | .00 | | -.01 | 449 | 2.66 | 2.62 | -.04 | | -.05 | 234 | 2.55 | 2.63 | .09 | ** | .11 | 542 | 2.63 | 2.64 | .01 | | .01 | 355 | 2.62 | 2.66 | .04 | | .05 | 870 |
| 20 | Influencing social values | 2.91 | 2.89 | -.02 | | -.03 | 451 | 2.95 | 2.96 | .01 | | .01 | 235 | 2.77 | 2.84 | .08 | * | .10 | 543 | 2.82 | 2.84 | .02 | | .03 | 356 | 2.87 | 2.90 | .03 | | .04 | 873 |
| 21 | Integrating spirituality into my life | 2.29 | 2.31 | .02 | | .02 | 448 | 2.34 | 2.28 | -.05 | | -.07 | 235 | 2.41 | 2.42 | .01 | | .01 | 542 | 2.21 | 2.17 | -.03 | | -.03 | 356 | 2.42 | 2.43 | .01 | | .02 | 869 |
| 22 | Developing a meaningful philosophy of life | 3.18 | 3.17 | -.01 | | -.01 | 450 | 3.14 | 3.13 | -.02 | | -.03 | 235 | 3.20 | 3.27 | .06 | | .08 | 543 | 3.29 | 3.29 | -.01 | | -.01 | 356 | 3.14 | 3.17 | .03 | | .04 | 872 |
| 23 | **StatusCareerOrient** | 2.62 | 2.60 | -.02 | | -.04 | 451 | 2.77 | 2.68 | -.09 | * | -.17 | 235 | 2.52 | 2.53 | .01 | | .02 | 543 | 2.72 | 2.68 | -.04 | | -.09 | 356 | 2.56 | 2.55 | -.01 | | -.03 | 873 |
| 24 | Becoming accomplished in my field of expertise | 3.40 | 3.31 | -.08 | * | -.12 | 451 | 3.45 | 3.28 | -.18 | *** | -.25 | 235 | 3.45 | 3.35 | -.10 | *** | -.15 | 543 | 3.41 | 3.31 | -.10 | * | -.13 | 356 | 3.44 | 3.33 | -.11 | *** | -.17 | 873 |
| 25 | Working in a prestigious occupation | 2.28 | 2.27 | -.01 | | -.01 | 451 | 2.47 | 2.47 | -.01 | | -.01 | 234 | 2.08 | 2.12 | .04 | | .06 | 540 | 2.40 | 2.40 | .00 | | .00 | 353 | 2.16 | 2.17 | .02 | | .02 | 872 |
| 26 | Making a lot of money | 2.23 | 2.25 | .03 | | .04 | 451 | 2.48 | 2.43 | -.06 | | -.08 | 235 | 2.03 | 2.07 | .03 | | .05 | 543 | 2.33 | 2.34 | .00 | | .00 | 356 | 2.13 | 2.15 | .02 | | .03 | 873 |
| 27 | Obtaining recognition from my colleagues for contributions to my special field | 2.58 | 2.56 | -.01 | | -.02 | 450 | 2.69 | 2.57 | -.10 | | -.11 | 233 | 2.52 | 2.57 | .04 | | .05 | 542 | 2.74 | 2.66 | -.08 | | -.09 | 354 | 2.51 | 2.53 | .02 | | .03 | 871 |
| 28 | **HighOrderCogn** | 3.26 | 3.19 | -.07 | * | -.10 | 436 | 3.21 | 3.20 | -.02 | | -.02 | 227 | 3.24 | 3.20 | -.04 | | -.06 | 536 | 3.18 | 3.22 | .05 | | .07 | 348 | 3.27 | 3.19 | -.08 | *** | -.12 | 851 |
| 29 | Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | 3.30 | 3.39 | .09 | | .10 | 436 | 3.25 | 3.32 | .07 | | .07 | 227 | 3.35 | 3.43 | .08 | * | .09 | 535 | 3.25 | 3.35 | .11 | * | .12 | 348 | 3.34 | 3.41 | .07 | * | .07 | 850 |
| 30 | Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | 3.16 | 3.14 | -.02 | | -.02 | 436 | 3.09 | 3.14 | .06 | | .06 | 227 | 3.10 | 3.13 | .03 | | .03 | 536 | 3.07 | 3.18 | .12 | * | .11 | 348 | 3.14 | 3.12 | -.02 | | -.02 | 851 |
| 31 | Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | 3.30 | 3.20 | -.10 | * | -.10 | 436 | 3.26 | 3.28 | .01 | | .01 | 227 | 3.23 | 3.14 | -.08 | | -.08 | 536 | 3.23 | 3.25 | .03 | | .03 | 348 | 3.28 | 3.17 | -.11 | ** | -.11 | 851 |
| 32 | Applying theories or concepts to practical problems or in new situations | 3.29 | 3.04 | -.25 | *** | -.25 | 434 | 3.24 | 3.05 | -.20 | * | -.18 | 226 | 3.26 | 3.08 | -.18 | *** | -.18 | 536 | 3.16 | 3.10 | -.07 | | -.07 | 347 | 3.31 | 3.04 | -.27 | *** | -.26 | 849 |
| 33 | **MultPerspectives** | 3.08 | 2.83 | -.25 | *** | -.39 | 437 | 3.00 | 2.86 | -.13 | ** | -.19 | 226 | 3.02 | 2.85 | -.18 | *** | -.28 | 537 | 2.99 | 2.80 | -.20 | *** | -.31 | 348 | 3.06 | 2.86 | -.19 | *** | -.30 | 852 |
| 34 | Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | 3.05 | 2.70 | -.33 | *** | -.32 | 437 | 2.97 | 2.77 | -.18 | * | -.17 | 225 | 2.99 | 2.76 | -.24 | *** | -.23 | 535 | 2.98 | 2.68 | -.27 | *** | -.26 | 347 | 3.02 | 2.77 | -.26 | *** | -.25 | 850 |
| 35 | Examined the strengths and weaknesses of your own views on a topic or issue | 3.00 | 3.00 | .00 | | .00 | 437 | 2.92 | 3.06 | .17 | * | .16 | 225 | 2.90 | 3.01 | .10 | * | .11 | 535 | 3.05 | 2.99 | -.07 | | -.07 | 347 | 2.90 | 3.03 | .14 | *** | .14 | 850 |
| 36 | Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | 2.96 | 2.46 | -.49 | *** | -.45 | 437 | 2.88 | 2.47 | -.40 | *** | -.34 | 226 | 2.90 | 2.47 | -.42 | *** | -.40 | 537 | 2.75 | 2.36 | -.38 | *** | -.35 | 348 | 2.98 | 2.51 | -.47 | *** | -.42 | 852 |
| 37 | Learned something that changed the way you understand an issue or concept | 3.12 | 3.06 | -.07 | | -.08 | 437 | 3.07 | 2.99 | -.07 | | -.08 | 226 | 3.10 | 3.04 | -.07 | | -.07 | 537 | 3.04 | 2.96 | -.10 | | -.11 | 348 | 3.12 | 3.07 | -.06 | | -.06 | 852 |
| 38 | Put together ideas or concepts from different courses | 3.27 | 2.93 | -.34 | *** | -.33 | 437 | 3.16 | 2.99 | -.16 | * | -.16 | 226 | 3.21 | 2.97 | -.25 | *** | -.24 | 537 | 3.14 | 2.98 | -.16 | ** | -.16 | 348 | 3.25 | 2.94 | -.31 | *** | -.31 | 852 |
| 39 | *5 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 | **SatisInstr** | 4.43 | 4.39 | -.04 | | -.08 | 437 | 4.33 | 4.32 | -.01 | | -.01 | 227 | 4.53 | 4.54 | .01 | | .01 | 539 | 4.41 | 4.38 | -.03 | | -.06 | 349 | 4.47 | 4.47 | -.01 | | -.01 | 854 |
| 41 | Quality of instruction in my major field | 4.55 | 4.48 | -.07 | * | -.11 | 435 | 4.42 | 4.41 | -.02 | | -.02 | 227 | 4.64 | 4.64 | .00 | | .00 | 539 | 4.52 | 4.47 | -.04 | | -.06 | 349 | 4.58 | 4.56 | -.03 | | -.04 | 852 |
| 42 | Overall quality of instruction | 4.33 | 4.31 | -.03 | | -.04 | 435 | 4.24 | 4.29 | .04 | | .05 | 227 | 4.49 | 4.49 | .01 | | .02 | 538 | 4.33 | 4.33 | -.01 | | -.01 | 347 | 4.40 | 4.41 | .01 | | .01 | 853 |
| 43 | Overall college experience | 4.40 | 4.39 | -.02 | | -.03 | 437 | 4.32 | 4.26 | -.04 | | -.05 | 225 | 4.47 | 4.49 | .01 | | .02 | 539 | 4.38 | 4.32 | -.05 | | -.07 | 349 | 4.44 | 4.44 | .01 | | .01 | 852 |

| Line | | All- 2.99 and under | | | | | | All- 3-3.49 | | | | | | All- 3.5 and up | | | | | | All- Males | | | | | | All- Females | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 44 | **SatisSuppSrv** | 3.99 | 3.89 | -.10 | ** | -.15 | 437 | 4.04 | 3.91 | -.12 | * | -.16 | 227 | 3.97 | 3.96 | -.02 | | -.03 | 539 | 3.98 | 3.95 | -.02 | | -.03 | 349 | 3.99 | 3.91 | -.09 | *** | -.13 | 854 |
| 45 | Computer facilities and services | 3.77 | 3.72 | -.06 | | -.05 | 437 | 3.86 | 3.79 | -.05 | | -.05 | 227 | 3.82 | 3.78 | -.04 | | -.04 | 538 | 3.79 | 3.80 | .02 | | .02 | 349 | 3.82 | 3.75 | -.07 | * | -.08 | 853 |
| 46 | Library facilities and services | 4.17 | 4.08 | -.10 | * | -.12 | 437 | 4.22 | 4.06 | -.17 | ** | -.20 | 227 | 4.17 | 4.14 | -.03 | | -.04 | 539 | 4.22 | 4.18 | -.03 | | -.04 | 349 | 4.17 | 4.07 | -.10 | *** | -.13 | 854 |
| 47 | Facilities/equipment in my major field | 4.02 | 3.88 | -.15 | ** | -.15 | 435 | 4.03 | 3.88 | -.13 | | -.13 | 227 | 3.92 | 3.94 | .01 | | .01 | 539 | 3.92 | 3.87 | -.05 | | -.05 | 349 | 4.00 | 3.92 | -.08 | * | -.09 | 852 |
| 48 | **ExhibScholarlySkills** | 4.14 | 4.33 | .19 | *** | .42 | 451 | 4.02 | 4.26 | .23 | *** | .49 | 235 | 4.22 | 4.40 | .18 | *** | .38 | 542 | 4.14 | 4.27 | .12 | *** | .23 | 356 | 4.16 | 4.38 | .22 | *** | .51 | 872 |
| 49 | I located appropriate source material | 4.21 | 4.42 | .20 | *** | .29 | 450 | 4.08 | 4.41 | .33 | *** | .45 | 235 | 4.29 | 4.48 | .17 | *** | .24 | 540 | 4.18 | 4.41 | .22 | *** | .29 | 356 | 4.24 | 4.46 | .21 | *** | .30 | 869 |
| 50 | I used disciplinary knowledge and methods appropriately | 4.13 | 4.27 | .14 | *** | .19 | 446 | 3.93 | 4.21 | .27 | *** | .31 | 234 | 4.20 | 4.41 | .20 | *** | .27 | 537 | 4.07 | 4.23 | .15 | ** | .18 | 355 | 4.15 | 4.36 | .21 | *** | .28 | 862 |
| 51 | I supported my arguments with appropriate evidence | 4.24 | 4.42 | .18 | *** | .24 | 447 | 4.09 | 4.36 | .26 | *** | .34 | 234 | 4.31 | 4.46 | .14 | *** | .18 | 539 | 4.25 | 4.34 | .08 | | .09 | 354 | 4.24 | 4.46 | .21 | *** | .30 | 866 |
| 52 | I showed originality | 4.06 | 4.20 | .15 | *** | .19 | 449 | 4.04 | 4.15 | .11 | * | .14 | 233 | 4.10 | 4.29 | .19 | *** | .24 | 539 | 4.13 | 4.20 | .07 | | .09 | 355 | 4.05 | 4.24 | .20 | *** | .24 | 866 |
| 53 | I synthesized information to produce insights that expanded my understanding | 4.06 | 4.33 | .28 | *** | .34 | 445 | 3.90 | 4.25 | .36 | *** | .48 | 231 | 4.16 | 4.44 | .27 | *** | .36 | 538 | 4.09 | 4.29 | .22 | *** | .25 | 349 | 4.07 | 4.39 | .32 | *** | .43 | 865 |
| 54 | I demonstrated good communication skills | 4.10 | 4.24 | .14 | *** | .18 | 449 | 4.03 | 4.15 | .09 | | .10 | 233 | 4.23 | 4.36 | .12 | *** | .17 | 541 | 4.12 | 4.15 | .02 | | .03 | 356 | 4.15 | 4.33 | .16 | *** | .22 | 867 |
| 55 | I showed evidence of independent thinking | 4.22 | 4.42 | .20 | *** | .27 | 450 | 4.14 | 4.35 | .20 | *** | .29 | 235 | 4.31 | 4.52 | .21 | *** | .30 | 539 | 4.29 | 4.41 | .10 | ** | .14 | 356 | 4.22 | 4.47 | .24 | *** | .35 | 868 |
| 56 | I showed skill with quantitative reasoning | 3.75 | 3.95 | .14 | ** | .16 | 439 | 3.75 | 3.91 | .12 | | .13 | 232 | 3.73 | 3.94 | .11 | * | .12 | 515 | 3.87 | 3.96 | .03 | | .03 | 343 | 3.69 | 3.93 | .16 | *** | .18 | 843 |
| 57 | I persisted when faced with conceptual and practical difficulties | 4.13 | 4.44 | .30 | *** | .40 | 449 | 4.04 | 4.25 | .21 | *** | .23 | 233 | 4.30 | 4.49 | .18 | *** | .25 | 539 | 4.19 | 4.34 | .14 | ** | .17 | 354 | 4.19 | 4.46 | .27 | *** | .36 | 867 |
| 58 | I used feedback to assess my performance | 4.18 | 4.37 | .17 | *** | .21 | 449 | 4.05 | 4.29 | .22 | *** | .23 | 232 | 4.28 | 4.44 | .16 | *** | .19 | 541 | 4.08 | 4.26 | .13 | ** | .15 | 353 | 4.25 | 4.44 | .19 | *** | .23 | 869 |
| 59 | Integrated ideas or information from various sources | 3.58 | 3.68 | .09 | * | .12 | 437 | 3.38 | 3.62 | .25 | *** | .33 | 225 | 3.60 | 3.69 | .09 | ** | .13 | 537 | 3.43 | 3.59 | .17 | *** | .22 | 347 | 3.60 | 3.70 | .10 | *** | .14 | 852 |
| 60 | **NeedCognLite** | 3.87 | 3.92 | .05 | * | .10 | 451 | 3.89 | 3.96 | .07 | * | .13 | 235 | 3.87 | 3.91 | .04 | * | .09 | 543 | 4.03 | 4.07 | .04 | | .08 | 356 | 3.81 | 3.87 | .05 | *** | .12 | 873 |
| 61 | The notion of thinking abstractly is appealing to me | 3.89 | 3.91 | .03 | | .04 | 446 | 3.84 | 3.97 | .13 | * | .16 | 233 | 3.83 | 3.92 | .09 | ** | .12 | 539 | 4.08 | 4.19 | .12 | ** | .15 | 353 | 3.76 | 3.82 | .06 | * | .07 | 865 |
| 62 | I enjoy expressing my ideas in writing | 3.81 | 3.89 | .08 | * | .11 | 446 | 3.67 | 3.78 | .10 | | .12 | 234 | 3.96 | 4.01 | .05 | | .06 | 538 | 3.80 | 3.88 | .08 | * | .11 | 354 | 3.87 | 3.93 | .06 | * | .08 | 864 |
| 63 | I really enjoy a task that involves coming up with new solutions to problems | 4.03 | 4.13 | .11 | ** | .15 | 447 | 4.05 | 4.09 | .04 | | .05 | 234 | 3.99 | 4.05 | .07 | * | .09 | 539 | 4.22 | 4.25 | .04 | | .05 | 354 | 3.93 | 4.02 | .09 | *** | .12 | 866 |
| 64 | Creating original works | 2.88 | 2.85 | -.02 | | -.03 | 451 | 2.97 | 2.94 | -.03 | | -.04 | 235 | 2.84 | 2.79 | -.05 | | -.06 | 542 | 3.01 | 2.93 | -.08 | | -.09 | 355 | 2.83 | 2.81 | -.02 | | -.02 | 873 |
| 65 | I have confidence in my opinions, even if they are contrary to the general consensus | 4.09 | 4.12 | .04 | | .05 | 447 | 4.20 | 4.28 | .08 | | .12 | 234 | 4.05 | 4.10 | .05 | | .07 | 539 | 4.31 | 4.35 | .04 | | .06 | 354 | 4.00 | 4.06 | .06 | * | .08 | 866 |
| 66 | **ProjMgt** | 3.88 | 4.03 | .15 | *** | .20 | 450 | 3.67 | 3.83 | .14 | * | .17 | 235 | 4.03 | 4.14 | .10 | ** | .14 | 541 | 3.75 | 3.83 | .09 | * | .11 | 356 | 3.98 | 4.13 | .14 | *** | .20 | 870 |
| 67 | I properly planned tasks to achieve project goals | 3.90 | 4.03 | .13 | ** | .13 | 447 | 3.68 | 3.89 | .19 | ** | .19 | 235 | 4.09 | 4.15 | .05 | | .06 | 540 | 3.78 | 3.85 | .06 | | .06 | 354 | 4.01 | 4.14 | .12 | *** | .14 | 868 |
| 68 | I demonstrated effective time management in completing tasks | 3.67 | 3.91 | .25 | *** | .24 | 449 | 3.43 | 3.66 | .22 | ** | .19 | 235 | 3.88 | 4.04 | .16 | *** | .17 | 541 | 3.47 | 3.68 | .23 | *** | .20 | 356 | 3.82 | 4.02 | .20 | *** | .20 | 869 |
| 69 | I identified manageable sets of goals for my projects | 4.07 | 4.17 | .09 | * | .10 | 449 | 3.91 | 3.98 | .05 | | .06 | 235 | 4.14 | 4.24 | .09 | * | .10 | 540 | 3.99 | 4.01 | -.01 | | -.01 | 356 | 4.10 | 4.23 | .12 | *** | .14 | 868 |
| 70 | **RatingAcadAbil** | 3.82 | 3.89 | .07 | *** | .21 | 451 | 3.64 | 3.73 | .09 | *** | .24 | 235 | 3.98 | 4.10 | .12 | *** | .35 | 543 | 3.96 | 4.05 | .08 | *** | .22 | 356 | 3.81 | 3.92 | .10 | *** | .30 | 873 |
| 71 | Writing ability | 3.73 | 3.84 | .11 | *** | .16 | 449 | 3.47 | 3.56 | .09 | | .11 | 233 | 3.93 | 4.09 | .16 | *** | .26 | 543 | 3.74 | 3.87 | .13 | *** | .18 | 354 | 3.78 | 3.91 | .13 | *** | .20 | 871 |
| 72 | Creativity | 3.81 | 3.84 | .02 | | .03 | 449 | 3.76 | 3.87 | .10 | * | .16 | 235 | 3.74 | 3.82 | .09 | ** | .14 | 542 | 3.89 | 3.94 | .05 | | .07 | 356 | 3.72 | 3.80 | .07 | *** | .12 | 870 |
| 73 | Academic ability | 3.88 | 3.97 | .08 | *** | .16 | 451 | 3.51 | 3.59 | .08 | | .13 | 235 | 4.31 | 4.41 | .10 | *** | .19 | 543 | 4.04 | 4.08 | .04 | | .08 | 356 | 3.99 | 4.10 | .11 | *** | .20 | 873 |
| 74 | Ability to think critically | 3.94 | 4.00 | .06 | * | .10 | 451 | 3.77 | 3.94 | .17 | *** | .23 | 235 | 4.03 | 4.16 | .14 | *** | .20 | 542 | 4.12 | 4.23 | .11 | ** | .17 | 356 | 3.88 | 3.99 | .12 | *** | .17 | 872 |
| 75 | Self-confidence (intellectual) | 3.73 | 3.80 | .08 | * | .11 | 451 | 3.66 | 3.69 | .03 | | .03 | 234 | 3.89 | 4.02 | .13 | *** | .20 | 543 | 4.01 | 4.10 | .09 | * | .12 | 355 | 3.69 | 3.79 | .10 | *** | .14 | 873 |
| 76 | **RatingLeadCollabSkills** | 3.65 | 3.71 | .07 | ** | .14 | 451 | 3.72 | 3.75 | .03 | | .06 | 235 | 3.58 | 3.69 | .11 | *** | .25 | 543 | 3.82 | 3.89 | .07 | ** | .16 | 356 | 3.56 | 3.64 | .08 | *** | .17 | 873 |
| 77 | Public speaking ability | 3.38 | 3.50 | .12 | *** | .17 | 450 | 3.42 | 3.52 | .09 | | .12 | 234 | 3.45 | 3.62 | .18 | *** | .27 | 542 | 3.64 | 3.77 | .13 | *** | .19 | 354 | 3.33 | 3.47 | .14 | *** | .21 | 872 |
| 78 | Leadership ability | 3.92 | 3.97 | .05 | | .08 | 450 | 3.86 | 3.90 | .03 | | .05 | 234 | 3.91 | 3.94 | .03 | | .05 | 543 | 4.06 | 4.09 | .02 | | .04 | 355 | 3.84 | 3.88 | .05 | * | .07 | 872 |
| 79 | Self-confidence (social) | 3.64 | 3.67 | .03 | | .04 | 451 | 3.88 | 3.84 | -.04 | | -.05 | 234 | 3.39 | 3.50 | .11 | *** | .15 | 543 | 3.75 | 3.80 | .07 | | .08 | 356 | 3.51 | 3.55 | .05 | | .06 | 872 |
| 80 | **RatingIndepVoice** | 4.12 | 4.14 | .02 | | .04 | 451 | 4.13 | 4.13 | .00 | | .01 | 235 | 4.05 | 4.11 | .06 | ** | .12 | 543 | 4.14 | 4.17 | .03 | | .06 | 356 | 4.07 | 4.11 | .03 | * | .07 | 873 |
| 81 | Self-understanding | 4.03 | 4.07 | .04 | | .06 | 451 | 4.08 | 4.09 | .00 | | .01 | 235 | 3.94 | 4.01 | .07 | * | .09 | 542 | 4.09 | 4.12 | .04 | | .04 | 356 | 3.97 | 4.02 | .05 | * | .07 | 872 |
| 82 | Understanding of others | 4.10 | 4.10 | .00 | | .00 | 450 | 4.11 | 4.12 | .00 | | .01 | 235 | 4.01 | 4.05 | .03 | | .05 | 542 | 4.01 | 4.08 | .07 | | .09 | 356 | 4.09 | 4.08 | -.01 | | -.01 | 871 |
| 83 | Ability to think and act on my own | 4.21 | 4.23 | .01 | | .02 | 450 | 4.20 | 4.20 | .00 | | -.01 | 234 | 4.19 | 4.26 | .07 | * | .10 | 543 | 4.31 | 4.30 | -.01 | | -.02 | 355 | 4.16 | 4.21 | .06 | * | .08 | 872 |
| 84 | **RatingStriver** | 4.00 | 4.04 | .04 | | .06 | 451 | 3.89 | 3.86 | -.03 | | -.04 | 235 | 4.17 | 4.24 | .07 | *** | .14 | 543 | 4.02 | 4.03 | .01 | | .02 | 356 | 4.07 | 4.12 | .05 | ** | .10 | 873 |
| 85 | Drive to achieve | 4.01 | 4.06 | .04 | | .06 | 451 | 3.79 | 3.79 | -.01 | | -.01 | 235 | 4.26 | 4.34 | .08 | ** | .13 | 543 | 3.99 | 4.01 | .01 | | .01 | 356 | 4.11 | 4.18 | .07 | ** | .10 | 873 |
| 86 | Persistence | 3.99 | 4.02 | .04 | | .05 | 450 | 3.98 | 3.94 | -.04 | | -.05 | 234 | 4.08 | 4.14 | .06 | * | .11 | 542 | 4.05 | 4.05 | .02 | | .03 | 355 | 4.02 | 4.06 | .04 | | .06 | 871 |
| 87 | **ResearchOrient** | 3.57 | 3.75 | .18 | *** | .27 | 451 | 3.45 | 3.61 | .16 | *** | .26 | 235 | 3.68 | 3.87 | .19 | *** | .33 | 543 | 3.58 | 3.76 | .18 | *** | .30 | 356 | 3.61 | 3.78 | .18 | *** | .29 | 873 |
| 88 | I enjoy doing research | 3.54 | 3.71 | .18 | *** | .20 | 447 | 3.50 | 3.63 | .13 | * | .15 | 234 | 3.61 | 3.78 | .18 | *** | .22 | 538 | 3.57 | 3.71 | .15 | *** | .18 | 354 | 3.56 | 3.74 | .17 | *** | .21 | 865 |
| 89 | Research skills | 3.61 | 3.78 | .17 | *** | .23 | 448 | 3.41 | 3.60 | .20 | *** | .28 | 234 | 3.75 | 3.96 | .21 | *** | .32 | 542 | 3.59 | 3.81 | .22 | *** | .30 | 355 | 3.65 | 3.83 | .18 | *** | .27 | 869 |
| 90 | Student Experience Scales (Post Only) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 91 | *4 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92 | **PrepBreadth** | | 2.34 | | | | 445 | | 2.32 | | | | 231 | | 2.32 | | | | 541 | | 2.25 | | | | 351 | | 2.36 | | | | 866 |
| 93 | Study abroad experiences | | 2.49 | | | | 233 | | 2.26 | | | | 106 | | 2.28 | | | | 338 | | 2.27 | | | | 184 | | 2.38 | | | | 493 |

| Line | | All- 2.99 and under | | | | | | All- 3-3.49 | | | | | | All- 3.5 and up | | | | | | All- Males | | | | | | All- Females | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 94 | Volunteer experiences | | 2.00 | | | | 367 | | 2.12 | | | | 182 | | 2.01 | | | | 469 | | 1.84 | | | | 279 | | 2.10 | | | | 739 |
| 95 | My non-academic interests/experiences | | 2.71 | | | | 420 | | 2.82 | | | | 217 | | 2.71 | | | | 503 | | 2.71 | | | | 324 | | 2.73 | | | | 816 |
| 96 | My job or internship experiences | | 2.50 | | | | 366 | | 2.31 | | | | 175 | | 2.49 | | | | 482 | | 2.41 | | | | 283 | | 2.49 | | | | 740 |
| 97 | Courses outside my major(s) and minor(s) | | 2.09 | | | | 434 | | 2.03 | | | | 225 | | 2.13 | | | | 536 | | 2.05 | | | | 345 | | 2.12 | | | | 850 |
| 98 | **PrepDisc** | | 2.90 | | | | 445 | | 2.96 | | | | 232 | | 2.89 | | | | 541 | | 2.85 | | | | 352 | | 2.93 | | | | 866 |
| 99 | A junior or senior seminar | | 2.89 | | | | 388 | | 2.93 | | | | 212 | | 2.90 | | | | 472 | | 2.86 | | | | 312 | | 2.93 | | | | 760 |
| 100 | A research methods or skills course | | 2.89 | | | | 386 | | 3.04 | | | | 210 | | 2.74 | | | | 442 | | 2.75 | | | | 316 | | 2.90 | | | | 722 |
| 101 | Assistance from librarians or use of library services | | 2.36 | | | | 405 | | 2.38 | | | | 214 | | 2.26 | | | | 495 | | 2.26 | | | | 320 | | 2.35 | | | | 794 |
| 102 | Courses in my major(s) or minors(s) | | 3.43 | | | | 441 | | 3.44 | | | | 232 | | 3.53 | | | | 541 | | 3.46 | | | | 351 | | 3.48 | | | | 863 |
| 103 | **PrepQuant** | | 2.49 | | | | 386 | | 2.46 | | | | 213 | | 2.34 | | | | 469 | | 2.43 | | | | 314 | | 2.41 | | | | 754 |
| 104 | Training in quantitative methods (statistics, tables, graphs, mathematical | | 2.43 | | | | 356 | | 2.40 | | | | 201 | | 2.34 | | | | 429 | | 2.37 | | | | 293 | | 2.39 | | | | 693 |
| 105 | Training or experience with computer techniques (spreadsheets, Internet, programming, presentation software…) | | 2.57 | | | | 380 | | 2.53 | | | | 208 | | 2.38 | | | | 458 | | 2.51 | | | | 308 | | 2.46 | | | | 738 |
| 106 | *5 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 107 | **MentorRel** | | 4.38 | | | | 425 | | 4.34 | | | | 219 | | 4.46 | | | | 513 | | 4.38 | | | | 334 | | 4.42 | | | | 823 |
| 108 | My mentor gave me helpful advice | | 4.42 | | | | 425 | | 4.41 | | | | 219 | | 4.48 | | | | 513 | | 4.42 | | | | 334 | | 4.46 | | | | 823 |
| 109 | My mentor gave me sufficient feedback | | 4.28 | | | | 228 | | 4.29 | | | | 112 | | 4.32 | | | | 271 | | 4.32 | | | | 174 | | 4.29 | | | | 437 |
| 110 | My mentor gave me useful feedback | | 4.42 | | | | 228 | | 4.38 | | | | 113 | | 4.42 | | | | 271 | | 4.44 | | | | 174 | | 4.40 | | | | 438 |
| 111 | My mentor effectively guided me through the capstone | | 4.16 | | | | 226 | | 4.22 | | | | 113 | | 4.26 | | | | 271 | | 4.20 | | | | 173 | | 4.22 | | | | 437 |
| 112 | My mentor and I communicated well | | 4.26 | | | | 228 | | 4.38 | | | | 113 | | 4.41 | | | | 269 | | 4.40 | | | | 174 | | 4.33 | | | | 436 |
| 113 | I was comfortable working with my faculty mentor | | 4.43 | | | | 425 | | 4.41 | | | | 219 | | 4.56 | | | | 513 | | 4.46 | | | | 334 | | 4.49 | | | | 823 |
| 114 | I had access to my mentor when I needed it | | 4.34 | | | | 425 | | 4.24 | | | | 219 | | 4.42 | | | | 513 | | 4.33 | | | | 334 | | 4.36 | | | | 823 |
| 115 | My mentor gave me timely feedback | | 4.27 | | | | 228 | | 4.23 | | | | 113 | | 4.34 | | | | 270 | | 4.28 | | | | 174 | | 4.30 | | | | 437 |
| 116 | My mentor provided helpful subject matter expertise | | 4.31 | | | | 228 | | 4.29 | | | | 113 | | 4.27 | | | | 270 | | 4.28 | | | | 174 | | 4.30 | | | | 437 |
| 117 | My mentor had reasonable expectations for my performance | | 4.42 | | | | 228 | | 4.35 | | | | 113 | | 4.45 | | | | 271 | | 4.45 | | | | 174 | | 4.41 | | | | 438 |
| 118 | My mentor met with me regularly | | 4.27 | | | | 228 | | 4.20 | | | | 113 | | 4.18 | | | | 271 | | 4.20 | | | | 174 | | 4.22 | | | | 438 |
| 119 | My mentor was genuinely interested in my project | | 4.45 | | | | 425 | | 4.39 | | | | 219 | | 4.52 | | | | 513 | | 4.45 | | | | 334 | | 4.48 | | | | 823 |
| 120 | My mentor encouraged my independence | | 4.51 | | | | 228 | | 4.42 | | | | 113 | | 4.52 | | | | 271 | | 4.53 | | | | 174 | | 4.49 | | | | 438 |
| 121 | My mentor was experienced in capstone advising | | 4.36 | | | | 228 | | 4.30 | | | | 112 | | 4.39 | | | | 270 | | 4.36 | | | | 174 | | 4.36 | | | | 436 |
| 122 | **CapContDev** | | 4.15 | | | | 428 | | 4.08 | | | | 221 | | 4.10 | | | | 517 | | 4.05 | | | | 334 | | 4.14 | | | | 832 |
| 123 | Ability to think critically and analytically | | 4.35 | | | | 428 | | 4.17 | | | | 221 | | 4.31 | | | | 516 | | 4.22 | | | | 334 | | 4.33 | | | | 831 |
| 124 | Ability to write effectively | | 4.19 | | | | 427 | | 4.14 | | | | 220 | | 4.28 | | | | 516 | | 4.09 | | | | 333 | | 4.28 | | | | 830 |
| 125 | Skill in the interpreting of data, evidence, texts, and/or works | | 4.22 | | | | 427 | | 4.12 | | | | 221 | | 4.17 | | | | 515 | | 4.19 | | | | 334 | | 4.18 | | | | 829 |
| 126 | Ability to interpret primary literature | | 4.09 | | | | 427 | | 4.12 | | | | 220 | | 4.07 | | | | 515 | | 4.05 | | | | 333 | | 4.10 | | | | 829 |
| 127 | Acquiring research related skills | | 4.20 | | | | 428 | | 4.12 | | | | 221 | | 4.13 | | | | 516 | | 4.09 | | | | 334 | | 4.18 | | | | 831 |
| 128 | Ability to think creatively | | 4.10 | | | | 428 | | 4.08 | | | | 221 | | 4.10 | | | | 515 | | 4.07 | | | | 333 | | 4.11 | | | | 831 |
| 129 | Having confidence in my own abilities | | 4.33 | | | | 428 | | 4.19 | | | | 221 | | 4.30 | | | | 515 | | 4.24 | | | | 334 | | 4.31 | | | | 830 |
| 130 | Managing a large project | | 4.48 | | | | 428 | | 4.31 | | | | 221 | | 4.49 | | | | 516 | | 4.35 | | | | 334 | | 4.50 | | | | 831 |
| 131 | Ability to make an effective oral presentation | | 3.84 | | | | 428 | | 3.78 | | | | 220 | | 3.60 | | | | 516 | | 3.64 | | | | 333 | | 3.76 | | | | 831 |
| 132 | Learning ethical conduct in my field | | 3.45 | | | | 428 | | 3.56 | | | | 221 | | 3.36 | | | | 517 | | 3.34 | | | | 334 | | 3.47 | | | | 832 |
| 133 | Learning effectively on my own | | 4.38 | | | | 428 | | 4.24 | | | | 221 | | 4.29 | | | | 516 | | 4.24 | | | | 334 | | 4.35 | | | | 831 |
| 134 | **CapMoreEngaging** | | 4.16 | | | | 428 | | 4.25 | | | | 221 | | 4.13 | | | | 520 | | 4.15 | | | | 337 | | 4.17 | | | | 832 |
| 135 | I worked harder on my capstone than on my regular coursework | | 4.32 | | | | 427 | | 4.37 | | | | 221 | | 4.26 | | | | 518 | | 4.25 | | | | 336 | | 4.33 | | | | 830 |
| 136 | My capstone was more intellectually challenging than my regular coursework | | 4.15 | | | | 427 | | 4.29 | | | | 219 | | 4.15 | | | | 519 | | 4.17 | | | | 335 | | 4.18 | | | | 830 |
| 137 | I developed more academically from my capstone than from a regular course | | 4.02 | | | | 428 | | 4.11 | | | | 221 | | 3.99 | | | | 520 | | 4.06 | | | | 337 | | 4.01 | | | | 832 |
| 138 | **CapSuccessful** | | 4.01 | | | | 428 | | 4.02 | | | | 221 | | 4.05 | | | | 520 | | 3.97 | | | | 337 | | 4.05 | | | | 832 |
| 139 | My capstone has better prepared me for a job or graduate school | | 3.88 | | | | 428 | | 3.84 | | | | 221 | | 3.99 | | | | 519 | | 3.92 | | | | 337 | | 3.92 | | | | 831 |
| 140 | My capstone had a positive influence on my intellectual growth and interest in | | 4.25 | | | | 427 | | 4.23 | | | | 220 | | 4.29 | | | | 519 | | 4.19 | | | | 337 | | 4.29 | | | | 829 |
| 141 | My capstone has helped me clarify my career or graduate school objectives | | 3.52 | | | | 428 | | 3.63 | | | | 221 | | 3.57 | | | | 520 | | 3.57 | | | | 337 | | 3.56 | | | | 832 |
| 142 | My capstone had a positive influence on my personal growth, attitudes, and values | | 4.11 | | | | 428 | | 4.19 | | | | 221 | | 4.07 | | | | 517 | | 4.04 | | | | 335 | | 4.13 | | | | 831 |
| 143 | My capstone has led me to a better understanding of my skills, abilities and | | 4.29 | | | | 427 | | 4.26 | | | | 221 | | 4.28 | | | | 519 | | 4.21 | | | | 337 | | 4.31 | | | | 830 |
| 144 | Understanding of my discipline improved | | 4.18 | | | | 428 | | 4.12 | | | | 220 | | 4.22 | | | | 519 | | 4.17 | | | | 336 | | 4.20 | | | | 831 |
| 145 | Overall, I had a good capstone experience | | 4.19 | | | | 428 | | 4.22 | | | | 221 | | 4.32 | | | | 518 | | 4.19 | | | | 337 | | 4.28 | | | | 830 |

| Line | | All- 2.99 and under | | | | | | All- 3-3.49 | | | | | | All- 3.5 and up | | | | | | All- Males | | | | | | All- Females | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 146 | Seeing the connection between my intended career and how it affects society | | 3.49 | | | | 428 | | 3.47 | | | | 221 | | 3.55 | | | | 516 | | 3.36 | | | | 334 | | 3.57 | | | | 831 |
| 147 | My capstone was more engaging than my regular coursework | | 4.29 | | | | 428 | | 4.36 | | | | 221 | | 4.27 | | | | 520 | | 4.28 | | | | 337 | | 4.30 | | | | 832 |
| 148 | I created new knowledge in my discipline | | 3.91 | | | | 427 | | 3.93 | | | | 221 | | 3.91 | | | | 520 | | 3.82 | | | | 336 | | 3.95 | | | | 832 |
| 149 | **Faculty Scales [1]** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 150 | *5 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 151 | **CommunSkills** | 3.81 | 3.95 | .21 | ** | .24 | 277 | 3.13 | 3.44 | .24 | * | .24 | 140 | 4.28 | 4.55 | .22 | *** | .34 | 320 | 3.70 | 3.99 | .29 | *** | .35 | 202 | 3.95 | 4.16 | .19 | *** | .24 | 535 |
| 152 | Writes in a clear, articulate manner | 3.71 | 3.91 | .16 | * | .15 | 266 | 3.14 | 3.24 | .20 | | .18 | 139 | 4.25 | 4.46 | .19 | *** | .23 | 315 | 3.61 | 3.81 | .19 | * | .19 | 195 | 3.85 | 4.01 | .18 | *** | .19 | 525 |
| 153 | Writes in a well-organized manner | 3.72 | 3.97 | .24 | ** | .24 | 265 | 3.21 | 3.34 | .11 | | .09 | 139 | 4.28 | 4.48 | .17 | ** | .22 | 314 | 3.65 | 3.89 | .26 | ** | .29 | 193 | 3.87 | 4.04 | .16 | ** | .17 | 525 |
| 154 | Writes without distracting errors in spelling grammar, punctuation, usage, etc. | 3.76 | 3.87 | .11 | | .10 | 267 | 3.28 | 3.25 | .04 | | .03 | 139 | 4.27 | 4.45 | .20 | *** | .25 | 316 | 3.67 | 3.81 | .22 | * | .21 | 196 | 3.91 | 3.98 | .11 | * | .11 | 526 |
| 155 | Delivers an effective poster presentation | 3.74 | 4.17 | .54 | ** | .58 | 66 | 3.20 | 3.77 | 1.09 | ** | 1.04 | 26 | 4.17 | 4.49 | .32 | ** | .49 | 77 | 3.68 | 4.19 | .74 | *** | .81 | 47 | 3.87 | 4.24 | .43 | *** | .51 | 122 |
| 156 | Delivers an effective oral presentation | 3.79 | 4.09 | .30 | *** | .32 | 244 | 3.24 | 3.61 | .45 | ** | .39 | 114 | 4.10 | 4.50 | .37 | *** | .49 | 263 | 3.67 | 4.05 | .41 | *** | .43 | 174 | 3.83 | 4.17 | .33 | *** | .37 | 447 |
| 157 | **EffProjectMgt** | 3.86 | 4.03 | .22 | *** | .27 | 281 | 3.31 | 3.60 | .26 | ** | .33 | 143 | 4.25 | 4.50 | .28 | *** | .45 | 328 | 3.75 | 4.02 | .30 | *** | .40 | 209 | 3.99 | 4.20 | .24 | *** | .33 | 543 |
| 158 | Properly plans tasks to achieve project goals | 3.80 | 3.99 | .18 | * | .17 | 277 | 3.16 | 3.29 | .17 | | .14 | 141 | 4.24 | 4.45 | .28 | *** | .32 | 325 | 3.57 | 3.80 | .29 | ** | .28 | 206 | 3.93 | 4.08 | .19 | *** | .19 | 537 |
| 159 | Demonstrates effective time management in completing tasks | 3.74 | 3.91 | .17 | | .14 | 277 | 3.06 | 3.10 | .13 | | .09 | 141 | 4.25 | 4.38 | .17 | * | .18 | 322 | 3.49 | 3.61 | .16 | | .12 | 206 | 3.91 | 4.03 | .16 | ** | .15 | 534 |
| 160 | Demonstrates accurate awareness of own abilities and limitations | 3.64 | 3.94 | .28 | *** | .25 | 262 | 3.23 | 3.45 | .29 | * | .26 | 135 | 4.09 | 4.40 | .36 | *** | .42 | 319 | 3.57 | 3.89 | .48 | *** | .49 | 202 | 3.77 | 4.02 | .26 | *** | .26 | 514 |
| 161 | Identifies a manageable set of project goals | 3.81 | 4.05 | .19 | ** | .20 | 278 | 3.32 | 3.52 | .20 | | .17 | 140 | 4.18 | 4.42 | .29 | *** | .39 | 323 | 3.70 | 3.91 | .20 | * | .19 | 207 | 3.89 | 4.12 | .25 | *** | .28 | 534 |
| 162 | Persists when faced with conceptual and practical difficulties | 3.88 | 4.23 | .39 | *** | .37 | 269 | 3.35 | 3.74 | .38 | ** | .31 | 139 | 4.35 | 4.58 | .27 | *** | .33 | 318 | 3.78 | 4.11 | .34 | *** | .34 | 203 | 3.99 | 4.30 | .33 | *** | .34 | 523 |
| 163 | Uses feedback to assess performance | 3.91 | 4.11 | .13 | | .12 | 265 | 3.44 | 3.68 | .44 | *** | .37 | 137 | 4.29 | 4.55 | .26 | *** | .32 | 315 | 3.79 | 4.02 | .34 | *** | .30 | 198 | 4.00 | 4.24 | .21 | *** | .23 | 519 |
| 164 | Locates appropriate source material | 3.87 | 4.07 | .20 | ** | .22 | 271 | 3.43 | 3.62 | .34 | ** | .35 | 134 | 4.27 | 4.48 | .26 | *** | .36 | 311 | 3.76 | 3.99 | .37 | *** | .45 | 195 | 3.99 | 4.17 | .21 | *** | .25 | 521 |
| 165 | Demonstrates appropriate confidence in own intellectual ability | 3.63 | 3.90 | .29 | *** | .29 | 269 | 3.20 | 3.39 | .20 | | .18 | 136 | 4.02 | 4.36 | .36 | *** | .39 | 323 | 3.63 | 3.88 | .30 | *** | .32 | 205 | 3.68 | 3.97 | .30 | *** | .30 | 523 |
| 166 | **IntelEngagement** | 3.79 | 3.95 | .27 | *** | .34 | 280 | 3.29 | 3.54 | .24 | ** | .27 | 143 | 4.26 | 4.50 | .24 | *** | .38 | 327 | 3.87 | 4.08 | .27 | *** | .35 | 209 | 3.91 | 4.12 | .25 | *** | .33 | 541 |
| 167 | Demonstrates intellectual curiosity | 3.90 | 4.10 | .22 | ** | .22 | 277 | 3.42 | 3.67 | .21 | | .19 | 142 | 4.37 | 4.56 | .21 | *** | .28 | 326 | 3.93 | 4.09 | .18 | * | .20 | 207 | 3.96 | 4.19 | .23 | *** | .24 | 538 |
| 168 | Shows originality | 3.59 | 3.92 | .38 | *** | .38 | 272 | 3.16 | 3.37 | .25 | * | .22 | 138 | 4.09 | 4.41 | .34 | *** | .36 | 323 | 3.65 | 3.88 | .33 | *** | .32 | 204 | 3.66 | 3.99 | .34 | *** | .35 | 529 |
| 169 | Shows evidence of independent thinking | 3.80 | 4.12 | .36 | *** | .37 | 278 | 3.35 | 3.60 | .28 | * | .25 | 141 | 4.31 | 4.55 | .26 | *** | .33 | 324 | 3.87 | 4.08 | .28 | ** | .28 | 206 | 3.86 | 4.16 | .31 | *** | .34 | 537 |
| 170 | Synthesizes information to produce insights that expand the student's understanding | 3.63 | 3.99 | .43 | *** | .43 | 263 | 3.13 | 3.46 | .53 | *** | .43 | 133 | 4.17 | 4.50 | .38 | *** | .44 | 315 | 3.61 | 3.96 | .48 | *** | .45 | 200 | 3.75 | 4.07 | .40 | *** | .42 | 511 |
| 171 | Actively pursues learning opportunities | 3.89 | 4.03 | .20 | ** | .19 | 275 | 3.23 | 3.35 | .03 | | .03 | 141 | 4.38 | 4.48 | .16 | ** | .22 | 318 | 3.77 | 3.87 | .10 | | .10 | 206 | 3.97 | 4.10 | .17 | *** | .18 | 528 |
| 172 | Asks probing questions | 3.62 | 3.83 | .27 | ** | .23 | 279 | 3.06 | 3.29 | .24 | | .20 | 142 | 4.17 | 4.37 | .26 | *** | .31 | 323 | 3.65 | 3.85 | .35 | *** | .37 | 208 | 3.68 | 3.90 | .23 | *** | .21 | 536 |
| 173 | Makes connections to other contexts (across courses, disciplines, experiences, | 3.64 | 3.89 | .27 | *** | .26 | 260 | 3.15 | 3.39 | .24 | | .21 | 132 | 4.10 | 4.35 | .19 | ** | .20 | 301 | 3.59 | 3.85 | .26 | ** | .25 | 197 | 3.74 | 3.98 | .21 | *** | .22 | 496 |
| 174 | **CrThinkSkills** | 3.71 | 3.92 | .31 | *** | .40 | 275 | 3.22 | 3.52 | .30 | ** | .34 | 140 | 4.18 | 4.48 | .32 | *** | .50 | 323 | 3.71 | 4.02 | .36 | *** | .46 | 206 | 3.86 | 4.11 | .30 | *** | .40 | 532 |
| 175 | Develops convincing arguments to support conclusions | 3.64 | 3.91 | .32 | *** | .36 | 269 | 3.18 | 3.38 | .22 | | .20 | 137 | 4.13 | 4.42 | .32 | *** | .40 | 311 | 3.59 | 3.85 | .33 | *** | .33 | 204 | 3.76 | 4.01 | .29 | *** | .34 | 513 |
| 176 | Logically interprets and evaluates main points of source material | 3.75 | 4.06 | .36 | *** | .42 | 266 | 3.23 | 3.48 | .48 | *** | .46 | 134 | 4.22 | 4.46 | .26 | *** | .36 | 314 | 3.69 | 3.96 | .45 | *** | .56 | 195 | 3.85 | 4.10 | .30 | *** | .35 | 519 |
| 177 | Supports arguments with appropriate evidence | 3.79 | 4.06 | .29 | *** | .34 | 270 | 3.40 | 3.53 | .23 | * | .24 | 138 | 4.27 | 4.51 | .29 | *** | .39 | 314 | 3.80 | 3.98 | .27 | *** | .33 | 204 | 3.90 | 4.14 | .28 | *** | .34 | 518 |
| 178 | Uses disciplinary knowledge and methods appropriately | 3.77 | 4.07 | .33 | *** | .35 | 263 | 3.25 | 3.52 | .35 | ** | .30 | 137 | 4.21 | 4.52 | .36 | *** | .48 | 315 | 3.70 | 3.98 | .38 | *** | .39 | 200 | 3.85 | 4.15 | .33 | *** | .37 | 515 |
| 179 | Addresses opposing arguments or alternative explanations | 3.43 | 3.71 | .33 | *** | .33 | 261 | 2.95 | 3.12 | .27 | * | .25 | 134 | 3.94 | 4.27 | .36 | *** | .41 | 309 | 3.44 | 3.69 | .43 | *** | .45 | 198 | 3.53 | 3.79 | .30 | *** | .31 | 506 |
| 180 | Faculty Scales - Post Only | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 181 | **StudentTopicMotiv** | | 4.17 | | | | 277 | | 4.00 | | | | 137 | | 4.40 | | | | 314 | | 4.20 | | | | 198 | | 4.25 | | | | 530 |
| 182 | When the project ended, how enthusiastic was the student about the topic? | | 4.24 | | | | 275 | | 4.13 | | | | 137 | | 4.49 | | | | 311 | | 4.30 | | | | 196 | | 4.34 | | | | 527 |
| 183 | When the project started, how enthusiastic was the student about the topic? | | 4.26 | | | | 275 | | 4.07 | | | | 137 | | 4.43 | | | | 314 | | 4.28 | | | | 197 | | 4.31 | | | | 529 |
| 184 | To what extent did the student participate in developing / refining his /her capstone topic? | | 4.00 | | | | 277 | | 3.80 | | | | 136 | | 4.27 | | | | 314 | | 4.02 | | | | 198 | | 4.10 | | | | 529 |
| 185 | **MentorInstruction** | | 4.44 | | | | 158 | | 4.43 | | | | 74 | | 4.57 | | | | 184 | | 4.44 | | | | 109 | | 4.52 | | | | 307 |
| 186 | I gave useful feedback to this student | | 4.47 | | | | 158 | | 4.54 | | | | 74 | | 4.61 | | | | 184 | | 4.46 | | | | 109 | | 4.57 | | | | 307 |
| 187 | I gave this student useful feedback | | 4.38 | | | | 99 | | 4.50 | | | | 44 | | 4.56 | | | | 130 | | 4.45 | | | | 77 | | 4.50 | | | | 196 |
| 188 | I gave timely feedback to this student | | 4.51 | | | | 157 | | 4.51 | | | | 74 | | 4.59 | | | | 184 | | 4.52 | | | | 109 | | 4.55 | | | | 306 |
| 189 | I gave this student useful advice | | 4.51 | | | | 158 | | 4.57 | | | | 74 | | 4.63 | | | | 184 | | 4.50 | | | | 109 | | 4.60 | | | | 307 |
| 190 | I effectively guided the student through the capstone | | 4.23 | | | | 158 | | 4.27 | | | | 74 | | 4.47 | | | | 184 | | 4.25 | | | | 109 | | 4.38 | | | | 307 |
| 191 | I gave this student sufficient access | | 4.66 | | | | 158 | | 4.65 | | | | 74 | | 4.72 | | | | 184 | | 4.64 | | | | 109 | | 4.70 | | | | 307 |
| 192 | I provided helpful subject matter expertise for this student's project | | 4.25 | | | | 158 | | 4.28 | | | | 74 | | 4.37 | | | | 183 | | 4.23 | | | | 108 | | 4.33 | | | | 307 |
| 193 | I met with this student regularly | | 4.46 | | | | 158 | | 4.14 | | | | 74 | | 4.56 | | | | 183 | | 4.39 | | | | 109 | | 4.47 | | | | 306 |
| 194 | **MentorRapport** | | 4.46 | | | | 158 | | 4.36 | | | | 74 | | 4.69 | | | | 184 | | 4.47 | | | | 109 | | 4.57 | | | | 307 |
| 195 | I felt comfortable working with this student | | 4.59 | | | | 157 | | 4.39 | | | | 74 | | 4.78 | | | | 184 | | 4.56 | | | | 109 | | 4.66 | | | | 306 |

| Line | | All- 2.99 and under | | | | | | All- 3-3.49 | | | | | | All- 3.5 and up | | | | | | All- Males | | | | | | All- Females | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N | Pre | Post | D | Sig. | eff | N |
| 196 | Overall, I felt comfortable supervising this capstone | | 4.45 | | | | 154 | | 4.36 | | | | 73 | | 4.77 | | | | 183 | | 4.47 | | | | 108 | | 4.62 | | | | 302 |
| 197 | I was interested in this student's project | | 4.30 | | | | 156 | | 4.28 | | | | 74 | | 4.52 | | | | 184 | | 4.35 | | | | 109 | | 4.41 | | | | 305 |
| 198 | I communicated well with this student | | 4.42 | | | | 158 | | 4.32 | | | | 73 | | 4.70 | | | | 184 | | 4.45 | | | | 108 | | 4.55 | | | | 307 |
| 199 | I had reasonable expectations for the student's capstone performance | | 4.44 | | | | 158 | | 4.39 | | | | 74 | | 4.67 | | | | 183 | | 4.50 | | | | 109 | | 4.55 | | | | 306 |
| 200 | I encouraged this student to work independently | | 4.54 | | | | 157 | | 4.42 | | | | 74 | | 4.71 | | | | 184 | | 4.50 | | | | 109 | | 4.62 | | | | 306 |
| 201 | **Independent Summative** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 202 | Independence: Showing autonomy and initiative in thought and actions | | 3.98 | | | | 275 | | 3.66 | | | | 136 | | 4.40 | | | | 311 | | 4.07 | | | | 198 | | 4.11 | | | | 524 |
| 203 | Intellectual Engagement: Demonstrating an interest in learning | | 4.07 | | | | 275 | | 3.70 | | | | 137 | | 4.47 | | | | 310 | | 4.11 | | | | 197 | | 4.19 | | | | 525 |
| 204 | Self-understanding: Developing an awareness of self (skills, abilities, interests) | | 3.94 | | | | 272 | | 3.64 | | | | 135 | | 4.40 | | | | 311 | | 3.98 | | | | 196 | | 4.12 | | | | 522 |
| 205 | Project Management: Conceiving and managing a project | | 4.04 | | | | 273 | | 3.63 | | | | 137 | | 4.45 | | | | 312 | | 3.96 | | | | 197 | | 4.20 | | | | 525 |
| 206 | Research: Investigating in a manner appropriate to the discipline | | 3.99 | | | | 274 | | 3.62 | | | | 136 | | 4.47 | | | | 311 | | 3.97 | | | | 197 | | 4.18 | | | | 524 |
| 207 | Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence | | 3.89 | | | | 273 | | 3.50 | | | | 137 | | 4.41 | | | | 307 | | 3.96 | | | | 196 | | 4.07 | | | | 521 |
| 208 | Communication: Presenting ideas effectively (written, oral, and other forms) | | 4.01 | | | | 272 | | 3.62 | | | | 136 | | 4.47 | | | | 311 | | 4.02 | | | | 198 | | 4.18 | | | | 521 |
| 209 | **Post Graduate Plans (Advanced degrees planned during lifetime)** | Pre | Post | Chg | | | | Pre | Post | Chg | | | | Pre | Post | Chg | | | | Pre | Post | Chg | | | | Pre | Post | Chg | | | |
| 210 | **GradProfSchl** | 63% | 60% | -3% | | | | 54% | 49% | -5% | | | | 65% | 65% | 0% | | | | 61% | 55% | -6% | | | | 63% | 62% | -1% | | | |
| 211 | **AdvDeg** | 90% | 88% | -3% | | | | 83% | 82% | -1% | | | | 93% | 92% | -1% | | | | 86% | 88% | 1% | | | | 91% | 89% | -3% | | | |
| 212 | bachelors | 12% | 16% | 4% | | | | 22% | 20% | -2% | | | | 8% | 9% | 0% | | | | 16% | 18% | 1% | | | | 11% | 12% | 2% | | | |
| 213 | masters | 51% | 52% | 1% | | | | 51% | 52% | 1% | | | | 45% | 46% | 1% | | | | 38% | 40% | 2% | | | | 54% | 54% | 0% | | | |
| 214 | law (JD) | 6% | 3% | -2% | | | | 4% | 6% | 2% | | | | 6% | 6% | 0% | | | | 6% | 7% | 1% | | | | 5% | 4% | -1% | | | |
| 215 | doctorate | 32% | 29% | -3% | | | | 23% | 22% | -2% | | | | 41% | 39% | -1% | | | | 40% | 36% | -4% | | | | 31% | 29% | -1% | | | |

[1] Some respondents may not have completed some individual questions, resulting

[2] Means for subgroups on this item have been omitted due to a small number of us

[3] For simplicity only the Ns shown for the pre-faculty data are shown. For "All" dat

## Table 4.11: Pre/Post Significant Changes

**Combined 2009/10 and 2010/11 Data**

**Data breakdowns for school(s):**
**All**

| Line | Arrows indicate direction of significant mean changes, p<=.05 | **Survey Means Arrow Summary** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | All | Red | Tan | White | Yellow | NatSci | SocSci | Hum. | <=2.99 | 3-3.49 | >=3.5 | Males | Females |
| 2 | **Student Scales [1]** | | | | | | | | | | | | | |
| 15 | *4 point scales* | **Arrows indicate the direction of change for statistically significant difference scores, p<=0.05, two-tailed T-test** | | | | | | | | | | | | |
| 16 | **CivicOrient** | | | | | | | | | | | **↑1** | | |
| 17 | Volunteering in my community | | | | | | | | | | | | | |
| 18 | Helping others who are in difficulty | | | | | | | | | | ↓2 | | | |
| 19 | Becoming a community leader | | | | ↑2 | | | | | | | ↑1 | | |
| 20 | Influencing social values | | | | | | | | | | | ↑1 | | |
| 21 | Integrating spirituality into my life | | | | | | | | | | | | | |
| 22 | Developing a meaningful philosophy of life | | | | | | | | | | | | | |
| 23 | **StatusCareerOrient** | | **↓1** | | | | | **↓1** | | | **↓2** | | | |
| 24 | Becoming accomplished in my field of expertise | ↓2 | ↓2 | ↓2 | | ↓1 | ↓2 | ↓1 | ↓2 | ↓1 | ↓2 | ↓2 | ↓1 | ↓2 |
| 25 | Working in a prestigious occupation | | | | | | | | | | | | | |
| 26 | Making a lot of money | | | | | | | | | | | | | |
| 27 | Obtaining recognition from my colleagues for contributions to my special field | | | | | | | | | | | | | |
| 28 | **HighOrderCogn** | **↓1** | | **↓2** | | | | | **↓2** | **↓1** | | | | **↓1** |
| 29 | Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | ↑1 | ↑1 | | | | | ↑1 | | | | ↑1 | ↑1 | ↑1 |
| 30 | Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | | | | | | ↑2 | | ↓2 | | | | ↑1 | |
| 31 | Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | ↓1 | | ↓2 | | | ↓1 | | ↓1 | ↓1 | | | | ↓1 |
| 32 | Applying theories or concepts to practical problems or in new situations | ↓2 | | ↓3 | ↓3 | ↓2 | ↓3 | ↓1 | ↓3 | ↓2 | ↓2 | ↓2 | | ↓3 |
| 33 | **MultPerspectives** | **↓3** | **↓3** | **↓2** | **↓2** | **↓4** | **↓5** | **↓3** | **↓2** | **↓4** | **↓2** | **↓3** | **↓3** | **↓3** |
| 34 | Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | ↓3 | ↓2 | | ↓2 | ↓4 | ↓6 | ↓2 | | ↓3 | ↓2 | ↓2 | ↓3 | ↓2 |
| 35 | Examined the strengths and weaknesses of your own views on a topic or issue | ↑1 | | ↑1 | | | | ↑1 | ↑2 | | ↑2 | ↑1 | | ↑1 |
| 36 | Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | ↓4 | ↓5 | ↓2 | ↓3 | ↓5 | ↓7 | ↓4 | ↓2 | ↓4 | ↓3 | ↓4 | ↓4 | ↓4 |
| 37 | Learned something that changed the way you understand an issue or concept | ↓1 | | | ↓2 | ↓1 | ↓2 | | | | | | | |
| 38 | Put together ideas or concepts from different courses | ↓3 | ↓2 | ↓3 | ↓2 | ↓3 | ↓2 | ↓3 | ↓3 | ↓3 | ↓2 | ↓2 | ↓2 | ↓3 |
| 39 | *5 point scales* | | | | | | | | | | | | | |
| 40 | **SatisInstr** | | | **↓1** | | | | | | | | | | |
| 41 | Quality of instruction in my major field | | | ↓1 | | | | | | ↓1 | | | | |
| 42 | Overall quality of instruction | | | | | | | | | | | | | |
| 43 | Overall college experience | | | ↓1 | | | | | | | | | | |

| 1 | | All | Red | Tan | White | Yellow | NatSci | SocSci | Hum. | <=2.99 | 3-3.49 | >=3.5 | Males | Females |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 44 | **SatisSuppSrv** | ↓1 | ↓2 | | | | | ↓1 | ↓1 | ↓2 | ↓2 | | | ↓1 |
| 45 | Computer facilities and services | | ↓1 | | | | | | | | | | | ↓1 |
| 46 | Library facilities and services | ↓1 | ↓1 | | | | | ↓1 | ↓1 | ↓1 | ↓2 | | | ↓1 |
| 47 | Facilities/equipment in my major field | ↓1 | ↓1 | | | | | ↓1 | | ↓2 | | | | ↓1 |
| 48 | **ExhibScholarlySkills** | ↑4 | ↑5 | ↑2 | ↑4 | ↑5 | ↑5 | ↑5 | ↑4 | ↑4 | ↑5 | ↑4 | ↑2 | ↑5 |
| 49 | I located appropriate source material | ↑3 | ↑3 | ↑2 | ↑4 | ↑4 | ↑4 | ↑3 | ↑2 | ↑3 | ↑5 | ↑2 | ↑3 | ↑3 |
| 50 | I used disciplinary knowledge and methods appropriately | ↑2 | ↑2 | ↑2 | ↑3 | ↑3 | ↑4 | ↑3 | ↑2 | ↑2 | ↑3 | ↑3 | ↑2 | ↑3 |
| 51 | I supported my arguments with appropriate evidence | ↑2 | ↑2 | ↑1 | ↑2 | ↑3 | ↑3 | ↑4 | | ↑2 | ↑3 | ↑2 | | ↑3 |
| 52 | I showed originality | ↑2 | ↑3 | | ↑2 | ↑3 | ↑2 | ↑2 | ↑2 | ↑2 | ↑1 | ↑2 | | ↑2 |
| 53 | I synthesized information to produce insights that expanded my understanding | ↑4 | ↑4 | ↑3 | ↑3 | ↑4 | ↑5 | ↑4 | ↑3 | ↑3 | ↑5 | ↑4 | ↑2 | ↑4 |
| 54 | I demonstrated good communication skills | ↑2 | ↑3 | | | ↑2 | ↑2 | ↑2 | | ↑2 | | ↑2 | | ↑2 |
| 55 | I showed evidence of independent thinking | ↑3 | ↑4 | ↑2 | ↑3 | ↑3 | ↑3 | ↑3 | ↑3 | ↑3 | ↑3 | ↑3 | ↑1 | ↑4 |
| 56 | I showed skill with quantitative reasoning | ↑1 | | | ↑3 | ↑2 | ↑4 | ↑2 | ↓1 | ↑2 | | ↑1 | | ↑2 |
| 57 | I persisted when faced with conceptual and practical difficulties | ↑3 | ↑4 | | ↑3 | ↑4 | ↑4 | ↑4 | ↑3 | ↑4 | ↑2 | ↑3 | ↑2 | ↑4 |
| 58 | I used feedback to assess my performance | ↑2 | ↑2 | ↑1 | ↑2 | ↑2 | ↑2 | ↑3 | ↑2 | ↑2 | ↑2 | ↑2 | ↑1 | ↑2 |
| 59 | Integrated ideas or information from various sources | ↑2 | ↑1 | | ↑2 | ↑3 | ↑2 | ↑2 | | ↑1 | ↑3 | ↑1 | ↑2 | ↑1 |
| 60 | **NeedCognLite** | ↑1 | ↑1 | | | ↑1 | ↑1 | ↑1 | | ↑1 | ↑1 | ↑1 | | ↑1 |
| 61 | The notion of thinking abstractly is appealing to me | ↑1 | | | ↑2 | ↑1 | ↑1 | ↑1 | | | ↑2 | ↑1 | ↑2 | ↑1 |
| 62 | I enjoy expressing my ideas in writing | ↑1 | | | | ↑1 | | ↑1 | | ↑1 | | | ↑1 | ↑1 |
| 63 | I really enjoy a task that involves coming up with new solutions to problems | ↑1 | ↑1 | ↑1 | | | ↑1 | | | ↑1 | | ↑1 | | ↑1 |
| 64 | Creating original works | | ↓1 | | | | | | | | | | | |
| 65 | I have confidence in my opinions, even if they are contrary to the general consensus | ↑1 | ↑1 | | | | ↑2 | | | | | | | ↑1 |
| 66 | **ProjMgt** | ↑2 | ↑3 | | | ↑2 | ↑3 | ↑2 | ↑2 | ↑2 | ↑2 | ↑1 | ↑1 | ↑2 |
| 67 | I properly planned tasks to achieve project goals | ↑1 | ↑2 | | | | ↑2 | ↑1 | ↑1 | ↑1 | ↑2 | | | ↑1 |
| 68 | I demonstrated effective time management in completing tasks | ↑2 | ↑2 | ↑2 | | ↑2 | ↑3 | ↑2 | ↑2 | ↑2 | ↑2 | ↑2 | ↑2 | ↑2 |
| 69 | I identified manageable sets of goals for my projects | ↑1 | ↑2 | | | | ↑2 | ↑2 | | ↑1 | | ↑1 | | ↑1 |
| 70 | **RatingAcadAbil** | ↑3 | ↑3 | ↑3 | ↑2 | ↑3 | ↑3 | ↑3 | ↑2 | ↑2 | ↑2 | ↑3 | ↑2 | ↑3 |
| 71 | Writing ability | ↑2 | ↑2 | ↑1 | | ↑2 | ↑3 | ↑2 | ↑1 | ↑2 | | ↑3 | ↑2 | ↑2 |
| 72 | Creativity | ↑1 | | | ↑2 | ↑1 | | ↑1 | ↑1 | | ↑2 | ↑1 | | ↑1 |
| 73 | Academic ability | ↑2 | ↑2 | ↑1 | ↑2 | ↑2 | ↑2 | ↑2 | ↑2 | ↑2 | | ↑2 | | ↑2 |
| 74 | Ability to think critically | ↑2 | ↑2 | ↑2 | | ↑2 | ↑2 | ↑2 | | ↑1 | ↑2 | ↑2 | ↑2 | ↑2 |
| 75 | Self-confidence (intellectual) | ↑1 | ↑1 | ↑2 | | ↑1 | | ↑1 | ↑1 | ↑1 | | ↑2 | ↑1 | ↑1 |
| 76 | **RatingLeadCollabSkills** | ↑2 | ↑2 | ↑2 | | ↑2 | ↑2 | ↑1 | ↑2 | ↑1 | | ↑3 | ↑2 | ↑2 |
| 77 | Public speaking ability | ↑2 | ↑3 | ↑2 | | ↑2 | ↑2 | ↑2 | ↑2 | ↑2 | | ↑3 | ↑2 | ↑2 |
| 78 | Leadership ability | ↑1 | | | | | | | | | | | | ↑1 |
| 79 | Self-confidence (social) | ↑1 | | | | | | | ↑2 | | | ↑1 | | |
| 80 | **RatingIndepVoice** | ↑1 | | | | ↑1 | | | | | | ↑1 | | ↑1 |
| 81 | Self-understanding | ↑1 | | | | ↑1 | | | | | | ↑1 | | ↑1 |
| 82 | Understanding of others | | | | | | | | | | | | | |
| 83 | Ability to think and act on my own | | | | | | | | | | | ↑1 | | ↑1 |

| 1 | | All | Red | Tan | White | Yellow | NatSci | SocSci | Hum. | <=2.99 | 3-3.49 | >=3.5 | Males | Females |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 84 | **RatingStriver** | ↑1 | ↑1 | | | ↑1 | ↑1 | | | | | ↑1 | | ↑1 |
| 85 | Drive to achieve | ↑1 | ↑1 | | | | ↑1 | | | | | ↑1 | | ↑1 |
| 86 | Persistence | | | | | ↑1 | | | | | | ↑1 | | |
| 87 | **ResearchOrient** | ↑3 | ↑3 | ↑2 | ↑4 | ↑3 | ↑3 | ↑3 | ↑2 | ↑3 | ↑3 | ↑3 | ↑3 | ↑3 |
| 88 | I enjoy doing research | ↑2 | ↑2 | ↑2 | ↑3 | ↑2 | ↑2 | ↑2 | ↑1 | ↑2 | ↑1 | ↑2 | ↑2 | ↑2 |
| 89 | Research skills | ↑3 | ↑4 | ↑2 | ↑3 | ↑3 | ↑4 | ↑3 | ↑2 | ↑2 | ↑3 | ↑3 | ↑3 | ↑3 |
| 149 | **Faculty Scales [1]** | | | | | | | | | | | | | |
| 151 | **CommunSkills** | ↑3 | ↑2 | ↑4 | ↑2 | ↑3 | ↑3 | ↑3 | ↑2 | ↑2 | ↑2 | ↑3 | ↑3 | ↑2 |
| 152 | Writes in a clear, articulate manner | ↑2 | | ↑4 | ↑2 | ↑2 | ↑2 | ↑2 | | ↑2 | | ↑2 | ↑2 | ↑2 |
| 153 | Writes in a well-organized manner | ↑2 | | ↑4 | | | ↑2 | ↑2 | | ↑2 | | ↑2 | ↑3 | ↑2 |
| 154 | Writes without distracting errors in spelling grammar, punctuation, usage, etc. | ↑1 | | ↑3 | | | | | ↑2 | | | ↑3 | ↑2 | ↑1 |
| 155 | Delivers an effective poster presentation | ↑6 | | | | ↑7 | ↑5 | ↑6 | ↑7 | ↑6 | ↑7 | ↑5 | ↑7 | ↑5 |
| 156 | Delivers an effective oral presentation | ↑4 | ↑5 | ↑5 | ↑3 | ↑3 | ↑5 | ↑4 | ↑3 | ↑3 | ↑4 | ↑5 | ↑4 | ↑4 |
| 157 | **EffProjectMgt** | ↑3 | ↑4 | ↑5 | ↑2 | ↑3 | ↑4 | ↑4 | ↑2 | ↑3 | ↑3 | ↑5 | ↑4 | ↑3 |
| 158 | Properly plans tasks to achieve project goals | ↑2 | ↑3 | ↑3 | | ↑2 | ↑4 | ↑2 | | ↑2 | | ↑3 | ↑3 | ↑2 |
| 159 | Demonstrates effective time management in completing tasks | ↑1 | ↑2 | ↑2 | | | ↑3 | ↑2 | | | | ↑2 | | ↑1 |
| 160 | Demonstrates accurate awareness of own abilities and limitations | ↑3 | ↑4 | ↑5 | ↑2 | ↑2 | ↑5 | ↑3 | | ↑3 | ↑3 | ↑4 | ↑5 | ↑3 |
| 161 | Identifies a manageable set of project goals | ↑3 | ↑2 | ↑3 | ↑2 | ↑3 | ↑4 | ↑3 | | ↑2 | | ↑4 | ↑2 | ↑3 |
| 162 | Persists when faced with conceptual and practical difficulties | ↑3 | ↑4 | ↑4 | ↑2 | ↑3 | ↑4 | ↑5 | ↑2 | ↑4 | ↑3 | ↑3 | ↑3 | ↑3 |
| 163 | Uses feedback to assess performance | ↑2 | ↑3 | ↑5 | | | ↑4 | ↑3 | | | ↑4 | ↑3 | ↑3 | ↑2 |
| 164 | Locates appropriate source material | ↑3 | ↑4 | ↑6 | | ↑2 | ↑3 | ↑2 | ↑4 | ↑2 | ↑3 | ↑4 | ↑4 | ↑2 |
| 165 | Demonstrates appropriate confidence in own intellectual ability | ↑3 | ↑3 | ↑5 | ↑3 | ↑2 | ↑4 | ↑3 | | ↑3 | | ↑4 | ↑3 | ↑3 |
| 166 | **IntelEngagement** | ↑3 | ↑4 | ↑6 | | ↑3 | ↑4 | ↑2 | ↑4 | ↑3 | ↑3 | ↑4 | ↑4 | ↑3 |
| 167 | Demonstrates intellectual curiosity | ↑2 | ↑3 | ↑5 | | | ↑3 | | ↑3 | ↑2 | | ↑3 | ↑2 | ↑2 |
| 168 | Shows originality | ↑3 | ↑4 | ↑5 | | ↑4 | ↑4 | ↑2 | ↑4 | ↑4 | ↑2 | ↑4 | ↑3 | ↑3 |
| 169 | Shows evidence of independent thinking | ↑3 | ↑5 | ↑5 | | ↑3 | ↑4 | ↑3 | ↑3 | ↑4 | ↑3 | ↑3 | ↑3 | ↑3 |
| 170 | Synthesizes information to produce insights that expand the student's understanding | ↑4 | ↑5 | ↑6 | ↑3 | ↑5 | ↑5 | ↑4 | ↑4 | ↑4 | ↑4 | ↑4 | ↑5 | ↑4 |
| 171 | Actively pursues learning opportunities | ↑2 | | ↑5 | | | ↑2 | | | ↑2 | | ↑2 | | ↑2 |
| 172 | Asks probing questions | ↑3 | ↑3 | ↑6 | | | ↑4 | | ↑2 | ↑2 | | ↑3 | ↑4 | ↑2 |
| 173 | Makes connections to other contexts (across courses, disciplines, experiences, etc.) | ↑2 | ↑3 | ↑5 | | | ↑4 | | | ↑3 | | ↑2 | ↑3 | ↑2 |
| 174 | **CrThinkSkills** | ↑4 | ↑4 | ↑6 | ↑3 | ↑4 | ↑5 | ↑4 | ↑4 | ↑4 | ↑3 | ↑5 | ↑5 | ↑4 |
| 175 | Develops convincing arguments to support conclusions | ↑3 | ↑4 | ↑6 | | ↑3 | ↑5 | ↑3 | | ↑4 | | ↑4 | ↑3 | ↑3 |
| 176 | Logically interprets and evaluates main points of source material | ↑4 | ↑4 | ↑5 | ↑3 | ↑5 | ↑3 | ↑4 | ↑5 | ↑4 | ↑5 | ↑4 | ↑6 | ↑3 |
| 177 | Supports arguments with appropriate evidence | ↑3 | ↑3 | ↑7 | ↑4 | ↑2 | ↑4 | ↑3 | ↑2 | ↑3 | ↑2 | ↑4 | ↑3 | ↑3 |
| 178 | Uses disciplinary knowledge and methods appropriately | ↑4 | ↑3 | ↑5 | ↑3 | ↑4 | ↑3 | ↑4 | ↑4 | ↑3 | ↑3 | ↑5 | ↑4 | ↑4 |
| 179 | Addresses opposing arguments or alternative explanations | ↑3 | ↑5 | ↑4 | ↑2 | ↑2 | ↑6 | ↑2 | ↑2 | ↑3 | ↑3 | ↑4 | ↑5 | ↑3 |

Arrows are indicated only if a change was statistically significant, p<=.05, two-tailed t-test.

The number after the arrow indicates the magnitude of the effect size, measured as the average pre/post difference divided by the standard deviation of the pre/post differences, with the the value rounded to the nearest decimal tenth.

## Table 4.12: Pre/Post Capstone Changes for Scales

Combined 2009/10 and 2010/11 Data

Data breakdowns for school(s):
All

| | Survey Means Arrow Summary | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | All | Red | Tan | White | Yellow | NatSci | SocSci | Hum. | <=2.99 | 3-3.49 | >=3.5 | Males | Females |
| **Student Scales [1]** | | | | | | | | | | | | | |
| | **Arrows indicate the direction of change for statistically significant difference scores, p<=0.05, two-tailed T-test** | | | | | | | | | | | | |
| **CivicOrient** | | | | | | | | | | | ↑1 | | |
| **StatusCareerOrient** | | ↓1 | | | | | ↓1 | | | ↓2 | | | |
| **HighOrderCogn** | ↓1 | | ↓2 | | | | | ↓2 | ↓1 | | | | ↓1 |
| **MultPerspectives** | ↓3 | ↓3 | ↓2 | ↓2 | ↓4 | ↓5 | ↓3 | ↓2 | ↓4 | ↓2 | ↓3 | ↓3 | ↓3 |
| **SatisInstr** | | | ↓1 | | | | | | | | | | |
| **SatisSuppSrv** | ↓1 | ↓2 | | | | | ↓1 | ↓1 | ↓2 | ↓2 | | | ↓1 |
| **ExhibScholarlySkills** | ↑4 | ↑5 | ↑2 | ↑4 | ↑5 | ↑5 | ↑5 | ↑4 | ↑4 | ↑5 | ↑4 | ↑2 | ↑5 |
| **NeedCognLite** | ↑1 | ↑1 | | | ↑1 | ↑1 | ↑1 | | ↑1 | ↑1 | ↑1 | | ↑1 |
| **ProjMgt** | ↑2 | ↑3 | | | ↑2 | ↑3 | ↑2 | ↑2 | ↑2 | ↑2 | ↑1 | ↑1 | ↑2 |
| **RatingAcadAbil** | ↑3 | ↑3 | ↑3 | ↑2 | ↑3 | ↑3 | ↑3 | ↑2 | ↑2 | ↑2 | ↑3 | ↑2 | ↑3 |
| **RatingLeadCollabSkills** | ↑2 | ↑2 | ↑2 | | ↑2 | ↑2 | ↑1 | ↑2 | ↑1 | | ↑3 | ↑2 | ↑2 |
| **RatingIndepVoice** | ↑1 | | | | ↑1 | | | | | | ↑1 | | ↑1 |
| **RatingStriver** | ↑1 | ↑1 | | | ↑1 | ↑1 | | | | | ↑1 | | ↑1 |
| **ResearchOrient** | ↑3 | ↑3 | ↑2 | ↑4 | ↑3 | ↑3 | ↑3 | ↑2 | ↑3 | ↑3 | ↑3 | ↑3 | ↑3 |
| **Faculty Scales [1]** | | | | | | | | | | | | | |
| **CommunSkills** | ↑3 | ↑2 | ↑4 | ↑2 | ↑3 | ↑3 | ↑3 | ↑2 | ↑2 | ↑2 | ↑3 | ↑3 | ↑2 |
| **EffProjectMgt** | ↑3 | ↑4 | ↑5 | ↑2 | ↑3 | ↑4 | ↑4 | ↑2 | ↑3 | ↑3 | ↑5 | ↑4 | ↑3 |
| **IntelEngagement** | ↑3 | ↑4 | ↑6 | | ↑3 | ↑4 | ↑2 | ↑4 | ↑3 | ↑3 | ↑4 | ↑4 | ↑3 |
| **CrThinkSkills** | ↑4 | ↑4 | ↑6 | ↑3 | ↑4 | ↑5 | ↑4 | ↑4 | ↑4 | ↑3 | ↑5 | ↑5 | ↑4 |

Arrows are indicated only if a change was statistically significant, p<=.05, two-tailed t-test.

The number after the arrow indicates the magnitude of the effect size, measured as the average pre/post difference divided by the standard deviation of the pre/post differences, with the value rounded to the nearest decimal tenth.

**Table 4.13 Summary Sheet: Means of Scales and Summative Items Asked Only on the Post-Capstone Student and Faculty Surveys**

Combined 2009/10 and 2010/11 Data

Based on the pool of capstones for which there was both a pre and post capstone survey

Summary of scales and selected items that were only asked on the pre-capstone or post-capstone, but not both, and the Advanced Degree items

| Line | Combined 2009/10 and 2010/11 Data | All | | Red | | Tan | | White | | Yellow | | All- NatSci | | All- SocSci | | All- Humanities | | All- 2.99 and under | | All- 3-3.49 | | All- 3.5 and up | | All- Males | | All-Females | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| 2 | **Student Scales [1]** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | *5 point scale* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | **ExpectGoodCapstone** | 4.20 | | 4.33 | | 4.14 | | 4.10 | | 4.16 | | 4.26 | | 4.22 | | 4.17 | | 4.23 | | 4.22 | | 4.18 | | 4.17 | | 4.21 | |
| 90 | Student Experience Scales (Post Only) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 91 | *4 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 92 | **PrepBreadth** | | 2.33 | | 2.34 | | 2.45 | | 2.32 | | 2.20 | | 2.15 | | 2.35 | | 2.39 | | 2.32 | | 2.34 | | 2.32 | | 2.25 | | 2.36 |
| 98 | **PrepDisc** | | 2.91 | | 2.91 | | 2.87 | | 2.78 | | 2.99 | | 3.00 | | 2.93 | | 2.83 | | 2.96 | | 2.90 | | 2.89 | | 2.85 | | 2.93 |
| 103 | **PrepQuant** | | 2.42 | | 2.44 | | 2.28 | | 2.34 | | 2.55 | | 2.82 | | 2.51 | | 1.71 | | 2.46 | | 2.49 | | 2.34 | | 2.43 | | 2.41 |
| 106 | *5 point scales* | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 107 | **MentorRel** | | 4.41 | | 4.46 | | 4.33 | | 4.41 | | 4.40 | | 4.53 | | 4.32 | | 4.41 | | 4.34 | | 4.38 | | 4.46 | | 4.38 | | 4.42 |
| 122 | **CapContDev** | | 4.11 | | 4.12 | | 4.08 | | 4.08 | | 4.16 | | 4.21 | | 4.12 | | 4.04 | | 4.08 | | 4.15 | | 4.10 | | 4.05 | | 4.14 |
| 134 | **CapMoreEngaging** | | 4.17 | | 4.24 | | 4.00 | | 3.95 | | 4.31 | | 4.19 | | 4.22 | | 4.19 | | 4.25 | | 4.16 | | 4.13 | | 4.15 | | 4.17 |
| 138 | **CapSuccessful** | | 4.03 | | 4.07 | | 4.07 | | 3.93 | | 4.00 | | 4.10 | | 3.99 | | 3.99 | | 4.02 | | 4.01 | | 4.05 | | 3.97 | | 4.05 |
| 180 | Faculty Scales - Post Only | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 181 | **StudentTopicMotiv** | | 4.24 | | 4.39 | | 4.17 | | 4.09 | | 4.24 | | 4.20 | | 4.24 | | 4.35 | | 4.00 | | 4.17 | | 4.40 | | 4.20 | | 4.25 |
| 185 | **MentorInstruction** | | 4.49 | | 4.57 | | 4.39 | | 4.39 | | 4.56 | | 4.49 | | 4.48 | | 4.57 | | 4.43 | | 4.44 | | 4.57 | | 4.44 | | 4.52 |
| 194 | **MentorRapport** | | 4.54 | | 4.61 | | 4.46 | | 4.45 | | 4.59 | | 4.58 | | 4.48 | | 4.60 | | 4.36 | | 4.46 | | 4.69 | | 4.47 | | 4.57 |
| 201 | **Independent Summative** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 202 | Independence: Showing autonomy and initiative in thought and actions | | 4.10 | | 4.14 | | 4.09 | | 4.07 | | 4.08 | | 4.12 | | 4.06 | | 4.11 | | 3.66 | | 3.98 | | 4.40 | | 4.07 | | 4.11 |
| 203 | Intellectual Engagement: Demonstrating an interest in learning | | 4.17 | | 4.23 | | 4.16 | | 4.07 | | 4.19 | | 4.19 | | 4.13 | | 4.24 | | 3.70 | | 4.07 | | 4.47 | | 4.11 | | 4.19 |
| 204 | Self-understanding: Developing an awareness of self (skills, abilities, interests) | | 4.08 | | 4.15 | | 4.17 | | 4.04 | | 3.98 | | 4.16 | | 3.96 | | 4.14 | | 3.64 | | 3.94 | | 4.40 | | 3.98 | | 4.12 |
| 205 | Project Management: Conceiving and managing a project | | 4.14 | | 4.20 | | 4.13 | | 4.04 | | 4.15 | | 4.21 | | 4.10 | | 4.08 | | 3.63 | | 4.04 | | 4.45 | | 3.96 | | 4.20 |
| 206 | Research: Investigating in a manner appropriate to the discipline | | 4.12 | | 4.16 | | 4.18 | | 4.08 | | 4.09 | | 4.27 | | 4.05 | | 4.05 | | 3.62 | | 3.99 | | 4.47 | | 3.97 | | 4.18 |
| 207 | Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence | | 4.04 | | 4.09 | | 4.06 | | 3.99 | | 4.01 | | 4.10 | | 3.96 | | 4.04 | | 3.50 | | 3.89 | | 4.41 | | 3.96 | | 4.07 |
| 208 | Communication: Presenting ideas effectively (written, oral, and other forms) | | 4.13 | | 4.18 | | 4.21 | | 4.10 | | 4.07 | | 4.21 | | 4.04 | | 4.17 | | 3.62 | | 4.01 | | 4.47 | | 4.02 | | 4.18 |
| 209 | **Post Graduate Plans (Advanced degrees planned du** | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post | Pre | Post |
| 211 | **AdvDeg** | 90% | 88% | 91% | 87% | 91% | 89% | 85% | 83% | 90% | 92% | 92% | 90% | 92% | 90% | 86% | 86% | 83% | 82% | 90% | 88% | 93% | 92% | 86% | 88% | 91% | 89% |
| 212 | bachelors | 13% | 14% | 10% | 14% | 12% | 15% | 16% | 17% | 11% | 11% | 9% | 8% | 9% | 10% | 18% | 22% | 22% | 20% | 12% | 16% | 8% | 9% | 16% | 18% | 11% | 12% |
| 213 | masters | 49% | 50% | 42% | 43% | 56% | 59% | 50% | 49% | 46% | 49% | 42% | 44% | 46% | 50% | 53% | 53% | 51% | 52% | 51% | 52% | 45% | 46% | 38% | 40% | 54% | 54% |
| 214 | law (JD) | 5% | 5% | 5% | 5% | 4% | 2% | 7% | 6% | 4% | 5% | 0% | 0% | 9% | 8% | 6% | 6% | 4% | 6% | 6% | 3% | 6% | 6% | 6% | 7% | 5% | 4% |
| 215 | doctorate | 34% | 32% | 42% | 38% | 28% | 24% | 28% | 28% | 39% | 35% | 50% | 47% | 35% | 32% | 23% | 19% | 23% | 22% | 32% | 29% | 41% | 39% | 40% | 36% | 31% | 29% |

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# PART 4 APPENDICES


4.1 Notes on Sample Bias Effects
4.2 Effects of Socio-Economic Status
4.3 Notes on the Factorization of the Data
4.4 Mentor Evaluations vs. Student
4.5 Capstone Preparation: Importance as Capstone Preparation
4.6 Workload: Means of Student and Faculty Workload and Topic Selection/Enthusiasm Questions
4.7 What correlates with expecting to have a good capstone?
4.8 Success: Conditions Associated with a Successful Capstone (General Linear Modeling of and correlates of "PostCapSuccessful")
4.9 Double Majoring: Scale Mean Differences between Single Majors and Double Majors
4.10 Independence: Correlations of Items Relating to Student Independence
4.11 Grades and Capstone Ratings: Correspondence of Capstone Grades with Students' Rating of the Capstone

## Appendix 4.1: Notes on Sample Bias Effects – Capstone Data, 2009/10.

These notes address the question of differences between the groups of students who responded to both the pre and post surveys and those who didn't. They also look at whether the faculty results were different depending on whether the same faculty member did both the pre and post faculty surveys, or not.

**Student Surveys**

As shown in the table below, there were 621 capstone records in the database where the student completed both the pre and post surveys. There were 290 records where the student completed the pre survey, but not the post survey, and 198 records where the student completed the post survey, but not the pre survey. There are another 201 records where the student completed neither survey, but a faculty member completed a pre or post survey about the student.

**surveystatusgrp survey status groups**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 1 Both pre/post student | 621 | 47.4 | 47.4 | 47.4 |
| | 2 pre, no post | 290 | 22.1 | 22.1 | 69.5 |
| | 3 no pre, post | 198 | 15.1 | 15.1 | 84.7 |
| | 4 no pre and no post | 201 | 15.3 | 15.3 | 100.0 |
| | Total | 1310 | 100.0 | 100.0 | |

Simplifying the above, we have 621 "completers", the "Yes" group in the tables below, and 689 "others", the "No" group below:

**surveycompleters Completed both surveys ( Y=1, 0=N)**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 No | 689 | 52.6 | 52.6 | 52.6 |
| | 1 Yes | 621 | 47.4 | 47.4 | 100.0 |
| | Total | 1310 | 100.0 | 100.0 | |

So do the 621 student “completers” who did both the pre and post differ from the “others” in any significant ways? Yes, as shown in the following table. Based on a p<=.05 level, item are statisitically significant if “ANOVA sig.” is <= . 050.

| | | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean Lower Bound | Upper Bound | ANOVA sig. |
|---|---|---|---|---|---|---|---|---|
| CapGrade Capstone grade (if more than one, average grade) | 0 No | 581 | 3.15 | .84 | .03 | 3.08 | 3.22 | .000 |
| | 1 Yes | 524 | 3.39 | .73 | .03 | 3.33 | 3.45 | |
| | Total | 1105 | 3.26 | .80 | .02 | 3.22 | 3.31 | |
| PreCapColGPA College GPA - Start of capstone year | 0 No | 686 | 3.15 | .46 | .02 | 3.12 | 3.18 | .000 |
| | 1 Yes | 620 | 3.34 | .42 | .02 | 3.31 | 3.37 | |
| | Total | 1306 | 3.24 | .45 | .01 | 3.22 | 3.26 | |
| NonWhiteAm Non White Am (Y=1, N=0) | 0 No | 661 | .11 | .31 | .01 | .09 | .13 | .503 |
| | 1 Yes | 597 | .10 | .30 | .01 | .07 | .12 | |
| | Total | 1258 | .10 | .31 | .01 | .09 | .12 | |
| genderN gender(M=1, F=0) | 0 No | 689 | .49 | .50 | .02 | .45 | .53 | .000 |
| | 1 Yes | 621 | .30 | .46 | .02 | .26 | .34 | |
| | Total | 1310 | .40 | .49 | .01 | .37 | .43 | |
| ACTSAT ACT score (or converted SAT) | 0 No | 661 | 25.54 | 3.43 | .13 | 25.27 | 25.80 | .001 |
| | 1 Yes | 600 | 26.20 | 3.56 | .15 | 25.92 | 26.49 | |
| | Total | 1261 | 25.85 | 3.51 | .10 | 25.66 | 26.05 | |
| HSPCT HS Rank percentile | 0 No | 448 | 79.30 | 16.21 | .77 | 77.79 | 80.80 | .000 |
| | 1 Yes | 446 | 83.38 | 15.65 | .74 | 81.93 | 84.84 | |
| | Total | 894 | 81.34 | 16.05 | .54 | 80.28 | 82.39 | |
| GradColGPA College GPA – final at graduation | 0 No | 645 | 3.21 | .43 | .02 | 3.18 | 3.24 | .000 |
| | 1 Yes | 616 | 3.37 | .39 | .02 | 3.34 | 3.40 | |
| | Total | 1261 | 3.29 | .42 | .01 | 3.27 | 3.31 | |
| EFC (from FAFSA) | 0 No | 471 | 15173 | 16544 | 762 | 13675 | 16671 | .028 |
| | 1 Yes | 433 | 17681 | 17710 | 851 | 16008 | 19354 | |
| | Total | 904 | 16374 | 17149 | 570 | 15255 | 17493 | |
| Need Financial aid – unmet need CDS method | 0 No | 476 | 5076 | 6034 | 277 | 4532 | 5619 | .626 |
| | 1 Yes | 436 | 4879 | 6158 | 295 | 4299 | 5458 | |
| | Total | 912 | 4982 | 6091 | 202 | 4586 | 5378 | |
| Athlete Varsity athletic participation in year of capstone - number of teams | 0 No | 689 | .24 | .54 | .02 | .20 | .28 | .005 |
| | 1 Yes | 621 | .16 | .43 | .02 | .13 | .20 | |
| | Total | 1310 | .20 | .49 | .01 | .18 | .23 | |
| MotherEd Mother's highest education level (FAFSA) | 0 No | 460 | 2.62 | .51 | .02 | 2.57 | 2.66 | .021 |
| | 1 Yes | 435 | 2.69 | .48 | .02 | 2.65 | 2.74 | |
| | Total | 895 | 2.65 | .50 | .02 | 2.62 | 2.69 | |
| FatherEd Father's | 0 No | 454 | 2.59 | .53 | .03 | 2.55 | 2.64 | .243 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| highest education level (FAFSA) | 1 Yes | 437 | 2.64 | .52 | .03 | 2.59 | 2.69 | |
| | Total | 891 | 2.62 | .53 | .02 | 2.58 | 2.65 | |

Citing the statistically significant differences, p<=.05, two tailed, the completers, on average, received a higher grade on the capstone, had a higher college GPA both before and after the capstone, had a somewhat higher expected family contribution (EFC) for college (indicating higher average family incomes), had a higher average ACT (including converted SATs), a higher average high school percentile, had a higher percentage of females ( 70% vs. 51%), a higher average educational level for mothers, and, perhaps related to the female percentage, participated in fewer intercollegiate athletic teams during their senior year. On the other hand, statistically significant differences did not emerge for the percentage of White Americans vs. other racial/ethnic groups, financial aid unmet need, or father's educational level.

The higher percentage of females among the completers is associated with a portion of the differences in some of the other variables, since females in the study have statistically significant higher averages for the academic indicators (capstone grade, college GPAs, ACT score, and high school percentile), and lower athletic participation. Statistically significant differences remained, however, even after controlling for gender in all these variables between completers and others, except for ACT score. For the remaining academic variables, the completers continued to score higher, on average. In contrast, for athletic participation, after controlling for gender, the earlier indication reversed – the completers on average had a slightly higher athletic participation.

Since EFC and parental education levels emerged as a difference, it might be noted that GLM models for the "PostCapSuccessful" and "PostCapContDev" scales showed no effect from the average of the mother's and father's education level or EFC when incorporated in a model with gender and college GPA. Hence, as a preliminary conclusion, adjusting overall results for differences in these variables does not appear to be necessary once gender and college GPA are considered.

In summary, we have observed sample differences that, while not at all invalidating our study, will need to be acknowledged in the report. (Other studies have shared these same problems - It is not at all uncommon for females to complete surveys in higher percentages than males, and better students tend to also be more willing to complete many surveys.) This sample bias for participating students should be considered before generalizing the overall composite results to all seniors. The sample differences are particularly important when considering the difference scores, since difference scores are only available for the completers. In analysis of the difference scores we should continue to consider differences by gender and college GPA as help in analyzing the effect the sample bias may have when generalizing to all seniors. If it would appear to make a significant difference we could consider weighting the results to be more representative for all seniors, but this may be unwarranted unless it would appear to change the overall story.

**Faculty Surveys**

Recognizing that the mentor for the capstone may not know the student well enough to complete the pre survey, we allowed any faculty member well acquainted with the student's prior academic performance to complete the pre-capstone survey, even though the ideal would be for the same faculty member, the mentor, to complete both the pre and post surveys.

A data field indicating whether the mentor who completed the post survey also completed the pre survey was available from Tan and Yellow, resulting in 727 capstone records for which the data is known. Among these 234 (17%) had the same faculty member completing both surveys.

**PreEqPost Pre faculty report and mentor report by same faculty member?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | N | 493 | 35.8 | 67.8 | 67.8 |
| | Y | 234 | 17.0 | 32.2 | 100.0 |
| | Total | 727 | 52.8 | 100.0 | |
| Missing | 9999 | 650 | 47.2 | | |
| Total | | 1377 | 100.0 | | |

The question is whether the "Y" group above, differs from the "N" group. The table below looks at the average pre to post difference score for the capstone record for each group.

| PreEqPost Pre faculty report and mentor report by same faculty member? | | DCommunSkills | DEffProjectMgt | DIntelEngagement | DCrThinkSkills |
|---|---|---|---|---|---|
| N | Mean | .18 | **.09** | .07 | .12 |
| | N | 159 | 163 | 165 | 161 |
| | Std. Deviation | 1.015 | 1.056 | .987 | .983 |
| Y | Mean | .24 | **.31** | .21 | .27 |
| | N | 227 | 228 | 230 | 222 |
| | Std. Deviation | .82474 | .76657 | .79572 | .76537 |
| Total | Mean | .21 | .22 | .16 | .21 |
| | N | 386 | 391 | 395 | 383 |
| | Std. Deviation | .907 | .904 | .882 | .866 |
| | ANOVA sig. | .545 | **.021** | .120 | .095 |

In general, it appears that the observed average differences, which are for student improvements in performance, are higher when the mentor also did the pre-survey, but the differences were not statistically significant, p=.05, two tailed, except for "effective project management". It looks, however,

like a larger N from more data from the second year, might lead to a conclusion that the differences for "intellectual engagement" and "critical thinking skills" would also be statistically significant, so this remains a concern in terms of potential noise in the data. In any case, if there is a bias introduced by using data from mixed faculty, it appears that our difference data would tend to **under** report student improvement on these scales, so our results indicating statistically significant difference scores from the faculty surveys are not weakened by using results from mixed faculty reporters. Here the assumption is that the most accurate data would come from results when the reporter was the same faculty member.

## APPENDIX 4.2 – Effects of Socio-Economic Status: Is socio-economic-status or financial need a factor in capstone success?

This analysis has been done using the year 1, 2009/10 data, and looks at the socio-ecomonic-status financial and educational level variables and how they relate to our successful capstone scales. The analysis was done using the general linear modeling (GLM) procedure of SPSS.

To look at this question we have available in the database the following variables:

| | |
|---|---|
| EFC | EFC (from FAFSA) |
| Need | Financial aid – unmet need CDS method |
| GrantAid | Financial aid – total grant awards all sources (incl. waivers) fall of capstone year |
| MotherEd | Mother's highest education level (FAFSA) |
| FatherEd | Father's highest education level (FAFSA) |
| CumLoans | Financial Aid - Cumulative loans at graduation using CDS H4 definition |
| AvgParentEd | Average of MotherEd and FatherEd |

**Result for "PostCapSuccessful" (Capstone successful scale)**

A general linear modeling (GLM) analysis with dependent variable "PostCapSuccessful", with cofactors AvgParentEd, EFC, Need, college GPA at graduation and gender as a factor showed none of these variables had statistically significant effects:

**Tests of Model Effects**

| | Type III | | |
|---|---|---|---|
| Source | Wald Chi-Square | df | Sig. |
| (Intercept) | 109.170 | 1 | .000 |
| Gender | .000 | 1 | .994 |
| AvgParentEd | .376 | 1 | .540 |
| EFC | .001 | 1 | .982 |
| CumLoans | 1.516 | 1 | .218 |
| Need | 1.126 | 1 | .289 |
| GradColGPA | 2.075 | 1 | .150 |

Dependent Variable: PostCapSuccessful

Model: (Intercept), Gender, AvgParentEd, EFC, CumLoans, Need, GradColGPA

**Results for "PostCapContDev" (Capstone contribution to development scale)**

A similar GLM analysis with dependent variable "PostCapContDev", with cofactors AvgParentEd, EFC, Need, college GPA at graduation and gender as a factor showed gender and CumLoans with significant effects.

**Tests of Model Effects**

| Source | Type III | | |
|---|---|---|---|
| | Wald Chi-Square | df | Sig. |
| (Intercept) | 166.345 | 1 | .000 |
| Gender | 7.081 | 1 | .008 |
| AvgParentEd | .841 | 1 | .359 |
| EFC | 1.629 | 1 | .202 |
| CumLoans | 5.080 | 1 | .024 |
| Need | .008 | 1 | .927 |
| GradColGPA | .362 | 1 | .548 |

Dependent Variable: PostCapContDev

Model: (Intercept), Gender, AvgParentEd, EFC, CumLoans, Need, GradColGPA

The GLM model for PostCapContDev using only Gender and CumLoans as independent variables was computed as follows:

**Parameter Estimates**

| Parameter | B | Std. Error | 95% Wald Confidence Interval | | Hypothesis Test | | |
|---|---|---|---|---|---|---|---|
| | | | Lower | Upper | Wald Chi-Square | df | Sig. |
| (Intercept) | 3.944 | .0450 | 3.856 | 4.032 | 7678.976 | 1 | .000 |
| [Gender=F] | .144 | .0495 | .047 | .241 | 8.421 | 1 | .004 |
| [Gender=M] | 0[a] | . | . | . | . | . | . |
| CumLoans | 2.273E-6 | 1.0152E-6 | 2.837E-7 | 4.263E-6 | 5.015 | 1 | .025 |
| (Scale) | .405[b] | .0214 | .365 | .449 | | | |

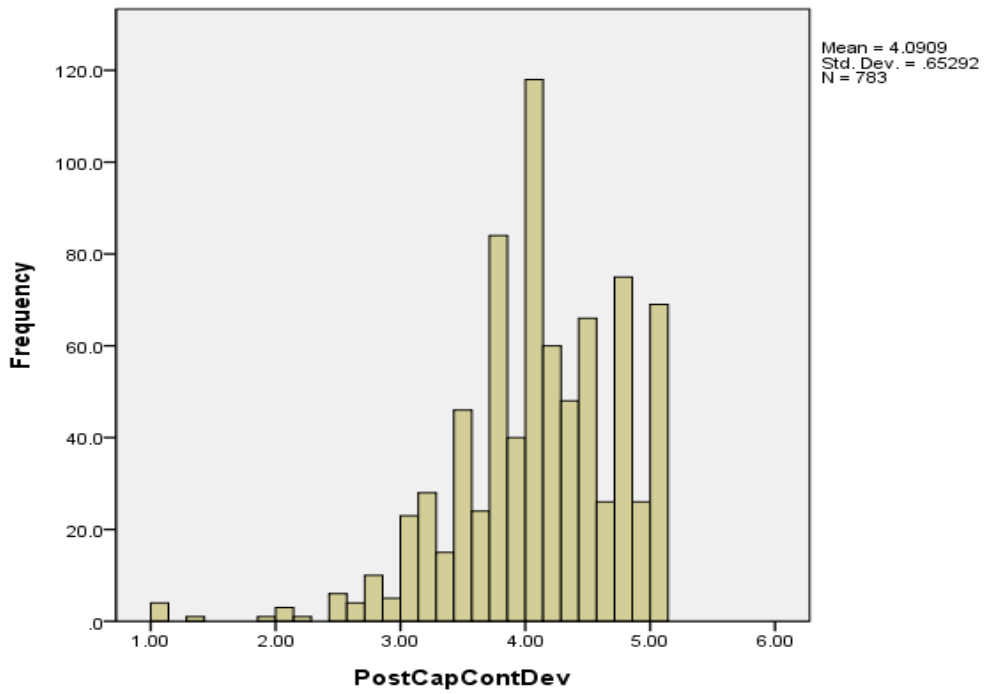
Dependent Variable: PostCapContDev

Model: (Intercept), Gender, CumLoans

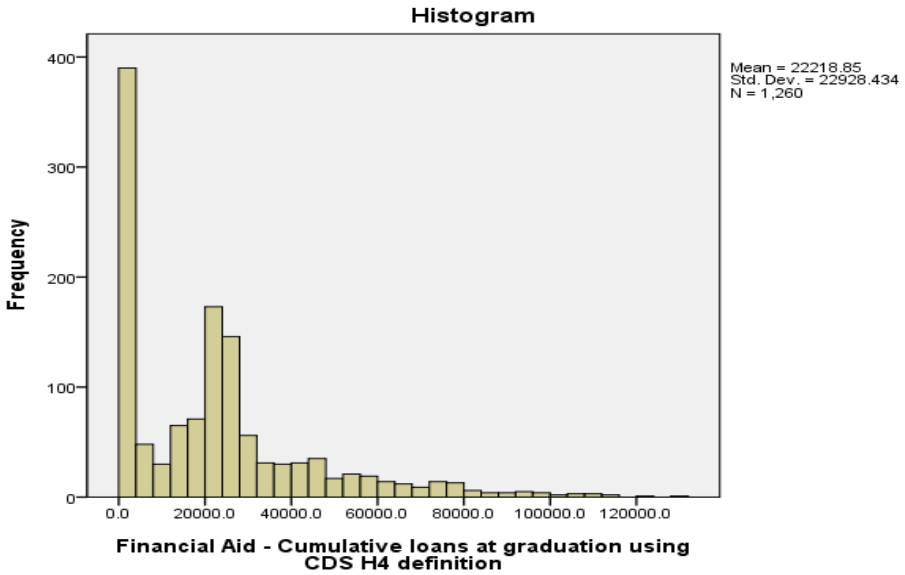
a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

CumLoans has mean 22,219 and standard deviation 22,928 (see graph below), so the impact predicted by the model from a standard deviation change in CumLoans is 22,928 * 2.273E-6 = .052. Since the coefficient is positive, the model predicts higher reports of a contribution to development for students with higher cumulate loan values. This is a weak association, however, since a move of .052 is relatively small in the distribution for PostCapContDev:




These results are contrary to the expectations of the IR group, who included CumLoans and Need as variables out of concern that students under more financial pressure might need to work more at on or off campus jobs and have less time for the capstone.



**Conclusion**

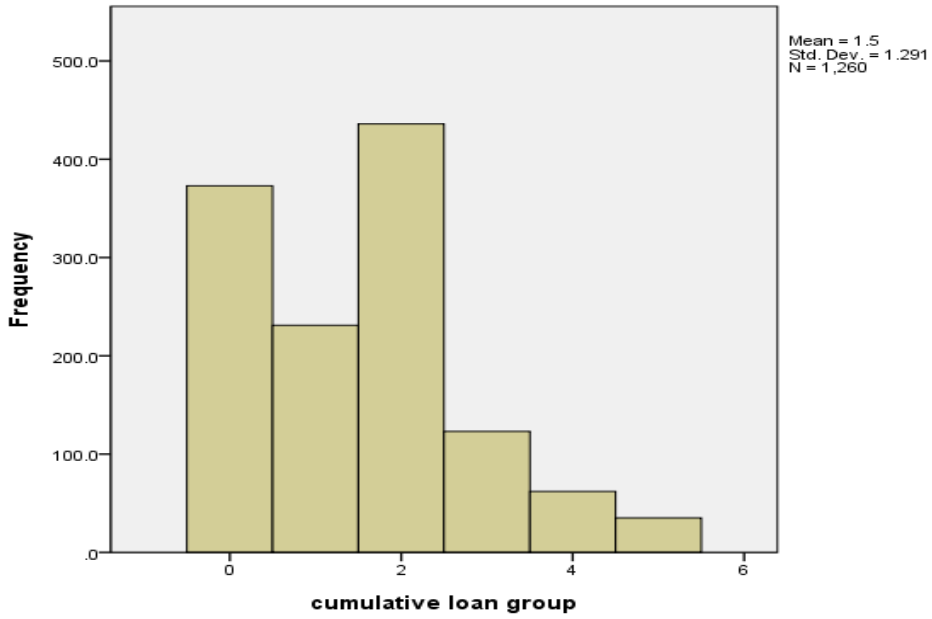
No evidence emerged that socio economic status, as construed from parent's educational level and income level (using EFC as a surrogate), have an effect on our capstone results. Higher CumLoans may be positively associated with modestly **higher** reports of development during the capstone, but unless there is a theoretical argument for why this is reasonable, we should wait to see if further data corroborates this finding.

_____

*** Recoding CumLoans into CumLoanGroups, using groups based on $20K intervals did not change the result that CumLoans is positively associated with higher capstone results on the PostCapContDev scale. Also, in case some zero values for CumLoans were incorrect or from missing data, the result was checked with 0 declared a missing value, and, again, there was the same weak positive association. The coefficient in the model for CumLoanGroups was 0.036, indicating an increase of about $20,000 in loans added about 0.036 to the rating of PostCapContDev.

**cumloangroup cumulative loan group**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 0 0 | 373 | 27.1 | 29.6 | 29.6 |
| | 1 1 - 19.999 | 231 | 16.8 | 18.3 | 47.9 |
| | 2 20,000-39,999 | 436 | 31.7 | 34.6 | 82.5 |
| | 3 40,000 - 59,999 | 123 | 8.9 | 9.8 | 92.3 |
| | 4 60,000-79,999 | 62 | 4.5 | 4.9 | 97.2 |
| | 5 80,00 and up | 35 | 2.5 | 2.8 | 100.0 |
| | Total | 1260 | 91.5 | 100.0 | |
| Missing | System | 117 | 8.5 | | |
| Total | | 1377 | 100.0 | | |




```
GENLIN Postcapcontdev BY Gender (ORDER=ASCENDING) WITH CumLoanGroup
  /MODEL Gender  CumLoanGroup INTERCEPT=YES
DISTRIBUTION=NORMAL LINK=IDENTITY
  /CRITERIA SCALE=MLE COVB=MODEL PCONVERGE=1E-006(ABSOLUTE) SINGULAR=1E-012
ANALYSISTYPE=3(WALD)
    CILEVEL=95 CITYPE=WALD LIKELIHOOD=FULL
  /MISSING CLASSMISSING=EXCLUDE
  /PRINT CPS DESCRIPTIVES MODELINFO FIT SUMMARY SOLUTION.
```

**Tests of Model Effects**

| Source | Type III | | |
|---|---|---|---|
| | Wald Chi-Square | df | Sig. |
| (Intercept) | 12273.500 | 1 | .000 |
| Gender | 8.399 | 1 | .004 |
| cumloangroup | 3.944 | 1 | .047 |

Dependent Variable: PostCapContDev

Model: (Intercept), Gender, cumloangroup

**Parameter Estimates**

| Parameter | B | Std. Error | 95% Wald Confidence Interval | | Hypothesis Test | | |
|---|---|---|---|---|---|---|---|
| | | | Lower | Upper | Wald Chi-Square | df | Sig. |
| (Intercept) | 3.941 | .0473 | 3.848 | 4.034 | 6943.470 | 1 | .000 |
| [Gender=F] | .144 | .0495 | .046 | .241 | 8.399 | 1 | .004 |
| [Gender=M] | 0[a] | . | . | . | . | . | . |
| cumloangroup | .036 | .0181 | .000 | .071 | 3.944 | 1 | .047 |
| (Scale) | .406[b] | .0214 | .366 | .450 | | | |

Dependent Variable: PostCapContDev

Model: (Intercept), Gender, cumloangroup

a. Set to zero because this parameter is redundant.

b. Maximum likelihood estimate.

## Appendix 4.3: Notes on the Factorization of the Combined 2009/10 and 2010/11 Data

**Introduction**

The purpose of factor analysis is data reduction – to reduce the number of variables to a smaller set of scales that can be used in further analysis. Separate factor analyses were done for each of the four pre- and post-capstone surveys of students and faculty. The resulting scales are listed with a brief description on the "Summary of Capstone Survey Scales" sheet. Detailed and technical information on the scales, including the reliability alpha, component survey items, and the correlation or factor loading of each item with the overall scale is given. The individual items for each scale are listed in descending order of their correlation or factor loading, and thus are listed in descending order of the strength of their relationship with the overall scale. The scale values are computed as the average of the values of the component items.

A first factor analysis was done using the data from year 1, 2009/10, and a separate factor analysis was done with the data from year 2, 2010/11.

The interrelationships among the scales are shown in the tables of correlations include in Tables 4.4 to 4.9. Excel's conditional formatting color scales have been used in those tables to highlight the relative magnitude of the values, with higher correlations appearing as the brighter green. The number at the intersection of a row and column indicates the correlation of the two corresponding scales, and the tables are symmetric across the diagonal.

**Observations on the factorizations and scales:**

Ideally, the reliability of each scale would be high, 0.7 or above, and the correlation or factor loading of each component item would also be high, 0.4, or above. Generally, these conditions are met, with a few borderline cases, however.

Most, but not all, of the factors came out with the same component items when each of the two years of data was done separately, and the changes that occurred seemed minor, indicating a great deal of stability. Where there were some changes, it was decided to retain the same scale components as were derived from the first year's data for the overall analysis.

Because of additional questions on the post-capstone surveys in year 2, the student scale for "MentorRel" incorporated a number of new items for year 2 only. These have an SPSS variable name of the form PostStuxxx with "xxx" a number in the 200's. The high reliability of this item, 0.959, would indicate that we could have captured the same information without adding so many questions.

Similarly, new questions on the Post-Capstone Faculty Survey resulted in two new scales: "MentorInstruction", and "MentorFeedback". Unlike with the student surveys, where the mentor relationship items did not break down into these separate items, the faculty data suggests mentors distinguish more clearly between their instructional and personal relationship with the student.

In the four cases where they aligned, the summative ratings of student performance (lines 273-279 of the "Capstone Survey Scales" sheet) were highly correlated with their respective scale, as seen on the "Faculty Summative Assessments to Faculty Scales Inter-Correlations" sheet. For example, the summative rating for "Critical Thinking and Reasoning" had a correlation of 0.776 with the "PostCrThinkSkills" scale. This cross-validation of the survey components reinforces the validity of the scales and summative items, and could also be a justification for using only the summative items on a short form of future surveys, as for assessment purposes.

It is interesting to note some differences between the pre- and post-capstone factorizations that may indicate that changes occurred during the capstone in how students and/or faculty contextualized certain skills:

- On the student surveys, demonstrating good communications skills moved from aligning with the leadership/collaboration skills factor to the scholarly skills factor. Possibly this is because the capstone emphasizes scholarly writing and many capstones include a formal presentation.
- Similarly, integrating ideas from various sources moved from aligning with the multiple perspectives factor to the scholarly skills factor. Again, the capstone may emphasize this more as a scholarly skill than has prior work.
- On the faculty surveys, the critical thinking items were aligned with the communication skills factor for the pre-survey, while on the post-survey the critical thinking items were aligned more with the intellectual engagement factor. One might wonder if this represents a difference in how the capstone elicits critical thinking versus a regular course, or if the scale of the capstone might expose different aspects of the student's critical thinking abilities.

Despite these shifts, in order to keep the pre and post scales identical, in terms of the included items, the items that emerged in the pre-survey factorizations were kept for both pre and post analysis. The scale reliabilities remained satisfactory.

## Appendix 4.4: Mentor Evaluations vs. Student – Are mentor assessments of student performance consistent with other data?

- **Do the four mentor evaluation scales align well with the seven summative evaluation items?**
- **Are faculty mentor reports of student performance consistent with student self assessments?**
- **Do mentor evaluations align with students assessments of their preparation for the capstone?**

Each of the above questions is of interest for purposes of data of cross validating student and faculty assessments, and the design of reliable assessment instruments. The analysis below is based on the year 1, 2009/10 data.

**Mentor Evaluation Fields**

The analysis of the post capstone mentor surveys is aided by boiling the data down to four scales and seven summative items that summarize the mentor's rating of the student's performance. These are:

Four scales:

| | |
|---|---|
| PostCommunSkills | Student exhibited good communication skills. |
| PostEffProjectMgt | Student exhibited good project management skills. |
| PostIntelEngagement | Student exhibited good intellectual engagement behaviors. |
| PostCrThinkSkills | Student exhibited good critical thinking skills. |

Seven summative evaluation items:

| | |
|---|---|
| PostFac27 | Independence: Showing autonomy and initiative in thought and actions |
| PostFac28 | Intellectual Engagement: Demonstrating an interest in learning |
| PostFac29 | Self-understanding: Developing an awareness of self (skills, abilities, interests) |
| PostFac30 | Project Management: Conceiving and managing a project |
| PostFac31 | Research: Investigating in a manner appropriate to the discipline |
| PostFac32 | Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence |
| PostFac33 | Communication: Presenting ideas effectively (written, oral, and other forms) |

**Consistency of Mentor Evaluations**

Are the faculty evaluation items consistent and/or highly correlated? Table 1 below shows the correlations among these 11 items. All the correlations are statistically significant at $p<=0.05$, two-tailed. The four scales are all highly correlated with each other, with a correlation of .700 or higher. The summative items are also highly correlated with each other and with the four scales. The correlation of each of the four scales with the summative item most closely aligned with it is particularly high in each case. These are the correlations outlined with thick boxes in Table 1 below. For instance, the summative item about critical thinking has a correlation of .783 with the critical thinking scale. Given these correlations, the interpretation of the four scales is reinforced, and it might be argued that using just the four scales in further analysis will reveal most of the findings of interest.

**Student Evaluation Fields**

The student scales or interest are:

| | |
|---|---|
| PostPrepBreadth | Helpfulness as preparation for the capstone of areas that add educational breadth. |
| PostPrepDisc | Helpfulness as preparation for the capstone of areas that are grounded in the disciplinary major of the capstone. |
| PostPrepQuant | Helpfulness as preparation for the capstone of quantitative or computer based techniques. |
| PostMentorRel | Helpful and comfortable relationship with the mentor. |
| PostCapContDev | Rating of the contribution of the capstone to the development of scholarly skills. |
| PostCapMoreEngaging | Rating of the capstone as more or less intellectually engaging than a regular course. |
| PostCapSuccessful | Overall assessment of the capstone as a successful experience. |
| PostSatisInstr | Satisfaction with instruction. |
| PostSatisSuppSrv | Satisfaction with academic support services (library, computer, facilities/equipment supporting their major). |
| PostCivicOrient | Orientation toward civic engagement. |
| PostHighOrderCogn | Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). |
| PostExhibScholarlySkills | During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. |
| PostNeedCognLite | An abbreviated version of the Need for Cognition scale designed to measure interest in or enjoyment of higher order cognition. |
| PostMultPerspectives | Using behaviors that exhibit an interest in examining ideas from a multiplicity of perspectives. |
| PostProjMgt | Exhibiting good project management skills. |
| PostRatingAcadAbil | Student's self rating of his/her academic ability. |
| PostRatingCollabSkills | Student's self rating of his/her group collaboration skills. |
| PostRatingIndepVoice | Student's self rating of his/her understanding of themselves and others and ability to think on their own. |
| PostResearchOrient | Student's self rating of his/her drive to achieve and persistence. |
| PostRatingStriver | Enjoyment of research. |
| PostStatusCareerOrient | Desire to have a prestigious, high paying, and high achieving career. |

**Consistency of Student Reports and Mentor Evaluations**

Table 2 shows the correlations of the mentor evaluations with the student scales from the post-capstone student surveys. Correlations that are statistically significant $p<=.05$ are bolded and shaded.

As shown in Table 2, all the significant correlations are positive, indicating generally good correspondence between the faculty and student ratings for capstone performance. Other notes:

- The two key indicators of students' rating of the capstone, PostCapSuccessful, PostCapContDev correlated positively with all 11 of the mentor ratings.
- All 11 mentor ratings also correlated positively and significantly with PostMentorRel, PostSatisInstr, PostExhibScholarlySkills, PostProjMgt, PostResearchOrient, and PostRatingStriver. Thus, on the mentor's side, high evaluations of the student's performance are generally associated with, as reported by students, a good student/mentor relationship, higher student satisfaction with instruction, and students' feeling that they were good project managers, persisted through difficulties, exhibited good academic skills, and enjoyed doing research.

**Capstone preparation and faculty assessments of performance**

Mentor evaluations had surprisingly weak correlations with students' assessments of the helpfulness of various forms of preparation for the capstone.

- PrepDisc had a statistically significant correlation with only one of the four scales (.140 with effective project management) , while PostEffProjectMgt. PostPrepBreadth and PostPrepQuant did not have a statistically significant correlation with any of the four scales.
- Looking at the seven summative evaluations, disciplinary preparation has a statistically significant but small correlation with 5 of the 7 items, while the "breadth" preparation associated with general education programs has a statistically significant correlation with only self understanding (.105). Quantitative preparation did not have a statistically significant correlation with any of the seven items.

Overall it appears students' sense of their preparation doesn't relate strongly with the mentors' evaluations of performance. This was particularly true for quantitative preparation. These results might be seen as consistent with the data for the MultiplePerspectives scale that suggests that the capstone experience is, on average, more an in depth experience in the major rather than an experience that integrates the four-year college experience.

**Conclusions**

It seems reasonable to conclude, as an overall summary, that the mentor's ratings are generally consistent with students' own perceptions of their performance. Moreover, the correlation of mentors' ratings with students' feeling more positive about the mentor relationship underscores the importance of the student/mentor relationship as a possible contributor to better capstone performance. Mentor evaluations had only weak correlations with student assessments of the helpfulness of various capstone preparation forms. Further investigation of cases where the student and mentor reports are out of sync might be of interest.

| Table 1: Correlations of Faculty Evaluation Fields | Scales | | | | Summative Items | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | PostCommunSkills Student exhibited good communication skills. | PostEffProjectMgt Student exhibited good project management skills. | PostIntelEngagement Student exhibited good intellectual engagement behaviors. | PostCrThinkSkills Student exhibited good critical thinking skills. | PostFac27 Independence: Showing autonomy and initiative in thought and actions | PostFac28 Intellectual Engagement: Demonstrating an interest in learning | PostFac29 Self-understanding: Developing an awareness of self (skills, abilities, interests) | PostFac30 Project Management: Conceiving and managing a project | PostFac31 Research: Investigating in a manner appropriate to the discipline | PostFac32 Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence | PostFac33 Communication: Presenting ideas effectively (written, oral, and other forms) |
| PostCommunSkills Student exhibited good communication skills. | 1 | .737 | .713 | .781 | .563 | .528 | .598 | .631 | .637 | .650 | .702 |
| PostEffProjectMgt Student exhibited good project management skills. | .737 | 1 | .837 | .857 | .708 | .708 | .743 | .794 | .773 | .757 | .720 |
| PostIntelEngagement Student exhibited good intellectual engagement behaviors. | .713 | .837 | 1 | .873 | .757 | .748 | .717 | .700 | .755 | .774 | .687 |
| PostCrThinkSkills Student exhibited good critical thinking skills. | .781 | .857 | .873 | 1 | .687 | .659 | .712 | .705 | .765 | .783 | .705 |
| PostFac27 Independence: Showing autonomy and initiative in thought | .563 | .708 | .757 | .687 | 1 | .761 | .719 | .679 | .720 | .759 | .700 |
| PostFac28 Intellectual Engagement: Demonstrating an interest in learning | .528 | .708 | .748 | .659 | .761 | 1 | .727 | .683 | .745 | .749 | .705 |
| PostFac29 Self-understanding: Developing an awareness of self | .598 | .743 | .717 | .712 | .719 | .727 | 1 | .716 | .750 | .752 | .746 |
| PostFac30 Project Management: Conceiving and managing a project | .631 | .794 | .700 | .705 | .679 | .683 | .716 | 1 | .791 | .738 | .730 |
| PostFac31 Research: Investigating in a manner appropriate to the | .637 | .773 | .755 | .765 | .720 | .745 | .750 | .791 | 1 | .820 | .743 |
| PostFac32 Critical Thinking and Reasoning: Evaluating and | .650 | .757 | .774 | .783 | .759 | .749 | .752 | .738 | .820 | 1 | .795 |
| PostFac33 Communication: Presenting ideas effectively | .702 | .720 | .687 | .705 | .700 | .705 | .746 | .730 | .743 | .795 | 1 |

Faculty Scales

| Table 2: Correlations of Faculty Rating Scales with Student Scales | PostCommunSkills | PostEffProjectMgt | PostIntelEngagement | PostCrThinkSkills |
|---|---|---|---|---|
| PostPrepBreadth | .036 | .058 | .092 | .037 |
| PostPrepDisc | .079 | **.140** | .092 | .082 |
| PostPrepQuant | -.006 | .066 | -.039 | .022 |
| PostMentorRel | **.111** | **.125** | **.189** | **.182** |
| PostCapContDev | **.146** | **.208** | **.205** | **.203** |
| PostCapMoreEngaging | -.010 | **.110** | **.102** | **.097** |
| PostCapSuccessful | **.142** | **.232** | **.232** | **.247** |
| PostSatisInstr | **.179** | **.192** | **.185** | **.212** |
| PostSatisSuppSrv | .042 | .052 | .015 | .040 |
| PostCivicOrient | .027 | **.116** | .074 | .058 |
| PostHighOrderCogn | **.143** | **.121** | **.162** | **.143** |
| PostExhibScholarlySkills | **.228** | **.269** | **.245** | **.271** |
| PostNeedCognLite | .076 | .076 | **.151** | **.115** |
| PostMultPerspectives | .067 | **.127** | **.152** | .095 |
| PostProjMgt | **.222** | **.321** | **.211** | **.276** |
| PostRatingAcadAbil | **.250** | **.171** | **.270** | **.245** |
| PostRatingLeadCollabSkills | -.028 | .074 | **.116** | .053 |
| PostRatingIndepVoice | .042 | .020 | .061 | .004 |
| PostResearchOrient | **.229** | **.239** | **.263** | **.281** |
| PostRatingStriver | **.167** | **.225** | **.183** | **.205** |
| PostStatusCareerOrient | **.101** | **.097** | .087 | **.123** |
| DSatisInstr | **.155** | **.125** | .084 | **.147** |
| DSatisSuppSrv | .031 | .027 | -.002 | .018 |
| DCivicOrient | .021 | .014 | -.029 | -.032 |
| DHighOrderCogn | .045 | .005 | .064 | -.002 |
| DExhibScholarlySkills | .062 | .040 | .049 | .049 |
| DNeedCognLite | -.003 | .038 | -.002 | -.009 |
| DMultPerspectives | .019 | .050 | .032 | -.002 |
| DProjMgt | .062 | **.122** | .097 | **.155** |
| DRatingAcadAbil | .002 | -.010 | .004 | -.017 |
| DRatingCollabSkills | .089 | **.120** | **.116** | .075 |
| DRatingIndepVoice | **.142** | .057 | .074 | .073 |
| DRatingStriver | .023 | -.026 | .024 | -.008 |
| DResearchOrient | .012 | -.059 | -.056 | .000 |
| DStatusCareerOrient | .047 | -.001 | .050 | .065 |

## Appendix 4.5: Capstone Preparation Data from the Post- Capstone Senior Survey

NOT RESTRICTED TO PAIRED PRE/POST RESPONDENTS, AS IN THE REPORT BY SCALES

Data is for all non-duplicate records (not just paired pre/post records).

Conditional highlighting used only if differences are statistically signifcant.

SS includes busadm, teacher ed

| | | | MEANS BY DIVISION | | | | | MEANS BY GPA GROUP | | | | | MEANS BY GENDER | | | | MEANS BY SCHOOL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| line | SPSS Name | Description or Question Text | NS | SS+ | HUM | *ALL* | Sig | L | M | H | *ALL* | Sig | M | F | *ALL* | Sig | R | T | W | Y | *ALL* | Sig |
| 1 | | **STUDENT AND FACULTY BIODEMO DATA** | | | | | | | | | | | | | | | | | | | | |
| 195 | | **How helpful were each of the following for completion of your capstone?** | | | | | | | | | | | | | | | | | | | | |
| 196 | PostStu34 | Courses outside my major(s) and minor(s) | 1.95 | 2.13 | 2.21 | *2.10* | *** | 2.09 | 2.08 | 2.12 | *2.10* | | 2.07 | 2.11 | *2.10* | | 2.18 | 2.17 | 2.05 | 1.99 | *2.10* | ** |
| 197 | PostStu35 | Courses in my major(s) or minors(s) | 3.52 | 3.40 | 3.48 | *3.45* | ** | 3.41 | 3.44 | 3.52 | *3.46* | * | 3.45 | 3.47 | *3.46* | | 3.46 | 3.45 | 3.43 | 3.50 | *3.46* | |
| 198 | PostStu36 | A research methods or skills course | 3.04 | 2.90 | 2.46 | *2.83* | *** | 2.95 | 2.86 | 2.72 | *2.83* | ** | 2.73 | 2.88 | *2.83* | ** | 2.90 | 2.65 | 2.71 | 2.93 | *2.83* | *** |
| 199 | PostStu37 | A junior or senior seminar | 2.99 | 2.84 | 2.80 | *2.87* | * | 2.90 | 2.85 | 2.87 | *2.87* | | 2.81 | 2.90 | *2.87* | | 2.98 | 2.67 | 2.50 | 3.02 | *2.87* | *** |
| 200 | PostStu38 | Assistance from librarians or use of library services | 2.23 | 2.32 | 2.33 | *2.30* | | 2.34 | 2.32 | 2.28 | *2.31* | | 2.25 | 2.34 | *2.31* | | 2.27 | 2.41 | 2.10 | 2.37 | *2.31* | ** |
| 201 | PostStu39 | Training in quantitative methods (statistics, tables, graphs, mathematical modeling,...) | 2.81 | 2.48 | 1.55 | *2.39* | *** | 2.42 | 2.44 | 2.33 | *2.39* | | 2.39 | 2.39 | *2.39* | | 2.45 | 2.19 | 2.36 | 2.51 | *2.39* | *** |
| 202 | PostStu40 | Training or experience with computer techniques (spreadsheets, Internet, programming, presentation | 2.92 | 2.50 | 1.93 | *2.49* | *** | 2.51 | 2.57 | 2.41 | *2.49* | * | 2.56 | 2.46 | *2.49* | | 2.46 | 2.42 | 2.45 | 2.60 | *2.49* | |
| 203 | PostStu41 | Study abroad experiences | 2.03 | 2.44 | 2.54 | *2.39* | *** | 2.31 | 2.48 | 2.40 | *2.41* | | 2.35 | 2.44 | *2.41* | | 2.55 | 2.23 | 2.43 | 2.40 | *2.41* | * |
| 204 | PostStu42 | My job or internship experiences | 2.65 | 2.54 | 2.26 | *2.49* | *** | 2.35 | 2.54 | 2.53 | *2.50* | * | 2.43 | 2.53 | *2.50* | | 2.37 | 2.70 | 2.55 | 2.43 | *2.50* | *** |
| 205 | PostStu43 | Volunteer experiences | 1.87 | 2.17 | 2.07 | *2.07* | *** | 2.17 | 2.04 | 2.03 | *2.06* | | 1.91 | 2.14 | *2.06* | *** | 1.98 | 2.29 | 2.08 | 1.95 | *2.06* | *** |
| 206 | PostStu44 | My non-academic interests/experiences | 2.41 | 2.80 | 2.95 | *2.74* | *** | 2.84 | 2.70 | 2.73 | *2.74* | | 2.73 | 2.75 | *2.74* | | 2.78 | 2.79 | 2.70 | 2.68 | *2.74* | |
| 207 | PostStu201 | A research project/experience | 3.11 | 2.87 | 2.77 | *2.91* | | 2.89 | 2.96 | 2.87 | *2.91* | | 2.91 | 2.91 | *2.91* | | 2.94 | 2.89 | 2.70 | 2.95 | *2.91* | |

Concerning helpfulness as preparation, at the Fall 2011 conference the high rating for "non-academic experiences" was noted, it being higher than "courses outside my major(s) and minors(s), and the question was asked whether this differed by division. The table above shows this relative ranking is consistent across divisions, GPA groups, genders and schools.

The table also shows there are a number of statistically significant differences in preparation ratings for various student sub-groups.

Note that this data is based on all capstone records, not just the paired pre/post records in some of our other tables, and some means may, therefore, be slightly different from those reported elsewhere.

## Appendix 4.6: Means of Student and Faculty Workload and Topic Selection and Enthusiasm Questions

**Report - Student Responses**

| | | Workload Measures | | | | | | | Topic Selection and Enthusiasm | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| School | | CredHrs Total Capstone semester hours | CapGrade Capstone grade (if more than one , average grade) | GradColGPA College GPA – final at graduation | PostStu52 On average, how many hours per week did you spend interacting with your capstone mentor in individual or group meetings relating to the capstone? | Median | PostStu53 On average, how many hours per week did you spend working on ALL aspects of your capstone combined? | Median | PostStu211 What was the origin of the idea for your capstone topic? | PostStu212 To what extent did you participate in developing/refining the topic for your capstone? | PostStu213 How satisfied were you with the process used to select your capstone topic? | PostStu214 When the project started, how enthusiastic were you about your capstone topic? | PostStu215 When the project ended, how enthusiastic were you about your capstone topic? |
| 1 Yellow | Mean | 3.97 | 3.22 | 3.24 | 2.98 | 2.00 | 15.70 | 12.00 | 3.90 | 4.36 | 4.01 | 4.22 | 4.01 |
| 2 Tan | Mean | 5.00 | 3.61 | 3.37 | 3.80 | 2.00 | 11.91 | 8.00 | 3.86 | 4.26 | 4.00 | 4.03 | 4.07 |
| 3 White | Mean | 3.64 | 3.14 | 3.22 | 2.77 | 2.00 | 12.65 | 10.00 | 4.14 | 4.11 | 4.03 | 4.18 | 3.96 |
| 4 Red | Mean | 8.00 | 3.08 | 3.26 | 2.07 | 1.50 | 14.73 | 12.00 | 3.93 | 4.26 | 4.14 | 4.36 | 4.25 |
| Total | Mean | 5.33 | 3.26 | 3.28 | 2.86 | 2.00 | 14.11 | 10.00 | 3.92 | 4.28 | 4.05 | 4.21 | 4.09 |

**Report - Facutly Responses**

| School | | | PostFac34 Estimate the average hours per week you spent meeting (individually or in a group setting) with this student as mentor: | Median | PostFac35 Estimate the average total hours per week you spent working on this student's capstone (meetings, email, reading drafts, etc.): | Median | PostFac36 Did the core idea for the student's capstone originate with the student? | PostFac37 To what extent did you participate in developing/refining the topic for his / her capstone? | PostFac38 To what extent did the student participate in developing / refining his /her capstone topic? | PostFac39 When the project started, how enthusiastic was the student about the topic? | PostFac40 When the project ended, how enthusiastic was the student about the topic? |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 Yellow | Mean | | 1.81 | 1.25 | 2.25 | 2.00 | 4.15 | 3.48 | 4.02 | 4.25 | 4.26 |
| 2 Tan | Mean | | 2.12 | 2.00 | 4.24 | 2.00 | 4.12 | 3.31 | 3.98 | 4.06 | 4.20 |
| 3 White | Mean | | 1.41 | 1.00 | 2.88 | 2.00 | 4.48 | 3.39 | 3.87 | 4.13 | 4.10 |
| 4 Red | Mean | | 1.58 | 1.00 | 3.06 | 2.00 | 4.34 | 3.50 | 4.12 | 4.48 | 4.48 |
| Total | Mean | | 1.72 | 1.00 | 2.97 | 2.00 | 4.27 | 3.43 | 4.00 | 4.24 | 4.27 |

Because of several outliers reporting a large number of hours, the medians have been added to the questions for the questions about the hours per week spendt on capstone activities.

**Appendix 4.7 What correlates with expecting to have a good capstone?**

A GLM showed that expecting a good capstone is one of the strongest predictors or the student's rating of the capstone as successful. So it is of interest to understand what goes into students' expectation of a good capstone and asking if any of the component items should be considered in student capstone preparation, capstone administration, or our statements to students about the rational for the capstone. It was suggested at the 2011 conference that high expectations might mostly represent a positive world view.

Table 1 shows the component items of the ExpectGoodCapstone scale. Although all items correlate highly, the strongest are expecting to understand their own skills and abilities better, develop CT skills, and preparation for a job or graduate school. Fortunately, our evidence is that students expectations are largely met.

Table 2 lists selected other questions from the pre-capstone survey that one might expect would correlate. The strongest correlate, perhaps surprisingly, is that the student expects to be comfortable working with his/her mentor. The other strongest correlates reflect the student's having exhibited during the prior year the type of behaviors and skills needed for the capstone, having a positive disposition toward research and using research related skills, and pre-capstone satisfaction with support services. Perhaps also surprising is that among the lowest correlates are the students self-ratings of their ability.

Table 1. Correlations. Sorted in descending order.

| **PreExpectGoodCapstone Student expects capstone experience to be helpful** | |
|---|---|
| PreStu73 My capstone will lead to a better understanding of my skills, abilities and interests | 0.769 |
| PreStu70 My ability to think critically and analytically will improve | 0.751 |
| PreStu75 My capstone will better prepare me for a job or graduate school | 0.738 |
| PreStu74 My capstone will help me clarify my career or graduate school objectives | 0.723 |
| PreStu71 My understanding of my discipline will improve | 0.713 |
| PreStu69 My oral presentation skills will improve | 0.711 |
| PreStu68 My writing skills will improve | 0.703 |
| PreStu67 My capstone will be more engaging than my regular course work | 0.657 |
| PreStu72 I expect to create new knowledge in my discipline | 0.657 |
| PreStu66 My capstone will be intellectually challenging | 0.597 |

Table 2. Correlations. Sorted in descending order.

| **PreExpectGoodCapstone Student expects capstone experience to be helpful** | |
|---|---|
| PreStu76 I expect to be comfortable working with my faculty mentor(s) | 0.461 |
| PreExhibScholarlySkills During the past year, student exhibited scholarly skills | 0.363 |
| PreHighOrderCogn Use of higher order cognitive thinking skills | 0.333 |
| PreMultPerspectives2 Using behaviors showing interest in examining ideas from multiple perspectives | 0.323 |
| PreStu18 I enjoy doing research | 0.318 |
| PreSatisSuppSrv Satisfaction with academic support services | 0.308 |
| PreResearchOrient Enjoyment of research | 0.307 |
| PreSatisInstr Satisfaction with instruction | 0.298 |
| PreNeedCognLite Abbreviated version of Need for Cognition | 0.281 |
| PreStu57 Applying theories or concepts to practical problems or in new situations | 0.277 |
| PreStu58 Integrated ideas or information from various sources | 0.270 |
| PreStu65 Learned something that changed the way you understand an issue or concept | 0.261 |

| | |
|---|---|
| PreStu39 I used feedback to assess my performance | 0.256 |
| PreStu38 I showed originality | 0.247 |
| PreStu55 Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | 0.245 |
| PreCivicOrient Orientation toward civic engagement | 0.244 |
| PreProjMgt Exhibiting good project management skills | 0.244 |
| PreStu36 I showed evidence of independent thinking | 0.243 |
| PreStu41 I used disciplinary knowledge and methods appropriately | 0.243 |
| PreStu60 Put together ideas or concepts from different courses | 0.243 |
| PreStu61 Discussed ideas from your readings or classes with faculty members outside of class | 0.240 |
| PreStu42 I synthesized information to produce insights that expanded my understanding | 0.239 |
| PreStu56 Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | 0.239 |
| PreStu62 Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.) | 0.229 |
| PreStu63 Examined the strengths and weaknesses of your own views on a topic or issue | 0.227 |
| PreStu40 I located appropriate source material | 0.225 |
| PreStu37 I persisted when faced with conceptual and practical difficulties | 0.223 |
| PreStu43 I supported my arguments with appropriate evidence | 0.223 |
| PreStu34 I identified manageable sets of goals for my projects | 0.221 |
| PreStu54 Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | 0.218 |
| PreStu59 Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | 0.217 |
| PreStu35 I properly planned tasks to achieve project goals | 0.215 |
| PreRatingStriver Self rating of drive to achieve and persistence | 0.213 |
| PreStatusCareerOrient Desire to have a prestigious, high paying, high achieving career | 0.212 |
| PreStu64 Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | 0.210 |
| PreStu31 Research skills | 0.209 |
| PreStu45 I demonstrated effective time management in completing tasks | 0.199 |
| PreStu44 I demonstrated good communication skills | 0.198 |
| PreStu16 I really enjoy a task that involves coming up with new solutions to problems | 0.198 |
| PreStu21 Drive to achieve | 0.194 |
| PreStu24 Persistence | 0.181 |
| PreStu17 The notion of thinking abstractly is appealing to me | 0.171 |
| PreStu46 I showed skill with quantitative reasoning | 0.169 |
| PreRatingIndepVoice Self rating of understanding of self/others and ability to think on their own | 0.166 |
| PreStu27 Self-confidence (social) | 0.161 |
| PreRatingCollabSkills Self rating of group collaboration skills | 0.150 |
| PreStu14 I enjoy expressing my ideas in writing | 0.149 |
| PreStu28 Understanding of others | 0.148 |
| PreRatingAcadAbil Self rating of academic ability | 0.122 |
| PreStu22 Leadership ability | 0.122 |
| PreStu32 Ability to think and act on my own | 0.119 |
| PreStu30 Ability to think critically | 0.117 |
| PreStu29 Self-understanding | 0.107 |
| PreStu15 I have confidence in my opinions, even if they are contrary to the general consensus | 0.098 |
| PreStu33 Writing ability | 0.083 |
| PreStu77 My capstone will be very stressful | 0.083 |
| PreStu26 Self-confidence (intellectual) | 0.080 |
| PreStu20 Creativity | 0.079 |
| PreStu25 Public speaking ability | 0.078 |
| PreStu19 Academic ability | 0.055 |
| PreStu23 Mathematical ability | 0.020 |

All correlations are significant at least the 0.05 level (2-tailed).

## Appendix 4.8: Success: What pre- and post-capstone measures are associated with a successful capstone?

Note: General Linear Models (GLM) are designed to predict the value of an independent variable, in this case the student's rating of a successful capstone. As such, a highly correlated variable that doesn't differentiate between students may not enter the GLM model. Consequently In the interpretation of the model, our results on correlations should be kept in mind (see table below), as well as the analysis of student and faculty comments.

Summary: Pre-capstone predictors of success are expecting a good capstone, pre-capstone use of good project management skills, and a higher research orientation. Post-capstone student measures associated with success are ownership of the project, the quality of the mentor relationship, being successful at project management, and particularly good preparation through areas and courses outside the major. Faculty measures associated with success include, most notably, strong student motivation for the topic and CT skills, and capstones in the natural sciences.

## Pre-capstone Student Measures, GLM 1

An initial GLM was done using the following listed variables:

```
UNIANOVA PostCapSuccessful BY school Gender capmajdivall WITH
precapcolgpa PreExpectGoodCapstone PreSatisSuppSrv PreCivicOrient
PreHighOrderCogn PreExhibScholarlySkills
PreNeedCognLite PreMultPerspectives2 PreProjMgt PreRatingAcadAbil
PreRatingCollabSkills PreRatingIndepVoice
PreRatingStriver PreResearchOrient PreStatusCareerOrient
```

The resulting model, reduced to the variables with a significant B coefficient, p<=.05 was:

```
Rsq = .350
Parameter Estimates
```

Dependent Variable:PostCapSuccessful Overall assessment of the capstone as a successful experience.

| Parameter | B | Std. Error | t | Sig. |
|---|---|---|---|---|
| | | | | |
| PreExpectGoodCapstone | .502 | .036 | 13.932 | .000 |
| PreCivicOrient | .110 | .035 | 3.155 | .002 |
| PreProjMgt | .134 | .029 | 4.625 | .000 |
| PreRatingAcadAbil | -.097 | .050 | -1.962 | .050 |
| PreResearchOrient | .109 | .026 | 4.137 | .000 |
| [school=Red] * [Gender=F] | .201 | .096 | 2.089 | .037 |
| [school=Tan] * [Gender=F] | .212 | .108 | 1.962 | .050 |
| [school=White] * [Gender=F] | -.262 | .125 | -2.101 | .036 |
| [school=Tan] * [Capmajdivall=1.00] | .332 | .129 | 2.577 | .010 |

Rerunning GLM with only the significant variables from this first set resulted in the model:

rsq=.342

Parameter Estimates

Dependent Variable:PostCapSuccessful Overall assessment of the capstone as a successful experience.

| Parameter | B | Std. Error | t | Sig. |
|---|---|---|---|---|
| | | | | |
| Intercept | .646 | .205 | 3.158 | .002 |
| PreExpectGoodCapstone | .520 | .033 | 15.703 | .000 |
| PreCivicOrient | .144 | .031 | 4.589 | .000 |
| PreProjMgt | .143 | .025 | 5.748 | .000 |
| PreResearchOrient | .112 | .025 | 4.417 | .000 |
| [school=Red] * [Gender=F] | .199 | .095 | 2.099 | .036 |
| [school=Tan] * [Gender=F] | .213 | .108 | 1.979 | .048 |
| [school=White] * [Gender=F] | -.277 | .124 | -2.226 | .026 |
| [school=Tan] * [Capmajdivall=1.00] | .341 | .128 | 2.664 | .008 |

What emerged was curious for both what was included and excluded.

Items included that intuitively make sense are:

**PreExpectGoodCapstone**
**PreProjMgt**
**PreResearchOrient**

On the other hand, that PreCivicOrientation remained in the model while things like pre-capstone GPA, self rating of academic ability, and pre-capstone use of higher order cognition did not seems puzzling. Also notable is that the credit hours of the capstone was not a significant variable.

The school*gender interaction is also notable, particularly since the coefficient changes to a negative sign for females from White. The big positive coefficient for natural science majors for Tan is also interesting. Perhaps while Tan is gearing up the capstone the natural science departments, which have a longer history of senior research, have a more developed program, or, noting the wide variability in the capstone structures at Tan, the natural science capstones are closer to the standard independent research model.

With regard to our research question about universality, note that, other than the result for Tan, the academic division of the capstone, and the pre-capstone GPA of the student did not enter into the model. We should, however, consider whether the gender*school effect has a reasonable explanation

## Post-capstone Student Measures, GLM 2

An initial GLM was done using the following listed variables:

```
UNIANOVA PostCapSuccessful BY school Gender capmajdivall WITH precapcolgpa
```

| | |
|---|---|
| PostStu52 | On average, how many hours per week did you spend interacting with your capstone mentor in individual or group meetings relating to the capstone? |
| PostStu53 | On average, how many hours per week did you spend working on ALL aspects of your capstone combined? |
| PostStu211 | What was the origin of the idea for your capstone topic? |
| PostStu212 | To what extent did you participate in developing/refining the topic for your capstone? |
| CredHrs | Total Capstone semester hours |
| poststu202 | Prior experience: Course-embedded research project |
| poststu203 | Prior experience: Course-embedded performance/creative project |
| poststu204 | Prior experience: Summer research project (more than four weeks) |
| poststu205 | Prior experience: Summer research project (more than four weeks) |
| poststu206 | Prior experience: Research assistant for a faculty project |
| poststu207 | Prior experience: Independent study course/project |
| poststu208 | Prior experience: Research assistant during the academic year |
| poststu209 | Prior experience: Assistance/apprenticeship with performance/creative project |

PostPrepBreadth
PostPrepDisc
PostPrepQuant
PostMentorRel
PostCapContDev
PostCapMoreEngaging
PostSatisInstr
PostSatisSuppSrv
PostCivicOrient
PostHighOrderCogn
PostExhibScholarlySkills
PostNeedCognLite
PostMultPerspectives2
PostProjMgt
PostRatingAcadAbil
PostRatingCollabSkills
PostRatingIndepVoice
PostResearchOrient
PostRatingStriver
PostStatusCareerOrient

After removing the non-significant parameters and rerunning the final model was:

rsq=.636

Parameter Estimates

Dependent Variable:PostCapSuccessful Overall assessment of the capstone as a successful experience.

| Parameter | B | Std. Error | t | Sig. |
|---|---|---|---|---|
| | | | | |
| Intercept | -.345 | .142 | -2.439 | .015 |
| PostStu209 | .159 | .054 | 2.952 | .003 |
| PostPrepBreadth | .110 | .020 | 5.458 | .000 |
| PostMentorRel | .096 | .023 | 4.155 | .000 |
| PostCapContDev | .470 | .029 | 16.292 | .000 |
| PostCapMoreEngaging | .272 | .021 | 12.711 | .000 |
| PostSatisInstr | .090 | .030 | 3.043 | .002 |
| PostProjMgt | .098 | .021 | 4.577 | .000 |

If PostCapContDev is consider a surrogate for successful capstone and removed, the model is:

rsq=.528

Parameter Estimates

Dependent Variable:PostCapSuccessful Overall assessment of the capstone as a successful experience.

| Parameter | B | Std. Error | t | Sig. |
|---|---|---|---|---|
| | | | | |
| Intercept | -.147 | .153 | -.956 | .339 |
| PostStu209 | .153 | .060 | 2.544 | .011 |
| PostPrepBreadth | .172 | .022 | 7.728 | .000 |
| PostMentorRel | .153 | .026 | 5.926 | .000 |
| PostCapMoreEngaging | .402 | .021 | 18.758 | .000 |
| PostSatisInstr | .161 | .032 | 5.113 | .000 |
| PostProjMgt | .180 | .023 | 7.751 | .000 |

We might conclude based on this model that the some particularly significant variables contributing to a successful capstone, as perceived by the student, are ownership of the project, the quality of the mentor relationship, being successful at project management, and particularly good preparation through areas and courses outside the major.

Note that PostStu209 is probably in the model because it has an add on effect in the presence of the other variables specific to arts majors, and that preparation in the major, for instance, which correlates highly with PostCapContDev, is probably not in the model because it is uniformly high, in student perceptions, and isn't needed to as a differentiating variable.

## Faculty Pre- and Post-capstone Measures, GLM 3

The GLM model included all the faculty scales from both the pre- and post-capstone surveys along with school, gender, and academic division:

```
UNIANOVA PostCapSuccessful BY
school gender Capmajdivall
WITH
 capgrade
PreCommunSkills
PreEffProjectMgt
PreIntelEngagement
PreCrThinkSkills
PostCommunSkills
PostEffProjectMgt
PostIntelEngagement
PostCrThinkSkills
PostStudentTopicMotiv
PostMentorInstruction
PostMentorRapport
```

In the resulting model only 3 variables were statistically significant, and a revised model with only those variables is shown below. Note that the r square value of .109 indicates this model only explains about 10% of the variance in PostCapSuccessful, possibly because faculty are generally happy with student performance and were not very discriminating in their responses. Note, however the prominence of the student being motivated to study the topic, which suggests good practices would include attention to topic selection and development.

rsq=.109

**Parameter Estimates**

Dependent Variable:PostCapSuccessful Overall assessment of the capstone as a successful experience.

| Parameter | B | Std. Error | T | Sig. |
|---|---|---|---|---|
| | | | | |
| Intercept | 2.624 | .145 | 18.061 | .000 |
| PostCrThinkSkills | .051 | .031 | 1.658 | .098 |
| PostStudentTopicMotiv | .270 | .036 | 7.498 | .000 |
| [Capmajdivall=1.00] NS | .210 | .057 | 3.713 | .000 |
| [Capmajdivall=2.00] SS | .048 | .053 | .897 | .370 |
| [Capmajdivall=3.00] HUM | 0 | . | . | . |

**Correlations with PostCapSuccessful**

| *Correlation is statistically significant p<=.05, two tailed, unless the description is highlighted grey* | PostCapSuccessful Overall assessment of the capstone as a successful experience. |
|---|---|
| PostCapSuccessful Overall assessment of the capstone as a successful experience. | 1 |
| PreCapColGPA College GPA - Start of capstone year | .057 |
| PreExpectGoodCapstone Student expects capstone experience to be helpful | .518 |
| PreSatisSuppSrv Satisfaction with academic support services | .162 |
| PreCivicOrient Orientation toward civic engagement | .255 |
| PreHighOrderCogn Use of higher order cognitive thinking skills | .220 |
| PreExhibScholarlySkills During the past year, student exhibited scholarly skills | .254 |
| PreNeedCognLite Abbreviated version of Need for Cognition | .213 |
| PreMultPerspectives2 Using behaviors showing interest in examining ideas from multiple perspectives | .209 |
| PreProjMgt Exhibiting good project management skills | .279 |
| PreRatingAcadAbil Self rating of academic ability | .099 |
| PreRatingCollabSkills Self rating of group collaboration skills | .181 |
| PreRatingIndepVoice Self rating of understanding of self/others and ability to think on their own | .155 |
| PreRatingStriver Self rating of drive to achieve and persistence | .269 |
| PreResearchOrient Enjoyment of research | .257 |
| PreStatusCareerOrient Desire to have a prestigious, high paying, high achieving career | .167 |
| PostStu52 On average, how many hours per week did you spend interacting with your capstone mentor in individual or group meetings relating to the capstone? | .173 |
| PostStu53 On average, how many hours per week did you spend working on ALL aspects of your capstone combined? | .214 |
| PostStu211 What was the origin of the idea for your capstone topic? | .022 |
| PostStu212 To what extent did you participate in developing/refining the topic for your capstone? | .200 |
| CredHrs Total Capstone semester hours | .064 |
| PostStu202 Prior experience: Course-embedded research project | .004 |
| PostStu203 Prior experience: Course-embedded performance/creative project | .002 |
| PostStu204 Prior experience: Summer research project (more than four weeks) | .021 |
| PostStu205 Prior experience: Summer research project (more than four weeks) | .137 |
| PostStu206 Prior experience: Research assistant for a faculty project | .110 |
| PostStu207 Prior experience: Independent study course/project | .095 |
| PostStu208 Prior experience: Research assistant during the academic year | .120 |

| | |
|---|---|
| PostStu209 Prior experience: Assistance/apprenticeship with performance/creative project | .152 |
| PostPrepBreadth Helpfulness as preparation for the capstone of areas that add educational breadth. | .313 |
| PostPrepDisc Helpfulness as preparation for the capstone of areas that are grounded in the disciplinary major of the capstone. | .324 |
| PostPrepQuant Helpfulness as preparation for the capstone of quantitative or computer based techniques. | .153 |
| PostMentorRel Helpful and comfortable relationship with the mentor. | .410 |
| PostCapContDev Rating of the contribution of the capstone to the development of scholarly skills. | .698 |
| PostCapMoreEngaging Rating of the capstone as more or less intellectually engaging than a regular course. | .582 |
| PostSatisInstr Satisfaction with instruction. | .386 |
| PostSatisSuppSrv Satisfaction with academic support services (library, computer, facilities/equipment supporting their major). | .178 |
| PostCivicOrient Orientation toward civic engagement. | .261 |
| PostHighOrderCogn Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). | .420 |
| PostExhibScholarlySkills During the past academic year (pre) or during the capstone (post) the student exhibited scholarly skills. | .505 |
| PostNeedCognLite An abbreviated version of the Need for Cognition scale designed to measure interest in or enjoyment of higher order cognition. | .292 |
| PostMultPerspectives2 Using behaviors showing interest in examining ideas from multiple perspectives | .397 |
| PostProjMgt Exhibiting good project management skills. | .417 |
| PostRatingAcadAbil Student's self rating of his/her academic ability. | .169 |
| PostRatingCollabSkills Student's self rating of his/her group collaboration skills. | .182 |
| PostRatingIndepVoice Student's self rating of his/her understanding of themselves and others and ability to think on their own. | .188 |
| PostResearchOrient Student's self rating of his/her drive to achieve and persistence. | .330 |
| PostRatingStriver Enjoyment of research. | .274 |
| PostStatusCareerOrient Desire to have a prestigious, high paying, and high achieving career. | .213 |

**Appendix 4.9: Are double majors different on our scales than single majors?**

Almost 39% of the students in our database are double-majors, so how double-majoring affects the capstone experience is a significant question. The table below indicates scales where the differences in the means were statistically significant. Double majors had higher means on multiple perspectives, self ratings of academic ability, orientation toward research, and use of higher order cognition during the capstone. They were less likely to expect a good capstone, and less likely to find the capstone more engaging then a regular course. Double majors had a smaller pre/post decline in multipleperspectives, and a smaller increase in reporting they exhibited good project management, which may be a particular difficulty when managing a combined capstone.

Note that the capstone successful and capstone contribution to development scales did NOT show statistically significant differences.

**Comparison of Single vs. Double Majors: Differences in Scale Means**

Statistically significant differences (two tailed).

| Scale | single majs | | dbl majs | | differences: dbl-single | | |
|---|---|---|---|---|---|---|---|
| ***Pre scales in green, post in red*** | N | mean | N | mean | diff. | sig. | sig. |
| PostMultPerspectives2 Using behaviors showing interest in examining ideas from multiple perspectives | 662 | 2.77 | 423 | 2.99 | .21 | .000 | *** |
| PreRatingAcadAbil Self rating of academic ability | 734 | 3.82 | 497 | 4.02 | .19 | .000 | *** |
| PostRatingAcadAbil Student's self rating of his/her academic ability. | 700 | 3.90 | 449 | 4.09 | .19 | .000 | *** |
| DMultPerspectives2 Chg: Using behaviors that exhibit an interest in examining ideas from a multiplicity of perspectives. | 471 | -.25 | 330 | -.11 | .15 | .001 | ** |
| PostResearchOrient Student's self rating of his/her drive to achieve and persistence. | 700 | 3.73 | 449 | 3.87 | .14 | .003 | ** |
| PreNeedCognLite Abbreviated version of Need for Cognition | 736 | 3.87 | 497 | 4.00 | .13 | .000 | *** |
| PreResearchOrient Enjoyment of research | 735 | 3.57 | 497 | 3.70 | .12 | .005 | ** |
| PreRatingStriver Self rating of drive to achieve and persistence | 734 | 4.00 | 497 | 4.11 | .11 | .006 | ** |
| PostPrepBreadth Helpfulness as preparation for the capstone of areas that add educational breadth. | 690 | 2.28 | 447 | 2.38 | .10 | .024 | * |
| PostHighOrderCogn Use of higher order cognitive thinking skills (analyzing, synthesizing, judgments, applying theories). | 664 | 3.14 | 425 | 3.24 | .10 | .010 | ** |
| PreExhibScholarlySkills During the past year, student exhibited scholarly skills | 734 | 4.12 | 497 | 4.22 | .10 | .000 | *** |
| PreProjMgt Exhibiting good project management skills | 731 | 3.85 | 497 | 3.95 | .10 | .026 | * |
| PreMultPerspectives2 Using behaviors showing interest in examining ideas from multiple perspectives | 706 | 3.02 | 488 | 3.11 | .09 | .010 | * |
| PostStatusCareerOrient Desire to have a prestigious, high paying, and high achieving career. | 701 | 2.65 | 449 | 2.57 | -.08 | .041 | * |
| PreExpectGoodCapstone Student expects capstone experience to be helpful | 711 | 4.21 | 491 | 4.13 | -.08 | .017 | * |
| PostCapMoreEngaging Rating of the capstone as more or less intellectually engaging than a regular course. | 663 | 4.21 | 422 | 4.10 | -.11 | .027 | * |
| DProjMgt Chg: Exhibiting good project management skills. | 480 | .16 | 331 | .04 | -.12 | .020 | * |

Appendix 4.9 (Continued): Crosstab of First and Second Majors for Double Majors

| **Double majors crosstabulated by major CIP code category. 759 double majors vs. 1202 single.** | | GradMaj1CIP4 Primary major COMCIP4 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 13 teacher education | 23 languages/lit/commun | 24 humanities | 30 self-designed major | 40 natural sciences/math | 45 social sciences | 50 visual and performing arts | 52 business | 99 | Total |
| GradMaj2CIP4 Major 2 CIP COMCIP4 | 23 languages/lit/commun | 5 | 34 | 7 | 2 | 31 | 78 | 11 | 13 | 0 | 181 |
| | 24 humanities | 0 | 13 | 4 | 0 | 7 | 32 | 3 | 1 | 0 | 60 |
| | 30 self-designed major | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| | 40 natural sciences/math | 0 | 8 | 3 | 0 | 68 | 25 | 7 | 1 | 1 | 113 |
| | 45 social sciences | 0 | 58 | 20 | 0 | 37 | 130 | 15 | 19 | 0 | 279 |
| | 50 visual and performing arts | 4 | 31 | 3 | 0 | 5 | 15 | 3 | 3 | 0 | 64 |
| | 52 business | 2 | 5 | 1 | 0 | 4 | 15 | 3 | 30 | 0 | 60 |
| | 99 - Single major only | 44 | 198 | 39 | 1 | 308 | 478 | 71 | 56 | 7 | 1202 |
| Total | | 55 | 347 | 77 | 3 | 460 | 775 | 113 | 123 | 8 | 1961 |

## Appendix 4.10 Independence - Correlations of Indepence Related Questions

Going from the prescriptive assignments of most regular courses to the self-authorship requirements of a capsonte is a significant transition. This is an exploratory table pertaining to the concept of showing independence during the capstone. Notable is the low correlation of faculty and student reports of the mentor encouraging independence. Does this indicate disagreement? Also modest are the correlations of the faculty summative rating of indepence in thought and action and student reports of performance on related items.

| **Correlations of survey items relating to "independence".** | PostFac27 Independence: Showing autonomy and initiative in thought and actions | PostFac206 I encouraged this student to work independently | PostStu216 My mentor encouraged my independence | PostStu69 I showed evidence of independent thinking | PostStu32 Ability to think and act on my own | PostStu88 Having confidence in my own abilities | PostStu95 Ability to think creatively | PostStu5 Creating original works | PostStu15 I have confidence in my opinions, even if they are contrary to the general consensus | PostStu16 I really enjoy a task that involves coming up with new solutions to problems | PostStu26 Self-confidence (intellectual) | PostStu27 Self-confidence (social) | PostStu71 I showed originality |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PostFac27 Independence: Showing autonomy and initiative in thought and actions** | | **.313**$^{**}$ | **.118**$^{**}$ | **.170**$^{**}$ | **.136**$^{**}$ | **.170**$^{**}$ | **.079**$^{*}$ | **.102**$^{**}$ | **.054** | **.103**$^{**}$ | **.186**$^{**}$ | **-.013** | **.127**$^{**}$ |
| **PostFac206 I encouraged this student to work independently** | **.313**$^{**}$ | | **.090**$^{*}$ | **.092**$^{*}$ | **.070** | **.125**$^{**}$ | **.048** | **.076** | **.003** | **.004** | **.101**$^{*}$ | **-.030** | **.084**$^{*}$ |
| **PostStu216 My mentor encouraged my independence** | **.118**$^{**}$ | **.090**$^{*}$ | | **.286**$^{**}$ | **.169**$^{**}$ | **.327**$^{**}$ | **.279**$^{**}$ | **.078**$^{*}$ | **.088**$^{**}$ | **.132**$^{**}$ | **.122**$^{**}$ | **.082**$^{*}$ | **.188**$^{**}$ |
| PreStu5 Creating original works | .034 | .062 | .063 | .201$^{**}$ | .123$^{**}$ | .128$^{**}$ | .238$^{**}$ | .542$^{**}$ | .161$^{**}$ | .220$^{**}$ | .092$^{**}$ | .064$^{*}$ | .232$^{**}$ |
| PreStu15 I have confidence in my opinions, even if they are contrary to the general consensus | -.019 | -.069 | .040 | .168$^{**}$ | .282$^{**}$ | .131$^{**}$ | .081$^{**}$ | .150$^{**}$ | .534$^{**}$ | .272$^{**}$ | .322$^{**}$ | .247$^{**}$ | .173$^{**}$ |
| PreStu16 I really enjoy a task that involves coming up with new solutions to problems | -.018 | -.004 | .065 | .183$^{**}$ | .204$^{**}$ | .135$^{**}$ | .135$^{**}$ | .218$^{**}$ | .277$^{**}$ | .539$^{**}$ | .203$^{**}$ | .133$^{**}$ | .159$^{**}$ |
| PreStu26 Self-confidence (intellectual) | .090$^{**}$ | .037 | .087$^{*}$ | .145$^{**}$ | .338$^{**}$ | .135$^{**}$ | .054 | .132$^{**}$ | .327$^{**}$ | .215$^{**}$ | .598$^{**}$ | .301$^{**}$ | .134$^{**}$ |
| PreStu27 Self-confidence (social) | -.054 | -.082$^{*}$ | .043 | .046 | .199$^{**}$ | .171$^{**}$ | .110$^{**}$ | .078$^{**}$ | .209$^{**}$ | .115$^{**}$ | .279$^{**}$ | .658$^{**}$ | .078$^{**}$ |
| PreStu32 Ability to think and act on my own | .053 | .061 | .072 | .143$^{**}$ | .424$^{**}$ | .102$^{**}$ | .030 | .112$^{**}$ | .315$^{**}$ | .218$^{**}$ | .309$^{**}$ | .265$^{**}$ | .120$^{**}$ |
| PostStu5 Creating original works | .102$^{**}$ | .076 | .078$^{*}$ | .205$^{**}$ | .152$^{**}$ | .194$^{**}$ | .297$^{**}$ | | .213$^{**}$ | .285$^{**}$ | .141$^{**}$ | .072$^{**}$ | .283$^{**}$ |
| PostStu15 I have confidence in my opinions, even if they are contrary to the general consensus | .054 | .003 | .088$^{**}$ | .246$^{**}$ | .361$^{**}$ | .152$^{**}$ | .113$^{**}$ | .213$^{**}$ | | .388$^{**}$ | .368$^{**}$ | .270$^{**}$ | .211$^{**}$ |
| PostStu16 I really enjoy a task that involves coming up with new solutions to problems | .103$^{**}$ | .004 | .132$^{**}$ | .241$^{**}$ | .283$^{**}$ | .202$^{**}$ | .184$^{**}$ | .285$^{**}$ | .388$^{**}$ | | .266$^{**}$ | .155$^{**}$ | .188$^{**}$ |
| PostStu26 Self-confidence (intellectual) | .186$^{**}$ | .101$^{*}$ | .122$^{**}$ | .227$^{**}$ | .409$^{**}$ | .212$^{**}$ | .090$^{**}$ | .141$^{**}$ | .368$^{**}$ | .266$^{**}$ | | .403$^{**}$ | .184$^{**}$ |
| PostStu27 Self-confidence (social) | -.013 | -.030 | .082$^{*}$ | .105$^{**}$ | .315$^{**}$ | .194$^{**}$ | .097$^{**}$ | .072$^{**}$ | .270$^{**}$ | .155$^{**}$ | .403$^{**}$ | | .107$^{**}$ |
| PostStu32 Ability to think and act on my own | .136$^{**}$ | .070 | .169$^{**}$ | .300$^{**}$ | | .189$^{**}$ | .115$^{**}$ | .152$^{**}$ | .361$^{**}$ | .283$^{**}$ | .409$^{**}$ | .315$^{**}$ | .219$^{**}$ |
| PostStu69 I showed evidence of independent thinking | .170$^{**}$ | .092$^{*}$ | .286$^{**}$ | | .300$^{**}$ | .367$^{**}$ | .319$^{**}$ | .205$^{**}$ | .246$^{**}$ | .241$^{**}$ | .227$^{**}$ | .105$^{**}$ | .543$^{**}$ |
| PostStu71 I showed originality | .127$^{**}$ | .084$^{*}$ | .188$^{**}$ | .543$^{**}$ | .219$^{**}$ | .338$^{**}$ | .425$^{**}$ | .283$^{**}$ | .211$^{**}$ | .188$^{**}$ | .184$^{**}$ | .107$^{**}$ | |
| PostStu88 Having confidence in my own abilities | .170$^{**}$ | .125$^{**}$ | .327$^{**}$ | .367$^{**}$ | .189$^{**}$ | | .492$^{**}$ | .194$^{**}$ | .152$^{**}$ | .202$^{**}$ | .212$^{**}$ | .194$^{**}$ | .338$^{**}$ |
| PostStu95 Ability to think creatively | .079$^{*}$ | .048 | .279$^{**}$ | .319$^{**}$ | .115$^{**}$ | .492$^{**}$ | | .297$^{**}$ | .113$^{**}$ | .184$^{**}$ | .090$^{**}$ | .097$^{**}$ | .425$^{**}$ |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

**Appendix 4.11: How do mentor ratings of the casptone, as indicated by the capstone grade, compare with student ratings of the capstone?**

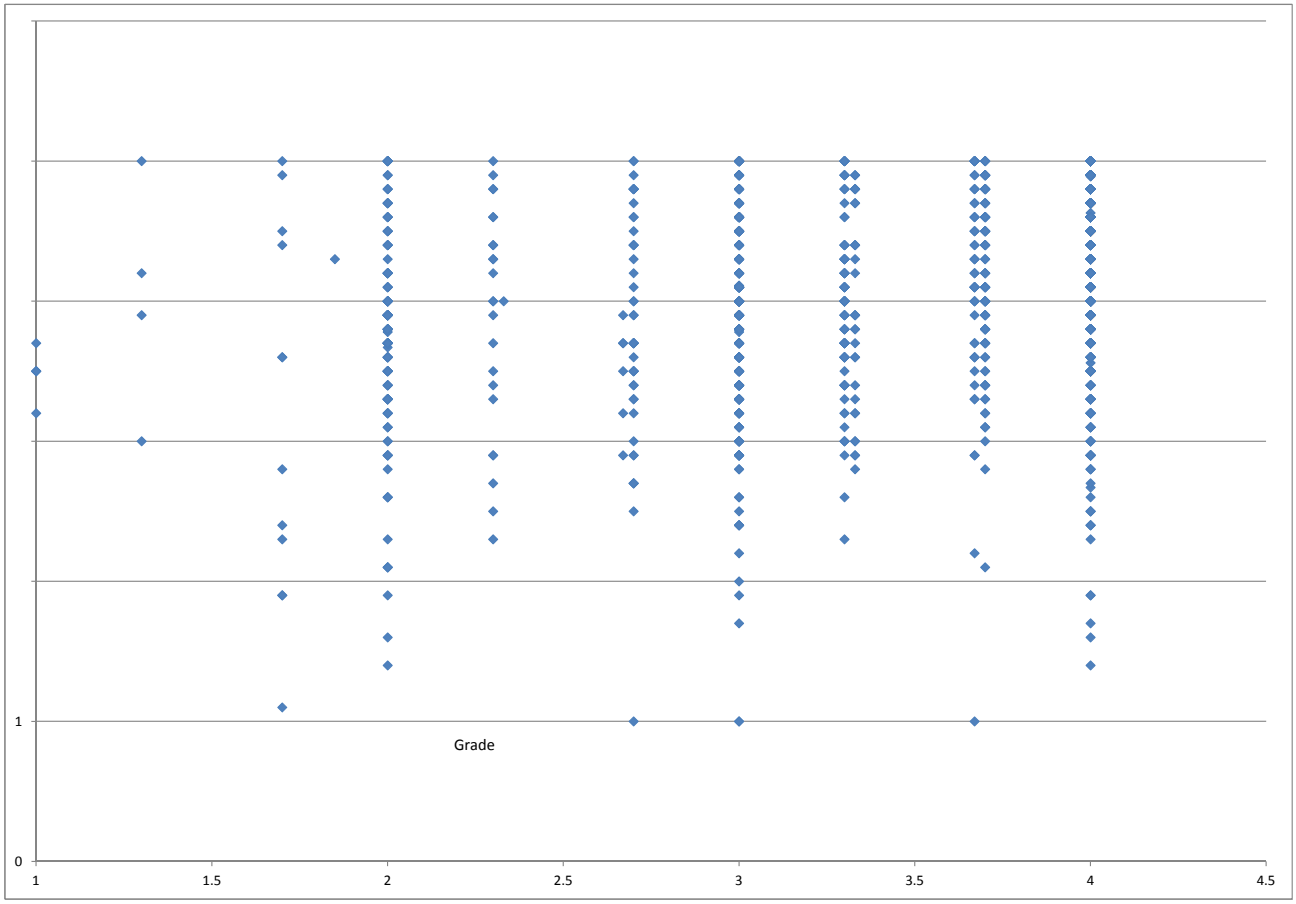
The SPSS output below is in response to a question of whether the grade assigned by the faculty member correlated with the student's rating of the capstone as successful or of it's contribution to development. For an addition comparison, the table also looks at the correlation of the pre-capstone college GPA with the student's capstone ratings.

The student's ratings of the capstone for success or contribution to development appears to have very little correlation with the student's pre-capstone GPA. This might be seen as evidence that capstones can be successfully conducted by students at all GPA levels, at least in terms of their own assessment of the outcomes.

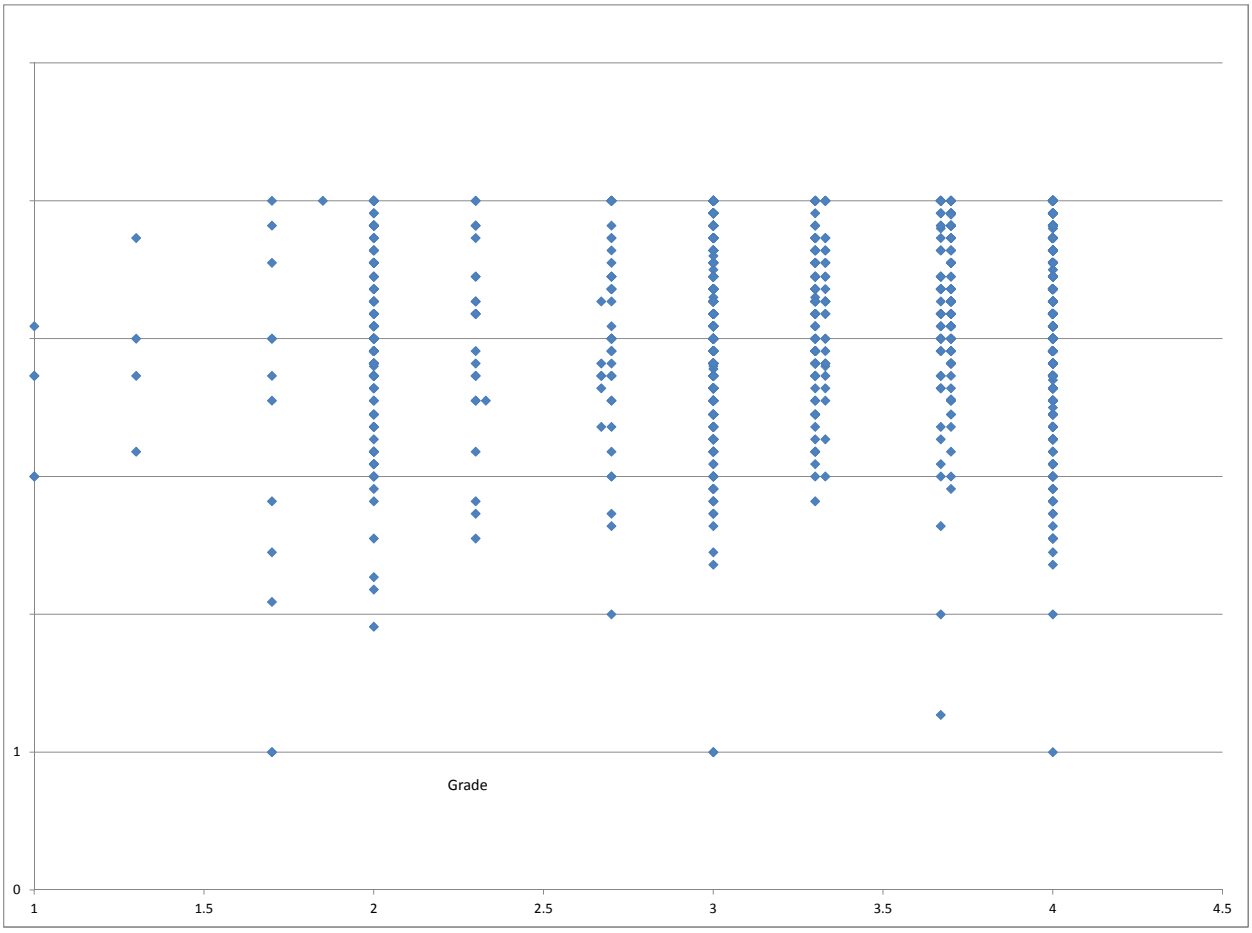
Similary, the capstone grade awarded by the mentor has a only a small postitive correlation with the student's self ratings. Scatterplots show that at all capstone grade levels, students have a fairly wide distribution of self ratings on the two measures. It may be that the mentor's grade is focused most heavily on the product produced by the capstone, while the student's ratings reflect a broader assessment that includes the process and impact on them personally.

| | | PostCapSuccessful Overall assessment of the capstone as a successful experience. | PostCapContDev Rating of the contribution of the capstone to the development of scholarly skills. | PreCapColGPA College GPA - Start of capstone year | CapGrade Capstone grade (if more than one , average grade) |
|---|---|---|---|---|---|
| PostCapSuccessful Overall assessment of the capstone as a successful experience. | Pearson Correlation | 1 | .698** | .057* | .227** |
| | Sig. (2-tailed) | | .000 | .019 | .000 |
| | N | 1675 | 1672 | 1673 | 1437 |
| PostCapContDev Rating of the contribution of the capstone to the development of scholarly skills. | Pearson Correlation | .698** | 1 | .035 | .149** |
| | Sig. (2-tailed) | .000 | | .156 | .000 |
| | N | 1672 | 1672 | 1670 | 1434 |
| PreCapColGPA College GPA - Start of capstone year | Pearson Correlation | .057* | .035 | 1 | .565** |
| | Sig. (2-tailed) | .019 | .156 | | .000 |
| | N | 1673 | 1670 | 3002 | 2418 |
| CapGrade Capstone grade (if more than one , average grade) | Pearson Correlation | .227** | .149** | .565** | 1 |
| | Sig. (2-tailed) | .000 | .000 | .000 | |
| | N | 1437 | 1434 | 2418 | 2421 |

**GRADE VS. SUCCESSFUL RATING**



**Grade vs. Contribution to Development**



# PART 5: SENIOR POST CAPSTONE SURVEY COMMENTS

This is an analysis of responses to the open-ended questions on the post-capstone survey of students completing capstones in academic years 2009/10 and 2010/11. The tables are based on the counts after deconstructing the comments into topical coded units.

## Narrative – Analysis of Student Responses to the Post-capstone Open-Ended Questions

## Tables of Counts by Topical Units

Question 1: "Please describe any particularly positive or negative aspects of your capstone experience."

- Table Student Q1- 1: Detailed Tally by Topic
- Table Student Q1- 2: Summary of Tally of Student Comments by Topic Group
- Table Student Q1 - 3: Percents of Responses by Topic Group

Question 2: "What did you learn about yourself as a result of your capstone?"

- Table Student Q2 – 1: Detailed Tally to Topic
- Table Student Q2 – 2: Summary Counts by Topic Group
- Table Student Q2 – 3: Percents of Responses by Topic Group

Question 3: "What aspects of your capstone experience do you think will be of most value to you after you graduate?"

- Table Student Q – 1: Detailed Tally to Topic
- Table Student Q3 – 2: Summary Counts by Topic Group
- Table Student Q3 – 3: Percents of Responses by Topic Group

Question 4: "Please tell us about any other aspects of your capstone experience that might be helpful to our study of the benefits of capstones."

- Table Student Q4 – 1: Detailed Tally to Topic
- Table Student Q4 – 2: Summary Counts by Topic Group
- Table Student Q4 – 3: Percents of Responses by Topic Group

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## Analysis of Student Responses to the Post-Capstone Open-Ended Questions

### Introduction – Questions and Table Descriptions

These notes discuss the comments engendered by the four open-ended questions on the student post-capstone survey:

- Q1: Please describe any particularly positive or negative aspects of your capstone experience.
- Q2: What did you learn about yourself as a result of your capstone experience?
- Q3: What aspects of your capstone experience do you think will be of most value to you after you graduate?
- Q4: Please tell us about any other aspects of your capstone experience that might be helpful to our study of the benefits of capstones.

In 2009-10, Q1 appeared as shown above. In 2010/11, it was split into two questions so that students responded for the positive and negative areas in separate responses.

The general methodology has been to deconstruct the comments into discrete topical coding units, assign each of these coding units an ID number, and to assign to each comment as many as five coding units, as appropriate. For each survey question, the basic coding units have also been grouped into a hierarchical structure, which while certainly only one of many categorization structures, seemed useful in relation to our research questions – as will be seen in the various tables.

For each question, up to three reference tables tallying the coding units and some general remarks are provided below. In the numeric tables, the overall tally is given, along with breakdowns by division of the capstone major; school; high, middle and lower GPA groupings; and gender:

- Table Qx-1: a detailed tally of the distinct coding units with a descriptive text. Reviewing this table will give the full flavor of the various comments, but the numbers for individual units are too small for most statistical comparisons.
- Table Qx-2: a summary of the counts by key topics subtotaled within the hierarchical structure.
- Table Qx-3: the summary counts of Table Qx-2converted to a percentage of the total comments within each column. This facilitates, for instance, a possible observation that males are more likely to make a certain type of comment than females. Excel conditional highlighting has been used to accentuate the variability in the percentages across individual rows for comment items with a count of at least 50, and with the professional and self-designed majors excluded due to their low numbers in the database. The use of conditional formatting and the 50 count criterion is not intended as a scientific procedure, but simply to visually accentuate differences that might be investigated further using the related numerical response items in the survey.

These tables can be found in four Excel spreadsheets:

- student comments - Q1 pos neg aspects yrs1 and 2.xlsx
- student comments - Q2 learned about yrs1 and 2.xlsx
- student comments - Q3 stu val yrs1 and 2.xlsx
- student comments - Q4 stu other yrs1 and 2.xlsx

**Response Rates and Analysis Methodology**

There are 3,006 capstone records in our survey database, of which 163 are double major capstones for which the student data is replicated for each of the mentors, leaving 2,843 distinct student records. Of these, 1,660 students, 58%, responded to the post-capstone survey, and of those 1,201 (72%) made a comment on at least one of the four open-ended questions.

The use of counting methods raises a general issue of interpretation – how to interpret the counts for an individual coding unit, many of which are low, even just 1 or 2. First, it can be seem in Table 1 for each question that the coding units are fine grained. Second, it should be noted that all the questions are very general, they were placed at the end of a long survey, and they were likely to elicit only one or two distinct ideas each. Indeed, two questions suggested precisely this by asking only for the "most" valuable experience or any "particularly positive or negative" aspect. As noted below, the average number of coded units per non-blank response varied from 1.3 to 2.3.

The hierarchical structure in the tables partially resolves this by grouping related coding units together in broader themes, where the counts become more meaningful. Many individual coding units may have an idea worth considering, however, and even if it only occurs once may still be a notion many other students would agree with. Hence, we encourage readers to review the individual coded units given in each Table Qx-1.

The breakdown of the 1,202 capstones with a non-blank response by the student subgroups in the tables is:

| School | | |
|---|---|---|
| Red | 368 | 31% |
| Tan | 309 | 26% |
| White | 141 | 12% |
| Yellow | 383 | 32% |
| | 1201 | 100% |
| Major | | |
| natural sciences/math | 310 | 26% |
| social sciences | 431 | 36% |
| humanities | 315 | 26% |
| professional (business, teacher ed) | 85 | 7% |
| self-designed major | 58 | 5% |
| missing | 2 | 0% |
| | 1201 | 100% |
| GPA Group | | |

| | | |
|---|---|---|
| H=>3.50 | 503 | 42% |
| M= 3.00 to 3.49 | 447 | 37% |
| L=<3.00 | 251 | 21% |
| | 1201 | 100% |

| Gender | | |
|---|---|---|
| M | 372 | 31% |
| F | 829 | 69% |
| | 1201 | 100% |

Clearly the counts for subgroups are unequally sized, and the comparisons of raw counts will under-represent school White, professional and self-designed majors, lower GPA students, and males. For this reason, the raw counts are converted to the percentage of the responses within each student subgroup in Table 3 for each question. It might also be noted that 56 of the 58 self-designed majors are from school White, while 68 of the 85 professional majors are from Tan, with the remaining 17 from White.

In the notes below, selected excerpts from student comments, with occasional minor editorial correction for typos, are indicated in italics.

The comments below look at each of the four questions in turn, followed by remarks about the comments from students who rated their capstone experience the poorest, and possible implications for the projects research questions.

**********

**Question Q1: "Please describe any particularly positive or negative aspects of your capstone experience"**

Although in 2009/10 this question did not explicitly ask students to identify an aspect as either positive or negative, the nature of the comment was almost always identifiable. In 2010/11 separate boxes were designated for the positive and negative responses, so this was clear. The few ambiguous or neutral comments have been omitted. In Tables Q1-1 to Q1-3 the positive and negative comments have been tallied in separate areas.

There were 2,593 coded items tallied among the 1,149 capstones with a comment, an average of 2.3 distinct coded items per capstone. Overall, the numerical balance leans markedly towards the positive side: 62% were positive and 38% negative. Moreover, in reading the remarks one has the sense that the balance ought to be judged even more toward the positive based on the relative weight of the statements. For instance, a frequent combination might cite strong personal or academic gains, but note the stress or amount of the work as a negative along with a disclaimer that it was worth it. This judgment is reinforced by the results from another question (PostStu110): when asked if "Overall, I had good capstone experience", among these same 1,149 students, 963 agreed or strongly agreed (84%), while only 63 (5%) disagreed or strongly disagreed.

**POSITIVE ASPECTS**

**Aspects students most frequently cited as personal or intellectual gains included (from most to least commented):**

- Project and time management skill – organization, planning, saw project through to end (164)
- Research skills and/or interest (119)
- Self-understanding of abilities and interests (115)
- General intellectual growth (69)
- Preparation for graduate or professional school (61)
- Critical thinking skills (46)
- Self-confidence (33)
- Writing or communication skills (33)
- Disciplinary knowledge (32)
- Patience, perseverance, overcoming challenges (14)

**Aspects of the capstone experience mentioned most frequently as positives included:**

- The close working relationship with their mentor, including receiving useful and timely feedback (402)
- The experience itself, or, specifically, the research experience, was generally enjoyable and/or rewarding (171)
- The freedom and independence to work on a project of their own choosing under their own direction (120)
- The availability of support from others (librarians, fellow students, others) (74)
- The overall experience, in general (52)
- The ability to integrate their ideas, knowledge, or interests (39)
- The chance to do fieldwork or to travel (33)

Selected comments:

- *Both of my senior capstone projects helped [me] find my true passions in life…*
- *… being able to work on my own independent, self directed project*
- *Working closely with my advisor, who was very supportive without being controlling.*
- *Freedom to learn about a subject I picked*
- *I pushed personal limits and capabilities, it helped me to grow*
- *I found that my capstone experience increased my ability to work independently and confidently.*
- *I had an amazing learning experience being treated as a peer not a student by my advisors*
- *… produced an experience that I am able to talk about extensively and passionately.*
- *I was shocked in how much I learned*
- *I was able to experience conducting and controlling a research project*
- *It was independent research, so I had the freedom to formulate my own ideas. I pushed myself really hard*

- *engaging challenge, completely changed my life, definitely the most important class I've taken in college*
- *The experience has made me confident in my research skills, presentation skills, ability to take on a large project, and has helped me decide what I ultimately want to do in life.*

**NEGATIVE ASPECTS**

**Aspects mentioned most frequently as negatives included:**

- Mentors who gave poor or untimely feedback, were unhelpful or unavailable, missed meetings (276)
- The general stress or difficulty of the experience (202)
- Difficulties balancing the demands of the capstone with those of other courses or personal activities (130)
- Capstone policies/structure - guidelines that are not clear, capstone class not helpful, time period too long or too short , too much weight as a requirement (121)
- Various support issues with facilities, equipment, workspaces, finding cooperative human research subjects, etc. (55)
- Difficulties with topic selection (no freedom or inadequate guidance) (38)
- Their own struggles with time management (29)
- Preparation for the capstone was lacking (23)
- An outside placement that caused problems (15)
- Project goals not reached (14)
- Found they didn't enjoy the research experience (13)

Selected comments:

- *It was stressful at times because you have to put so much of yourself into this project*
- *Very stressful. Even if you don't work on it daily, it is always hanging over your head*
- *At times it was stressful, but I had a great advisor who helped me through everything.*
- *… how to balance my capstone with my other coursework.*
- *I'm not very good at managing my time….*
- *It was very frustrating when information for my topic was not readily accessible, but I worked through the challenges….*
- *I sometimes did not fully understand what my mentor was expecting out of me.*
- *Unclear expectations at the beginning*
- *Advisor gave very little feedback*
- *My advisor was not readily accessible*

Table Q1-3 highlights differences in the likelihood of students by major, school, gpa group, and gender of citing a particular aspect.

REMARKS

**Mentors:** The student/mentor relationship is the dominant theme in the comments, and reflects the 1:1 nature of the capstone experience and the crucial role of the mentor in

capstone success. Although it is gratifying to see so many positive comments about mentors, it appears that for about 11% of the capstones, the student is reporting some dissatisfaction with the mentor, much of it about availability, meetings, feedback, or lack of guidance. Could these problems be reduced by better mentor training or through guidelines for mentors regarding expectations? Are they a consequence of faculty workload? In any case, the comments still strongly support the opportunity to work 1:1 with a faculty mentor as a key structural advantage of the capstone experience. Students, of course, are looking for faculty with disciplinary expertise relevant to the student's project, but much more dominant in the comments are general advising and interpersonal skills - that the mentor offers support and encouragement, shows some interest in the project, is available, and gives timely feedback.

To explore this further using our numerical results from the fixed response section of the survey, we turn to the scales, as described elsewhere, on both the student and mentor surveys that concerned the quality of the student:faculty mentor relationship, and look at how the means varied by departmental responses to how the capstone was structured with regard to the 1:1 mentoring when the mentor has multiple students (1 = Strongly Disagree, 5 = Strongly Agree):

| Faculty: Mentor's self-rating of good relationship with the student | | | | |
|---|---|---|---|---|
| Students: Helpful and comfortable relationship with the mentor | | | | |
| | **N** | **Mean** | **N** | **Mean** |
| 1 using one-on-one mentoring only | 219 | 4.38 | 211 | 4.44 |
| 2 primarily one-on-one with less frequent group meetings | 91 | 4.35 | 129 | 4.59 |
| 3 primarily group meetings with incidental individual mentoring | 72 | 4.27 | 87 | 4.24 |
| 4 primarily group meetings with significant structured individual mentoring | 74 | 4.48 | 81 | 4.62 |
| 5 varies by faculty member | 68 | 4.38 | 65 | 4.52 |
| Total | 524 | 4.37 | 573 | 4.48 |

An ANOVA indicated the differences in the means were statistically significant for the faculty responses, but not for the students. Even though the statistical significance results are mixed, it is interesting that the highest means are for group meetings in combination with significant structured individual mentoring, which suggests that this approach, which may have benefits as an efficiency measure in mentoring multiple students or as a pedagogical technique to encourage student interaction around common issues, is also reasonable in terms of good student:mentor relationships. As a further argument in favor of this technique, the students' ratings of the capstones contribution to development showed the highest mean for this approach, tied with "primarily on-on-one with less frequent group meetings", although the differences were not statistically significant.

The amount of independence given to or expected of the student is also an issue for the mentor. Many students commented on the value of their freedom to manage their own project, while others wanted more direction and structure, citing things like deadlines, regular

meetings, and clear expectations. Mentor training might include consideration of ways to tailor the capstone structures or projects to the needs and capabilities of the student, with the goal of allowing as much independence and self-ownership of the project as the student can handle without resulting in disaster, keeping in mind that learning to manage a large project and learning about their own abilities are major benefits of the capstone experience.

**Growth:** Students reported personal and academic growth in areas this study anticipated, as shown in the numerical results. Project and time management skills were the top general areas receiving comment, followed by gaining research skills and interest, and self-understanding of abilities and interests.

In contrast, the relatively infrequent mention of gaining disciplinary knowledge is worth special note. Although embedded in a discipline it may be a defining characteristic of the capstone experience that the main benefits are the more general growth that students report, with development of disciplinary expertise being secondary. Overall, the comments suggest the capstone experience is a powerful growth experience in ways distinct from those of regular courses.

**Topic selection:** The comments suggest that, as much as possible, letting students work on a topic of personal interest is desirable as it increases motivation, enjoyment, and "ownership" of the project. Mentors comments suggest that lack of student motivation is a significant problem for about 12% of capstones. Additional investigation should be done to determine the factors that result in poor motivation. Students and mentors might benefit from approaches that improve the fit of the topic to the student's interests. Numerical results suggest that the origin of the topic, whether it be from the student or the mentor, is less important than the student having significant input in tailoring the topic and in the design of the capstone project. On the negative side, some students objected to topics being restricted to the area of a specific capstone course or seminar.

**Structure:** Negative comments about the capstone structure focused on unclear guidelines, the length of time (both too long and too short), the weight as a graduation requirement, and the use of capstone classes that students didn't feel were useful for their particular topic. School Tan, where requiring capstones is relatively new, drew a disproportionate share of these comments.

**Stress and Workload:** About 8% of student comments reported that the capstone was stressful, difficult or disappointing, and about 5% that it was difficult to balance the capstone with other courses or personal activities. To a certain extent the challenge of the capstone is a desirable design feature that drives growth, so this is an acceptable result. Student comments, however, also indicate specific support issues that might be resolved, such as lack of facilities or equipment, access to library source materials, insufficient financial support, lack of time, and poor mentor availability. In general, the capstone is an intense experience that heightens the need for support services.

**Variation by subgroups:** There are several notable differences in the responses by student subgroups highlighted in table Q1-3. The percentages in the column for each student subgroup are based on the total number of coded comments for that subgroup, which avoids the

problem of comparing the raw counts among differently-sized groups. With the limitations noted in the introduction to this report, Excel conditional highlighting has been used to visually express differences in the percentages across each row. Some speculative observations:

*Academic division.* Natural science majors are more likely to cite improvement in time management skills and research skills than humanities majors. Is this a difference in disciplinary styles? Does managing a scientific experiment, for instance, require more attention to project planning, organization and timelines than literary analysis or a creative art work? Although humanities majors were most likely to cite the experience as rewarding and the preponderance of comments is positive for all academic divisions, the research component of capstones may fit the natural sciences particularly well. 67% of natural science comments were positive versus 58% for social science and humanities. We ask if there is an inherent 'sequentiality' to work in the sciences (lab work comes to mind) that is not the same in the humanities. Also, we wonder if attitudinally there is an emphasis on precision in the sciences, which might lead to a stronger propensity to feel that planning is of value.

*School.* School Tan stands out in having a higher percentage citing gains in preparation for a job or graduate school, possibly because of disproportionate inclusion of pre-professional majors (business and teacher education). Tan, which is just beginning a capstone program and may have start-up adjustments to make, had more cited problems with mentor support and unclear guidelines than the other schools.

*GPA Group.* The comments support the claim that a capstone experience can be valuable to students at all GPA levels. The percentage of positive comments was 60% for both the low and high GPA groups, and 63% for the middle group. The lowest GPA group was highest in the percentage who indicated they gained self-understanding of their abilities and interests, and the capstone experience was enjoyable or generally positive, although they were lowest for citing gaining job or graduate school preparation as an outcome. Otherwise, the gains and positive aspects of the experience seem to be fairly even across all groups.

*Gender.* As percentages of areas cited, differences by gender do not seem to be notable.

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**Question Q2: "What did you learn about yourself as a result of your capstone experience?"**

This question is about self-discovery. A capstone experience generally involves extending the student's proximal zone of development by requiring a more intense, sustained, independent effort. For many, the experience of a large scale research effort requiring production of a thesis or a major creative project is a new and significant experience in "self-authorship". This question is directed to what students learned about themselves in this process. In contrast, responses to questions Q1 and Q3 are more relevant to the issue of how students developed during the capstone.

**Overall response rate:** There were 1,094 non-blank responses to this question. Of these, 13 were deemed unusable or non-responsive to the question, leaving a pool of 1,081 usable responses. The coding into topical units resulted in 1,653 topics, an average of 1.5 per capstone.

**Tables Q2-1 and Q2-2:** The responses generally showed that students either discovered they had a *strength* they hadn't fully realized, notably being able to manage a large project or that they were better writers than they thought, or a *limitation or deficiency*, such as being unable to manage a large project, or they gained a *self-insight*, such as confirming, or not, their interest in their chosen academic discipline or career. Table 1 tallies the coded response units according to these three broad categories. These categories have been broken down further by whether the unit referred to an ability, interest, or personality characteristic. Finally, the codes are grouped into the general topic and sub-topic areas.

Table Q2-1 gives the tallies in the full detail of the above categorization, with subtotals at the general topic area indicated in the column for Group 3.

**Tally Results:**

Students' comments most frequently related to discovery of strengths (68%), as opposed to limitations (12%), or insights (19%). 2% indicated they learned little of nothing about themselves as a result of their capstone.

**Strengths – 68%.** The most frequent comments indicated students learned they had strengths, sometimes beyond what they expected in:

- Project management skills, 25%
- General academic ability, 16%:
    - Communicating in writing or orally, 7%
    - Critical thinking (analysis, synthesis, argumentation), 5%
    - General academic ability, 4%
- Personal potential to achieve, 11%
- Research skills, 9%
- Work ethic, motivation, perseverance, 6%

Selected strength comments:

- *I learned that I am able to write critically and strongly. This was a skill set that I never thought I had.*
- *I learned I'm a good academic writer who can integrate separate ideas and then expand on them.*
- *I have the ability to write creatively and people enjoy reading what I write.*
- *I learned that I thoroughly enjoy research and that I am capable of producing a relevant, meaningful thesis.*
- *I am capable of producing work equal with what is being generated at the top of the field…*
- *I learned that i am very organized and have the drive to complete a task to the best of my ability. I also learned that If I put my mind to it, I can do anything I want to or need to do.*
- *I learned a lot about time management and how to handle various projects … How to juggle regular course work while independently handling my senior paper.*

- *I learned how to push myself to understand and interpret ideas and analytical tools. I learned that other scientist respect me for contributing good data to the scientific community. I learned that I can be in a lab all day and still love what I do.*
- *That I can do it!*

**Limitations – 12%.** Several student comments reported discovering limitations or deficiencies in their abilities or personal characteristics. The most frequent were:

- Project management skills, 6%
- Communicating in writing or orally, 2%
- Limited work ethic, 1%

Sample responses:

- *I am terrible at holding myself to deadlines.*
- *I am determined, but I also like to take on more than I am able at times. It is important to focus on what I am able to complete, not what I want to complete.*
- *I need to really think through things before I start something. I ran into a few problems that were results of not considering all aspects of a particular issue. However, I am very grateful for these problems because I learn best from my mistakes.*
- *I learned about flaws in my writing style and how to improve them.*
- *I still have a lot more work to do on my writing to make it clear and succinct.*
- *I get very distracted easily, however, when I am really interested in a topic I become more engaged…*

**Insights – 19%.** Insights gained related to several elements of personal style, personality, or interests, but the predominant insights related to interests and career clarification:

- Clarified career interest, 8%
- Clarified general academic or discipline specific interest, 4%
- Learned enjoyed doing research, 2%

Sample responses:

- *That I am a very independent worker, that I am ready to go on to get a PhD because of that…*
- *That I want a career in research*
- *I learned that teaching is not very easy but it is something that I want to do.*
- *I learned what I was passionate about and what hard work and determination can result in as well as gaining a better understanding of my potential.*
- *I believe the capstone experience has helped me decide what I want to do with my life. Also, it has helped me discover my strengths and weaknesses.*
- *I learned what I am really interested in doing as a career.*
- *I learned that the material I was studying was the material I want to study in graduate school and beyond.*
- *I do not enjoy doing research*

**COMMENTARY:**

**General Results**

As with the other questions, the large scale of the capstone project is a driving force behind many of remarks, particularly the discovery of project management abilities or inabilities, and related factors such as motivation, persistence, and work ethic. The scale of the project in conjunction with the expectations of independent work and doing original research or inquiry are also behind gains in discovery of capabilities in writing and critical thinking.

Since the capstone is most frequently a research project, it is worth noting that 9% of the remarks indicated discovery of an ability for doing research, and 2% that indicated the student learned they enjoyed research.

Also of note, since it relates to one of our research hypotheses, is that 12% of the remarks indicated gaining a clearer understanding of the student's career or academic disciplinary interest.

Overall, the capstone experience seems to contribute significantly to students' self-assessments of their abilities and interests in ways that would not be expected from a typical course.

A hypothesis of this project was that the capstone experience is "transformational" in the sense of the development of "self-authorship", life-long learning interests, and, in particular, an interest in research or creative work. For a small but significant percentage of the students, the data suggests the impact of the capstone is indeed life changing in altering their career or graduate school plans or making other personal commitments. For many more students the capstone allowed them to discover a new interest or ability, including research or other academic interests, or to make gains in self-understanding, self-confidence, or a sense of increased potential. The capstone gave them the first opportunity to do original research, work independently, manage a large project, or write a major thesis espousing their own position, and they found they were capable of meeting the challenge. Finally, for some students the capstone was more "confirmational" in that it confirmed their interest in going to graduate school or their interest in their academic major, rather than radically changing it. It is probably too much to expect to see many radical changes from one experience over a brief time period, but the comments strongly suggest that, at the least, the capstone experience has a powerful "precursor effect" in the sense of setting the student on a path that leads to longer term benefits.

> "With realization of one's own potential and self-confidence in one's ability, one can build a better world." - Dalai Lama

**Subgroup Results**

Table Q2-3 gives the breakdowns by student groups as percentages of responses in each column.

Men and women were about equally likely to cite a strength, as were students from all three GPA groups. In contrast, men and lower GPA students were more likely to cite a limitation, notably in project management skills.

Discovering a capability for doing research was most likely to be cited by natural science majors (13%), followed by social science majors (10%), and humanities majors (4%).

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**Question Q3: "What aspects of your capstone experience do you think will be of most value to you after you graduate?"**

There were 1,124 non-blank responses to this question, 1,100 noted something of value and 24 indicated nothing of value was gained. The responses were categorized into 1,912 coded units for an average of 1.7 units per response. Extracts from selected comments are indicated in italics.

**DEVELOPMENT OF SKILLS OR KNOWLEDGE**

**Development of Project management skills (334 comments, 17%)**

This category received by far the most number of comments. Several subareas received a significant number of comments: organization, time management, ability to work independently, seeing a significant project through to its completion, working under pressure, troubleshooting. These characteristics are prominent in (and in scale they are unique to) the capstone experience and are apparently new to most students. Students from all academic divisions except professional, which had a lower percentage, were about as likely to cite project management. It was about as likely to be cited by males as females, and slightly more likely to be cited by the lower GPA group. It was somewhat more likely to be cited by students from Red, where the capstone is always a full year project, than from students from White or Yellow, and least likely to be cited by students from Tan, where the capstone often extends over a single ten week term, the smallest time frame for the four schools.

- *My experience in organizing my research and effectively integrating it into my work will probably be of most value to me.*
- *Going through the process of organizing my own research has given me the confidence to approach complicated tasks.*
- *By performing the research on my own will be able to show graduate schools and businesses that I am reliable and have a strong work ethic.*
- *Having learned to work independently, but also cooperatively with another institution, as well as how to use feedback constructively.*
- *I will value my abilities to work independently as well as cooperatively. I have taken life lessons of success and failure with me - very important for the so called "real-world."*
- *The ability to form an idea and see it through. Also, my ability to work independently but still allow myself to accept suggestions and feedback from others.*

- *The ability to make decisions on my own based on previous knowledge in my field, and the ability to work through difficult problems which arise unexpectedly.*
- *Being able to complete a project given to me that I may be unclear about at first and working through it on my own to figure it out and complete it.*
- *I know how to deal and cope with setbacks in the research process.*
- *The most beneficial part of my capstone experience was learning how to manage such a large project mostly on my own. I now have a better understanding of how to adequately research a large subject.*
- *The ability to work on one idea, think about, and expand over a certain period of time is of value to me. It will help while I am on my own without the safety net of college.*
- *…managing the process of completing a long, difficult, and focused project.*
- *The entire process of developing a research idea and executing it, and then writing about the findings.*

**Development of writing and oral communication skills (234 comments, 12%)**

Of the comments in this category, 152 were about writing skills and 82 dealt with oral or general communications, many about presentation skills. Of the comments about writing, 43 specifically mention the length of the written work as contributing to the student's development, clearly a characteristic prominent in capstones.

Citing this as a benefit was fairly even across all student subgroups.

- *My communication skills--I've not only become a better writer, but a better public speaker as well. I learned to engage in a meaningful conversation with others of my discipline.*
- *Being able to give multiple presentations increased my confidence in public speaking.*
- *I think being able effectively to present a topic that an audience has no background in will help me when I need to work as part of a team.*
- *I think the oral presentation really prepared in terms of communication skills, because it's one thing to write a paper, but it's another thing to be able to explain and discuss its strengths and weaknesses in front of colleagues.*
- *The skills I learned doing an oral presentation (both to my peers and to my adviser and second reader) as well as the experience of writing a thesis*
- *Writing a long, thorough scientific paper*
- *The ability to write professionally*
- *The knowledge that I can produce a large written body of work under stressful conditions.*
- *The ability to write, research, and think critically. Also, being able to speak in public is of the utmost importance.*
- *I think the ability to critically examine a concept, research using methods that you might not have used before, and to manage such a large body of information to create a cohesive work have made a profound impact on the way I think about academics.*

**Preparation for graduate schools and/or career skills (224 comments, 12%)**

About 12% of seniors explicitly mentioned that their work on their capstone contributed to their professional development in some way. Preparation for graduate school (77 comments) or a job (48 comments) was cited by some. Another 28 comments specifically mentioned the

creation of a product for a professional portfolio useful in a job search, 4 noted their capstone work would be published or was publishable, 8 cited professional contacts as a benefit, and 8 cited the development of interview skills.

By student subgroup, the highest GPA group students were more likely to cite this benefit (13%) than the lowest (9%).

- *It will serve as a manuscript to send out for possible publication, and also as a meaningful, representative writing sample in my portfolio for graduate admission*
- *It sounds impressive to graduate schools and looks good on a resume.*
- *I left with a complete portfolio of finished poems, ready to be submitted for publication.*
- *I think having experience writing a qualitative thesis will be very helpful to me in my master's program next fall.*
- *The completed thesis, as well as the time management skills gained from it, will be most helpful in applying for graduate school and future jobs.*
- *The contacts I've made and networks I've been introduced into.*
- *The relationships I made with my advisors will help when they write letters of recommendations.*

**Development of research skills (219 comments, 12%)**

The comments in this category focused on development of skills (programming, data gathering, lab techniques, and so on). Comments from seniors in the natural and social sciences were most likely (15%), with relatively fewer comments from students in the humanities (9%).

There are two related categories: "Valued the research experience" with 6% of comments, and "Increase in valuing work-related attributes of research/projects" with 4% of comments.

Students of all GPA ranges were about equally likely to cite research skills as a benefit.

- *Research skills, presenting skills, writing skills, masters-level thesis experience.*
- *Having research experience, especially having lab experience.*
- *Research skills, having a major piece of work in my major field of study, and having the experience to do a research project.*
- *The experience I gained from working in a research lab. Research never goes as smoothly or quite how one wants it.*

**Understanding knowledge in a broader context & gaining disciplinary knowledge (113 comments, 6%)**

Gaining disciplinary knowledge does not appear to have the same importance as skill-based gains resulting from the capstone. Similarly, understanding knowledge in a broader context is quite weak as a reported capstone post-graduate impact.

This is consistent with other evidence we have, but is still disappointing. We believe the capstone is a culminating experience that is intended to bring together valued liberal arts outcomes, but the biggest gains are associated with the skills needed to successfully complete a large project. We have hypothesized that in identifying a fairly narrow question to take on,

students are focused on the academic background needed for that investigation and haven't the time to sit back and see their work in a larger context.

- *Learning how to learn…*
- *Work ethic and I have learned how to learn...*
- *The fact that I performed and excelled in my field of study, because research is what I want to do for the rest of my life.*
- *My knowledge that I gained about my topic*
- *I will value the understanding I gained of current research and work in my field. I will value the confidence I gained from being able to complete my project in the face of considerable adversity.*

**Gaining self-understanding & Increase in self-confidence (162 comments total, 9%)**

These two related categories speak to the relationship between gaining a better understanding of one's abilities and the consequent gain in confidence to tackle significant and challenging projects.

Students from Tan, which requires a reflective statement as part of its capstone, were only somewhat more likely, 4.9%, to cite self-understanding as a valuable outcome than the average of the other three schools, 3.4%.

- *The overall sense of accomplishment, new feelings of confidence.*
- *The project itself is helping me get into graduate school. I feel confident in the work I am going to do in the future. I know I will be able to handle graduate work.*
- *More than anything, it has boosted my confidence. I have confidence in my abilities to accomplish tasks that require a large undertaking, and I have confidence in my solid education.*
- *My overall confidence in my work. I felt as though there was so much leading up to the final piece, and when it was finally completed and I knew I had passed, it was proof that I could achieve what at times, seems almost unachievable.*

**Development of collaboration skills (37 comments, 2%)**

There were only 37 comments on collaboration, presumably because most capstones are one-on-one with an advisor, which students don't see as being collaborative.

**OTHER VALUEABLE ASPECTS OF THE EXPERIENCE**

Many comments reported some aspect of the capstone experience would be valuable. We have treated this as distinct from reporting the development of a skill or knowledge, as discussed above, because no explicit claim was made that a skill was actually *developed*. These areas include valuing the:

- research experience (114 comments, 6%)
- the experience of completing a large scale or difficult project (I can do it!) (113 comments, 6%)
- writing or oral communication experience (17 comments, 1%)

- relationship with the mentor (19 comments, 1%)

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**Question Q4: "Please tell us about any other aspects of your capstone experience that might be helpful to our study of the benefits of capstones."**

Perhaps for emphasis, many of the student responses to Question 4 repeat topics that were raised in response to the earlier questions about positive and negative aspects of their experience or benefits. New types of comments were predominant in three areas:

- Capstone administration with suggestions for improvement (e.g., program structure)
- Observations about the capstone program/process
- Advice to other students

A total of 529 responses were made, many extensive and thoughtful. Some 710 topics are tabulated in the tables, an average of 1.3 topics per comment.

**General comments**

Echoing prior questions, over a third of the comments described either positive or negative aspects of their capstone experiences and 9% of the responses noted some gain in a skill, knowledge, or dispositional trait. However, over half of the responses constituted specific observations regarding particular aspects of the capstone program, including how the program was administered, how the program could be better structured, and what future students should do in order to have a successful capstone experience.

**Table Q4-1**

Table Q4-1 shows the breakdown of topics into the hierarchy of Groups 1 to 3. The reader is encouraged to read through the list of topic descriptions, along with the counts, to see the range of topics.

**Advice to other students.**

Some students wanted to pass on their advice for what was important for others to have a successful capstone. Most frequent topics:

- Choose your mentor carefully and work with your mentor, 21.
- Manage your time well, start early, 24.
- Choose a topic carefully – something you are interested in, you can manage, 18.

Selected comment excerpts:

- *Make sure you pick a topic that you can stay interested in for the entire time.*
- *By picking a passionate topic you truly enjoy doing the work and are excited about the finished product.*
- *My mentor was very good in giving me enough time to find a topic that I was really passionate about, which made the rest of my experience enjoyable and interesting to me.*

- *The task is quite overwhelming at first but it's important to break it down and have feedback from your mentor.*
- *An engaged and involved advisor is very necessary to keep your morale and work high.*
- *Meet with your advisor at least once a week in person. Ideas and critiques can be misconstrued through emails and track changes. It's best to sit down with the thesis in front of you and TALK IT OUT TOGETHER!!*
- *Always give yourself more time for the writing process than you think you'll need.*
- *The single most helpful thing that I can think of is to work on it regularly. This isn't a homework assignment-- you can't wait until the last minute to finish it. Actually stick to the schedule you make, if you make one. Consistency is key.*

**Capstone administration.**

Most frequent topics:

- A capstone class was not useful, should focus more on helping individual students, 17.
- Preparation for the capstone should be improved, 17.
- Capstone should cover a longer time frame or does not give enough time; could not be adequately completed within the allotted time, 17.
- More training is needed for mentors. Mentors should be qualified, interested in student's topic. Mentors should have adequate time to work with students, 17.
- Guidelines/expectations/requirements for the capstone should be clearer, 11.

Again we see an emphasis on the important role of the mentor and selecting a topic that is doable in the time allotted given the student's abilities and the resources available.

Selected comment excerpts:

- *I believe senior seminars should be focused on the students, on communication between them and their original thoughts.*
- *The class should be more geared towards helping us with our personal topics.*
- *I wish I had had to do more long research papers to help me become more prepared for this project.*
- *Students should be encouraged to begin thinking about a topic their freshman year, and taught how to do that kind of independent research from the start, not in their junior or senior year.*
- *I think it would be helpful to have a seminar for professors to go through before they are allowed to mentor so that they understand what they are undertaking and how serious the project is. Also, how to work with students and how to construct a time line and stick to it...how to organize this project.*
- *Make sure new profs do not have to be an IS adviser in their first year. Have them be a part of another professor's advising team.*
- *Make sure all new faculty have proper training…*

**Capstone experiences – positive and negative aspects.**

For the most part, the remarks made in this category also appeared in the main themes arising from the responses to question Q1. That they are repeated here may mean they were of particular importance to the student.

Most frequent topics:

- Positive – the experience overall was generally positive, enjoyable, worthwhile, valuable, or the best experience of college, 84.
- Positive – good, helpful relationship with the mentor, 36.
- Positive – the freedom to direct their own project, 12.
- Negative – stress, anxiety, difficulty (but almost always also accompanied by a remark that it was also rewarding), 21.
- Negative – poor, unhelpful relationship with the mentor, 12.

Selected comment excerpts:

- *I.S. is a great opportunity to create a genuine and exciting experience for your self*
- *I really enjoyed my project and am grateful for the relationship that I developed with my adviser and the skills that I gained in the process.*
- *Capstones are the best!*
- *I think that the capstone project is a wonderful way to prepare students for graduate school and it was one of the best experiences of my college career.*
- *This was the most rewarding aspect of my college academic experience.*
- *My advisor was wonderful. He had a true enjoyment of the subject material, and was genuinely interested in the project.*
- *The ability to have a professor as a mentor is greatly important. Here you are able to discuss not only ones project, but future goals in life.*
- *It was one of the hardest things I have ever done, but one of the most rewarding.*
- *It is difficult when an advisor is on sabbatical for part of the capstone.*

**Miscellaneous Observations.**

These are general comments about the capstone experience. Many would have been placed in the "advice to students" category if they had been more explicitly a recommendation to others. Several are, as requested in the question, observations students think should be noted for a study of capstone impacts.

The majority of responses fell into two sub-categories: the importance of project management (24 counts), and the general value of the capstone program as better than a classroom experience or as a distinguishing feature for the college (22 counts). Other themes include the value of working independently, of gaining knowledge about oneself, and of the post-graduate preparation.

Selected comments:

- *The process was stressful at times, but I learned so much, including content, methods, statistics, etc. that I really think it is more than just a worthwhile exercise. I feel prepared*

*for grad school, and I think that this experience has given me a leg-up over students graduating from schools that do not have a capstone project.*

- *It is important that … the mentor help students effectively narrow their research so as not to be overwhelming or impossible.*
- *At the end we had to write a reflective paper that discussed what we learned about our topic, ourselves and the greater community while completing the project. I think this is an important aspect of undergraduate research that should be addressed by other colleges and universities as well. It's important to really think about how you've grown as a person and why the research you completed is important.*
- *It helped me felt like I earned my degree. There was an actual peak or climax to my college experience…*
- *Advisors are essential to the IS experience, and it is important that they are not over-burdened.*
- *I think every major should have to give an oral presentation beyond their oral examination if it is conducive to their field as people should be able to present their research to others.*
- *I believe we should not fear to employ means-end thinking, and discuss with students how this project may filter into larger research at different universities or centers around the globe. We ought to get involved with other places and network throughout the process. "Partner institutions"*
- *My professors and advisor seemed to think I knew how the entire process worked--I had no such knowledge*
- *More deadlines would be helpful along the way. It was overwhelming to just have one large goal at the end of each term.*
- *The second semester should be the time for job applications, grad school applications and preparation for the real world. The project was time consuming and stressful and I feel like it did hurt my job searching process.*
- *Working in "comp groups" with other students should be something that all students/majors should have to the opportunity to do. My discipline did not offer this and from hearing other students' experiences they sounded very helpful for feedback, editing, and time management.*
- *I think there should be a more even spectrum between majors of what people have to do for their capstone.*
- *For whatever reason, college students have built up the thesis project into this huge, frightening, and stressful task. … Granted, writing a thesis can be stressful and often frustrating, and until you have experienced the process yourself, you cannot fully understand the mental and emotional stressors. However, it's really not as bad as everyone makes it out to be. It's very doable, provided that you manage your time wisely, and drink a lot of coffee!*

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**Special Considerations - Remarks by those with the poorest capstone experience**

One of the fixed-response questions on the survey asked the student whether they agreed that "Overall, I had a good capstone experience." The vast majority (85%) of students rated their experience a 4 or 5, "agree" or "strongly agree", with only 23 students rating the experience a 1 = "strongly disagree". Thus, the overall results of this analysis represent students who felt they had a good experience. For contrast, in this section we ask what distinguishes the sorts of comments made by the 23 students who had a particularly poor capstone experience.

This group was broadly diverse. 15 were female, 8 male, and by division their majors were: 3 - NS, 7 - SS, 10 - Hum, 2-business, and 1 - self-designed. The group, on average, received lower grades on their capstone than they did in regular courses. Their average college GPA was 3.23 (B+) and the average capstone grade was 2.41 (C+). In contrast, the overall average GPA for capstones closely matched the average capstone grade. So, one characteristic of this group is a lower than expected capstone grade, and it seems that something in the capstone structure versus a regular course caused these students difficulty. A review of the topics in the comments from these students suggests these areas may involve the student:mentor relationship: the mentor not giving the expected feedback or guidance, students assigned to a topic or capstone type not of personal interest, or a lack of time which was generally blamed on late mentor feedback or a classroom or seminar structure that pushed work to the very end.

Over half of these 23 students commented negatively on their adviser, making it the most frequently mentioned topic:

- *I didn't have much direction, I felt I was often pushed aside to take care of others first, and I don't think my instructor realized how important and serious this project was in conjunction with my other classes.*
- *I rarely met with my advisor and he was not helpful.*
- *My relationship with my advisor was HORRIBLE. I got no feedback, he was not at all interested in my topic.*
- *My adviser was not interested in my project and did not give helpful feedback.*
- *My advisor couldn't have been any less helpful.*
- *Was not guided well by mentor*
- *…my comp adviser and comp seminar were fairly useless…*
- *My Advisor was a very condescending, unprofessional, unencouraging, rude, and belittling. He made me feel stupid and worthless*
- *I felt as though my advisor didn't care about my final product and that the whole process was horribly orchestrated.*
- *my [internship] boss left to work [elsewhere] so my project more or less became unguided and in the end a useless endeavor.*
- *Despite meeting with my professor prior to writing every portion of my comp, a lack of communication that my professor had with me forced me to re-write over a third of my thesis in less than a day before it was due.*
- *My advisor didn't seem to know what she was doing with the class; she was unclear about expectations.*
- *Advisers in a way took over your project and changed it into something that was no longer yours*

Another area negatively cited was a lack of control of the topic:

- *Taking the senior seminar class left me unable to do a paper on my chosen topic, but instead had to fit it into an idea for the class as a whole.*
- *I was not chosen to do a creative comp, which is a crushing experience. Therefore, I did a literature comp that did not interest me nearly as much as a creative one would have.*
- *Advisers in a way took over your project and changed it into something that was no longer yours.*

Another student complained that they did not like the works of Jane Austin or Charlotte Bronte, apparently the topic of a capstone seminar, and would like to see more options for topics. Two comments were from humanities students who wanted to write a creative piece, but felt forced into writing a literature review.

A third area was lack of time due to structural or adviser problems:

- *I had to work to finish a majority of my project during finals week thus not allowing for proper time to study for my other finals, and the project spilled over into my spring break/my internship.*
- *I wrote my capstone 10 pages in one day and then another 10 pages in one day. There wasn't a support system of accountability to do the project a little at a time. We never knew when we were going to get the drafts back.*
- *Taking the senior seminar class … with only a month to write a paper.*
- *The draconian schedule we were expected to adhere to for the production of our paper*
- *The due date was never properly given to me--calculated, not just "such and such Friday of this number week of full classes" until two weeks prior to its due date. I was not able to effectively plan without this in mind.*
- *… a lack of communication that my professor … forced me to re-write over a third of my thesis in less than a day before it was due.*

One student simply found it extremely stressful:

- *It was the most stressful three months of my life. I had a panic attack almost every day and it just got worst as the due date grew closer.*

Suggestions from these students for improving the capstone included mentor training or banning some faculty from mentoring, more student choice in topics or capstone type, or ending the program entirely.

For some of these capstones, the mentor also made comments about the student and capstone, and these generally reflect that the capstone did not go well, and tended to report that the student didn't take feedback well, didn't consult with the adviser enough, wasn't motivated or procrastinated.

It is difficult to draw firm conclusions from these remarks, particularly since there is a bit of finger pointing between the student and mentor. But it might be observed that, while these capstones may be the extreme cases, they confirm the importance of the student-mentor relationship, constructive and timely mentor feedback, and having a topic of interest to the student. Perhaps some of the problems reported might have been avoided if the student and

mentor were more explicit about mutual expectations, or if mentors had more training in how to deal with students who aren't making progress or regular contact. In some cases, again because it seems to be a more general concern, mentors may be contributing to failed capstones by not giving timely feedback, or by not providing appropriate monitoring for students not prepared to work so independently.

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**Concluding Remarks – Implications for our Research Questions**

Below we look at the research questions for this project and discuss implications from the student comments analysis.

1. *What is the impact of the capstone experience on outcomes leading to lifelong learning? What is the perceived impact one, five and five-plus years after graduation?*

   The question of long term sustained benefits are discussed in analysis of the alumni survey, although the comments from seniors indicated that trajectories students make take in regard to lifelong learning are strongly affected by their capstone experiences. Key attributes of the capstone that affect life-long learning are the development of project management skills, including time management, planning, organizing, and persevering, and an empowering sense of academic self-confidence and achievement. Many report developing a better understanding of their academic interests, including finding an interest in research. Many report the development of skills in writing and oral communication, critical thinking, and research. Career clarification was noted in about 8% of comments about benefits. Although it does not appear from our numerical results that the decision to pursue advanced degrees is significantly altered by the capstone, and largely precedes the capstone, many report they feel better prepared for graduate school both in skills and in a sense of confidence.

   Although several students noted gaining knowledge of their project as a benefit, it was the general development items noted above that students predominantly cited, not gaining disciplinary knowledge.

2. *How does the capstone experience benefit the student and the faculty mentor?*

   We have noted the main benefits students cite. What are the key attributes of a well-designed capstone experience that drive these benefits and that are more prominent in, if not unique to, capstones?

   - A sustained, longer term, project with a significant intellectual challenge.
   - A research, inquiry, or creative product that integrates disciplinary expertise with oral and written communication skills and critical thinking skills.
   - A topic or project that is of personal interest to the student, either selected by the student or negotiated with student input, that the student takes ownership of.
   - An expectation of considerable independence on the part of the student.
   - A 1:1 relationship with a mentor who encourages the student, is responsive to students' need for feedback, and models scholarly skills and behavior.

- Oral presentation of the capstone product (if of the appropriate type) through a defense, public presentation, or poster session.

3. *What are the similarities and the differences in how our capstone programs are formulated?*

   The specifics of how the four schools' programs differ structurally is covered in other materials, but of note here is that despite many differences in the formulation of our capstone programs, the same themes, both positive and negative, emerged in the student comments. It appears the main benefits can be achieved through a wide variety of capstone structures, although the benefits will vary in extent. For instance, project management benefits appear to be most cited by students from Red, which has the largest universal credit requirement, 8 credits spanning the entire senior year.

4. *What resources (programs, structures, and personnel) are our colleges providing to support their capstone programs? What is the opportunity cost of our capstones?*

   The main resource supporting capstone programs is, of course, faculty time and effort. The vast majority of student comments are complimentary about faculty mentoring, but there are enough negative comments to suggest benefits might be achieved from a more clarity about mentor expectations or through mentor training.

   Support issues in other areas were noted relatively infrequently, in about 2% of the comments about positive or negative aspects of the capstone.

   Clearly, library resources might be expected to be challenged by capstone programs, and a small number of student comments related to not being able to obtain source materials, or limited library hours. A few others expressed appreciation for assistance from the library staff.

   Notable was the absence of student comments related to support from writing support services like reading/writing centers, although faculty comments suggested that writing was a problem for some students. Faculty reported in their comments that students seem to be reluctant to use reading/writing centers, even though they should, because they seem them as geared toward first-year students.

   A few comments alluded to financial support, particularly the denial of a grant application.

   The most oft cited opportunity cost issue for students was the ability to balance the capstone with the demands of other courses or personal activities, mentioned as more or less of a problem in about 11% of the comments about positive/negative aspects of the capstone. Comments were not generally specific as to an activity that was sacrificed, but notable were several comments that the capstone timing interfered with the student's ability to complete graduate school applications and interviews.

   An obvious tradeoff of capstones is with the opportunity to take equivalent credits in other courses, particularly in the major. What the student comments suggest is that the capstone experience contributes, as has been noted above, types of developmental benefits that are different from most standard courses. This still leaves room for debate about the size that the capstone experience needs to be, in terms of credit hours, to achieve the most benefit with the least disruption of other goals of the curriculum or co-curriculum.

5. *How do faculty, students, and other college constituencies perceive and experience the capstone?*

   Student perceptions have been discussed above. The perceptions of faculty and administrative support staff are discussed in the separate focus group report.

6. *How do students experience the capstone? What is the range of capstone experiences for our students, and what are the conditions and practices that result in the most positive capstone experiences?*

   The analysis of comments did not show significant differences in experiences by gender. All GPA groups were about equally likely to report benefits, although the lower GPA students were more likely to report they discovered a limitation in their ability to perform. The traditional research model may fit natural science majors more naturally, and they seemed to be most in tune with the time management and planning requirements of a capstone experience.

   Referring to the analysis of the comments from students who rated their capstone experience as poor, it appears that, while most students report a positive experience, the 23 students who reported the poorest experience (1 on a 5 point scale), had a particularly bad relationship with their mentor, didn't like their topic choice, or felt they lacked the time to properly complete their project, often citing some problem with the way the capstone was organized.

   This reinforces comments that occurred more generally that good practices include providing reasonable flexibility in letting the student choose both the mentor and topic.

   Based on the comments, the student:mentor relationship is key to a positive capstone experience. Good practices include defining the expectations for mentors and providing training, such as through experience as secondary readers. Numerical results suggest that strictly 1:1 mentoring may not be the only viable model, and that best practices may include significant 1:1 mentoring in conjunction with periodic group meetings of a mentor's students. Indeed, in addition to potentially lessening the mentoring workload, several comments referred to the value of such group meetings in providing support and encouragement from other students. As suggested by student comments, mentor training materials or topics might include:

   - a review of institutional policies and guidelines for capstones
   - explicit discussion of the institutionally established goals of the capstone experience for students
   - suggestions or criteria for designing a capstone project that will meet the intended goals for student development
   - working with the student to scale the project for the time available and the student's capabilities
   - institutional expectations for capstone mentors, and what students say about the mentoring relationship
   - scaffolding for independence: providing students with appropriate freedom and challenge, while providing enough structure to avoid floundering

- dealing with unmotivated, unresponsive, or disorganized students (the most common mentor complaint)
- dealing with multiple advisees: the options, pros, and cons of structures like classes, seminars and group meetings

A few comments referred to financial support for an individual project, and the absence of more comments may be an indication that the grant programs in place at the colleges to support capstones are effective and model good practices.

Several comments indicate that double majors experience the capstone differently, in part because policies often require an integrated capstone or multiple capstones, which appears to be a more difficult requirement, and working with multiple mentors can also be a problem. No school seems to have an ideal solution for this problem.

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Tim Schermer

11/2011

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Further issues:

The final report should compare what we learned here about what current seniors *think* will be beneficial about their capstone after they graduate with what we learned from the alumni survey and what our focus group data indicates about what students and faculty think the capstone should achieve for students.

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# PART 5 TABLES: SENIOR COMMENT TABLES

**Table Q1-1: Detailed Tally by Topic of student responses to:** COMBINED DATA FOR 2009 and 2010

**Please describe any particularly positive or negative aspects of your capstone experience.**

Positive and negative comments are tallied in separate sections

Percents are column percents for all comments combined (positive and negative).

H=>3.50
M= 3.00 to 3.49
L=<3.00

| Line | Group 1 | Group 2 | Group 3 | ID | Description | Cnt | % | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
| | **POSTIVE** | | | | | | | | | | | | | | | | | | | | |
| 1 | 1 skill gain | comm | general | 29 | developed communication skills - general | 5 | 0.2% | 4 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 1 | 4 | 0 | 4 | 1 |
| 2 | 1 skill gain | comm | writing | 34 | improved writing due to multiple drafts | 2 | 0.1% | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 3 | 1 skill gain | comm | writing | 30 | improved writing - general | 24 | 0.9% | 6 | 12 | 5 | 0 | 1 | 13 | 1 | 1 | 9 | 6 | 7 | 11 | 10 | 14 |
| 4 | 1 skill gain | comm | writing | 350 | improved writing - learned to write lab papers | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 5 | | **comm Total** | | | **Improved writing or communication skills** | **33** | **1.3%** | **11** | **15** | **5** | **0** | **2** | **15** | **2** | **1** | **15** | **8** | **13** | **12** | **15** | **18** |
| 6 | 1 skill gain | crit thinking | general | 75 | CT - general | 8 | 0.3% | 2 | 2 | 2 | 0 | 2 | 3 | 0 | 0 | 5 | 2 | 1 | 5 | 2 | 6 |
| 7 | 1 skill gain | crit thinking | analysis | 76 | CT - analysis skills | 7 | 0.3% | 1 | 4 | 1 | 0 | 1 | 1 | 2 | 0 | 4 | 2 | 2 | 3 | 3 | 4 |
| 8 | 1 skill gain | crit thinking | analysis | 373 | CT - analyze from different perspectives | 3 | 0.1% | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 |
| 9 | 1 skill gain | crit thinking | analysis | 92 | CT - learned to refine / develop /clarify ideas | 3 | 0.1% | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 2 | 3 | 0 |
| 10 | 1 skill gain | crit thinking | argument | 90 | CT - developed an original argument / project | 3 | 0.1% | 0 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 3 |
| 11 | 1 skill gain | crit thinking | integrate | 84 | CT - integrate theory and practice | 4 | 0.2% | 0 | 3 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 4 |
| 12 | 1 skill gain | crit thinking | integrate | 83 | CT - integrating knowledge from other disciplines; | 10 | 0.4% | 3 | 2 | 4 | 1 | 0 | 1 | 6 | 3 | 0 | 0 | 2 | 8 | 1 | 9 |
| 13 | 1 skill gain | crit thinking | integrate | 86 | CT - synthesis | 8 | 0.3% | 1 | 1 | 3 | 0 | 3 | 0 | 2 | 1 | 5 | 0 | 3 | 5 | 3 | 5 |
| 14 | | **crit thinking Total** | | | **Improved critical thinking skills** | **46** | **1.8%** | **8** | **15** | **15** | **2** | **6** | **11** | **13** | **5** | **17** | **7** | **11** | **28** | **13** | **33** |
| 15 | 1 skill gain | projmgt | general | 56 | project management - project went smoothly | 1 | 0.0% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 16 | 1 skill gain | projmgt | organiz | 369 | project management - learned to break project down into manageable pieces | 5 | 0.2% | 1 | 2 | 2 | 0 | 0 | 3 | 1 | 0 | 1 | 1 | 2 | 2 | 2 | 3 |
| 17 | 1 skill gain | projmgt | organiz | 73 | project management -learned to manage large project | 17 | 0.7% | 4 | 8 | 5 | 0 | 0 | 5 | 5 | 1 | 6 | 2 | 11 | 4 | 4 | 13 |
| 18 | 1 skill gain | projmgt | own | 57 | project management - learned to work independently | 56 | 2.2% | 23 | 21 | 4 | 1 | 7 | 15 | 10 | 5 | 26 | 9 | 23 | 24 | 19 | 37 |
| 19 | 1 skill gain | projmgt | timeman | 61 | time management - meeting deadlines | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 2 |
| 20 | 1 skill gain | projmgt | timeman | 60 | time management skills- developed | 33 | 1.3% | 9 | 15 | 8 | 1 | 0 | 11 | 7 | 5 | 10 | 9 | 14 | 10 | 6 | 27 |
| 21 | 1 skill gain | projmgt | troublsh | 348 | project management - troubleshooting - approach problem in different ways | 9 | 0.3% | 6 | 1 | 1 | 0 | 1 | 3 | 2 | 0 | 4 | 2 | 7 | 0 | 1 | 8 |
| 22 | | **projmgt Total** | | | **Improved project management skills; learned to work independently** | **123** | **4.7%** | **43** | **49** | **20** | **2** | **9** | **37** | **25** | **12** | **49** | **25** | **58** | **40** | **33** | **90** |
| 23 | 1 skill gain | research | general | 1 | research skills - development | 30 | 1.2% | 12 | 14 | 2 | 0 | 2 | 11 | 1 | 1 | 17 | 5 | 14 | 11 | 13 | 17 |
| 24 | 1 skill gain | research | analysis | 343 | research - analysis - general | 4 | 0.2% | 1 | 3 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 3 | 1 | 3 |
| 25 | 1 skill gain | research | analysis | 25 | research - interpreting findings | 3 | 0.1% | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 3 |
| 26 | 1 skill gain | research | cond | 2 | research - conducting | 10 | 0.4% | 5 | 5 | 0 | 0 | 0 | 2 | 2 | 1 | 5 | 5 | 1 | 4 | 1 | 9 |
| 27 | 1 skill gain | research | cond | 3 | research - conducting - lab skills | 5 | 0.2% | 4 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 0 | 4 | 1 | 2 | 3 |
| 28 | 1 skill gain | research | cond | 23 | research - field work specific to discipline | 4 | 0.2% | 1 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 1 | 0 | 3 | 1 | 1 | 3 |
| 29 | 1 skill gain | research | litreview | 20 | literature review - evaluating materials | 8 | 0.3% | 0 | 3 | 3 | 0 | 2 | 2 | 1 | 1 | 4 | 1 | 3 | 4 | 2 | 6 |
| 30 | 1 skill gain | research | litreview | 345 | literature review - integrating sources | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 1 |
| 31 | 1 skill gain | research | presenting | 24 | research - presenting findings | 3 | 0.1% | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 3 | 1 | 2 |
| 32 | 1 skill gain | research | quant | 11 | quantitative skills - statistics improved | 3 | 0.1% | 0 | 3 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 1 | 1 | 2 |
| 33 | 1 skill gain | research | tech | 106 | technical skills - general | 7 | 0.3% | 3 | 3 | 1 | 0 | 0 | 2 | 3 | 0 | 2 | 3 | 2 | 2 | 4 | 3 |
| 34 | 1 skill gain | research | tech | 109 | technical skills - real-world application | 10 | 0.4% | 2 | 3 | 1 | 4 | 0 | 3 | 5 | 0 | 2 | 0 | 5 | 5 | 1 | 9 |
| 35 | 1 skill gain | research | tech | 107 | technical skills - specific to discipline | 4 | 0.2% | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 4 | 0 | 1 | 3 |
| 36 | 2 knowledge gain | research | research | 126 | understanding- how research in the field applies to specific research questions | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 37 | 2 knowledge gain | research | research | 127 | understanding -research process | 7 | 0.3% | 4 | 2 | 1 | 0 | 0 | 1 | 4 | 0 | 2 | 0 | 4 | 3 | 1 | 6 |
| 38 | 2 knowledge gain | research | value | 130 | learned importance of - research (general) | 3 | 0.1% | 2 | 0 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| 39 | | **research Total** | | | **Gained research skills** | **104** | **4.0%** | **40** | **43** | **11** | **6** | **4** | **31** | **26** | **6** | **41** | **16** | **48** | **40** | **30** | **74** |
| 40 | 2 knowledge gain | disc | general | 118 | disciplinary knowledge - general | 12 | 0.5% | 2 | 6 | 3 | 1 | 0 | 7 | 4 | 0 | 1 | 5 | 7 | 0 | 5 | 7 |
| 41 | 2 knowledge gain | disc | ethics | 122 | disciplinary knowledge, ethics | 2 | 0.1% | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 1 |
| 42 | 2 knowledge gain | disc | overall | 497 | experience - knowledge - disc | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 43 | 2 knowledge gain | disc | overall | 500 | experience - learning - other studies | 4 | 0.2% | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 4 | 0 | 4 |
| 44 | 2 knowledge gain | disc | project | 123 | disciplinary knowledge - project area | 10 | 0.4% | 3 | 4 | 1 | 1 | 1 | 3 | 4 | 0 | 3 | 1 | 5 | 4 | 2 | 8 |
| 45 | 2 knowledge gain | disc | theory | 120 | disciplinary knowledge - ways of practice | 2 | 0.1% | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 46 | 2 knowledge gain | disc | theory | 121 | disciplinary knowledge - ways of thinking | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 47 | | **disc Total** | | | **Gained disciplinary knowledge** | **32** | **1.2%** | **7** | **12** | **7** | **3** | **3** | **13** | **9** | **2** | **8** | **7** | **13** | **12** | **10** | **22** |
| 48 | 2 knowledge gain | overall | overall | 190 | development - intellectual growth | 11 | 0.4% | 1 | 2 | 6 | 2 | 0 | 4 | 4 | 0 | 3 | 3 | 2 | 6 | 4 | 7 |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 2 knowledge gain | overall | overall | 334 | development - learned lot, grew | 33 | 1.3% | 13 | 4 | 10 | 2 | 4 | 5 | 8 | 3 | 17 | 5 | 13 | 15 | 7 | 26 |
| 50 | 2 knowledge gain | overall | overall | 496 | experience - gained great deal of knowledge | 5 | 0.2% | 1 | 1 | 3 | 0 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 3 | 2 | 3 |
| 51 | 2 knowledge gain | overall | overall | 489 | experience - learning | 20 | 0.8% | 4 | 5 | 4 | 0 | 6 | 3 | 3 | 2 | 12 | 4 | 8 | 8 | 7 | 13 |
| 52 | | **overall Total** | | | **Generally learned a lot or grew intellectually** | **69** | **2.7%** | **19** | **12** | **23** | **4** | **10** | **14** | **17** | **5** | **33** | **14** | **23** | **32** | **20** | **49** |
| 53 | 2 knowledge gain | self | general | 110 | self-understanding - general | 6 | 0.2% | 3 | 1 | 2 | 0 | 0 | 0 | 3 | 1 | 2 | 1 | 2 | 3 | 1 | 5 |
| 54 | 2 knowledge gain | self | abilities | 368 | self-understanding - abilities - oral presentation | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 |
| 55 | 2 knowledge gain | self | abilities | 111 | self-understanding - of own abilities | 18 | 0.7% | 6 | 3 | 8 | 1 | 0 | 2 | 5 | 0 | 11 | 5 | 6 | 7 | 5 | 13 |
| 56 | 2 knowledge gain | self | abilities | 344 | self-understanding - of own abilities - academic | 6 | 0.2% | 2 | 2 | 2 | 0 | 0 | 2 | 3 | 0 | 1 | 0 | 3 | 3 | 3 | 3 |
| 57 | 2 knowledge gain | self | abilities | 360 | self-understanding - of own abilities - communication | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| 58 | 2 knowledge gain | self | abilities | 349 | self-understanding - of own abilities - research | 5 | 0.2% | 3 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 3 | 1 | 3 | 1 | 0 | 5 |
| 59 | 2 knowledge gain | self | abilities | 347 | self-understanding - of own abilities - writing | 3 | 0.1% | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 2 | 1 |
| 60 | 2 knowledge gain | self | indep | 129 | intellectual independence | 5 | 0.2% | 1 | 3 | 1 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 2 | 3 | 1 | 4 |
| 61 | 2 knowledge gain | self | interests | 115 | self-understanding - of interests (career clarification) | 30 | 1.2% | 9 | 9 | 8 | 1 | 3 | 11 | 7 | 2 | 10 | 8 | 11 | 11 | 8 | 22 |
| 62 | 2 knowledge gain | self | limitations | 113 | self-understanding - of lack of quality in performance - general | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 63 | 2 knowledge gain | self | limitations | 346 | self-understanding - of lack of quality in performance - time management | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 64 | 2 knowledge gain | self | limitations | 112 | self-understanding - of own limitations | 4 | 0.2% | 3 | 0 | 1 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 3 | 0 | 4 |
| 65 | 2 knowledge gain | self | worth | 150 | developed sense of accomplishment | 28 | 1.1% | 10 | 10 | 8 | 0 | 0 | 9 | 3 | 1 | 15 | 9 | 9 | 10 | 9 | 19 |
| 66 | 2 knowledge gain | self | worth | 182 | realized or surpassed expectations for self | 3 | 0.1% | 1 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 2 | 1 | 2 |
| 67 | 2 knowledge gain | self | worth | 358 | sense of self worth | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 68 | | **self Total** | | | **Gained self-understanding or abilities and interests** | **115** | **4.4%** | **42** | **31** | **36** | **2** | **4** | **35** | **29** | **5** | **46** | **29** | **42** | **44** | **31** | **84** |
| 69 | 3 disposition gain | behavior | challenge | 353 | challenged self | 3 | 0.1% | 0 | 1 | 2 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 2 | 1 | 2 |
| 70 | 3 disposition gain | behavior | patience | 155 | learned patience necessary for research | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 71 | 3 disposition gain | behavior | perseverance | 166 | perseverance | 4 | 0.2% | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 2 | 2 | 1 | 3 |
| 72 | 3 disposition gain | behavior | perseverance | 154 | tolerance of obstacles, risk, failure, ambiguity | 6 | 0.2% | 4 | 1 | 1 | 0 | 0 | 2 | 0 | 2 | 2 | 2 | 2 | 2 | 1 | 5 |
| 73 | | **behavior Total** | | | **Developed patience, perseverance, willingness to face challenges** | **14** | **0.5%** | **6** | **5** | **3** | **0** | **0** | **6** | **1** | **3** | **4** | **3** | **5** | **6** | **3** | **11** |
| 74 | 3 disposition gain | confidence | general | 156 | self-confidence - general, pos-gained | 6 | 0.2% | 1 | 3 | 2 | 0 | 0 | 1 | 1 | 1 | 3 | 2 | 2 | 2 | 0 | 6 |
| 75 | 3 disposition gain | confidence | academic | 359 | self-confidence - academic - articulating ideas | 3 | 0.1% | 0 | 2 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 3 |
| 76 | 3 disposition gain | confidence | academic | 157 | self-confidence - academic - general | 17 | 0.7% | 7 | 8 | 1 | 0 | 1 | 6 | 2 | 2 | 7 | 4 | 7 | 6 | 3 | 14 |
| 77 | 3 disposition gain | confidence | academic | 351 | self-confidence - academic - ideas | 3 | 0.1% | 0 | 3 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | 2 |
| 78 | 3 disposition gain | confidence | academic | 159 | self-confidence - academic - writing | 3 | 0.1% | 1 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 1 | 1 | 2 |
| 79 | 3 disposition gain | confidence | personal | 161 | self-confidence - personal - general | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 80 | | **confidence Total** | | | **Gained self confidence in abilities** | **33** | **1.3%** | **10** | **16** | **6** | **0** | **1** | **13** | **5** | **3** | **12** | **7** | **15** | **11** | **6** | **27** |
| 81 | 3 disposition gain | motiv | collab | 146 | motivation - toward collaboration on project | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 82 | 3 disposition gain | motiv | project | 147 | motivation - toward project | 12 | 0.5% | 1 | 4 | 2 | 5 | 0 | 1 | 7 | 2 | 2 | 1 | 8 | 3 | 2 | 10 |
| 83 | 3 disposition gain | motiv | research | 143 | motivation - towardresearch | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 2 |
| 84 | | **motiv Total** | | | **Became more interested in research or project** | **15** | **0.6%** | **2** | **4** | **4** | **5** | **0** | **2** | **7** | **3** | **3** | **1** | **10** | **4** | **3** | **12** |
| 85 | 4 profdevel | profdevel | general | 169 | professional development - general | 12 | 0.5% | 2 | 4 | 3 | 3 | 0 | 4 | 5 | 0 | 3 | 2 | 5 | 5 | 2 | 10 |
| 86 | 4 profdevel | profdevel | conference | 172 | professional development - gave conference presentation | 7 | 0.3% | 1 | 5 | 1 | 0 | 0 | 2 | 3 | 0 | 2 | 0 | 1 | 6 | 3 | 4 |
| 87 | 4 profdevel | profdevel | jobprep | 175 | professional development - helped prepare for / led directly to job | 12 | 0.5% | 4 | 5 | 1 | 1 | 1 | 1 | 5 | 2 | 4 | 1 | 5 | 6 | 3 | 9 |
| 88 | 4 profdevel | profdevel | lifeprep | 181 | better prepared for life | 3 | 0.1% | 2 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 3 | 0 |
| 89 | 4 profdevel | profdevel | postproj | 178 | professional development - learned ways of developing project post-graduation | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 90 | 4 profdevel | profdevel | publishable | 173 | professional development - produced work that was or will be published (or is publishable) | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 91 | 4 profdevel | profdevel | recognition | 362 | professional development - art work put on display | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 92 | 4 profdevel | profdevel | schoolprep | 179 | preparation for grad school/professional school | 23 | 0.9% | 12 | 5 | 6 | 0 | 0 | 6 | 9 | 2 | 6 | 2 | 4 | 17 | 8 | 15 |
| 93 | | **profdevel Total** | | | **Gained preparation for job, graduate school, or life generally** | **61** | **2.4%** | **21** | **22** | **13** | **4** | **1** | **16** | **24** | **4** | **17** | **5** | **17** | **39** | **19** | **42** |
| 94 | 6 cap exper | research | enjoyed | 485 | experience - enjoyed, appreciated research | 30 | 1.2% | 8 | 12 | 7 | 1 | 2 | 17 | 5 | 0 | 8 | 3 | 12 | 15 | 10 | 20 |
| 95 | 6 cap exper | research | enjoyed | 488 | experience - research - develop ideas | 4 | 0.2% | 2 | 1 | 1 | 0 | 0 | 3 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 3 |
| 96 | 6 cap exper | research | enjoyed | 491 | experience - research - enjoyed lit review, using primary sources | 8 | 0.3% | 3 | 3 | 2 | 0 | 0 | 2 | 5 | 0 | 1 | 0 | 5 | 3 | 4 | 4 |
| 97 | 6 cap exper | research | enjoyed | 487 | experience - research - getting results | 6 | 0.2% | 2 | 1 | 3 | 0 | 0 | 3 | 2 | 0 | 1 | 2 | 3 | 1 | 3 | 3 |
| 98 | 6 cap exper | research | enjoyed | 486 | experience - research -enjoyed working in lab | 3 | 0.1% | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 1 | 1 | 2 |
| 99 | | **research Total** | | | **Enjoyed, appreciated research experience** | **51** | **2.0%** | **17** | **18** | **13** | **1** | **2** | **25** | **13** | **0** | **13** | **8** | **22** | **21** | **19** | **32** |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100 | 6 cap exper | overall | poitive | 484 | positive/enjoyable/great/ experience - | 52 | 2.0% | 18 | 18 | 12 | 2 | 2 | 20 | 9 | 5 | 18 | 14 | 20 | 18 | 17 | 35 |
| 101 | | **overall Total** | | | **Capstone experience was enjoyable, great, or generally positive** | **52** | **2.0%** | **18** | **18** | **12** | **2** | **2** | **20** | **9** | **5** | **18** | **14** | **20** | **18** | **17** | **35** |
| 102 | 6 cap exper | projmgt | organiz | 70 | project management - organized project well | 9 | 0.3% | 1 | 5 | 2 | 0 | 1 | 1 | 1 | 3 | 4 | 1 | 4 | 4 | 4 | 5 |
| 103 | 6 cap exper | projmgt | own | 68 | project management - saw major project through from beginning to end | 24 | 0.9% | 4 | 10 | 8 | 1 | 1 | 12 | 7 | 1 | 4 | 4 | 7 | 13 | 5 | 19 |
| 104 | 6 cap exper | projmgt | own | 59 | project management - taking responsibility | 8 | 0.3% | 1 | 5 | 1 | 1 | 0 | 3 | 2 | 0 | 3 | 1 | 5 | 2 | 3 | 5 |
| 105 | | **projmgt Total** | | | **Managed project well** | **41** | **1.6%** | **6** | **20** | **11** | **2** | **2** | **16** | **10** | **4** | **11** | **6** | **16** | **19** | **12** | **29** |
| 106 | 6 cap exper | freedom | general | 409 | freedom - general | 5 | 0.2% | 1 | 2 | 1 | 1 | 0 | 1 | 2 | 0 | 2 | 1 | 2 | 2 | 2 | 3 |
| 107 | 6 cap exper | freedom | direction | 415 | freedom - explore field not offered in college curriculum | 3 | 0.1% | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 2 |
| 108 | 6 cap exper | freedom | direction | 417 | freedom - to develop own research plan | 8 | 0.3% | 2 | 1 | 4 | 1 | 0 | 4 | 2 | 1 | 1 | 1 | 1 | 6 | 2 | 6 |
| 109 | 6 cap exper | freedom | direction | 416 | freedom - to direct course of project | 16 | 0.6% | 6 | 4 | 4 | 0 | 2 | 2 | 1 | 5 | 8 | 5 | 5 | 6 | 5 | 11 |
| 110 | 6 cap exper | freedom | direction | 410 | freedom to choose own topic | 50 | 1.9% | 7 | 16 | 13 | 13 | 0 | 9 | 23 | 8 | 10 | 7 | 18 | 25 | 13 | 37 |
| 111 | 6 cap exper | freedom | presenting | 412 | freedom - how to present project | 6 | 0.2% | 0 | 2 | 1 | 3 | 0 | 1 | 4 | 1 | 0 | 1 | 3 | 2 | 2 | 4 |
| 112 | 6 cap exper | freedom | work | 418 | freedom - to both teach and learn | 2 | 0.1% | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 113 | 6 cap exper | freedom | work | 414 | freedom - to set own deadlines | 3 | 0.1% | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 2 | 0 | 1 | 1 | 2 |
| 114 | 6 cap exper | freedom | work | 413 | freedom - to work at own pace | 7 | 0.3% | 2 | 4 | 0 | 1 | 0 | 2 | 2 | 0 | 3 | 2 | 4 | 1 | 1 | 6 |
| 115 | 6 cap exper | freedom | work | 411 | freedom - to work independently | 20 | 0.8% | 5 | 5 | 5 | 3 | 2 | 4 | 6 | 0 | 10 | 1 | 7 | 12 | 6 | 14 |
| 116 | | **freedom Total** | | | **Student appreciated the freedom to choose topic, direct project, work independently** | **120** | **4.6%** | **24** | **37** | **31** | **23** | **4** | **27** | **41** | **15** | **37** | **21** | **41** | **58** | **34** | **86** |
| 117 | 6 cap exper | mentor | general | 422 | mentor - great overall | 86 | 3.3% | 22 | 27 | 30 | 3 | 4 | 29 | 16 | 14 | 27 | 14 | 35 | 37 | 18 | 68 |
| 118 | 6 cap exper | mentor | feedback | 449 | mentor - discuss data | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 119 | 6 cap exper | mentor | feedback | 424 | mentor - helpful - feedback | 33 | 1.3% | 8 | 16 | 6 | 3 | 0 | 6 | 9 | 5 | 13 | 6 | 14 | 13 | 10 | 23 |
| 120 | 6 cap exper | mentor | helpful | 462 | mentor - dedication | 6 | 0.2% | 2 | 3 | 1 | 0 | 0 | 0 | 1 | 2 | 3 | 1 | 1 | 4 | 2 | 4 |
| 121 | 6 cap exper | mentor | helpful | 455 | mentor - helped make project more interesting | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 122 | 6 cap exper | mentor | helpful | 461 | mentor - helped student connect capstone experiences with real-world challenges | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 123 | 6 cap exper | mentor | helpful | 438 | mentor - helped student engage with material in new way | 4 | 0.2% | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 2 | 1 | 1 | 2 | 2 |
| 124 | 6 cap exper | mentor | helpful | 439 | mentor - helped student teach self | 4 | 0.2% | 2 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 0 | 1 | 3 | 1 | 3 |
| 125 | 6 cap exper | mentor | helpful | 437 | mentor - helped student understand concepts | 5 | 0.2% | 1 | 0 | 3 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 2 | 3 | 1 | 4 |
| 126 | 6 cap exper | mentor | helpful | 423 | mentor - helpful | 66 | 2.5% | 21 | 22 | 17 | 2 | 4 | 21 | 17 | 5 | 23 | 16 | 25 | 25 | 16 | 50 |
| 127 | 6 cap exper | mentor | helpful | 429 | mentor - helpful - academically | 6 | 0.2% | 1 | 4 | 1 | 0 | 0 | 4 | 2 | 0 | 0 | 3 | 2 | 1 | 1 | 5 |
| 128 | 6 cap exper | mentor | helpful | 430 | mentor - helpful - writing process | 2 | 0.1% | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 129 | 6 cap exper | mentor | helpful | 453 | mentor - honest | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 130 | 6 cap exper | mentor | helpful | 458 | mentor - positive attitude | 3 | 0.1% | 2 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 3 | 0 | 1 | 2 |
| 131 | 6 cap exper | mentor | interest | 435 | mentor - interested in topic/capstone | 15 | 0.6% | 0 | 9 | 4 | 0 | 2 | 8 | 1 | 1 | 5 | 4 | 2 | 9 | 3 | 12 |
| 132 | 6 cap exper | mentor | interest | 454 | mentor - truly interested in student's success | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 2 |
| 133 | 6 cap exper | mentor | knowledge | 432 | mentor - knowledgeable | 6 | 0.2% | 2 | 0 | 3 | 0 | 1 | 1 | 1 | 2 | 2 | 0 | 1 | 5 | 0 | 6 |
| 134 | 6 cap exper | mentor | knowledge | 433 | mentor - knowledgeable - about topic | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 135 | 6 cap exper | mentor | meetings | 460 | mentor - all faculty present during meetings | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 136 | 6 cap exper | mentor | meetings | 446 | mentor - available | 23 | 0.9% | 8 | 7 | 5 | 1 | 2 | 7 | 3 | 3 | 10 | 7 | 6 | 10 | 10 | 13 |
| 137 | 6 cap exper | mentor | meetings | 448 | mentor - meetings positive | 2 | 0.1% | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 |
| 138 | 6 cap exper | mentor | projmgt | 503 | experience - deadlines clear and helpful | 4 | 0.2% | 0 | 3 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 3 | 2 | 2 |
| 139 | 6 cap exper | mentor | projmgt | 451 | mentor - challenged student | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 140 | 6 cap exper | mentor | projmgt | 444 | mentor - encouraging - own ideas | 6 | 0.2% | 2 | 1 | 2 | 0 | 1 | 0 | 1 | 0 | 5 | 0 | 5 | 1 | 0 | 6 |
| 141 | 6 cap exper | mentor | projmgt | 443 | mentor - encouraging - risks | 2 | 0.1% | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 2 |
| 142 | 6 cap exper | mentor | projmgt | 447 | mentor - pushed student | 7 | 0.3% | 0 | 5 | 2 | 0 | 0 | 5 | 1 | 0 | 1 | 0 | 0 | 7 | 2 | 5 |
| 143 | 6 cap exper | mentor | projmgt | 450 | mentor - resourceful | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 144 | 6 cap exper | mentor | rapor | 236 | collab - enjoyed connection with advisor | 27 | 1.0% | 8 | 11 | 7 | 1 | 0 | 13 | 7 | 1 | 6 | 6 | 11 | 10 | 6 | 21 |
| 145 | 6 cap exper | mentor | rapor | 218 | enjoyed working with two mentors | 6 | 0.2% | 1 | 2 | 3 | 0 | 0 | 5 | 1 | 0 | 0 | 1 | 2 | 3 | 3 | 3 |
| 146 | 6 cap exper | mentor | rapor | 229 | great working intensely one-on-one | 33 | 1.3% | 8 | 16 | 7 | 0 | 2 | 16 | 4 | 1 | 12 | 3 | 11 | 19 | 9 | 24 |
| 147 | 6 cap exper | mentor | rapor | 434 | mentor - approachable | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 148 | 6 cap exper | mentor | rapor | 442 | mentor - encouraging - general | 6 | 0.2% | 1 | 1 | 3 | 1 | 0 | 2 | 2 | 0 | 2 | 0 | 2 | 4 | 1 | 5 |
| 149 | 6 cap exper | mentor | rapor | 457 | mentor - patient | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 150 | 6 cap exper | mentor | rapor | 459 | mentor - respected student's limitations | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 151 | 6 cap exper | mentor | rapor | 452 | mentor - respected student's point of view | 3 | 0.1% | 0 | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 2 | 1 | 1 | 2 |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 152 | 6 cap exper | mentor | rapor | 456 | mentor - student comfortable asking questions | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 153 | 6 cap exper | mentor | rapor | 440 | mentor - supportive | 23 | 0.9% | 7 | 7 | 5 | 4 | 0 | 8 | 4 | 2 | 9 | 5 | 8 | 10 | 6 | 17 |
| 154 | 6 cap exper | mentor | rapor | 441 | mentor - supportive - personal | 4 | 0.2% | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | 1 | 1 | 2 | 1 | 0 | 4 |
| 155 | 6 cap exper | mentor | rapor | 445 | mentor - understanding | 3 | 0.1% | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 2 |
| 156 | | **mentor Total** | | | **Mentor was great overall, helpful, supportive, available, interested, gave good feedback** | **402** | **15.5%** | **103** | **149** | **112** | **16** | **22** | **144** | **79** | **43** | **136** | **72** | **146** | **184** | **99** | **303** |
| 157 | 6 cap exper | personal | communication | 492 | experience - comm - enjoyed presenting | 7 | 0.3% | 2 | 2 | 3 | 0 | 0 | 3 | 2 | 0 | 2 | 1 | 2 | 4 | 3 | 4 |
| 158 | 6 cap exper | personal | communication | 508 | experience - comm - enjoyed the writing | 5 | 0.2% | 0 | 1 | 2 | 1 | 1 | 3 | 0 | 1 | 1 | 1 | 3 | 1 | 1 | 4 |
| 159 | 6 cap exper | personal | emotional | 507 | experience - exciting | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 160 | 6 cap exper | personal | emotional | 499 | experience - interesting | 5 | 0.2% | 0 | 2 | 1 | 2 | 0 | 1 | 1 | 1 | 2 | 4 | 0 | 1 | 2 | 3 |
| 161 | 6 cap exper | personal | expectations | 352 | realized or surpassed expectations - writing | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 162 | 6 cap exper | personal | learning | 509 | experience - loved learning environment | 4 | 0.2% | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 3 | 1 | 3 |
| 163 | 6 cap exper | personal | misc | 228 | enjoyed working with multiple departments | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 2 |
| 164 | 6 cap exper | personal | project | 495 | experience - completing large project | 22 | 0.8% | 4 | 8 | 7 | 0 | 3 | 6 | 1 | 0 | 15 | 6 | 8 | 8 | 9 | 13 |
| 165 | 6 cap exper | personal | skills | 506 | experience - enjoyed financial analysis | 1 | 0.0% | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 166 | 6 cap exper | personal | topic | 490 | experience - enjoyed topic | 41 | 1.6% | 5 | 9 | 21 | 1 | 5 | 14 | 7 | 2 | 18 | 7 | 15 | 19 | 10 | 31 |
| 167 | 6 cap exper | personal | value | 498 | experience - important | 4 | 0.2% | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 3 | 1 | 3 |
| 168 | 6 cap exper | personal | value | 501 | experience - meaningful | 1 | 0.0% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 169 | 6 cap exper | personal | value | 505 | experience - rewarding | 12 | 0.5% | 4 | 3 | 4 | 1 | 0 | 1 | 2 | 3 | 6 | 2 | 3 | 7 | 5 | 7 |
| 170 | 6 cap exper | personal | value | 504 | experience - worthwhile | 4 | 0.2% | 1 | 2 | 0 | 1 | 0 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 3 | 1 |
| 171 | 6 cap exper | personal | work | 502 | experience - loved the focused work | 4 | 0.2% | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 4 | 0 | 2 | 2 |
| 172 | 6 cap exper | personal | work | 493 | experience - loved the hard work | 5 | 0.2% | 3 | 1 | 1 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 3 | 2 | 3 | 2 |
| 173 | | **personal Total** | | | **Experience was worthwhile, rewarding** | **120** | **4.6%** | **27** | **33** | **40** | **9** | **11** | **39** | **18** | **11** | **52** | **23** | **41** | **56** | **41** | **79** |
| 174 | 6 cap exper | project | general | 293 | project - good quality | 11 | 0.4% | 5 | 3 | 3 | 0 | 0 | 2 | 5 | 0 | 4 | 2 | 5 | 4 | 4 | 7 |
| 175 | 6 cap exper | project | community | 275 | project benefits local community | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 |
| 176 | 6 cap exper | project | research | 364 | research - led to patent | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 177 | 6 cap exper | project | research | 363 | research - project contributed to field | 6 | 0.2% | 2 | 2 | 0 | 0 | 2 | 1 | 0 | 1 | 4 | 2 | 0 | 4 | 4 | 2 |
| 178 | 6 cap exper | project | research | 290 | research - unique topic / took on project that had little prior research | 18 | 0.7% | 2 | 9 | 7 | 0 | 0 | 9 | 1 | 2 | 6 | 5 | 7 | 6 | 3 | 15 |
| 179 | 6 cap exper | project | scope | 183 | took on ambitious project | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 180 | | **project Total** | | | **Capstone project itself was of good quality or of worth** | **39** | **1.5%** | **12** | **15** | **10** | **0** | **2** | **16** | **6** | **3** | **14** | **10** | **12** | **17** | **13** | **26** |
| 181 | 7 cap admin | organiz | comps | 356 | comps instead of project | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 2 |
| 182 | 7 cap admin | organiz | other | 357 | able to integrate other work or interests into project | 14 | 0.5% | 3 | 4 | 4 | 3 | 0 | 5 | 1 | 3 | 5 | 2 | 5 | 7 | 3 | 11 |
| 183 | 7 cap admin | organiz | other | 371 | audit program helpful | 1 | 0.0% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 184 | 7 cap admin | organiz | other | 370 | better than just classroom experience | 3 | 0.1% | 0 | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 2 | 2 | 1 |
| 185 | 7 cap admin | organiz | structure | 800 | helfuf to exchange ideas/experiences with other capstone students | 7 | 0.3% | 4 | 0 | 2 | 0 | 1 | 0 | 3 | 0 | 4 | 0 | 2 | 5 | 0 | 7 |
| 186 | 7 cap admin | organiz | structure | 365 | capstone guidelines clear and helpful | 1 | 0.0% | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 187 | 7 cap admin | organiz | structure | 366 | in-class research updates helped stay on track | 2 | 0.1% | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 188 | 7 cap admin | organiz | time | 361 | capstone pace | 3 | 0.1% | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 2 | 1 | 2 |
| 189 | 7 cap admin | organiz | time | 354 | having multiple terms for capstone | 6 | 0.2% | 1 | 1 | 4 | 0 | 0 | 0 | 5 | 0 | 1 | 0 | 4 | 2 | 0 | 6 |
| 190 | | **organiz Total** | | | **Capstone process had benefits - able to integrate various interests into project, spread out over multiple terms** | **39** | **1.5%** | **10** | **7** | **13** | **8** | **1** | **5** | **17** | **6** | **11** | **2** | **15** | **22** | **6** | **33** |
| 191 | 7 cap admin | outside | fieldwork | 527 | community - fieldwork - positive | 20 | 0.8% | 6 | 6 | 5 | 3 | 0 | 4 | 11 | 0 | 5 | 2 | 9 | 9 | 4 | 16 |
| 192 | 7 cap admin | outside | travel | 494 | experience - opportunity to travel | 13 | 0.5% | 4 | 7 | 1 | 0 | 1 | 7 | 3 | 0 | 3 | 4 | 4 | 5 | 6 | 7 |
| 193 | | **outside Total** | | | **Fieldwork/travel positive experience** | **33** | **1.3%** | **10** | **13** | **6** | **3** | **1** | **11** | **14** | **0** | **8** | **6** | **13** | **14** | **10** | **23** |
| 194 | 7 cap admin | prep | course | 367 | pre-project data collection | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 195 | 7 cap admin | prep | course | 355 | pre-project junior seminar helpful | 4 | 0.2% | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 2 | 1 | 0 | 4 |
| 196 | | **prep Total** | | | **Preparation for the capstone was helpful** | **5** | **0.2%** | **2** | **2** | **1** | **0** | **0** | **2** | **0** | **2** | **1** | **1** | **3** | **1** | **0** | **5** |
| 197 | 7 cap admin | resources | library | 10104 | helpful library support | 3 | 0.1% | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 2 | 1 | 2 |
| 198 | 7 cap admin | resources | library | 372 | library purchased materials necessary for project | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 199 | 7 cap admin | resources | support | 258 | admin - field support | 2 | 0.1% | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 200 | 7 cap admin | resources | support | 801 | eqiuipment/facilities good | 1 | 0.0% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 201 | 7 cap admin | resources | support | 100 | good support from collaborators, teamwork | 42 | 1.6% | 15 | 11 | 11 | 3 | 2 | 6 | 16 | 2 | 18 | 11 | 14 | 17 | 9 | 33 |
| 202 | 7 cap admin | resources | support | 104 | got good help from others (research assistants, other students, others) | 25 | 1.0% | 6 | 9 | 9 | 1 | 0 | 8 | 8 | 0 | 9 | 6 | 8 | 11 | 5 | 20 |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 203 | | **resources Total** | | | **Availability of equipment, library, facilities, human participant resources for the project** | **74** | **2.9%** | **22** | **22** | **22** | **5** | **3** | **15** | **28** | **2** | **29** | **17** | **25** | **32** | **15** | **59** |
| 204 | | | | | | | | | | | | | | | | | | | | | |
| 205 | | | | | **POSITIVE COMMENT SUBTOTAL:** | **1621** | **62.5%** | **460** | **558** | **414** | **97** | **90** | **513** | **393** | **140** | **575** | **302** | **609** | **710** | **449** | **1172** |
| 206 | | | | | | | | | | | | | | | | | | | | | |
| 207 | **NEGATIVE** | | | | | | | | | | | | | | | | | | | | |
| 208 | 1 skill gain | comm | oral | 10051 | not prepared for oral defense | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 209 | 1 skill gain | comm | writing | 10215 | writing - had difficulty synthesizing | 5 | 0.2% | 0 | 2 | 2 | 1 | 0 | 3 | 1 | 1 | 0 | 0 | 2 | 3 | 1 | 4 |
| 210 | | **comm Total** | | | **False: Improved writing or communication skills** | **6** | **0.2%** | **0** | **3** | **2** | **1** | **0** | **3** | **1** | **1** | **1** | **1** | **2** | **3** | **1** | **5** |
| 211 | 1 skill gain | crit thinking | integrate | 10084 | CT - only a paper, even if bigger | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| 212 | 1 skill gain | crit thinking | integrate | 10083 | CT - toic too narrow | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 213 | | **crit thinking Total** | | | **False: Improved critical thinking skills** | **3** | **0.1%** | **1** | **1** | **1** | **0** | **0** | **0** | **0** | **3** | **0** | **1** | **0** | **2** | **1** | **2** |
| 214 | 1 skill gain | projmgt | organiz | 10073 | project management -- difficulty managing large project | 4 | 0.2% | 0 | 3 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 | 3 | 0 | 4 |
| 215 | 1 skill gain | projmgt | timeman | 10061 | time management - meeting deadlines | 4 | 0.2% | 0 | 1 | 2 | 1 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 2 |
| 216 | 1 skill gain | projmgt | timeman | 10060 | time management skills- developed; problem with | 21 | 0.8% | 8 | 8 | 4 | 1 | 0 | 9 | 3 | 3 | 6 | 5 | 9 | 7 | 9 | 12 |
| 217 | | **projmgt Total** | | | **False: Improved project management skills; learned to work independently** | **29** | **1.1%** | **8** | **12** | **6** | **2** | **1** | **11** | **4** | **5** | **9** | **7** | **11** | **11** | **11** | **18** |
| 218 | 1 skill gain | research | quant | 10009 | quantitative skills - did not improve | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 219 | | **research Total** | | | **False: Gained research skills** | **1** | **0.0%** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **0** | **1** | **0** | **1** |
| 220 | 3 disposition gain | confidence | general | 10156 | self-confidence - general, lessened | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 |
| 221 | | **confidence Total** | | | **False: Gained self confidence in abilities** | **2** | **0.1%** | **2** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **2** | **0** |
| 222 | 4 profdevel | profdevel | general | 10169 | professional development - general; less helpful than hoped | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 2 |
| 223 | 4 profdevel | profdevel | jobprep | 10175 | professional development - helped prepare for / led directly to job | 6 | 0.2% | 2 | 2 | 2 | 0 | 0 | 2 | 0 | 1 | 3 | 1 | 4 | 1 | 1 | 5 |
| 224 | 4 profdevel | profdevel | schoolprep | 10179 | preparation for grad school/professional school; neg - too focused on grad school | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 225 | | **profdevel Total** | | | **False: Gained preparation for job, graduate school, or life generally** | **9** | **0.3%** | **3** | **3** | **3** | **0** | **0** | **3** | **0** | **2** | **4** | **2** | **6** | **1** | **1** | **8** |
| 226 | 6 cap exper | research | enjoyed | 10485 | experience - did not enjoy, appreciate research | 6 | 0.2% | 2 | 1 | 3 | 0 | 0 | 1 | 3 | 0 | 2 | 0 | 2 | 4 | 2 | 4 |
| 227 | 6 cap exper | research | enjoyed | 10486 | experience - research -did not enjoy working in lab | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 228 | 6 cap exper | research | litreview | 10019 | literature review - difficulty locating sources | 4 | 0.2% | 0 | 1 | 2 | 1 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 3 | 1 | 3 |
| 229 | 6 cap exper | research | research | 10522 | experience - too much focus on research | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 230 | | **research Total** | | | **False: Enjoyed, appreciated research experience** | **13** | **0.5%** | **4** | **2** | **6** | **1** | **0** | **6** | **5** | **0** | **2** | **2** | **3** | **8** | **4** | **9** |
| 231 | 6 cap exper | overall | negative | 20484 | negative experience overall | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 1 |
| 232 | | **overall Total** | | | **False: Capstone experience was enjoyable, great, or generally positive** | **2** | **0.1%** | **1** | **0** | **1** | **0** | **0** | **0** | **0** | **1** | **1** | **0** | **2** | **0** | **1** | **1** |
| 233 | 6 cap exper | projmgt | organiz | 10207 | reached project goals; neg - not reached as hoped | 3 | 0.1% | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 3 |
| 234 | 6 cap exper | projmgt | own | 10059 | project management - taking responsibility; neg-didn't own project | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 235 | 6 cap exper | projmgt | timeman | 10214 | time management - project not finished | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| 236 | 6 cap exper | projmgt | timeman | 10213 | time management - started process late/ fell behind | 7 | 0.3% | 0 | 2 | 4 | 0 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 4 |
| 237 | | **projmgt Total** | | | **Started late, didn't finish or reach goals** | **14** | **0.5%** | **4** | **4** | **5** | **0** | **1** | **1** | **5** | **3** | **5** | **2** | **5** | **7** | **4** | **10** |
| 238 | 6 cap exper | freedom | direction | 10419 | freedom - difficult directing course of own project | 8 | 0.3% | 3 | 1 | 3 | 0 | 1 | 5 | 2 | 0 | 1 | 2 | 3 | 3 | 2 | 6 |
| 239 | 6 cap exper | freedom | direction | 10417 | freedom - not able to develop own research plan | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 1 | 1 |
| 240 | 6 cap exper | freedom | direction | 10416 | freedom -not able to direct course of project | 5 | 0.2% | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 4 | 2 | 2 | 1 | 1 | 4 |
| 241 | 6 cap exper | freedom | direction | 10410 | freedom- unable to choose own topic | 13 | 0.5% | 2 | 3 | 8 | 0 | 0 | 3 | 7 | 0 | 3 | 2 | 4 | 7 | 3 | 10 |
| 242 | 6 cap exper | freedom | topic | 10421 | freedom - did not have guidance in choosing topic | 3 | 0.1% | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 2 | 1 | 0 | 3 |
| 243 | 6 cap exper | freedom | work | 10420 | freedom - forced to work independently | 7 | 0.3% | 2 | 2 | 1 | 0 | 2 | 2 | 0 | 2 | 3 | 2 | 2 | 3 | 3 | 4 |
| 244 | | **freedom Total** | | | **Unable to choose topic or lacked guidance** | **38** | **1.5%** | **12** | **8** | **14** | **0** | **4** | **11** | **9** | **3** | **15** | **8** | **14** | **16** | **10** | **28** |
| 245 | 6 cap exper | mentor | general | 10422 | mentor - not good overall | 9 | 0.3% | 1 | 6 | 2 | 0 | 0 | 8 | 1 | 0 | 0 | 3 | 2 | 4 | 2 | 7 |
| 246 | 6 cap exper | mentor | feedback | 10483 | mentor - did not appreciate quality of project | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 247 | 6 cap exper | mentor | feedback | 10424 | mentor - unhelpful - feedback | 19 | 0.7% | 4 | 12 | 1 | 1 | 1 | 8 | 2 | 1 | 8 | 3 | 7 | 9 | 3 | 16 |
| 248 | 6 cap exper | mentor | feedback | 10427 | mentor - unhelpful - feedback - amount | 11 | 0.4% | 0 | 8 | 3 | 0 | 0 | 6 | 3 | 0 | 2 | 0 | 4 | 7 | 1 | 10 |
| 249 | 6 cap exper | mentor | feedback | 10428 | mentor - unhelpful - feedback - consistent | 3 | 0.1% | 0 | 1 | 2 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 3 | 1 | 2 |
| 250 | 6 cap exper | mentor | feedback | 10425 | mentor - unhelpful - feedback - thorough | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 |
| 251 | 6 cap exper | mentor | feedback | 10426 | mentor - unhelpful - feedback - timely | 23 | 0.9% | 3 | 12 | 6 | 1 | 1 | 6 | 10 | 2 | 5 | 3 | 10 | 10 | 6 | 17 |
| 252 | 6 cap exper | mentor | feedback | 10701 | Not satisfied with grade | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 253 | 6 cap exper | mentor | helpful | 10423 | mentor - unhelpful | 23 | 0.9% | 3 | 14 | 4 | 0 | 2 | 5 | 10 | 1 | 7 | 5 | 13 | 5 | 5 | 18 |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 254 | 6 cap exper | mentor | helpful | 10431 | mentor - unhelpful - conducting research | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 2 |
| 255 | 6 cap exper | mentor | helpful | 10430 | mentor - unhelpful - writing process | 2 | 0.1% | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 2 |
| 256 | 6 cap exper | mentor | interest | 10435 | mentor - uninterested in topic/capstone | 11 | 0.4% | 2 | 5 | 3 | 1 | 0 | 2 | 1 | 2 | 6 | 0 | 5 | 6 | 2 | 9 |
| 257 | 6 cap exper | mentor | interest | 10436 | mentor - other faculty uninterested in topic/capstone | 4 | 0.2% | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 3 | 1 | 2 | 2 |
| 258 | 6 cap exper | mentor | knowledge | 10482 | mentor - did not understand capstone process | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 259 | 6 cap exper | mentor | knowledge | 10433 | mentor - not knowledgeable - about topic | 11 | 0.4% | 1 | 6 | 1 | 0 | 3 | 5 | 0 | 1 | 5 | 3 | 3 | 5 | 6 | 5 |
| 260 | 6 cap exper | mentor | meetings | 10446 | mentor - unavailable | 31 | 1.2% | 9 | 9 | 11 | 1 | 1 | 6 | 7 | 4 | 14 | 4 | 12 | 15 | 7 | 24 |
| 261 | 6 cap exper | mentor | meetings | 10478 | mentor - did not read drafts before meetings | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| 262 | 6 cap exper | mentor | meetings | 10474 | mentor - forgot meetings | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 263 | 6 cap exper | mentor | meetings | 10476 | mentor - meetings could be exhausting | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 264 | 6 cap exper | mentor | meetings | 10477 | mentor - meetings insufficient | 8 | 0.3% | 2 | 2 | 4 | 0 | 0 | 4 | 3 | 0 | 1 | 1 | 2 | 5 | 0 | 8 |
| 265 | 6 cap exper | mentor | meetings | 10448 | mentor - meetings not positive | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 266 | 6 cap exper | mentor | meetings | 10479 | mentor - not prepared for meetings | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 267 | 6 cap exper | mentor | projmgt | 10503 | experience - deadlinesnot  clear and helpful | 9 | 0.3% | 4 | 2 | 3 | 0 | 0 | 0 | 1 | 0 | 8 | 1 | 3 | 5 | 3 | 6 |
| 268 | 6 cap exper | mentor | projmgt | 10467 | mentor - did not follow syllabus | 4 | 0.2% | 2 | 0 | 2 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 2 | 2 | 0 | 4 |
| 269 | 6 cap exper | mentor | projmgt | 10481 | mentor - did not follow through on what promised | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 270 | 6 cap exper | mentor | projmgt | 10443 | mentor - encouraging - risks | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 |
| 271 | 6 cap exper | mentor | projmgt | 10466 | mentor - not enough direction | 21 | 0.8% | 6 | 9 | 5 | 0 | 1 | 5 | 5 | 3 | 8 | 2 | 12 | 7 | 7 | 14 |
| 272 | 6 cap exper | mentor | projmgt | 10463 | mentor - organization | 8 | 0.3% | 2 | 3 | 3 | 0 | 0 | 2 | 3 | 1 | 2 | 1 | 2 | 5 | 2 | 6 |
| 273 | 6 cap exper | mentor | projmgt | 10473 | mentor - unclear about expectations | 8 | 0.3% | 2 | 0 | 5 | 0 | 1 | 2 | 3 | 0 | 3 | 1 | 2 | 5 | 3 | 5 |
| 274 | 6 cap exper | mentor | rapor | 10434 | mentor - unapproachable | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 275 | 6 cap exper | mentor | rapor | 10475 | mentor - did not get along | 8 | 0.3% | 3 | 4 | 1 | 0 | 0 | 7 | 1 | 0 | 0 | 2 | 4 | 2 | 5 | 3 |
| 276 | 6 cap exper | mentor | rapor | 10468 | mentor - difficult to understand | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 277 | 6 cap exper | mentor | rapor | 10445 | mentor - not understanding | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 278 | 6 cap exper | mentor | rapor | 10452 | mentor - did not respectstudent's point of view | 3 | 0.1% | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 2 |
| 279 | 6 cap exper | mentor | rapor | 10440 | mentor -u supportive | 13 | 0.5% | 0 | 5 | 6 | 1 | 1 | 5 | 1 | 1 | 6 | 1 | 6 | 6 | 4 | 9 |
| 280 | 6 cap exper | mentor | rapor | 10441 | mentor - unsupportive - personal | 3 | 0.1% | 0 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 1 | 2 |
| 281 | 6 cap exper | mentor | xmisc | 10464 | mentor - did not have a mentor | 2 | 0.1% | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 1 |
| 282 | 6 cap exper | mentor | xmisc | 10472 | mentor - multiple advisors | 11 | 0.4% | 4 | 7 | 0 | 0 | 0 | 3 | 2 | 3 | 3 | 2 | 4 | 5 | 3 | 8 |
| 283 | 6 cap exper | mentor | xmisc | 10465 | mentor - needed to change mentors during capstone | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 2 |
| 284 | 6 cap exper | mentor | xmisc | 10469 | mentor - new professor | 4 | 0.2% | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 1 | 2 | 1 | 2 | 2 |
| 285 | 6 cap exper | mentor | xmisc | 10471 | mentor - too many advisees | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 286 | 6 cap exper | mentor | xmisc | 10470 | mentor - visiting professor | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 287 | 6 cap exper | mentor | xmisc | 10480 | mentor - worked too much with one mentor | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 288 | | **mentor Total** | | | **Mentor unhelpful, poor or untimely feedback, unavailable, unorganized, unclear expectations, uninterested** | **276** | **10.6%** | **65** | **117** | **75** | **8** | **11** | **94** | **66** | **24** | **92** | **40** | **115** | **121** | **74** | **202** |
| 289 | 6 cap exper | personal | communication | 10492 | experience - comm - presented data too many times | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 290 | 6 cap exper | personal | communication | 10508 | experience - comm -did not  enjoy the writing | 8 | 0.3% | 1 | 3 | 3 | 0 | 1 | 3 | 0 | 1 | 4 | 1 | 1 | 6 | 3 | 5 |
| 291 | 6 cap exper | personal | difficulty | 10515 | experience - difficult receiving constant critique | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 292 | 6 cap exper | personal | difficulty | 10528 | experience - difficulty - general | 20 | 0.8% | 7 | 9 | 3 | 0 | 1 | 4 | 2 | 2 | 12 | 6 | 7 | 7 | 8 | 12 |
| 293 | 6 cap exper | personal | difficulty | 10524 | experience - difficulty - sustaining creative energy | 2 | 0.1% | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 294 | 6 cap exper | personal | difficulty | 10513 | experience - difficulty - thesis relative to comps | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 295 | 6 cap exper | personal | difficulty | 10520 | experience - difficulty - two capstones at once | 4 | 0.2% | 1 | 2 | 1 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 3 | 0 | 4 |
| 296 | 6 cap exper | personal | emotional | 10512 | experience - depressing | 3 | 0.1% | 0 | 0 | 3 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 2 | 1 | 2 |
| 297 | 6 cap exper | personal | emotional | 10519 | experience - felt lost | 4 | 0.2% | 1 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 2 | 2 | 1 | 1 | 0 | 4 |
| 298 | 6 cap exper | personal | emotional | 10511 | experience - frustrating | 11 | 0.4% | 3 | 5 | 2 | 1 | 0 | 1 | 7 | 2 | 1 | 1 | 3 | 7 | 2 | 9 |
| 299 | 6 cap exper | personal | emotional | 10510 | experience - stressful | 126 | 4.9% | 31 | 48 | 36 | 2 | 9 | 49 | 15 | 13 | 49 | 33 | 45 | 48 | 30 | 96 |
| 300 | 6 cap exper | personal | emotional | 10601 | lost interest in topic over time | 5 | 0.2% | 0 | 3 | 1 | 0 | 1 | 1 | 2 | 1 | 1 | 0 | 3 | 2 | 2 | 3 |
| 301 | 6 cap exper | personal | misc | 10526 | experience - other disappointment | 9 | 0.3% | 2 | 3 | 3 | 0 | 0 | 4 | 1 | 4 | 0 | 5 | 4 | 0 | 4 | 5 |
| 302 | 6 cap exper | personal | topic | 10490 | experience - enjoyed topic | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 303 | 6 cap exper | personal | value | 10523 | experience - reflection | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 304 | 6 cap exper | personal | value | 10504 | experience - worthwhile | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 2 | 0 |
| 305 | 6 cap exper | personal | work | 10502 | experience - loved the focused work | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 306 | | **personal Total** | | | **Experience was stressful, difficult, disappointing** | **202** | **7.8%** | **48** | **78** | **60** | **3** | **12** | **68** | **37** | **27** | **70** | **50** | **70** | **82** | **54** | **148** |
| 307 | 6 cap exper | project | general | 10293 | project - good quality | 3 | 0.1% | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 2 |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 308 | 6 cap exper | project | research | 10290 | research - unique topic / took on project that had little prior research | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 309 | 6 cap exper | project | scope | 10390 | project too ambitious | 4 | 0.2% | 0 | 1 | 2 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 3 | 1 | 1 | 3 |
| 310 | 6 cap exper | project | scope | 10391 | project too rigidly defined | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 311 | | **project Total** | | | **False: Capstone project itself was of good quality or of worth** | **9** | **0.3%** | **1** | **3** | **4** | **0** | **1** | **3** | **2** | **1** | **3** | **1** | **4** | **4** | **2** | **7** |
| 312 | 6 cap exper | self | personal | 10210 | student personal problems caused difficulty | 5 | 0.2% | 0 | 1 | 4 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | 2 | 2 | 3 | 2 |
| 313 | | **self Total** | | | **False: Gained self-understanding or abilities and interests** | **5** | **0.2%** | **0** | **1** | **4** | **0** | **0** | **0** | **3** | **1** | **1** | **1** | **2** | **2** | **3** | **2** |
| 314 | 6 cap exper | structural | difficulty | 10514 | experience - obstacles | 2 | 0.1% | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 315 | 6 cap exper | structural | difficulty | 10521 | experience - obstacles - conducting research | 9 | 0.3% | 5 | 3 | 0 | 1 | 0 | 3 | 1 | 3 | 2 | 2 | 3 | 4 | 3 | 6 |
| 316 | 6 cap exper | structural | difficulty | 10518 | experience - obstacles - design | 3 | 0.1% | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 3 |
| 317 | 6 cap exper | structural | peers | 10700 | Other students' negative attitudes toward project | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 318 | 6 cap exper | structural | peers | 10517 | experience - group work difficulty | 4 | 0.2% | 0 | 2 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 0 | 1 | 3 | 1 | 3 |
| 319 | | **structural Total** | | | **Various obstacles to conducting the project were encountered** | **19** | **0.7%** | **8** | **6** | **2** | **2** | **1** | **6** | **5** | **3** | **5** | **3** | **6** | **10** | **4** | **15** |
| 320 | 6 cap exper | workload | effort | 10401 | capstone process too much work | 16 | 0.6% | 8 | 2 | 3 | 3 | 0 | 2 | 9 | 2 | 3 | 3 | 6 | 7 | 4 | 12 |
| 321 | 7 cap admin | organiz | credits | 10600 | capstone not worth enough credit hours | 5 | 0.2% | 2 | 1 | 1 | 1 | 0 | 0 | 4 | 0 | 1 | 0 | 2 | 3 | 2 | 3 |
| 322 | 6 cap exper | workload | organiz | 10220 | project management - difficulty balancing with other coursework | 49 | 1.9% | 14 | 16 | 17 | 0 | 2 | 17 | 10 | 10 | 12 | 11 | 13 | 25 | 13 | 36 |
| 323 | 6 cap exper | workload | organiz | 12201 | project management - difficulty balancing with other personal activities | 24 | 0.9% | 4 | 12 | 7 | 0 | 1 | 14 | 3 | 2 | 5 | 4 | 9 | 11 | 6 | 18 |
| 324 | 6 cap exper | workload | time | 10389 | capstone process too time consuming | 23 | 0.9% | 5 | 10 | 3 | 3 | 2 | 10 | 6 | 1 | 6 | 4 | 9 | 10 | 7 | 16 |
| 325 | 6 cap exper | workload | timereq | 10388 | too time consuming | 13 | 0.5% | 6 | 4 | 1 | 2 | 0 | 5 | 2 | 2 | 4 | 2 | 5 | 6 | 6 | 7 |
| 326 | | **workload Total** | | | **Difficulties were encountered balancing the capstone work with other coursework or personal activities** | **130** | **5.0%** | **39** | **45** | **32** | **9** | **5** | **48** | **34** | **17** | **31** | **24** | **44** | **62** | **38** | **92** |
| 327 | 7 cap admin | organiz | class | 10377 | capstone class - design, structure | 6 | 0.2% | 0 | 1 | 5 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 6 | 2 | 4 |
| 328 | 7 cap admin | organiz | class | 10384 | capstone class - did not meet enough | 3 | 0.1% | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 3 | 0 | 0 | 3 |
| 329 | 7 cap admin | organiz | class | 10383 | capstone class - not relevant to specific topic | 4 | 0.2% | 0 | 1 | 3 | 0 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 3 | 1 | 3 |
| 330 | 7 cap admin | organiz | class | 10385 | capstone class - not useful | 12 | 0.5% | 3 | 2 | 7 | 0 | 0 | 0 | 10 | 2 | 0 | 1 | 4 | 7 | 3 | 9 |
| 331 | 7 cap admin | organiz | class | 10382 | capstone class - time consuming | 2 | 0.1% | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| 332 | 7 cap admin | organiz | comps | 10256 | admin - organization of department comps | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 2 |
| 333 | 7 cap admin | organiz | comps | 10356 | comps instead of project; neg - just took test | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 2 | 0 |
| 334 | 7 cap admin | organiz | grading | 10525 | experience - evaluation too subjective | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| 335 | 7 cap admin | organiz | other | 10260 | admin - IRIS/IRB constraints | 5 | 0.2% | 1 | 4 | 0 | 0 | 0 | 0 | 1 | 0 | 4 | 1 | 3 | 1 | 1 | 4 |
| 336 | 7 cap admin | organiz | structure | 10365 | capstone guidelines clear and helpful; neg - not clear | 12 | 0.5% | 0 | 2 | 5 | 4 | 1 | 0 | 7 | 1 | 4 | 2 | 1 | 9 | 4 | 8 |
| 337 | 7 cap admin | organiz | structure | 10387 | capstone project/grade carries too much weight relative to other requirements | 5 | 0.2% | 0 | 2 | 1 | 1 | 1 | 0 | 2 | 1 | 2 | 2 | 2 | 1 | 3 | 2 |
| 338 | 7 cap admin | organiz | structure | 10405 | capstone structure not flexible enough | 2 | 0.1% | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 339 | 7 cap admin | organiz | structure | 10398 | did not have system of accountability to help meet goals | 2 | 0.1% | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 1 | 1 |
| 340 | 7 cap admin | organiz | time | 10650 | not enough presentation time to present necessary information | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 341 | 7 cap admin | organiz | time | 10378 | capstone process too long | 13 | 0.5% | 2 | 5 | 5 | 1 | 0 | 3 | 7 | 1 | 2 | 6 | 5 | 2 | 9 | 4 |
| 342 | 7 cap admin | organiz | time | 10375 | capstone should cover longer time frame | 17 | 0.7% | 7 | 6 | 4 | 0 | 0 | 1 | 8 | 2 | 6 | 2 | 6 | 9 | 4 | 13 |
| 343 | 7 cap admin | organiz | time | 10376 | capstone should not be spread over three terms | 3 | 0.1% | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 1 | 1 | 2 |
| 344 | 7 cap admin | organiz | time | 10354 | having multiple terms for capstone | 2 | 0.1% | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 1 |
| 345 | 7 cap admin | organiz | time | 10404 | not enough time | 20 | 0.8% | 6 | 7 | 6 | 1 | 0 | 2 | 9 | 2 | 7 | 6 | 3 | 11 | 3 | 17 |
| 346 | 7 cap admin | organiz | time | 10408 | oral presentations took place too late | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 2 |
| 347 | 7 cap admin | organiz | time | 10374 | too late in senior year to be helpful for grad school | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 348 | 7 cap admin | organiz | topic | 10516 | experience - needed to change topic in middle | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 |
| 349 | | **organiz Total** | | | **Capstone guidelines not clear, requirement carries too much weight, time frame or terms to much or too little, capstone class not helpful** | **121** | **4.7%** | **23** | **38** | **48** | **8** | **4** | **9** | **65** | **11** | **36** | **28** | **39** | **54** | **41** | **80** |
| 350 | 7 cap admin | outside | fieldwork | 10402 | did not like placement | 2 | 0.1% | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 351 | 7 cap admin | outside | fieldwork | 11000 | misc problem with outside placement | 4 | 0.2% | 1 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 0 | 1 | 2 | 1 | 2 | 2 |
| 352 | 7 cap admin | outside | fieldwork | 10403 | problems with personnel at placement | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 353 | 7 cap admin | outside | fieldwork | 10393 | student teaching time consuming | 3 | 0.1% | 0 | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 3 |
| 354 | 7 cap admin | outside | fieldwork | 10399 | too much expected from facility | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 355 | 7 cap admin | outside | fieldwork | 10392 | travel difficult | 3 | 0.1% | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 2 | 3 | 0 |
| 356 | 7 cap admin | outside | fieldwork | 10394 | volunteer hours requirement | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 357 | | **outside Total** | | | **Outside placements caused problem** | **15** | **0.6%** | **2** | **5** | **4** | **4** | **0** | **2** | **13** | **0** | **0** | **2** | **5** | **8** | **6** | **9** |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 358 | 7 cap admin | prep | course | 10397 | pre-project - did not work on project before capstone | 6 | 0.2% | 3 | 2 | 1 | 0 | 0 | 1 | 1 | 3 | 1 | 2 | 1 | 3 | 0 | 6 |
| 359 | 7 cap admin | prep | course | 10355 | pre-project junior seminar helpful; neg - didn't help | 5 | 0.2% | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 4 | 1 | 1 | 3 | 2 | 3 |
| 360 | 7 cap admin | prep | course | 11011 | statistical preparation insufficient | 6 | 0.2% | 1 | 5 | 0 | 0 | 0 | 2 | 0 | 0 | 4 | 1 | 3 | 2 | 0 | 6 |
| 361 | 7 cap admin | prep | research | 10212 | pre-project - research design skills lacking | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 362 | 7 cap admin | prep | wellprep | 10186 | pre-project - well prepared in general | 5 | 0.2% | 0 | 2 | 3 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 4 | 1 | 0 | 5 |
| 363 | | **prep Total** | | | **Preparation for the capstone waslacking** | **23** | **0.9%** | **4** | **12** | **6** | **0** | **1** | **6** | **1** | **5** | **11** | **4** | **10** | **9** | **2** | **21** |
| 364 | 7 cap admin | resources | access | 10400 | availability/cooperation of human subjects | 7 | 0.3% | 1 | 4 | 1 | 1 | 0 | 1 | 3 | 2 | 1 | 4 | 3 | 0 | 4 | 3 |
| 365 | 7 cap admin | resources | equipment | 10381 | access to equipment | 8 | 0.3% | 2 | 4 | 1 | 0 | 1 | 2 | 0 | 0 | 6 | 1 | 3 | 4 | 1 | 7 |
| 366 | 7 cap admin | resources | equipment | 10259 | admin - equipment/software issues | 12 | 0.5% | 1 | 8 | 1 | 0 | 2 | 3 | 1 | 0 | 8 | 1 | 6 | 5 | 2 | 10 |
| 367 | 7 cap admin | resources | equipment | 10379 | wireless internet unreliable | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 368 | 7 cap admin | resources | facilities | 10386 | access to workspace | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 369 | 7 cap admin | resources | facilities | 10395 | place to store resources | 1 | 0.0% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 370 | 7 cap admin | resources | funding | 10406 | needed to pay to print thesis | 1 | 0.0% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 371 | 7 cap admin | resources | funding | 10180 | neg- denied funding for project | 6 | 0.2% | 2 | 2 | 2 | 0 | 0 | 4 | 0 | 1 | 1 | 0 | 3 | 3 | 1 | 5 |
| 372 | 7 cap admin | resources | library | 10380 | library hours limited | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 373 | 7 cap admin | resources | library | 10396 | library primary sources | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 374 | 7 cap admin | resources | library | 11001 | difficulty obtaining library materials/sources | 10 | 0.4% | 2 | 4 | 4 | 0 | 0 | 2 | 3 | 1 | 4 | 4 | 1 | 5 | 1 | 9 |
| 375 | 7 cap admin | resources | support | 10801 | too much out of pocket cost | 0 | 0.0% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 376 | 7 cap admin | resources | support | 10258 | admin - field support | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 0 |
| 377 | 7 cap admin | resources | support | 10255 | admin - working with college administrators | 2 | 0.1% | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 |
| 378 | | **resources Total** | | | **Availability of equipment, library, facilities, human participant resources for the project** | **55** | **2.1%** | **11** | **26** | **14** | **1** | **3** | **18** | **8** | **4** | **25** | **14** | **19** | **22** | **14** | **41** |
| 379 | | | | | | | | | | | | | | | | | | | | | |
| 380 | | | | | **NEGATIVE COMMENT SUBTOTAL:** | **972** | **37.5%** | **236** | **365** | **287** | **39** | **44** | **290** | **260** | **111** | **311** | **192** | **357** | **423** | **273** | **699** |
| 381 | | | | | | | | | | | | | | | | | | | | | |
| 382 | | **Grand Total** | | | | 2593 | 100.0% | 696 | 923 | 701 | 136 | 134 | 803 | 653 | 251 | 886 | 494 | 966 | 1133 | 722 | 1871 |
| 383 | | | | | | | | | | | | | | | | | | | | | |
| 384 | 8-none | none | no aspects | 185 | none - no positive or negative aspect to report | - | | 7 | 11 | 11 | 1 | 3 | 11 | 9 | 6 | 7 | 11 | 17 | 5 | 22 | 11 |
| 385 | | | | | | | | | | | | | | | | | | | | | |
| 386 | Comment Count Statistics: | | | | | | | | | | | | | | | | | | | | |
| 387 | | Grand Total POSITIVE | | | | 1621 | 63% | 460 | 558 | 414 | 97 | 90 | 513 | 393 | 140 | 575 | 302 | 609 | 710 | 449 | 1172 |
| 388 | | Grand Total NEGATIVE | | | | 972 | 37% | 236 | 365 | 287 | 39 | 44 | 290 | 260 | 111 | 311 | 192 | 357 | 423 | 273 | 699 |
| 389 | | Grand Total | | | | 2593 | 100% | 696 | 923 | 701 | 136 | 134 | 803 | 653 | 251 | 886 | 494 | 966 | 1133 | 722 | 1871 |
| 390 | | | | | | | | | | | | | | | | | | | | | |
| 391 | | % OVERALL POSITIVE | | | | 63% | | 66% | 60% | 59% | 71% | 67% | 64% | 60% | 56% | 65% | 61% | 63% | 63% | 62% | 63% |

**Table Q1-2: Detailed Tally by Topic of student responses to:** COMBINED DATA FOR 2009 and 2010

**Please describe any particularly positive or negative aspects of your capstone experience.**

Positive and negative comments are tallied in separate sections

Percents are column percents for all comments combined (positive and negative).

H=>3.50
M= 3.00 to 3.49
L=<3.00

| Line | Group 2 | Description | Cnt | % | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
| 5 | comm Total | Improved writing or communication skills | 33 | 1.3% | 11 | 15 | 5 | 0 | 2 | 15 | 2 | 1 | 15 | 8 | 13 | 12 | 15 | 18 |
| 14 | crit thinking Total | Improved critical thinking skills | 46 | 1.8% | 8 | 15 | 15 | 2 | 6 | 11 | 13 | 5 | 17 | 7 | 11 | 28 | 13 | 33 |
| 22 | projmgt Total | Improved project management skills; learned to work independently | 123 | 4.7% | 43 | 49 | 20 | 2 | 9 | 37 | 25 | 12 | 49 | 25 | 58 | 40 | 33 | 90 |
| 39 | research Total | Gained research skills | 104 | 4.0% | 40 | 43 | 11 | 6 | 4 | 31 | 26 | 6 | 41 | 16 | 48 | 40 | 30 | 74 |
| 47 | disc Total | Gained disciplinary knowledge | 32 | 1.2% | 7 | 12 | 7 | 3 | 3 | 13 | 9 | 2 | 8 | 7 | 13 | 12 | 10 | 22 |
| 52 | overall Total | Generally learned a lot or grew intellectually | 69 | 2.7% | 19 | 12 | 23 | 4 | 10 | 14 | 17 | 5 | 33 | 14 | 23 | 32 | 20 | 49 |
| 68 | self Total | Gained self-understanding or abilities and interests | 115 | 4.4% | 42 | 31 | 36 | 2 | 4 | 35 | 29 | 5 | 46 | 29 | 42 | 44 | 31 | 84 |
| 73 | behavior Total | Developed patience, perseverance, willingness to face challenges | 14 | 0.5% | 6 | 5 | 3 | 0 | 0 | 6 | 1 | 3 | 4 | 3 | 5 | 6 | 3 | 11 |
| 80 | confidence Total | Gained self confidence in abilities | 33 | 1.3% | 10 | 16 | 6 | 0 | 1 | 13 | 5 | 3 | 12 | 7 | 15 | 11 | 6 | 27 |
| 84 | motiv Total | Became more interested in research or project | 15 | 0.6% | 2 | 4 | 4 | 5 | 0 | 2 | 7 | 3 | 3 | 1 | 10 | 4 | 3 | 12 |
| 93 | profdevel Total | Gained preparation for job, graduate school, or life generally | 61 | 2.4% | 21 | 22 | 13 | 4 | 1 | 16 | 24 | 4 | 17 | 5 | 17 | 39 | 19 | 42 |
| 99 | research Total | Enjoyed, appreciated research experience | 51 | 2.0% | 17 | 18 | 13 | 1 | 2 | 25 | 13 | 0 | 13 | 8 | 22 | 21 | 19 | 32 |
| 101 | overall Total | Capstone experience was enjoyable, great, or generally positive | 52 | 2.0% | 18 | 18 | 12 | 2 | 2 | 20 | 9 | 5 | 18 | 14 | 20 | 18 | 17 | 35 |
| 105 | projmgt Total | Managed project well | 41 | 1.6% | 6 | 20 | 11 | 2 | 2 | 16 | 10 | 4 | 11 | 6 | 16 | 19 | 12 | 29 |
| 116 | freedom Total | Student appreciated the freedom to choose topic, direct project, work independently | 120 | 4.6% | 24 | 37 | 31 | 23 | 4 | 27 | 41 | 15 | 37 | 21 | 41 | 58 | 34 | 86 |
| 156 | mentor Total | Mentor was great overall, helpful, supportive, available, interested, gave good feedback | 402 | 15.5% | 103 | 149 | 112 | 16 | 22 | 144 | 79 | 43 | 136 | 72 | 146 | 184 | 99 | 303 |
| 173 | personal Total | Experience was worthwhile, rewarding | 120 | 4.6% | 27 | 33 | 40 | 9 | 11 | 39 | 18 | 11 | 52 | 23 | 41 | 56 | 41 | 79 |
| 180 | project Total | Capstone project itself was of good quality or of worth | 39 | 1.5% | 12 | 15 | 10 | 0 | 2 | 16 | 6 | 3 | 14 | 10 | 12 | 17 | 13 | 26 |
| 190 | organiz Total | Capstone process had benefits - able to integrate various interests into project, spread out over multiple terms | 39 | 1.5% | 10 | 7 | 13 | 8 | 1 | 5 | 17 | 6 | 11 | 2 | 15 | 22 | 6 | 33 |
| 193 | outside Total | Fieldwork/travel positive experience | 33 | 1.3% | 10 | 13 | 6 | 3 | 1 | 11 | 14 | 0 | 8 | 6 | 13 | 14 | 10 | 23 |
| 196 | prep Total | Preparation for the capstone was helpful | 5 | 0.2% | 2 | 2 | 1 | 0 | 0 | 2 | 0 | 2 | 1 | 1 | 3 | 1 | 0 | 5 |
| 203 | resources Total | Availability of equipment, library, facilities, human participant resources for the project | 74 | 2.9% | 22 | 22 | 22 | 5 | 3 | 15 | 28 | 2 | 29 | 17 | 25 | 32 | 15 | 59 |
| **205** | | **POSITIVE COMMENT SUBTOTAL:** | **1621** | **62.5%** | **460** | **558** | **414** | **97** | **90** | **513** | **393** | **140** | **575** | **302** | **609** | **710** | **449** | **1172** |
| 207 | | | | | | | | | | | | | | | | | | |
| 210 | comm Total | False: Improved writing or communication skills | 6 | 0.2% | 0 | 3 | 2 | 1 | 0 | 3 | 1 | 1 | 1 | 1 | 2 | 3 | 1 | 5 |
| 213 | crit thinking Total | False: Improved critical thinking skills | 3 | 0.1% | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 2 | 1 | 2 |
| 217 | projmgt Total | False: Improved project management skills; learned to work independently | 29 | 1.1% | 8 | 12 | 6 | 2 | 1 | 11 | 4 | 5 | 9 | 7 | 11 | 11 | 11 | 18 |
| 219 | research Total | False: Gained research skills | 1 | 0.0% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 221 | confidence Total | False: Gained self confidence in abilities | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 |
| 225 | profdevel Total | False: Gained preparation for job, graduate school, or life generally | 9 | 0.3% | 3 | 3 | 3 | 0 | 0 | 3 | 0 | 2 | 4 | 2 | 6 | 1 | 1 | 8 |
| 230 | research Total | False: Enjoyed, appreciated research experience | 13 | 0.5% | 4 | 2 | 6 | 1 | 0 | 6 | 5 | 0 | 2 | 2 | 3 | 8 | 4 | 9 |
| 232 | overall Total | False: Capstone experience was enjoyable, great, or generally positive | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 1 |
| 237 | projmgt Total | Started late, didn't finish or reach goals | 14 | 0.5% | 4 | 4 | 5 | 0 | 1 | 1 | 5 | 3 | 5 | 2 | 5 | 7 | 4 | 10 |
| 244 | freedom Total | Unable to choose topic or lacked guidance | 38 | 1.5% | 12 | 8 | 14 | 0 | 4 | 11 | 9 | 3 | 15 | 8 | 14 | 16 | 10 | 28 |
| 288 | mentor Total | Mentor unhelpful, poor or untimely feedback, unavailable, unorganized, unclear expectations, uninterested | 276 | 10.6% | 65 | 117 | 75 | 8 | 11 | 94 | 66 | 24 | 92 | 40 | 115 | 121 | 74 | 202 |
| 306 | personal Total | Experience was stressful, difficult, disappointing | 202 | 7.8% | 48 | 78 | 60 | 3 | 12 | 68 | 37 | 27 | 70 | 50 | 70 | 82 | 54 | 148 |
| 311 | project Total | False: Capstone project itself was of good quality or of worth | 9 | 0.3% | 1 | 3 | 4 | 0 | 1 | 3 | 2 | 1 | 3 | 1 | 4 | 4 | 2 | 7 |
| 313 | self Total | False: Gained self-understanding or abilities and interests | 5 | 0.2% | 0 | 1 | 4 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | 2 | 2 | 3 | 2 |
| 319 | structural Total | Various obstacles to conducting the project were encountered | 19 | 0.7% | 8 | 6 | 2 | 2 | 1 | 6 | 5 | 3 | 5 | 3 | 6 | 10 | 4 | 15 |

| Line | Group 2 | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 326 | workload Total | Difficulties were encountered balancing the capstone work with other coursework or personal activities | 130 | 5.0% | 39 | 45 | 32 | 9 | 5 | 48 | 34 | 17 | 31 | 24 | 44 | 62 | 38 | 92 |
| 349 | organiz Total | Capstone guidelines not clear, requirement carries too much weight, time frame or terms to much or too little, capstone class not helpful | 121 | 4.7% | 23 | 38 | 48 | 8 | 4 | 9 | 65 | 11 | 36 | 28 | 39 | 54 | 41 | 80 |
| 357 | outside Total | Outside placements caused problem | 15 | 0.6% | 2 | 5 | 4 | 4 | 0 | 2 | 13 | 0 | 0 | 2 | 5 | 8 | 6 | 9 |
| 363 | prep Total | Preparation for the capstone waslacking | 23 | 0.9% | 4 | 12 | 6 | 0 | 1 | 6 | 1 | 5 | 11 | 4 | 10 | 9 | 2 | 21 |
| 378 | resources Total | Availability of equipment, library, facilities, human participant resources for the project | 55 | 2.1% | 11 | 26 | 14 | 1 | 3 | 18 | 8 | 4 | 25 | 14 | 19 | 22 | 14 | 41 |
| **380** | | **NEGATIVE COMMENT SUBTOTAL:** | **972** | **37.5%** | **236** | **365** | **287** | **39** | **44** | **290** | **260** | **111** | **311** | **192** | **357** | **423** | **273** | **699** |
| 382 | **Grand Total** | | 2593 | 100.0% | 696 | 923 | 701 | 136 | 134 | 803 | 653 | 251 | 886 | 494 | 966 | 1133 | 722 | 1871 |

**Table Q1-3: Detailed Tally by Topic of student responses to:** COMBINED DATA FOR 2009 and 2010

**Please describe any particularly positive or negative aspects of your capstone experience.** **Percentages of column total**

Positive and negative comments are tallied in separate sections

Percents are column percents for all comments combined (positive and negative).

H=>3.50
M= 3.00 to 3.49
L=<3.00

| Line | Group 2 | Description | Cnt | % | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
| 5 | comm Total | Improved writing or communication skills | 33 | 1.3% | 1.6% | 1.6% | 0.7% | 0.0% | 1.4% | 1.7% | 0.3% | 0.4% | 1.7% | 1.6% | 1.3% | 1.0% | 2.0% | 0.9% |
| 14 | crit thinking Total | Improved critical thinking skills | 46 | 1.8% | 1.2% | 1.6% | 2.1% | 1.5% | 4.1% | 1.3% | 2.0% | 2.0% | 1.9% | 1.4% | 1.1% | 2.4% | 1.7% | 1.7% |
| 22 | projmgt Total | Improved project management skills; learned to work independently | 123 | 4.7% | 6.2% | 5.1% | 2.8% | 1.5% | 6.2% | 4.3% | 3.9% | 4.7% | 5.4% | 5.0% | 6.0% | 3.4% | 4.4% | 4.7% |
| 39 | research Total | Gained research skills | 104 | 4.0% | 5.8% | 4.5% | 1.5% | 4.4% | 2.7% | 3.6% | 4.0% | 2.4% | 4.6% | 3.2% | 4.9% | 3.4% | 4.0% | 3.9% |
| 47 | disc Total | Gained disciplinary knowledge | 32 | 1.2% | 1.0% | 1.2% | 1.0% | 2.2% | 2.1% | 1.5% | 1.4% | 0.8% | 0.9% | 1.4% | 1.3% | 1.0% | 1.3% | 1.2% |
| 52 | overall Total | Generally learned a lot or grew intellectually | 69 | 2.7% | 2.7% | 1.2% | 3.2% | 2.9% | 6.8% | 1.6% | 2.6% | 2.0% | 3.7% | 2.8% | 2.4% | 2.7% | 2.7% | 2.6% |
| 68 | self Total | Gained self-understanding or abilities and interests | 115 | 4.4% | 6.1% | 3.2% | 5.0% | 1.5% | 2.7% | 4.1% | 4.5% | 2.0% | 5.1% | 5.8% | 4.3% | 3.7% | 4.2% | 4.4% |
| 73 | behavior Total | Developed patience, perseverance, willingness to face challenges | 14 | 0.5% | 0.9% | 0.5% | 0.4% | 0.0% | 0.0% | 0.7% | 0.2% | 1.2% | 0.4% | 0.6% | 0.5% | 0.5% | 0.4% | 0.6% |
| 80 | confidence Total | Gained self confidence in abilities | 33 | 1.3% | 1.4% | 1.7% | 0.8% | 0.0% | 0.7% | 1.5% | 0.8% | 1.2% | 1.3% | 1.4% | 1.5% | 0.9% | 0.8% | 1.4% |
| 84 | motiv Total | Became more interested in research or project | 15 | 0.6% | 0.3% | 0.4% | 0.6% | 3.7% | 0.0% | 0.2% | 1.1% | 1.2% | 0.3% | 0.2% | 1.0% | 0.3% | 0.4% | 0.6% |
| 93 | profdevel Total | Gained preparation for job, graduate school, or life generally | 61 | 2.4% | 3.0% | 2.3% | 1.8% | 2.9% | 0.7% | 1.9% | 3.7% | 1.6% | 1.9% | 1.0% | 1.7% | 3.3% | 2.6% | 2.2% |
| 99 | research Total | Enjoyed, appreciated research experience | 51 | 2.0% | 2.5% | 1.9% | 1.8% | 0.7% | 1.4% | 2.9% | 2.0% | 0.0% | 1.4% | 1.6% | 2.3% | 1.8% | 2.6% | 1.7% |
| 101 | overall Total | Capstone experience was enjoyable, great, or generally positive | 52 | 2.0% | 2.6% | 1.9% | 1.7% | 1.5% | 1.4% | 2.3% | 1.4% | 2.0% | 2.0% | 2.8% | 2.1% | 1.5% | 2.3% | 1.8% |
| 105 | projmgt Total | Managed project well | 41 | 1.6% | 0.9% | 2.1% | 1.5% | 1.5% | 1.4% | 1.9% | 1.6% | 1.6% | 1.2% | 1.2% | 1.6% | 1.6% | 1.6% | 1.5% |
| 116 | freedom Total | Student appreciated the freedom to choose topic, direct project, work independently | 120 | 4.6% | 3.5% | 3.9% | 4.3% | 16.9% | 2.7% | 3.1% | 6.4% | 5.9% | 4.1% | 4.2% | 4.2% | 4.9% | 4.6% | 4.5% |
| 156 | mentor Total | Mentor was great overall, helpful, supportive, available, interested, gave good feedback | 402 | 15.5% | 14.9% | 15.5% | 15.6% | 11.8% | 15.1% | 16.7% | 12.3% | 17.0% | 15.1% | 14.4% | 15.0% | 15.6% | 13.3% | 15.8% |
| 173 | personal Total | Experience was worthwhile, rewarding | 120 | 4.6% | 3.9% | 3.4% | 5.6% | 6.6% | 7.5% | 4.5% | 2.8% | 4.3% | 5.8% | 4.6% | 4.2% | 4.7% | 5.5% | 4.1% |
| 180 | project Total | Capstone project itself was of good quality or of worth | 39 | 1.5% | 1.7% | 1.6% | 1.4% | 0.0% | 1.4% | 1.9% | 0.9% | 1.2% | 1.6% | 2.0% | 1.2% | 1.4% | 1.7% | 1.4% |
| 190 | organiz Total | Capstone process had benefits - able to integrate various interests into project, spread out over multiple terms | 39 | 1.5% | 1.4% | 0.7% | 1.8% | 5.9% | 0.7% | 0.6% | 2.6% | 2.4% | 1.2% | 0.4% | 1.5% | 1.9% | 0.8% | 1.7% |
| 193 | outside Total | Fieldwork/travel positive experience | 33 | 1.3% | 1.4% | 1.4% | 0.8% | 2.2% | 0.7% | 1.3% | 2.2% | 0.0% | 0.9% | 1.2% | 1.3% | 1.2% | 1.3% | 1.2% |
| 196 | prep Total | Preparation for the capstone was helpful | 5 | 0.2% | 0.3% | 0.2% | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 0.8% | 0.1% | 0.2% | 0.3% | 0.1% | 0.0% | 0.3% |
| 203 | resources Total | Availability of equipment, library, facilities, human participant resources for the project | 74 | 2.9% | 3.2% | 2.3% | 3.1% | 3.7% | 2.1% | 1.7% | 4.4% | 0.8% | 3.2% | 3.4% | 2.6% | 2.7% | 2.0% | 3.1% |
| **205** | | **POSITIVE COMMENT SUBTOTAL:** | **1621** | **62.5%** | **67%** | **58%** | **58%** | **71%** | **62%** | **60%** | **61%** | **55%** | **64%** | **60%** | **63%** | **60%** | **60%** | **61%** |

| Line | Group 2 | Description | Cnt | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 207 | | | | | | | | | | | | | | | | | | |
| 210 | comm Total | False: Improved writing or communication skills | 6 | 0.2% | 0.0% | 0.3% | 0.3% | 0.7% | 0.0% | 0.3% | 0.2% | 0.4% | 0.1% | 0.2% | 0.2% | 0.3% | 0.1% | 0.3% |
| 213 | crit thinking Total | False: Improved critical thinking skills | 3 | 0.1% | 0.1% | 0.1% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 1.2% | 0.0% | 0.2% | 0.0% | 0.2% | 0.1% | 0.1% |
| 217 | projmgt Total | False: Improved project management skills; learned to work independently | 29 | 1.1% | 1.2% | 1.2% | 0.8% | 1.5% | 0.7% | 1.3% | 0.6% | 2.0% | 1.0% | 1.4% | 1.1% | 0.9% | 1.5% | 0.9% |
| 219 | research Total | False: Gained research skills | 1 | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.1% | 0.0% | 0.1% |
| 221 | confidence Total | False: Gained self confidence in abilities | 2 | 0.1% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.3% | 0.0% |
| 225 | profdevel Total | False: Gained preparation for job, graduate school, or life generally | 9 | 0.3% | 0.4% | 0.3% | 0.4% | 0.0% | 0.0% | 0.3% | 0.0% | 0.8% | 0.4% | 0.4% | 0.6% | 0.1% | 0.1% | 0.4% |
| 230 | research Total | False: Enjoyed, appreciated research experience | 13 | 0.5% | 0.6% | 0.2% | 0.8% | 0.7% | 0.0% | 0.7% | 0.8% | 0.0% | 0.2% | 0.4% | 0.3% | 0.7% | 0.5% | 0.5% |
| 232 | overall Total | False: Capstone experience was enjoyable, great, or generally positive | 2 | 0.1% | 0.1% | 0.0% | 0.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.1% | 0.0% | 0.2% | 0.0% | 0.1% | 0.1% |
| 237 | projmgt Total | Started late, didn't finish or reach goals | 14 | 0.5% | 0.6% | 0.4% | 0.7% | 0.0% | 0.7% | 0.1% | 0.8% | 1.2% | 0.6% | 0.4% | 0.5% | 0.6% | 0.5% | 0.5% |
| 244 | freedom Total | Unable to choose topic or lacked guidance | 38 | 1.5% | 1.7% | 0.8% | 1.9% | 0.0% | 2.7% | 1.3% | 1.4% | 1.2% | 1.7% | 1.6% | 1.4% | 1.4% | 1.3% | 1.5% |
| 288 | mentor Total | Mentor unhelpful, poor or untimely feedback, unavailable, unorganized, unclear expectations, uninteresto | 276 | 10.6% | 9.4% | 12.2% | 10.4% | 5.9% | 7.5% | 10.9% | 10.3% | 9.5% | 10.2% | 8.0% | 11.8% | 10.2% | 9.9% | 10.6% |
| 306 | personal Total | Experience was stressful, difficult, disappointing | 202 | 7.8% | 6.9% | 8.1% | 8.3% | 2.2% | 8.2% | 7.9% | 5.8% | 10.7% | 7.8% | 10.0% | 7.2% | 6.9% | 7.3% | 7.7% |
| 311 | project Total | False: Capstone project itself was of good quality or of worth | 9 | 0.3% | 0.1% | 0.3% | 0.6% | 0.0% | 0.7% | 0.3% | 0.3% | 0.4% | 0.3% | 0.2% | 0.4% | 0.3% | 0.3% | 0.4% |
| 313 | self Total | False: Gained self-understanding or abilities and interests | 5 | 0.2% | 0.0% | 0.1% | 0.6% | 0.0% | 0.0% | 0.0% | 0.5% | 0.4% | 0.1% | 0.2% | 0.2% | 0.2% | 0.4% | 0.1% |
| 319 | structural Total | Various obstacles to conducting the project were encountered | 19 | 0.7% | 1.2% | 0.6% | 0.3% | 1.5% | 0.7% | 0.7% | 0.8% | 1.2% | 0.6% | 0.6% | 0.6% | 0.8% | 0.5% | 0.8% |
| 326 | workload Total | Difficulties were encountered balancing the capstone work with other coursework or personal activities | 130 | 5.0% | 5.6% | 4.7% | 4.4% | 6.6% | 3.4% | 5.6% | 5.3% | 6.7% | 3.4% | 4.8% | 4.5% | 5.2% | 5.1% | 4.8% |
| 349 | organiz Total | Capstone guidelines not clear, requirement carries too much weight, time frame or terms to much or too little, capstone class not helpful | 121 | 4.7% | 3.3% | 4.0% | 6.7% | 5.9% | 2.7% | 1.0% | 10.1% | 4.3% | 4.0% | 5.6% | 4.0% | 4.6% | 5.5% | 4.2% |
| 357 | outside Total | Outside placements caused problem | 15 | 0.6% | 0.3% | 0.5% | 0.6% | 2.9% | 0.0% | 0.2% | 2.0% | 0.0% | 0.0% | 0.4% | 0.5% | 0.7% | 0.8% | 0.5% |
| 363 | prep Total | Preparation for the capstone waslacking | 23 | 0.9% | 0.6% | 1.2% | 0.8% | 0.0% | 0.7% | 0.7% | 0.2% | 2.0% | 1.2% | 0.8% | 1.0% | 0.8% | 0.3% | 1.1% |
| 378 | resources Total | Availability of equipment, library, facilities, human participant resources for the project | 55 | 2.1% | 1.6% | 2.7% | 1.9% | 0.7% | 2.1% | 2.1% | 1.2% | 1.6% | 2.8% | 2.8% | 2.0% | 1.9% | 1.9% | 2.1% |
| **380** | | **NEGATIVE COMMENT SUBTOTAL:** | **972** | **37.5%** | **34%** | **38%** | **40%** | **29%** | **30%** | **34%** | **40%** | **44%** | **35%** | **38%** | **37%** | **36%** | **37%** | **37%** |
| 382 | **Grand Total** | | 2593 | 100.0% | 691 | 961 | 720 | 136 | 146 | 860 | 643 | 253 | 901 | 500 | 974 | 1183 | 744 | 1913 |

**Table Q2-1: Detailed Tally of Responses by Category and Topic To: What did you learn about yourself as a result of your capstone experience?**

**Clarified understanding of:** COMBINED DATA FROM 2009 AND 2010

H=>3.50
M= 3.00 to 3.49
L=<3.00

The responses have been categorized according to the hierarchical structure shown for Groups 1 to 4. Group 1 indicates whether the response related to a perceived strength, limitation or deficiency, or simply a self-insight. Group 2 categorizes the responses as relating to either an ability, interest or personality characteristic. Groups 3 and 4 indicate the general topic and sub-topic of the response.

| Line | Self assessment category: strength (e.g. can do), limitation, or general insight | Major taxonomy category: ability, interest, or personality characteristic | General topic area | Sub-topic area | ID | Descriptive Text | Total | Pct | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Group 1** | **Group 2** | **Group 3** | **Group 4** | **ID** | **Descriptive Text** | **Total** | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
| 1 | **STRENGTH** | | | | | | | | | | | | | | | | | | | | | |
| 2 | strength | 1abilities | academic | general | 344 | self-understanding - of own abilities - academic | 63 | 3.7% | 20 | 24 | 15 | 1 | 3 | 25 | 6 | 7 | 25 | 11 | 26 | 26 | 19 | 44 |
| 3 | strength | 1abilities | academic | potential | 334 | that one can develop academically weak areas | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 4 | | | **academic Total** | | | **General academic abilities: Views self as more academically capable** | **64** | **3.7%** | **20** | **24** | **16** | **1** | **3** | **25** | **6** | **7** | **26** | **11** | **27** | **26** | **19** | **45** |
| 5 | strength | 1abilities | communication | general | 360 | self-understanding - has strengths as a communicator | 14 | 0.8% | 6 | 1 | 5 | 1 | 1 | 4 | 6 | 3 | 1 | 1 | 6 | 7 | 5 | 9 |
| 6 | strength | 1abilities | communication | oral | 368 | self-understanding - has oral presentation skills | 10 | 0.6% | 1 | 2 | 3 | 3 | 1 | 2 | 7 | 0 | 1 | 3 | 2 | 5 | 3 | 7 |
| 7 | strength | 1abilities | communication | oral | 580 | self-understanding - abilities - oral presentation - when passionate about topic | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 8 | strength | 1abilities | communication | oral | 618 | that can develop oral presentation skills | 3 | 0.2% | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 1 | 1 | 2 |
| 9 | strength | 1abilities | communication | oral | 572 | self-understanding - abilities - oral presentation - better than thought | 3 | 0.2% | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 0 | 3 |
| 10 | strength | 1abilities | communication | writing | 347 | self-understanding - has strengths as a writer, can write well | 47 | 2.8% | 10 | 20 | 12 | 0 | 5 | 22 | 4 | 7 | 14 | 7 | 12 | 28 | 11 | 36 |
| 11 | strength | 1abilities | communication | writing | 566 | self-understanding - of own abilities - writing - critically | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| 12 | strength | 1abilities | communication | writing | 570 | self-understanding - of own abilities - writing - better than thought | 31 | 1.8% | 6 | 10 | 14 | 1 | 0 | 12 | 7 | 6 | 6 | 5 | 11 | 15 | 8 | 23 |
| 13 | strength | 1abilities | communication | writing | 589 | self-understanding - of own abilities - writing - creatively | 4 | 0.2% | 0 | 1 | 3 | 0 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 2 | 2 | 2 |
| 14 | strength | 1abilities | communication | writing | 332 | learned can articulate thoughts | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 15 | | | **communication Total** | | | **Communication skills: Views self as more capable (writing, oral, presentations)** | **118** | **6.9%** | **26** | **39** | **41** | **5** | **7** | **45** | **28** | **19** | **26** | **19** | **36** | **63** | **30** | **88** |
| 16 | strength | 1abilities | critical thinking | general | 546 | self-understanding - of own abilities - CT, can think critically, have own ideas | 31 | 1.8% | 9 | 15 | 6 | 0 | 1 | 8 | 5 | 4 | 14 | 10 | 8 | 13 | 7 | 24 |
| 17 | strength | 1abilities | critical thinking | general | 586 | self-understanding - of own abilities - CT - better than thought | 8 | 0.5% | 1 | 4 | 2 | 1 | 0 | 2 | 2 | 1 | 3 | 4 | 2 | 2 | 4 | 4 |
| 18 | strength | 1abilities | critical thinking | analysis | 583 | self-understanding - of own abilities - CT - thinking analytically | 3 | 0.2% | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 2 | 0 | 3 |
| 19 | strength | 1abilities | critical thinking | analysis | 587 | self-understanding - of own abilities - CT - analytical skills - better than thought | 8 | 0.5% | 3 | 3 | 1 | 0 | 1 | 0 | 5 | 0 | 3 | 1 | 4 | 3 | 3 | 5 |
| 20 | strength | 1abilities | critical thinking | creativity | 555 | self-understanding - of own abilities - creativity | 10 | 0.6% | 3 | 1 | 6 | 0 | 0 | 3 | 1 | 3 | 3 | 1 | 1 | 8 | 0 | 10 |
| 21 | strength | 1abilities | critical thinking | indep voice | 584 | self-understanding - of own abilities - CT - can and should think independently | 6 | 0.4% | 1 | 0 | 3 | 1 | 0 | 1 | 2 | 1 | 2 | 1 | 3 | 2 | 1 | 5 |
| 22 | strength | 1abilities | critical thinking | perspective | 564 | self-understanding - of own abilities - CT - can think from multiple perspectives | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 1 |
| 23 | strength | 1abilities | critical thinking | quickness | 565 | self-understanding - of own abilities - CT - can think quickly | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 24 | strength | 1abilities | critical thinking | synthesis | 585 | self-understanding - of own abilities - CT - synthesizing | 12 | 0.7% | 3 | 3 | 3 | 1 | 2 | 2 | 1 | 3 | 6 | 1 | 6 | 5 | 4 | 8 |
| 25 | strength | 1abilities | critical thinking | synthesis | 574 | self-understanding - of own abilities - CT - synthesizing - better than thought | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 26 | | | **critical thinking Total** | | | **Critical thinking skills: Views self as more capable** | **82** | **4.8%** | **21** | **30** | **22** | **4** | **4** | **18** | **18** | **12** | **34** | **18** | **26** | **38** | **21** | **61** |
| 27 | strength | 1abilities | interpersonal | collab | 611 | self-understanding - of own abilities - collaborates well with mentor | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 28 | strength | 1abilities | interpersonal | collab | 607 | self-understanding - of own abilities - receiving criticism | 3 | 0.2% | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 3 |
| 29 | strength | 1abilities | interpersonal | collab | 609 | self-understanding - of own abilities - ok to seek help from others | 10 | 0.6% | 0 | 8 | 2 | 0 | 0 | 5 | 2 | 1 | 2 | 2 | 3 | 5 | 0 | 10 |
| 30 | strength | 1abilities | interpersonal | collab | 99 | collaboration skills - general | 8 | 0.5% | 1 | 5 | 2 | 0 | 0 | 3 | 2 | 0 | 3 | 1 | 4 | 3 | 1 | 7 |
| 31 | strength | 1abilities | interpersonal | assertive | 573 | self-understanding - disposition - assertiveness | 4 | 0.2% | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 4 | 0 | 3 | 1 |
| 32 | strength | 1abilities | interpersonal | outgoing | 579 | self-understanding - disposition - outgoing - more than thought | 1 | 0.1% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 33 | strength | 1abilities | interpersonal | leadership | 594 | self-understanding - of own abilities - has leadership skills | 7 | 0.4% | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 0 | 3 | 4 | 3 | 4 |
| 34 | | | **interpersonal Total** | | | **Interpersonal skills: Views self as having interpersonal/collaboration skills** | **34** | **2.0%** | **6** | **17** | **8** | **2** | **1** | **13** | **7** | **5** | **9** | **5** | **14** | **15** | **7** | **27** |
| 35 | strength | 1abilities | potential | confidence | 156 | learned to be more confident in themselves | 44 | 2.6% | 12 | 17 | 14 | 0 | 1 | 8 | 6 | 6 | 24 | 9 | 14 | 21 | 10 | 34 |
| 36 | strength | 1abilities | potential | confidence | 575 | self-understanding - of own abilities - can do more than had thought | 47 | 2.8% | 13 | 9 | 20 | 3 | 2 | 17 | 12 | 2 | 16 | 12 | 12 | 23 | 7 | 40 |
| 37 | strength | 1abilities | potential | confidence | 597 | self-understanding - of own abilities - can make a difference in community / world | 6 | 0.4% | 0 | 2 | 2 | 2 | 0 | 1 | 5 | 0 | 0 | 0 | 4 | 2 | 1 | 5 |
| 38 | strength | 1abilities | potential | confidence | 623 | self-understanding - disposition - brave | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 39 | strength | 1abilities | potential | confidence | 569 | self-understanding - disposition - can achieve something if set mind to it | 43 | 2.5% | 14 | 17 | 8 | 3 | 1 | 21 | 7 | 1 | 14 | 15 | 14 | 14 | 16 | 27 |
| 40 | strength | 1abilities | potential | confidence | 578 | self-understanding - disposition - strong - more than thought | 4 | 0.2% | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 3 |
| 41 | strength | 1abilities | potential | confidence | 593 | self-understanding - disposition - confidence - improved | 5 | 0.3% | 2 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 1 | 1 | 1 | 3 | 1 | 4 |
| 42 | strength | 1abilities | potential | confidence | 111 | self-understanding - of own abilities, strengths, potential | 38 | 2.2% | 12 | 12 | 11 | 2 | 1 | 13 | 6 | 1 | 18 | 5 | 13 | 20 | 15 | 23 |
| 43 | | | **potential Total** | | | **Personal potential: Views self as having greater achievement potential** | **188** | **11.0%** | **54** | **59** | **58** | **11** | **6** | **62** | **41** | **10** | **75** | **44** | **60** | **84** | **51** | **137** |
| 44 | strength | 1abilities | proj mgt | indep | 563 | self-understanding - of own abilities - can work independently | 49 | 2.9% | 19 | 18 | 7 | 0 | 4 | 14 | 4 | 4 | 27 | 9 | 23 | 17 | 12 | 37 |
| 45 | strength | 1abilities | proj mgt | indep | 588 | self-understanding - of own abilities - work independently - better than thought | 7 | 0.4% | 2 | 5 | 0 | 0 | 0 | 4 | 2 | 1 | 0 | 1 | 5 | 1 | 4 | 3 |

| Line | Group 1 | Group 2 | Group 3 | Group 4 | ID | Descriptive Text | Total | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 46 | strength | 1abilities | proj mgt | major proj | 549 | self-understanding - of own abilities - can manage, complete major project | 157 | 9.2% | 23 | 73 | 45 | 5 | 11 | 60 | 29 | 17 | 51 | 45 | 53 | 59 | 50 | 107 |
| 47 | strength | 1abilities | proj mgt | major proj | 550 | self-understanding - of own abilities - complete major project - can do by breaking down into smaller tasks | 13 | 0.8% | 5 | 3 | 4 | 1 | 0 | 9 | 3 | 0 | 1 | 2 | 3 | 8 | 2 | 11 |
| 48 | strength | 1abilities | proj mgt | multiple persp | 553 | self-understanding - of own abilities - learned how to or that can manage multiple projects | 9 | 0.5% | 1 | 2 | 5 | 1 | 0 | 2 | 4 | 1 | 2 | 3 | 0 | 6 | 1 | 8 |
| 49 | strength | 1abilities | proj mgt | organize/plan | 590 | self-understanding - of own abilities - can set, achieve own goals | 19 | 1.1% | 3 | 9 | 7 | 0 | 0 | 5 | 6 | 1 | 7 | 4 | 8 | 7 | 9 | 10 |
| 50 | strength | 1abilities | proj mgt | organize/plan | 554 | self-understanding - of own abilities - can plan, organize | 20 | 1.2% | 4 | 8 | 6 | 1 | 1 | 8 | 2 | 4 | 6 | 3 | 6 | 11 | 4 | 16 |
| 51 | strength | 1abilities | proj mgt | patience/persist | 155 | learned patience necessary for research | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| 52 | strength | 1abilities | proj mgt | patience/persist | 166 | learned can persist | 26 | 1.5% | 15 | 8 | 3 | 0 | 0 | 8 | 4 | 1 | 13 | 2 | 9 | 15 | 9 | 17 |
| 53 | strength | 1abilities | proj mgt | patience/persist | 616 | self-understanding - of own abilities - resourcefulness | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 54 | strength | 1abilities | proj mgt | patience/persist | 617 | self-understanding - of own abilities - getting things done | 17 | 1.0% | 4 | 8 | 4 | 0 | 1 | 10 | 3 | 0 | 4 | 4 | 6 | 7 | 6 | 11 |
| 55 | strength | 1abilities | proj mgt | stress mgt | 154 | learned to manage stress, pressure, ambiguity; that they can do it | 30 | 1.8% | 6 | 10 | 12 | 0 | 2 | 9 | 6 | 4 | 11 | 3 | 13 | 14 | 8 | 22 |
| 56 | strength | 1abilities | proj mgt | time mgt | 542 | self-understanding - of own abilities - time management, can manage | 75 | 4.4% | 9 | 24 | 29 | 5 | 8 | 21 | 16 | 11 | 27 | 13 | 26 | 36 | 21 | 54 |
| 57 | | | **proj mgt Total** | | | **Project management skills: Views self as having good project management skills** | **426** | **24.9%** | **94** | **169** | **122** | **13** | **27** | **152** | **81** | **44** | **149** | **89** | **154** | **183** | **126** | **300** |
| 58 | strength | 1abilities | reflection | general | 168 | self reflection | 2 | 0.1% | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 59 | | | **reflection Total** | | | **Reflection skills: Views self as more capable of doing self-reflection** | **2** | **0.1%** | **0** | **0** | **0** | **2** | **0** | **0** | **2** | **0** | **0** | **0** | **0** | **2** | **0** | **2** |
| 60 | strength | 1abilities | research | general | 571 | self-understanding - of own abilities - research - better than thought | 29 | 1.7% | 11 | 8 | 6 | 3 | 1 | 7 | 12 | 0 | 10 | 3 | 10 | 16 | 8 | 21 |
| 61 | strength | 1abilities | research | confidence | 349 | self-understanding - can do research, more confident of research abilities | 52 | 3.0% | 15 | 21 | 4 | 5 | 7 | 15 | 14 | 3 | 20 | 5 | 26 | 21 | 13 | 39 |
| 62 | strength | 1abilities | research | data | 562 | self-understanding - of own abilities - research - data analysis | 7 | 0.4% | 3 | 3 | 0 | 1 | 0 | 5 | 1 | 1 | 0 | 0 | 2 | 5 | 3 | 4 |
| 63 | strength | 1abilities | research | data | 567 | self-understanding - of own abilities - research - interpret data | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 64 | strength | 1abilities | research | data | 568 | self-understanding - of own abilities - research - collect data | 3 | 0.2% | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 2 | 1 |
| 65 | strength | 1abilities | research | data | 596 | self-understanding - of own abilities - research - fieldwork | 5 | 0.3% | 2 | 3 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 2 | 1 | 2 | 2 | 3 |
| 66 | strength | 1abilities | research | design | 551 | self-understanding - of own abilities - research - capable of designing project | 7 | 0.4% | 2 | 4 | 1 | 0 | 0 | 2 | 1 | 0 | 4 | 3 | 0 | 4 | 3 | 4 |
| 67 | strength | 1abilities | research | independence | 563 | self-understanding - of own abilities - can work independently | 49 | 2.9% | 19 | 18 | 7 | 0 | 4 | 14 | 4 | 4 | 27 | 9 | 23 | 17 | 12 | 37 |
| 68 | strength | 1abilities | research | presenting | 595 | self-understanding - of own abilities - research - able to defend | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 |
| 69 | | | **research Total** | | | **Research skills: Views self as more capable of doing research** | **155** | **9.1%** | **54** | **58** | **20** | **10** | **12** | **46** | **35** | **10** | **64** | **24** | **66** | **65** | **44** | **111** |
| 70 | strength | 3 personality | work ethic | motivation | 605 | self-understanding - disposition - is motivated - more than thought | 7 | 0.4% | 2 | 4 | 0 | 1 | 0 | 2 | 1 | 0 | 4 | 1 | 3 | 3 | 2 | 5 |
| 71 | strength | 3 personality | work ethic | motivation | 604 | self-understanding - disposition - is motivated / could motivate self | 21 | 1.2% | 7 | 9 | 3 | 0 | 2 | 12 | 4 | 1 | 4 | 5 | 8 | 8 | 5 | 16 |
| 73 | strength | 3 personality | work ethic | perseverance | 608 | self-understanding - disposition - tolerance of obstacles, risk, failure, ambiguity | 8 | 0.5% | 1 | 4 | 3 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 4 | 4 | 0 | 8 |
| 74 | strength | 3 personality | work ethic | perseverance | 610 | self-understanding - disposition - patience - more than thought | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 |
| 75 | strength | 3 personality | work ethic | perseverance | 582 | self-understanding - disposition - has perseverance | 19 | 1.1% | 6 | 6 | 3 | 1 | 3 | 5 | 2 | 3 | 9 | 5 | 8 | 6 | 10 | 9 |
| 76 | strength | 3 personality | work ethic | perseverance | 576 | self-understanding - disposition - perseverance - more persistent than had thought | 6 | 0.4% | 2 | 4 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 3 | 3 | 0 | 6 |
| 78 | strength | 3 personality | work ethic | work ethic | 547 | self-understanding - disposition - good work ethic, is or can be hard worker | 27 | 1.6% | 7 | 7 | 8 | 1 | 4 | 12 | 3 | 1 | 11 | 3 | 12 | 12 | 7 | 20 |
| 79 | strength | 3 personality | work ethic | work ethic | 577 | self-understanding - disposition - good work ethic - better than thought | 4 | 0.2% | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 3 | 0 | 1 | 0 | 3 | 1 | 3 |
| 80 | | | **work ethic Total** | | | **Work ethic: Views self as having strong work ethic, highly motivated, more perseverance, patient, tolerant of obstacles** | **94** | **5.5%** | **29** | **34** | **19** | **3** | **9** | **38** | **11** | **11** | **34** | **15** | **39** | **40** | **25** | **69** |
| 81 | | | | | | | | | | | | | | | | | | | | | | |
| 82 | **STRENGTH** | | **SUBTOTAL:** | | | | **1163** | **68.1%** | **304** | **430** | **306** | **51** | **69** | **399** | **229** | **118** | **417** | **225** | **422** | **516** | **323** | **840** |
| 83 | | | | | | | | | | | | | | | | | | | | | | |
| 84 | **LIMITATION** | | | | | | | | | | | | | | | | | | | | | |
| 85 | limitation | 1abilities | general | limits | 112 | self-understanding - of own limitations, weaknesses | 26 | 1.5% | 10 | 9 | 7 | 0 | 0 | 7 | 10 | 0 | 9 | 3 | 7 | 16 | 12 | 14 |
| 86 | limitation | 1abilities | general | limits | 113 | self-understanding - of lack of quality in performance / mistakes - general | 4 | 0.2% | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 3 | 2 | 2 |
| 87 | | | **general Total** | | | **General limitations: New understanding of limitations, weaknesses, in general** | **30** | **1.8%** | **10** | **11** | **9** | **0** | **0** | **9** | **10** | **0** | **11** | **4** | **7** | **19** | **14** | **16** |
| 88 | limitation | 1abilities | academic | limits | 556 | self-understanding - of own limitations - academic | 5 | 0.3% | 5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 3 |
| 89 | | | **academic Total** | | | **General academic limitations: new understanding of academic weaknesses** | **5** | **0.3%** | **5** | **0** | **0** | **0** | **0** | **3** | **0** | **0** | **2** | **1** | **2** | **2** | **2** | **3** |
| 90 | limitation | 1abilities | communication | oral | 602 | self-understanding - of own limitations - communication | 8 | 0.5% | 2 | 4 | 2 | 0 | 0 | 1 | 3 | 1 | 3 | 3 | 4 | 1 | 4 | 4 |
| 91 | limitation | 1abilities | communication | writing | 114 | self-understanding - of lack of quality in performance - writing | 5 | 0.3% | 0 | 2 | 2 | 0 | 1 | 1 | 1 | 0 | 3 | 0 | 3 | 2 | 2 | 3 |
| 92 | limitation | 1abilities | communication | writing | 545 | learned they should do multiple revisions | 3 | 0.2% | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 1 | 2 |
| 93 | limitation | 1abilities | communication | writing | 591 | learned importance of setting and sticking to goals | 3 | 0.2% | 1 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 1 | 2 |
| 94 | limitation | 1abilities | communication | writing | 619 | learned importance of seeing big picture | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 95 | limitation | 1abilities | communication | writing | 541 | self-understanding - of own limitations - has writing deficiencies | 8 | 0.5% | 2 | 5 | 1 | 0 | 0 | 3 | 1 | 0 | 4 | 4 | 1 | 3 | 1 | 7 |
| 96 | | | **communication Total** | | | **Communication skills: New understanding of limitations, weaknesses** | **28** | **1.6%** | **7** | **11** | **8** | **1** | **1** | **6** | **9** | **2** | **11** | **7** | **13** | **8** | **9** | **19** |
| 97 | limitation | 1abilities | proj mgt | indep | 612 | self-understanding - of own limitations - project management - working independently / indep research | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 3 | 0 |
| 98 | limitation | 1abilities | proj mgt | organize/plan | 552 | self-understanding - of lack of quality in performance - project management, needs to plan, organize better | 12 | 0.7% | 4 | 3 | 5 | 0 | 0 | 2 | 4 | 1 | 5 | 5 | 1 | 6 | 4 | 8 |
| 99 | limitation | 1abilities | proj mgt | organize/plan | 599 | self-understanding - project management style - needs deadlines / structure / guidance | 15 | 0.9% | 1 | 6 | 4 | 1 | 3 | 4 | 2 | 3 | 6 | 3 | 4 | 8 | 4 | 11 |
| 100 | limitation | 1abilities | proj mgt | organize/plan | 137 | learned importance of planning | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 3 |

| Line | Group 1 | Group 2 | Group 3 | Group 4 | ID | Descriptive Text | Total | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | limitation | 1abilities | proj mgt | time mgt | 346 | self-understanding - needs to improve time management skills | 61 | 3.6% | 17 | 20 | 20 | 2 | 2 | 23 | 9 | 7 | 22 | 27 | 16 | 18 | 23 | 38 |
| 102 | limitation | 1abilities | proj mgt | time mgt | 543 | learned they should pay attention to time management, organization when doing a project | 10 | 0.6% | 2 | 4 | 2 | 2 | 0 | 2 | 2 | 4 | 2 | 3 | 5 | 2 | 6 | 4 |
| 103 | | | **proj mgt Total** | | | **Project management skills: New understanding of limitations, weaknesses** | **104** | **6.1%** | **28** | **35** | **31** | **5** | **5** | **33** | **19** | **16** | **36** | **41** | **28** | **35** | **40** | **64** |
| 104 | limitation | 1abilities | research | general | 540 | self-understanding - of own limitations - not good at research | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 |
| 105 | | | **research Total** | | | **Research skills: New understanding of limitations, weaknesses** | **2** | **0.1%** | **0** | **2** | **0** | **0** | **0** | **0** | **1** | **0** | **1** | **1** | **1** | **0** | **0** | **2** |
| 106 | limitation | 3 personality | confidence | lacking | 592 | self-understanding - disposition - confidence - needs to improve | 8 | 0.5% | 2 | 3 | 2 | 0 | 1 | 0 | 0 | 1 | 7 | 1 | 4 | 3 | 1 | 7 |
| 107 | limitation | 3 personality | confidence | lacking | 622 | self-understanding - disposition - is afraid to succeed | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 108 | | | **confidence Total** | | | **Confidence: New understanding of limitations, weaknesses** | **9** | **0.5%** | **2** | **3** | **3** | **0** | **1** | **0** | **0** | **1** | **8** | **2** | **4** | **3** | **1** | **8** |
| 109 | limitation | 3 personality | work ethic | motivation | 624 | self-understanding - disposition - too emotionally involved in project | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 110 | limitation | 3 personality | work ethic | motivation | 606 | self-understanding - disposition - is not motivated | 4 | 0.2% | 2 | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 2 |
| 112 | limitation | 3 personality | work ethic | perseverance | 603 | self-understanding - of own limitations - perseverance | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 2 |
| 114 | limitation | 3 personality | work ethic | work ethic | 598 | self-understanding - of lack of quality in performance - work ethic | 5 | 0.3% | 2 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 1 | 1 | 2 | 2 | 1 | 4 |
| 115 | limitation | 3 personality | work ethic | work ethic | 135 | learned they need to work hard, persist to be successful | 7 | 0.4% | 4 | 1 | 2 | 0 | 0 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 3 | 4 |
| 116 | | | **work ethic Total** | | | **Work ethic: New understanding of limitations, weaknesses** | **19** | **1.1%** | **10** | **4** | **5** | **0** | **0** | **9** | **3** | **3** | **4** | **6** | **6** | **7** | **7** | **12** |
| 117 | | | | | | | | | | | | | | | | | | | | | | |
| 118 | **LIMITATION** | | **SUBTOTAL:** | | | | **197** | 11.5% | **62** | **66** | **56** | **6** | **7** | **60** | **42** | **22** | **73** | **62** | **61** | **74** | **73** | **124** |
| 119 | | | | | | | | | | | | | | | | | | | | | | |
| 120 | **INSIGHT** | | | | | | | | | | | | | | | | | | | | | |
| 121 | insight | 1abilities | academic | learning style | 117 | self-understanding - of learning style | 15 | 0.9% | 7 | 2 | 3 | 2 | 1 | 6 | 6 | 1 | 2 | 3 | 6 | 6 | 5 | 10 |
| 122 | | | **academic Total** | | | **General academic interests: clarified** | **15** | **0.9%** | **7** | **2** | **3** | **2** | **1** | **6** | **6** | **1** | **2** | **3** | **6** | **6** | **5** | **10** |
| 123 | insight | 1abilities | communication | writing | 615 | self-understanding - writing style | 10 | 0.6% | 0 | 4 | 6 | 0 | 0 | 6 | 3 | 0 | 1 | 1 | 3 | 6 | 1 | 9 |
| 124 | | | **communication Total** | | | **Communication skills: Gained insight about writing style** | **10** | **0.6%** | **0** | **4** | **6** | **0** | **0** | **6** | **3** | **0** | **1** | **1** | **3** | **6** | **1** | **9** |
| 125 | insight | 1abilities | critical thinking | indep voice | 6110 | need to think independently but value other opinions | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 126 | | | **critical thinking Total** | | | **Critical thinking skills: Learned need to value other's opinions** | **1** | **0.1%** | **0** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **0** | **1** |
| 127 | insight | 1abilities | proj mgt | style | 557 | self-understanding - project management style | 7 | 0.4% | 3 | 1 | 3 | 0 | 0 | 2 | 2 | 1 | 2 | 1 | 3 | 3 | 2 | 5 |
| 128 | | | **proj mgt Total** | | | **Project management skills: Understands own project management style better** | **7** | **0.4%** | **3** | **1** | **3** | **0** | **0** | **2** | **2** | **1** | **2** | **1** | **3** | **3** | **2** | **5** |
| 129 | insight | 2 interests | academic | general | 560 | self-understanding - of interests - academic | 32 | 1.9% | 4 | 16 | 11 | 0 | 1 | 17 | 7 | 4 | 4 | 5 | 9 | 18 | 4 | 28 |
| 130 | insight | 2 interests | academic | value | 120 | learned can apply topic to own life | 3 | 0.2% | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 2 | 0 | 3 |
| 131 | insight | 2 interests | academic | value | 130 | learned they appreciate a college education | 4 | 0.2% | 2 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 4 |
| 132 | insight | 2 interests | academic | value | 132 | learned they value creativity | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 133 | | | **academic Total** | | | **General academic interests: clarified** | **40** | **2.3%** | **6** | **17** | **15** | **1** | **1** | **19** | **11** | **5** | **5** | **5** | **12** | **23** | **4** | **36** |
| 134 | insight | 2 interests | career | chg field | 529 | self-understanding - career clarification - decided should change to a different field | 12 | 0.7% | 2 | 4 | 5 | 1 | 0 | 5 | 3 | 1 | 3 | 3 | 5 | 4 | 6 | 6 |
| 135 | insight | 2 interests | career | chg focus | 532 | self-understanding - career clarification - different direction, area | 7 | 0.4% | 3 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 5 | 1 | 2 | 4 | 1 | 6 |
| 136 | insight | 2 interests | career | chg to non-acad | 533 | self-understanding - career clarification - different direction, outside academia | 5 | 0.3% | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 1 | 2 | 1 | 2 | 2 | 1 | 4 |
| 137 | insight | 2 interests | career | chg to non-resea | 537 | self-understanding - career clarification - does not want to do independent research | 14 | 0.8% | 5 | 5 | 1 | 2 | 1 | 1 | 4 | 0 | 9 | 1 | 6 | 7 | 3 | 11 |
| 138 | insight | 2 interests | career | chg to teaching | 539 | self-understanding - career clarification - likes teaching, can teach | 8 | 0.5% | 1 | 1 | 2 | 4 | 0 | 0 | 6 | 0 | 2 | 0 | 6 | 2 | 0 | 8 |
| 139 | insight | 2 interests | career | clarified | 621 | learned ready for career choice | 7 | 0.4% | 1 | 1 | 2 | 3 | 0 | 1 | 6 | 0 | 0 | 0 | 4 | 3 | 2 | 5 |
| 140 | insight | 2 interests | career | clarified | 559 | self-understanding - career clarification - likes working with others | 9 | 0.5% | 3 | 3 | 2 | 1 | 0 | 1 | 4 | 0 | 4 | 0 | 3 | 6 | 1 | 8 |
| 141 | insight | 2 interests | career | clarified | 115 | self-understanding - clarification of career and life interests | 66 | 3.9% | 19 | 16 | 21 | 7 | 3 | 19 | 27 | 3 | 17 | 9 | 22 | 35 | 24 | 42 |
| 142 | insight | 2 interests | career | clarified | 492 | learned enjoyed doing interviews | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 143 | insight | 2 interests | career | clarified | 601 | learned importance of contributing to community | 3 | 0.2% | 1 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 2 | 1 | 2 |
| 144 | | | **career Total** | | | **Career interests: clarified** | **133** | **7.8%** | **36** | **37** | **38** | **18** | **4** | **30** | **55** | **5** | **43** | **16** | **51** | **66** | **40** | **93** |
| 145 | insight | 2 interests | grad school | moved away | 600 | self-understanding - career clarification - not ready for grad school | 6 | 0.4% | 1 | 3 | 2 | 0 | 0 | 3 | 0 | 2 | 1 | 1 | 3 | 2 | 3 | 3 |
| 146 | insight | 2 interests | grad school | moved toward | 558 | self-understanding - career clarification - likes academia | 1 | 0.1% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 147 | insight | 2 interests | grad school | moved toward | 530 | self-understanding - career clarification - decided to go to grad school or confirmed decision | 13 | 0.8% | 6 | 1 | 3 | 0 | 3 | 4 | 4 | 0 | 5 | 2 | 4 | 7 | 7 | 6 |
| 148 | | | **grad school Total** | | | **Graduate school interests: Clarified or confirmed** | **20** | **1.2%** | **7** | **4** | **5** | **0** | **4** | **7** | **4** | **2** | **7** | **3** | **7** | **10** | **10** | **10** |
| 149 | insight | 2 interests | major field | change | 531 | self-understanding - career clarification - different focus within same field | 7 | 0.4% | 1 | 2 | 2 | 2 | 0 | 0 | 5 | 1 | 1 | 1 | 3 | 3 | 1 | 6 |
| 150 | insight | 2 interests | major field | retain | 534 | self-understanding - career clarification - confirmed current direction, field | 20 | 1.2% | 2 | 4 | 8 | 4 | 2 | 2 | 9 | 2 | 7 | 3 | 8 | 9 | 3 | 17 |
| 151 | | | **major field Total** | | | **Academic field: Clarified or confirmed interests in or within current academic field** | **27** | **1.6%** | **3** | **6** | **10** | **6** | **2** | **2** | **14** | **3** | **8** | **4** | **11** | **12** | **4** | **23** |
| 152 | insight | 2 interests | non-academic | faith values | 620 | self-understanding - interest clarification - importance of own faith values | 9 | 0.5% | 0 | 3 | 6 | 0 | 0 | 5 | 4 | 0 | 0 | 2 | 2 | 5 | 2 | 7 |
| 153 | | | **non-academic Total** | | | **Faith values: clarified importance of own faith values** | **9** | **0.5%** | **0** | **3** | **6** | **0** | **0** | **5** | **4** | **0** | **0** | **2** | **2** | **5** | **2** | **7** |
| 154 | insight | 2 interests | oral comm | enjoys | 613 | self-understanding - interest clarification - presenting | 1 | 0.1% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 155 | | | **oral comm Total** | | | **Presentations: learned enjoys presenting** | **1** | **0.1%** | **0** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **0** | **1** |
| 156 | insight | 2 interests | research | enjoys | 614 | learned found doing own work exciting, motivating | 4 | 0.2% | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 3 | 1 | 3 |
| 157 | insight | 2 interests | research | enjoys | 538 | self-understanding - career clarification - enjoys, loves research | 32 | 1.9% | 6 | 9 | 9 | 2 | 6 | 11 | 7 | 1 | 13 | 3 | 8 | 21 | 4 | 28 |

| Line | Group 1 | Group 2 | Group 3 | Group 4 | ID | Descriptive Text | Total | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 158 | | | **research Total** | | | **Research skills: Learned enjoys research** | **36** | **2.1%** | **6** | **11** | **10** | **3** | **6** | **11** | **8** | **2** | **15** | **4** | **8** | **24** | **5** | **31** |
| 159 | insight | 2 interests | writing | dislikes | 535 | self-understanding - interest clarification - does not like writing papers | 5 | 0.3% | 0 | 2 | 3 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 0 | 5 |
| 160 | insight | 2 interests | writing | likes | 581 | self-understanding - interest clarification - writing | 3 | 0.2% | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 2 | 1 | 2 |
| 161 | | | **writing Total** | | | **Writing: Clarified interest in writing** | **8** | **0.5%** | **0** | **3** | **4** | **0** | **1** | **3** | **2** | **1** | **2** | **1** | **4** | **3** | **1** | **7** |
| 162 | insight | 3 personality | general | general | 110 | self-understanding - personality, character | 14 | 0.8% | 4 | 1 | 9 | 0 | 0 | 4 | 6 | 0 | 4 | 3 | 4 | 7 | 6 | 8 |
| 163 | | | **general Total** | | | **Personality: clarified understanding of own personality, character** | **14** | **0.8%** | **4** | **1** | **9** | **0** | **0** | **4** | **6** | **0** | **4** | **3** | **4** | **7** | **6** | **8** |
| 164 | insight | 3 personality | work ethic | clarified | 561 | self-understanding - understands own work ethic better | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| 165 | | | **work ethic Total** | | | **Work ethic: Understands own work ethic better** | **2** | **0.1%** | **0** | **1** | **1** | **0** | **0** | **2** | **0** | **0** | **0** | **1** | **1** | **0** | **0** | **2** |
| 166 | | | | | | | | | | | | | | | | | | | | | | |
| 167 | **INSIGHTS** | | **SUBTOTAL:** | | | | **323** | 18.9% | **72** | **90** | **111** | **31** | **19** | **97** | **117** | **20** | **89** | **45** | **113** | **165** | **80** | **243** |
| 168 | | | | | | | | | | | | | | | | | | | | | | |
| 169 | | | x-nothing Total | | 185 | Nothing: Little or nothing learned about self during capstone | 25 | 1.5% | 2 | 11 | 11 | 1 | 0 | 4 | 7 | 9 | 5 | 3 | 11 | 11 | 10 | 15 |
| 170 | **NOTHING** | | **SUBTOTAL:** | | | | **25** | 1.5% | **2** | **11** | **11** | **1** | **0** | **4** | **7** | **9** | **5** | **3** | **11** | **11** | **10** | **15** |
| 171 | | | | | | | | | | | | | | | | | | | | | | |
| 172 | | | **Grand Total** | | | **Grand total:** | **1708** | 100.0% | **440** | **597** | **484** | **89** | **95** | **560** | **395** | **169** | **584** | **335** | **607** | **766** | **486** | **###** |

**Table Q2-2: Summary Tally of Responses by Category and Topic To: What did you learn about yourself as a result of your capstone experience?**

**Clarified understanding of:**

H=>3.50
M= 3.00 to 3.49
L=<3.00

| | Self assessment category: strength (e.g. can do), limitation, or general insight | General topic area | Sub-topic area | Group 1 indicates whether the response related to a perceived strength, limitation or deficiency, or simply a self-insight. Group 3 indicates the general topic area of the response. | | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | **Group 1** | **Group 3** | **Group 4** | **Descriptive Text** | **Total** | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
| 1 | **STRENGTH** | | | | | | | | | | | | | | | | | | | |
| 2 | strength | academic | general | self-understanding - of own abilities - academic | 63 | 3.7% | 20 | 24 | 15 | 1 | 3 | 25 | 6 | 7 | 25 | 11 | 26 | 26 | 19 | 44 |
| 3 | strength | academic | potential | that one can develop academically weak areas | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 4 | | academic Total | | General academic abilities: Views self as more academically capable | 64 | 3.7% | 20 | 24 | 16 | 1 | 3 | 25 | 6 | 7 | 26 | 11 | 27 | 26 | 19 | 45 |
| 5 | strength | communication | general | self-understanding - has strengths as a communicator | 14 | 0.8% | 6 | 1 | 5 | 1 | 1 | 4 | 6 | 3 | 1 | 1 | 6 | 7 | 5 | 9 |
| 6 | strength | communication | oral | self-understanding - has oral presentation skills | 10 | 0.6% | 1 | 2 | 3 | 3 | 1 | 2 | 7 | 0 | 1 | 3 | 2 | 5 | 3 | 7 |
| 7 | strength | communication | oral | self-understanding - abilities - oral presentation - when passionate about topic | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 8 | strength | communication | oral | that can develop oral presentation skills | 3 | 0.2% | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 1 | 1 | 2 |
| 9 | strength | communication | oral | self-understanding - abilities - oral presentation - better than thought | 3 | 0.2% | 1 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 0 | 3 |
| 10 | strength | communication | writing | self-understanding - has strengths as a writer, can write well | 47 | 2.8% | 10 | 20 | 12 | 0 | 5 | 22 | 4 | 7 | 14 | 7 | 12 | 28 | 11 | 36 |
| 11 | strength | communication | writing | self-understanding - of own abilities - writing - critically | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| 12 | strength | communication | writing | self-understanding - of own abilities - writing - better than thought | 31 | 1.8% | 6 | 10 | 14 | 1 | 0 | 12 | 7 | 6 | 6 | 5 | 11 | 15 | 8 | 23 |
| 13 | strength | communication | writing | self-understanding - of own abilities - writing - creatively | 4 | 0.2% | 0 | 1 | 3 | 0 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 2 | 2 | 2 |
| 14 | strength | communication | writing | learned can articulate thoughts | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 15 | | communication Total | | Communication skills: Views self as more capable (writing, oral, presentations) | 118 | 6.9% | 26 | 39 | 41 | 5 | 7 | 45 | 28 | 19 | 26 | 19 | 36 | 63 | 30 | 88 |
| 16 | strength | critical thinking | general | self-understanding - of own abilities - CT, can think critically, have own ideas | 31 | 1.8% | 9 | 15 | 6 | 0 | 1 | 8 | 5 | 4 | 14 | 10 | 8 | 13 | 7 | 24 |
| 17 | strength | critical thinking | general | self-understanding - of own abilities - CT - better than thought | 8 | 0.5% | 1 | 4 | 2 | 1 | 0 | 2 | 2 | 1 | 3 | 4 | 2 | 2 | 4 | 4 |
| 18 | strength | critical thinking | analysis | self-understanding - of own abilities - CT - thinking analytically | 3 | 0.2% | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 2 | 0 | 3 |
| 19 | strength | critical thinking | analysis | self-understanding - of own abilities - CT - analytical skills - better than thought | 8 | 0.5% | 3 | 3 | 1 | 0 | 1 | 0 | 5 | 0 | 3 | 1 | 4 | 3 | 3 | 5 |
| 20 | strength | critical thinking | creativity | self-understanding - of own abilities - creativity | 10 | 0.6% | 3 | 1 | 6 | 0 | 0 | 3 | 1 | 3 | 3 | 1 | 1 | 8 | 0 | 10 |
| 21 | strength | critical thinking | indep voice | self-understanding - of own abilities - CT - can and should think independently | 6 | 0.4% | 1 | 0 | 3 | 1 | 0 | 1 | 2 | 1 | 2 | 1 | 3 | 2 | 1 | 5 |
| 22 | strength | critical thinking | perspective | self-understanding - of own abilities - CT - can think from multiple perspectives | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 1 |
| 23 | strength | critical thinking | quickness | self-understanding - of own abilities - CT - can think quickly | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 24 | strength | critical thinking | synthesis | self-understanding - of own abilities - CT - synthesizing | 12 | 0.7% | 3 | 3 | 3 | 1 | 2 | 2 | 1 | 3 | 6 | 1 | 6 | 5 | 4 | 8 |
| 25 | strength | critical thinking | synthesis | self-understanding - of own abilities - CT - synthesizing - better than thought | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 26 | | critical thinking Total | | Critical thinking skills: Views self as more capable | 82 | 4.8% | 21 | 30 | 22 | 4 | 4 | 18 | 18 | 12 | 34 | 18 | 26 | 38 | 21 | 61 |
| 27 | strength | interpersonal | collab | self-understanding - of own abilities - collaborates well with mentor | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 28 | strength | interpersonal | collab | self-understanding - of own abilities - receiving criticism | 3 | 0.2% | 1 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 3 |
| 29 | strength | interpersonal | collab | self-understanding - of own abilities - ok to seek help from others | 10 | 0.6% | 0 | 8 | 2 | 0 | 0 | 5 | 2 | 1 | 2 | 2 | 3 | 5 | 0 | 10 |
| 30 | strength | interpersonal | collab | collaboration skills - general | 8 | 0.5% | 1 | 5 | 2 | 0 | 0 | 3 | 2 | 0 | 3 | 1 | 4 | 3 | 1 | 7 |
| 31 | strength | interpersonal | assertive | self-understanding - disposition - assertiveness | 4 | 0.2% | 1 | 3 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 4 | 0 | 3 | 1 |
| 32 | strength | interpersonal | outgoing | self-understanding - disposition - outgoing - more than thought | 1 | 0.1% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 33 | strength | interpersonal | leadership | self-understanding - of own abilities - has leadership skills | 7 | 0.4% | 2 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 2 | 0 | 3 | 4 | 3 | 4 |
| 34 | | interpersonal Total | | Interpersonal skills: Views self as having interpersonal/collaboration skills | 34 | 2.0% | 6 | 17 | 8 | 2 | 1 | 13 | 7 | 5 | 9 | 5 | 14 | 15 | 7 | 27 |
| 35 | strength | potential | confidence | learned to be more confident in themselves | 44 | 2.6% | 12 | 17 | 14 | 0 | 1 | 8 | 6 | 6 | 24 | 9 | 14 | 21 | 10 | 34 |
| 36 | strength | potential | confidence | self-understanding - of own abilities - can do more than had thought | 47 | 2.8% | 13 | 9 | 20 | 3 | 2 | 17 | 12 | 2 | 16 | 12 | 12 | 23 | 7 | 40 |
| 37 | strength | potential | confidence | self-understanding - of own abilities - can make a difference in community / world | 6 | 0.4% | 0 | 2 | 2 | 2 | 0 | 1 | 5 | 0 | 0 | 0 | 4 | 2 | 1 | 5 |
| 38 | strength | potential | confidence | self-understanding - disposition - brave | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 39 | strength | potential | confidence | self-understanding - disposition - can achieve something if set mind to it | 43 | 2.5% | 14 | 17 | 8 | 3 | 1 | 21 | 7 | 1 | 14 | 15 | 14 | 14 | 16 | 27 |
| 40 | strength | potential | confidence | self-understanding - disposition - strong - more than thought | 4 | 0.2% | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 3 |
| 41 | strength | potential | confidence | self-understanding - disposition - confidence - improved | 5 | 0.3% | 2 | 0 | 2 | 1 | 0 | 0 | 4 | 0 | 1 | 1 | 1 | 3 | 1 | 4 |
| 42 | strength | potential | confidence | self-understanding - of own abilities, strengths, potential | 38 | 2.2% | 12 | 12 | 11 | 2 | 1 | 13 | 6 | 1 | 18 | 5 | 13 | 20 | 15 | 23 |
| 43 | | potential Total | | Personal potential: Views self as having greater achievement potential | 188 | 11.0% | 54 | 59 | 58 | 11 | 6 | 62 | 41 | 10 | 75 | 44 | 60 | 84 | 51 | 137 |
| 44 | strength | proj mgt | indep | self-understanding - of own abilities - can work independently | 49 | 2.9% | 19 | 18 | 7 | 0 | 4 | 14 | 4 | 4 | 27 | 9 | 23 | 17 | 12 | 37 |
| 45 | strength | proj mgt | indep | self-understanding - of own abilities - work independently - better than thought | 7 | 0.4% | 2 | 5 | 0 | 0 | 0 | 4 | 2 | 1 | 0 | 1 | 5 | 1 | 4 | 3 |
| 46 | strength | proj mgt | major proj | self-understanding - of own abilities - can manage, complete major project | 157 | 9.2% | 23 | 73 | 45 | 5 | 11 | 60 | 29 | 17 | 51 | 45 | 53 | 59 | 50 | 107 |

| Line | Group 1 | Group 3 | Group 4 | Descriptive Text | Total | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 47 | strength | proj mgt | major proj | self-understanding - of own abilities - complete major project - can do by breaking down into smaller tasks | 13 | 0.8% | 5 | 3 | 4 | 1 | 0 | 9 | 3 | 0 | 1 | 2 | 3 | 8 | 2 | 11 |
| 48 | strength | proj mgt | multiple persp | self-understanding - of own abilities - learned how to or that can manage multiple projects | 9 | 0.5% | 1 | 2 | 5 | 1 | 0 | 2 | 4 | 1 | 2 | 3 | 0 | 6 | 1 | 8 |
| 49 | strength | proj mgt | organize/plan | self-understanding - of own abilities - can set, achieve own goals | 19 | 1.1% | 3 | 9 | 7 | 0 | 0 | 5 | 6 | 1 | 7 | 4 | 8 | 7 | 9 | 10 |
| 50 | strength | proj mgt | organize/plan | self-understanding - of own abilities - can plan, organize | 20 | 1.2% | 4 | 8 | 6 | 1 | 1 | 8 | 2 | 4 | 6 | 3 | 6 | 11 | 4 | 16 |
| 51 | strength | proj mgt | patience/persist | learned patience necessary for research | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| 52 | strength | proj mgt | patience/persist | learned can persist | 26 | 1.5% | 15 | 8 | 3 | 0 | 0 | 8 | 4 | 1 | 13 | 2 | 9 | 15 | 9 | 17 |
| 53 | strength | proj mgt | patience/persist | self-understanding - of own abilities - resourcefulness | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 54 | strength | proj mgt | patience/persist | self-understanding - of own abilities - getting things done | 17 | 1.0% | 4 | 8 | 4 | 0 | 1 | 10 | 3 | 0 | 4 | 4 | 6 | 7 | 6 | 11 |
| 55 | strength | proj mgt | stress mgt | learned to manage stress, pressure, ambiguity; that they can do it | 30 | 1.8% | 6 | 10 | 12 | 0 | 2 | 9 | 6 | 4 | 11 | 3 | 13 | 14 | 8 | 22 |
| 56 | strength | proj mgt | time mgt | self-understanding - of own abilities - time management, can manage | 75 | 4.4% | 9 | 24 | 29 | 5 | 8 | 21 | 16 | 11 | 27 | 13 | 26 | 36 | 21 | 54 |
| 57 | | proj mgt Total | | Project management skills: Views self as having good project management skills | 426 | 24.9% | 94 | 169 | 122 | 13 | 27 | 152 | 81 | 44 | 149 | 89 | 154 | 183 | 126 | 300 |
| 58 | strength | reflection | general | self reflection | 2 | 0.1% | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 59 | | reflection Total | | Reflection skills: Views self as more capable of doing self-reflection | 2 | 0.1% | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 60 | strength | research | general | self-understanding - of own abilities - research - better than thought | 29 | 1.7% | 11 | 8 | 6 | 3 | 1 | 7 | 12 | 0 | 10 | 3 | 10 | 16 | 8 | 21 |
| 61 | strength | research | confidence | self-understanding - can do research, more confident of research abilities | 52 | 3.0% | 15 | 21 | 4 | 5 | 7 | 15 | 14 | 3 | 20 | 5 | 26 | 21 | 13 | 39 |
| 62 | strength | research | data | self-understanding - of own abilities - research - data analysis | 7 | 0.4% | 3 | 3 | 0 | 1 | 0 | 5 | 1 | 1 | 0 | 0 | 2 | 5 | 3 | 4 |
| 63 | strength | research | data | self-understanding - of own abilities - research - interpret data | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 64 | strength | research | data | self-understanding - of own abilities - research - collect data | 3 | 0.2% | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 2 | 1 |
| 65 | strength | research | data | self-understanding - of own abilities - research - fieldwork | 5 | 0.3% | 2 | 3 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 2 | 1 | 2 | 2 | 3 |
| 66 | strength | research | design | self-understanding - of own abilities - research - capable of designing project | 7 | 0.4% | 2 | 4 | 1 | 0 | 0 | 2 | 1 | 0 | 4 | 3 | 0 | 4 | 3 | 4 |
| 67 | strength | research | independence | self-understanding - of own abilities - can work independently | 49 | 2.9% | 19 | 18 | 7 | 0 | 4 | 14 | 4 | 4 | 27 | 9 | 23 | 17 | 12 | 37 |
| 68 | strength | research | presenting | self-understanding - of own abilities - research - able to defend | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 |
| 69 | | research Total | | Research skills: Views self as more capable of doing research | 155 | 9.1% | 54 | 58 | 20 | 10 | 12 | 46 | 35 | 10 | 64 | 24 | 66 | 65 | 44 | 111 |
| 70 | strength | work ethic | motivation | self-understanding - disposition - is motivated - more than thought | 7 | 0.4% | 2 | 4 | 0 | 1 | 0 | 2 | 1 | 0 | 4 | 1 | 3 | 3 | 2 | 5 |
| 71 | strength | work ethic | motivation | self-understanding - disposition - is motivated / could motivate self | 21 | 1.2% | 7 | 9 | 3 | 0 | 2 | 12 | 4 | 1 | 4 | 5 | 8 | 8 | 5 | 16 |
| 73 | strength | work ethic | perseverance | self-understanding - disposition - tolerance of obstacles, risk, failure, ambiguity | 8 | 0.5% | 1 | 4 | 3 | 0 | 0 | 4 | 0 | 0 | 4 | 0 | 4 | 4 | 0 | 8 |
| 74 | strength | work ethic | perseverance | self-understanding - disposition - patience - more than thought | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 |
| 75 | strength | work ethic | perseverance | self-understanding - disposition - has perseverance | 19 | 1.1% | 6 | 6 | 3 | 1 | 3 | 5 | 2 | 3 | 9 | 5 | 8 | 6 | 10 | 9 |
| 76 | strength | work ethic | perseverance | self-understanding - disposition - perseverance - more persistent than had thought | 6 | 0.4% | 2 | 4 | 0 | 0 | 0 | 3 | 0 | 2 | 1 | 0 | 3 | 3 | 0 | 6 |
| 78 | strength | work ethic | work ethic | self-understanding - disposition - good work ethic, is or can be hard worker | 27 | 1.6% | 7 | 7 | 8 | 1 | 4 | 12 | 3 | 1 | 11 | 3 | 12 | 12 | 7 | 20 |
| 79 | strength | work ethic | work ethic | self-understanding - disposition - good work ethic - better than thought | 4 | 0.2% | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 3 | 0 | 1 | 0 | 3 | 1 | 3 |
| 80 | | work ethic Total | | Work ethic: Views self as having strong work ethic, highly motivated, more perseverance, patient, tolerant of obstacles | 94 | 5.5% | 29 | 34 | 19 | 3 | 9 | 38 | 11 | 11 | 34 | 15 | 39 | 40 | 25 | 69 |
| 81 | | | | | | | | | | | | | | | | | | | | |
| 82 | **STRENGTH** | **SUBTOTAL:** | | | **1163** | **68%** | **304** | **430** | **306** | **51** | **69** | **399** | **229** | **118** | **417** | **225** | **422** | **516** | **323** | **840** |
| 83 | | | | | | | | | | | | | | | | | | | | |
| 84 | **LIMITATION** | | | | | | | | | | | | | | | | | | | |
| 85 | limitation | general | limits | self-understanding - of own limitations, weaknesses | 26 | 1.5% | 10 | 9 | 7 | 0 | 0 | 7 | 10 | 0 | 9 | 3 | 7 | 16 | 12 | 14 |
| 86 | limitation | general | limits | self-understanding - of lack of quality in performance / mistakes - general | 4 | 0.2% | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 1 | 0 | 3 | 2 | 2 |
| 87 | | general Total | | General limitations: New understanding of limitations, weaknesses, in general | 30 | 1.8% | 10 | 11 | 9 | 0 | 0 | 9 | 10 | 0 | 11 | 4 | 7 | 19 | 14 | 16 |
| 88 | limitation | academic | limits | self-understanding - of own limitations - academic | 5 | 0.3% | 5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 3 |
| 89 | | academic Total | | General academic limitations: new understanding of academic weaknesses | 5 | 0.3% | 5 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 2 | 1 | 2 | 2 | 2 | 3 |
| 90 | limitation | communication | oral | self-understanding - of own limitations - communication | 8 | 0.5% | 2 | 4 | 2 | 0 | 0 | 1 | 3 | 1 | 3 | 3 | 4 | 1 | 4 | 4 |
| 91 | limitation | communication | writing | self-understanding - of lack of quality in performance - writing | 5 | 0.3% | 0 | 2 | 2 | 0 | 1 | 1 | 1 | 0 | 3 | 0 | 3 | 2 | 2 | 3 |
| 92 | limitation | communication | writing | learned they should do multiple revisions | 3 | 0.2% | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 1 | 2 |
| 93 | limitation | communication | writing | learned importance of setting and sticking to goals | 3 | 0.2% | 1 | 0 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 1 | 2 |
| 94 | limitation | communication | writing | learned importance of seeing big picture | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 95 | limitation | communication | writing | self-understanding - of own limitations - has writing deficiencies | 8 | 0.5% | 2 | 5 | 1 | 0 | 0 | 3 | 1 | 0 | 4 | 4 | 1 | 3 | 1 | 7 |
| 96 | | communication Total | | Communication skills: New understanding of limitations, weaknesses | 28 | 1.6% | 7 | 11 | 8 | 1 | 1 | 6 | 9 | 2 | 11 | 7 | 13 | 8 | 9 | 19 |
| 97 | limitation | proj mgt | indep | self-understanding - of own limitations - project management - working independently / indep research | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 3 | 0 |
| 98 | limitation | proj mgt | organize/plan | self-understanding - of lack of quality in performance - project management, needs to plan, | 12 | 0.7% | 4 | 3 | 5 | 0 | 0 | 2 | 4 | 1 | 5 | 5 | 1 | 6 | 4 | 8 |
| 99 | limitation | proj mgt | organize/plan | self-understanding - project management style - needs deadlines / structure / guidance | 15 | 0.9% | 1 | 6 | 4 | 1 | 3 | 4 | 2 | 3 | 6 | 3 | 4 | 8 | 4 | 11 |
| 100 | limitation | proj mgt | organize/plan | learned importance of planning | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 | 1 | 0 | 3 |
| 101 | limitation | proj mgt | time mgt | self-understanding - needs to improve time management skills | 61 | 3.6% | 17 | 20 | 20 | 2 | 2 | 23 | 9 | 7 | 22 | 27 | 16 | 18 | 23 | 38 |

| Line | Group 1 | Group 3 | Group 4 | Descriptive Text | Total | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 102 | limitation | proj mgt | time mgt | learned they should pay attention to time management, organization when doing a project | 10 | 0.6% | 2 | 4 | 2 | 2 | 0 | 2 | 2 | 4 | 2 | 3 | 5 | 2 | 6 | 4 |
| 103 | | proj mgt Total | | Project management skills: New understanding of limitations, weaknesses | 104 | 6.1% | 28 | 35 | 31 | 5 | 5 | 33 | 19 | 16 | 36 | 41 | 28 | 35 | 40 | 64 |
| 104 | limitation | research | general | self-understanding - of own limitations - not good at research | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 |
| 105 | | research Total | | Research skills: New understanding of limitations, weaknesses | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 |
| 106 | limitation | confidence | lacking | self-understanding - disposition - confidence - needs to improve | 8 | 0.5% | 2 | 3 | 2 | 0 | 1 | 0 | 0 | 1 | 7 | 1 | 4 | 3 | 1 | 7 |
| 107 | limitation | confidence | lacking | self-understanding - disposition - is afraid to succeed | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 108 | | confidence Total | | Confidence: New understanding of limitations, weaknesses | 9 | 0.5% | 2 | 3 | 3 | 0 | 1 | 0 | 0 | 1 | 8 | 2 | 4 | 3 | 1 | 8 |
| 109 | limitation | work ethic | motivation | self-understanding - disposition - too emotionally involved in project | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 110 | limitation | work ethic | motivation | self-understanding - disposition - is not motivated | 4 | 0.2% | 2 | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 1 | 2 | 1 | 1 | 2 | 2 |
| 112 | limitation | work ethic | perseverance | self-understanding - of own limitations - perseverance | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 2 |
| 114 | limitation | work ethic | work ethic | self-understanding - of lack of quality in performance - work ethic | 5 | 0.3% | 2 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 1 | 1 | 2 | 2 | 1 | 4 |
| 115 | limitation | work ethic | work ethic | learned they need to work hard, persist to be successful | 7 | 0.4% | 4 | 1 | 2 | 0 | 0 | 2 | 2 | 2 | 1 | 2 | 2 | 3 | 3 | 4 |
| 116 | | work ethic Total | | Work ethic: New understanding of limitations, weaknesses | 19 | 1.1% | 10 | 4 | 5 | 0 | 0 | 9 | 3 | 3 | 4 | 6 | 6 | 7 | 7 | 12 |
| 117 | | | | | | | | | | | | | | | | | | | | |
| 118 | **LIMITATION** | **SUBTOTAL:** | | | **197** | 11.5% | **62** | **66** | **56** | **6** | **7** | **60** | **42** | **22** | **73** | **62** | **61** | **74** | **73** | **124** |
| 119 | | | | | | | | | | | | | | | | | | | | |
| 120 | **INSIGHT** | | | | | | | | | | | | | | | | | | | |
| 121 | insight | academic | learning style | self-understanding - of learning style | 15 | 0.9% | 7 | 2 | 3 | 2 | 1 | 6 | 6 | 1 | 2 | 3 | 6 | 6 | 5 | 10 |
| 122 | | academic Total | | General academic interests: clarified | 15 | 0.9% | 7 | 2 | 3 | 2 | 1 | 6 | 6 | 1 | 2 | 3 | 6 | 6 | 5 | 10 |
| 123 | insight | communication | writing | self-understanding - writing style | 10 | 0.6% | 0 | 4 | 6 | 0 | 0 | 6 | 3 | 0 | 1 | 1 | 3 | 6 | 1 | 9 |
| 124 | | communication Total | | Communication skills: Gained insight about writing style | 10 | 0.6% | 0 | 4 | 6 | 0 | 0 | 6 | 3 | 0 | 1 | 1 | 3 | 6 | 1 | 9 |
| 125 | insight | critical thinking | indep voice | need to think independently but value other opinions | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 126 | | critical thinking Total | | Critical thinking skills: Learned need to value other's opinions | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 127 | insight | proj mgt | style | self-understanding - project management style | 7 | 0.4% | 3 | 1 | 3 | 0 | 0 | 2 | 2 | 1 | 2 | 1 | 3 | 3 | 2 | 5 |
| 128 | | proj mgt Total | | Project management skills: Understands own project management style better | 7 | 0.4% | 3 | 1 | 3 | 0 | 0 | 2 | 2 | 1 | 2 | 1 | 3 | 3 | 2 | 5 |
| 129 | insight | academic | general | self-understanding - of interests - academic | 32 | 1.9% | 4 | 16 | 11 | 0 | 1 | 17 | 7 | 4 | 4 | 5 | 9 | 18 | 4 | 28 |
| 130 | insight | academic | value | learned can apply topic to own life | 3 | 0.2% | 0 | 1 | 2 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 2 | 0 | 3 |
| 131 | insight | academic | value | learned they appreciate a college education | 4 | 0.2% | 2 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 4 |
| 132 | insight | academic | value | learned they value creativity | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 133 | | academic Total | | General academic interests: clarified | 40 | 2.3% | 6 | 17 | 15 | 1 | 1 | 19 | 11 | 5 | 5 | 5 | 12 | 23 | 4 | 36 |
| 134 | insight | career | chg field | self-understanding - career clarification - decided should change to a different field | 12 | 0.7% | 2 | 4 | 5 | 1 | 0 | 5 | 3 | 1 | 3 | 3 | 5 | 4 | 6 | 6 |
| 135 | insight | career | chg focus | self-understanding - career clarification - different direction, area | 7 | 0.4% | 3 | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 5 | 1 | 2 | 4 | 1 | 6 |
| 136 | insight | career | chg to non-acad | self-understanding - career clarification - different direction, outside academia | 5 | 0.3% | 0 | 3 | 2 | 0 | 0 | 2 | 0 | 1 | 2 | 1 | 2 | 2 | 1 | 4 |
| 137 | insight | career | chg to non-rese | self-understanding - career clarification - does not want to do independent research | 14 | 0.8% | 5 | 5 | 1 | 2 | 1 | 1 | 4 | 0 | 9 | 1 | 6 | 7 | 3 | 11 |
| 138 | insight | career | chg to teaching | self-understanding - career clarification - likes teaching, can teach | 8 | 0.5% | 1 | 1 | 2 | 4 | 0 | 0 | 6 | 0 | 2 | 0 | 6 | 2 | 0 | 8 |
| 139 | insight | career | clarified | learned ready for career choice | 7 | 0.4% | 1 | 1 | 2 | 3 | 0 | 1 | 6 | 0 | 0 | 0 | 4 | 3 | 2 | 5 |
| 140 | insight | career | clarified | self-understanding - career clarification - likes working with others | 9 | 0.5% | 3 | 3 | 2 | 1 | 0 | 1 | 4 | 0 | 4 | 0 | 3 | 6 | 1 | 8 |
| 141 | insight | career | clarified | self-understanding - clarification of career and life interests | 66 | 3.9% | 19 | 16 | 21 | 7 | 3 | 19 | 27 | 3 | 17 | 9 | 22 | 35 | 24 | 42 |
| 142 | insight | career | clarified | learned enjoyed doing interviews | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 143 | insight | career | clarified | learned importance of contributing to community | 3 | 0.2% | 1 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 2 | 1 | 2 |
| 144 | | career Total | | Career interests: clarified | 133 | 7.8% | 36 | 37 | 38 | 18 | 4 | 30 | 55 | 5 | 43 | 16 | 51 | 66 | 40 | 93 |
| 145 | insight | grad school | moved away | self-understanding - career clarification - not ready for grad school | 6 | 0.4% | 1 | 3 | 2 | 0 | 0 | 3 | 0 | 2 | 1 | 1 | 3 | 2 | 3 | 3 |
| 146 | insight | grad school | moved toward | self-understanding - career clarification - likes academia | 1 | 0.1% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 147 | insight | grad school | moved toward | self-understanding - career clarification - decided to go to grad school or confirmed decision | 13 | 0.8% | 6 | 1 | 3 | 0 | 3 | 4 | 4 | 0 | 5 | 2 | 4 | 7 | 7 | 6 |
| 148 | | grad school Total | | Graduate school interests: Clarified or confirmed | 20 | 1.2% | 7 | 4 | 5 | 0 | 4 | 7 | 4 | 2 | 7 | 3 | 7 | 10 | 10 | 10 |
| 149 | insight | major field | change | self-understanding - career clarification - different focus within same field | 7 | 0.4% | 1 | 2 | 2 | 2 | 0 | 0 | 5 | 1 | 1 | 1 | 3 | 3 | 1 | 6 |
| 150 | insight | major field | retain | self-understanding - career clarification - confirmed current direction, field | 20 | 1.2% | 2 | 4 | 8 | 4 | 2 | 2 | 9 | 2 | 7 | 3 | 8 | 9 | 3 | 17 |
| 151 | | major field Total | | Academic field: Clarified or confirmed interests in or within current academic field | 27 | 1.6% | 3 | 6 | 10 | 6 | 2 | 2 | 14 | 3 | 8 | 4 | 11 | 12 | 4 | 23 |
| 152 | insight | non-academic | faith values | self-understanding - interest clarification - importance of own faith values | 9 | 0.5% | 0 | 3 | 6 | 0 | 0 | 5 | 4 | 0 | 0 | 2 | 2 | 5 | 2 | 7 |
| 153 | | non-academic Total | | Faith values: clarified importance of own faith values | 9 | 0.5% | 0 | 3 | 6 | 0 | 0 | 5 | 4 | 0 | 0 | 2 | 2 | 5 | 2 | 7 |
| 154 | insight | oral comm | enjoys | self-understanding - interest clarification - presenting | 1 | 0.1% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 155 | | oral comm Total | | Presentations: learned enjoys presenting | 1 | 0.1% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 156 | insight | research | enjoys | learned found doing own work exciting, motivating | 4 | 0.2% | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 1 | 0 | 3 | 1 | 3 |
| 157 | insight | research | enjoys | self-understanding - career clarification - enjoys, loves research | 32 | 1.9% | 6 | 9 | 9 | 2 | 6 | 11 | 7 | 1 | 13 | 3 | 8 | 21 | 4 | 28 |
| 158 | | research Total | | Research skills: Learned enjoys research | 36 | 2.1% | 6 | 11 | 10 | 3 | 6 | 11 | 8 | 2 | 15 | 4 | 8 | 24 | 5 | 31 |

| Line | Group 1 | Group 3 | Group 4 | Descriptive Text | Total | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 159 | insight | writing | dislikes | self-understanding - interest clarification - does not like writing papers | 5 | 0.3% | 0 | 2 | 3 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 3 | 1 | 0 | 5 |
| 160 | insight | writing | likes | self-understanding - interest clarification - writing | 3 | 0.2% | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 2 | 1 | 2 |
| 161 | | writing Total | | Writing: Clarified interest in writing | 8 | 0.5% | 0 | 3 | 4 | 0 | 1 | 3 | 2 | 1 | 2 | 1 | 4 | 3 | 1 | 7 |
| 162 | insight | general | general | self-understanding - personality, character | 14 | 0.8% | 4 | 1 | 9 | 0 | 0 | 4 | 6 | 0 | 4 | 3 | 4 | 7 | 6 | 8 |
| 163 | | general Total | | Personality: clarified understanding of own personality, character | 14 | 0.8% | 4 | 1 | 9 | 0 | 0 | 4 | 6 | 0 | 4 | 3 | 4 | 7 | 6 | 8 |
| 164 | insight | work ethic | clarified | self-understanding - understands own work ethic better | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| 165 | | work ethic Total | | Work ethic: Understands own work ethic better | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| 166 | | | | | | | | | | | | | | | | | | | | |
| 167 | **INSIGHTS** | **SUBTOTAL:** | | | **323** | 18.9% | **72** | **90** | **111** | **31** | **19** | **97** | **117** | **20** | **89** | **45** | **113** | **165** | **80** | **243** |
| 168 | | | | | | | | | | | | | | | | | | | | |
| 169 | | x-nothing Total | | Nothing: Little or nothing learned about self during capstone | 25 | 1.5% | 2 | 11 | 11 | 1 | 0 | 4 | 7 | 9 | 5 | 3 | 11 | 11 | 10 | 15 |
| 170 | NOTHING | SUBTOTAL: | | | 25 | 1.5% | 2 | 11 | 11 | 1 | 0 | 4 | 7 | 9 | 5 | 3 | 11 | 11 | 10 | 15 |
| 171 | | | | | | | | | | | | | | | | | | | | |
| 172 | | **Grand Total** | | **Grand total:** | **1708** | 100.0% | **440** | **597** | **484** | **89** | **95** | **560** | **395** | **169** | **584** | **335** | **607** | **766** | **486** | **###** |

**Table Q2-3: Summary Tally of Responses by Category and Topic To: What did you learn about yourself as a result of your capstone experience?**

**Clarified understanding**

H=>3.50
M= 3.00 to 3.49
L=<3.00

| Line | Self assessment category: strength (e.g. can do), limitation, or general insight | Group 1 indicates whether the response related to a perceived strength, limitation or deficiency, or simply a self-insight. Group 3 indicates the general topic area of the response. | | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Group 1** | **Descriptive Text** | **Total** | Pct | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Ylw | L | M | H | M | F |
| 1 | **STRENGTH** | | | | | | | | | | | | | | | | | |
| 4 | | General academic abilities: Views self as more academically capable | 64 | 3.7% | 4.5% | 4.0% | 3.3% | 1.1% | 3.2% | 4.5% | 1.5% | 4.1% | 4.5% | 3.3% | 4.4% | 3.4% | 3.9% | 3.7% |
| 15 | | Communication skills: Views self as more capable (writing, oral, presentations) | 118 | 6.9% | 5.9% | 6.5% | 8.5% | 5.6% | 7.4% | 8.0% | 7.1% | 11.2% | 4.5% | 5.7% | 5.9% | 8.2% | 6.2% | 7.2% |
| 26 | | Critical thinking skills: Views self as more capable | 82 | 4.8% | 4.8% | 5.0% | 4.5% | 4.5% | 4.2% | 3.2% | 4.6% | 7.1% | 5.8% | 5.4% | 4.3% | 5.0% | 4.3% | 5.0% |
| 34 | | Interpersonal skills: Views self as having interpersonal/collaboration skills | 34 | 2.0% | 1.4% | 2.8% | 1.7% | 2.2% | 1.1% | 2.3% | 1.8% | 3.0% | 1.5% | 1.5% | 2.3% | 2.0% | 1.4% | 2.2% |
| 43 | | Personal potential: Views self as having greater achievement potential | 188 | 11.0% | 12.3% | 9.9% | 12.0% | 12.4% | 6.3% | 11.1% | 10.4% | 5.9% | 12.8% | 13.1% | 9.9% | 11.0% | 10.5% | 11.2% |
| 57 | | Project management skills: Views self as having good project management skills | 426 | 24.9% | 21.4% | 28.3% | 25.2% | 14.6% | 28.4% | 27.1% | 20.5% | 26.0% | 25.5% | 26.6% | 25.4% | 23.9% | 25.9% | 24.5% |
| 59 | | Reflection skills: Views self as more capable of doing self-reflection | 2 | 0.1% | 0.0% | 0.0% | 0.0% | 2.2% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.2% |
| 69 | | Research skills: Views self as more capable of doing research | 155 | 9.1% | 12.3% | 9.7% | 4.1% | 11.2% | 12.6% | 8.2% | 8.9% | 5.9% | 11.0% | 7.2% | 10.9% | 8.5% | 9.1% | 9.1% |
| 80 | | Work ethic: Views self as having strong work ethic, highly motivated, more perseverance, patient, tolerant of obstacles | 94 | 5.5% | 6.6% | 5.7% | 3.9% | 3.4% | 9.5% | 6.8% | 2.8% | 6.5% | 5.8% | 4.5% | 6.4% | 5.2% | 5.1% | 5.6% |
| 82 | **STRENGTH** | | **1163** | **68%** | 69.1% | 72.0% | 63.2% | 57.3% | 72.6% | 71.3% | 58.0% | 69.8% | 71.4% | 67.2% | 69.5% | 67.4% | 66.5% | 68.7% |
| 84 | **LIMITATION** | | | | | | | | | | | | | | | | | |
| 87 | | General limitations: New understanding of limitations, weaknesses, in general | 30 | 1.8% | 2.3% | 1.8% | 1.9% | 0.0% | 0.0% | 1.6% | 2.5% | 0.0% | 1.9% | 1.2% | 1.2% | 2.5% | 2.9% | 1.3% |
| 89 | | General academic limitations: new understanding of academic weaknesses | 5 | 0.3% | 1.1% | 0.0% | 0.0% | 0.0% | 0.0% | 0.5% | 0.0% | 0.0% | 0.3% | 0.3% | 0.3% | 0.3% | 0.4% | 0.2% |
| 96 | | Communication skills: New understanding of limitations, weaknesses | 28 | 1.6% | 1.6% | 1.8% | 1.7% | 1.1% | 1.1% | 1.1% | 2.3% | 1.2% | 1.9% | 2.1% | 2.1% | 1.0% | 1.9% | 1.6% |
| 103 | | Project management skills: New understanding of limitations, weaknesses | 104 | 6.1% | 6.4% | 5.9% | 6.4% | 5.6% | 5.3% | 5.9% | 4.8% | 9.5% | 6.2% | 12.2% | 4.6% | 4.6% | 8.2% | 5.2% |
| 105 | | Research skills: New understanding of limitations, weaknesses | 2 | 0.1% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.2% | 0.3% | 0.2% | 0.0% | 0.0% | 0.2% |
| 108 | | Confidence: New understanding of limitations, weaknesses | 9 | 0.5% | 0.5% | 0.5% | 0.6% | 0.0% | 1.1% | 0.0% | 0.0% | 0.6% | 1.4% | 0.6% | 0.7% | 0.4% | 0.2% | 0.7% |
| 116 | | Work ethic: New understanding of limitations, weaknesses | 19 | 1.1% | 2.3% | 0.7% | 1.0% | 0.0% | 0.0% | 1.6% | 0.8% | 1.8% | 0.7% | 1.8% | 1.0% | 0.9% | 1.4% | 1.0% |
| 118 | **LIMITATION** | | **197** | 11.5% | 14.1% | 11.1% | 11.6% | 6.7% | 7.4% | 10.7% | 10.6% | 13.0% | 12.5% | 18.5% | 10.0% | 9.7% | 15.0% | 10.1% |
| 120 | **INSIGHT** | | | | | | | | | | | | | | | | | |
| 122 | | General academic interests: clarified | 15 | 0.9% | 1.6% | 0.3% | 0.6% | 2.2% | 1.1% | 1.1% | 1.5% | 0.6% | 0.3% | 0.9% | 1.0% | 0.8% | 1.0% | 0.8% |
| 124 | | Communication skills: Gained insight about writing style | 10 | 0.6% | 0.0% | 0.7% | 1.2% | 0.0% | 0.0% | 1.1% | 0.8% | 0.0% | 0.2% | 0.3% | 0.5% | 0.8% | 0.2% | 0.7% |
| 126 | | Critical thinking skills: Learned need to value other's opinions | 1 | 0.1% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.1% |
| 128 | | Project management skills: Understands own project management style better | 7 | 0.4% | 0.7% | 0.2% | 0.6% | 0.0% | 0.0% | 0.4% | 0.5% | 0.6% | 0.3% | 0.3% | 0.5% | 0.4% | 0.4% | 0.4% |
| 133 | | General academic interests: clarified | 40 | 2.3% | 1.4% | 2.8% | 3.1% | 1.1% | 1.1% | 3.4% | 2.8% | 3.0% | 0.9% | 1.5% | 2.0% | 3.0% | 0.8% | 2.9% |
| 144 | | Career interests: clarified | 133 | 7.8% | 8.2% | 6.2% | 7.9% | 20.2% | 4.2% | 5.4% | 13.9% | 3.0% | 7.4% | 4.8% | 8.4% | 8.6% | 8.2% | 7.6% |
| 148 | | Graduate school interests: Clarified or confirmed | 20 | 1.2% | 1.6% | 0.7% | 1.0% | 0.0% | 4.2% | 1.3% | 1.0% | 1.2% | 1.2% | 0.9% | 1.2% | 1.3% | 2.1% | 0.8% |
| 151 | | Academic field: Clarified or confirmed interests in or within current academic field | 27 | 1.6% | 0.7% | 1.0% | 2.1% | 6.7% | 2.1% | 0.4% | 3.5% | 1.8% | 1.4% | 1.2% | 1.8% | 1.6% | 0.8% | 1.9% |
| 153 | | Faith values: clarified importance of own faith values | 9 | 0.5% | 0.0% | 0.5% | 1.2% | 0.0% | 0.0% | 0.9% | 1.0% | 0.0% | 0.0% | 0.6% | 0.3% | 0.7% | 0.4% | 0.6% |
| 155 | | Presentations: learned enjoys presenting | 1 | 0.1% | 0.0% | 0.0% | 0.0% | 1.1% | 0.0% | 0.0% | 0.3% | 0.0% | 0.0% | 0.0% | 0.2% | 0.0% | 0.0% | 0.1% |
| 158 | | Research skills: Learned enjoys research | 36 | 2.1% | 1.4% | 1.8% | 2.1% | 3.4% | 6.3% | 2.0% | 2.0% | 1.2% | 2.6% | 1.2% | 1.3% | 3.1% | 1.0% | 2.5% |
| 161 | | Writing: Clarified interest in writing | 8 | 0.5% | 0.0% | 0.5% | 0.8% | 0.0% | 1.1% | 0.5% | 0.5% | 0.6% | 0.3% | 0.3% | 0.7% | 0.4% | 0.2% | 0.6% |
| 163 | | Personality: clarified understanding of own personality, character | 14 | 0.8% | 0.9% | 0.2% | 1.9% | 0.0% | 0.0% | 0.7% | 1.5% | 0.0% | 0.7% | 0.9% | 0.7% | 0.9% | 1.2% | 0.7% |
| 165 | | Work ethic: Understands own work ethic better | 2 | 0.1% | 0.0% | 0.2% | 0.2% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.0% | 0.3% | 0.2% | 0.0% | 0.0% | 0.2% |
| 167 | **INSIGHTS** | | **323** | 18.9% | 16.4% | 15.1% | 22.9% | 34.8% | 20.0% | 17.3% | 29.6% | 11.8% | 15.2% | 13.4% | 18.6% | 21.5% | 16.5% | 19.9% |
| 170 | NOTHING | | 25 | 1.5% | 0.5% | 1.8% | 2.3% | 1.1% | 0.0% | 0.7% | 1.8% | 5.3% | 0.9% | 0.9% | 1.8% | 1.4% | 2.1% | 1.2% |
| 172 | | **Grand total:** | **1708** | 100.0% | 440 | 597 | 484 | 89 | 95 | 560 | 395 | 169 | 584 | 335 | 607 | 766 | 486 | 1222 |

**Table Q3-1 : Detailed Tally by Topic of Student Responses To:**

***What aspects of your capstone experience do you think will be of most value to you after you graduate?***

H=>3.50
M= 3.00 to 3.49
L=<3.00

| | | | | | | ALL | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| line | Group 1 | Group 2 | Group 3 | ID | Description | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
| 1 | 1 skill dev | collab | general | 99 | collaboration skills - general | 7 | 0.4% | 1 | 4 | 2 | 0 | 0 | 3 | 3 | 0 | 1 | 0 | 3 | 4 | 2 | 5 |
| 2 | 1 skill dev | collab | advisor | 101 | collaboration skills - responding to feedback | 3 | 0.2% | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 3 |
| 3 | 1 skill dev | collab | advisor | 227 | profitable conversations / exchange of ideas | 3 | 0.2% | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 0 | 1 | 2 |
| 4 | 1 skill dev | collab | outside | 104 | collaboration skills - getting help from others | 4 | 0.2% | 1 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 4 | 0 | 1 | 3 |
| 5 | 1 skill dev | collab | outside | 105 | collaboration skills - making contacts in field | 4 | 0.2% | 0 | 4 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 3 |
| 6 | 1 skill dev | collab | teamwork | 100 | collaboration skills - teamwork | 13 | 0.7% | 2 | 4 | 6 | 1 | 0 | 2 | 5 | 2 | 4 | 4 | 3 | 6 | 5 | 8 |
| 7 | 1 skill dev | collab | teamwork | 636 | collaboration skills - leadership | 3 | 0.2% | 2 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 2 | 1 | 2 |
| 8 | | **collab Total** | | | **Development of collaboration skills** | **37** | **1.9%** | **7** | **18** | **11** | **1** | **0** | **14** | **10** | **3** | **10** | **6** | **15** | **16** | **11** | **26** |
| 9 | 1 skill dev | comm | general | 29 | communication skills - general | 23 | 1.2% | 7 | 6 | 10 | 0 | 0 | 12 | 0 | 3 | 8 | 1 | 10 | 12 | 6 | 17 |
| 10 | 1 skill dev | comm | oral | 50 | oral communication - general | 13 | 0.7% | 4 | 3 | 4 | 0 | 2 | 4 | 2 | 0 | 6 | 2 | 4 | 6 | 4 | 8 |
| 11 | 1 skill dev | comm | oral | 51 | oral communication - presentation skills | 29 | 1.5% | 9 | 11 | 6 | 1 | 2 | 6 | 14 | 2 | 7 | 6 | 13 | 10 | 8 | 21 |
| 12 | 1 skill dev | comm | oral | 52 | oral communication - present difficult concepts | 7 | 0.4% | 3 | 1 | 2 | 1 | 0 | 2 | 1 | 0 | 4 | 0 | 1 | 6 | 1 | 6 |
| 13 | 1 skill dev | comm | oral | 632 | oral communication - scientific conversation | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 14 | 1 skill dev | comm | oral | 645 | oral communication - defend ideas/theories orally | 9 | 0.5% | 1 | 5 | 2 | 1 | 0 | 2 | 1 | 0 | 6 | 0 | 6 | 3 | 3 | 6 |
| 15 | 1 skill dev | comm | writing | 30 | writing - general | 79 | 4.1% | 20 | 34 | 22 | 1 | 2 | 48 | 8 | 5 | 18 | 16 | 28 | 35 | 19 | 60 |
| 16 | 1 skill dev | comm | writing | 31 | writing - clarity | 4 | 0.2% | 0 | 3 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 2 | 0 | 4 |
| 17 | 1 skill dev | comm | writing | 33 | writing - mechanics | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 18 | 1 skill dev | comm | writing | 34 | writing - multiple drafts | 6 | 0.3% | 1 | 2 | 3 | 0 | 0 | 0 | 2 | 1 | 3 | 1 | 2 | 3 | 0 | 6 |
| 19 | 1 skill dev | comm | writing | 36 | writing - long work/research work | 43 | 2.2% | 15 | 13 | 12 | 0 | 3 | 12 | 13 | 3 | 15 | 8 | 19 | 16 | 10 | 33 |
| 20 | 1 skill dev | comm | writing | 37 | writing - foreign language skills | 9 | 0.5% | 0 | 2 | 4 | 1 | 2 | 2 | 4 | 1 | 2 | 0 | 4 | 5 | 1 | 8 |
| 21 | 1 skill dev | comm | writing | 40 | writing - being concise | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 1 |
| 22 | 1 skill dev | comm | writing | 45 | writing - thematic development | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 23 | 1 skill dev | comm | writing | 46 | writing - integrating sources | 4 | 0.2% | 1 | 1 | 2 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 2 | 1 | 3 | 1 |
| 24 | 1 skill dev | comm | writing | 48 | writing - persuasive | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 1 | 1 |
| 25 | 1 skill dev | comm | writing | 640 | writing - creative | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 26 | | **comm Total** | | | **Development of writing and oral communication skills** | **234** | **12.2%** | **62** | **84** | **71** | **5** | **12** | **95** | **48** | **17** | **73** | **36** | **97** | **100** | **57** | **176** |
| 27 | 1 skill dev | CT | general | 75 | CT - general | 33 | 1.7% | 7 | 17 | 8 | 0 | 1 | 19 | 6 | 1 | 7 | 3 | 16 | 14 | 12 | 21 |
| 28 | 1 skill dev | CT | analysis | 76 | CT - analysis skills | 21 | 1.1% | 2 | 12 | 3 | 3 | 1 | 8 | 4 | 2 | 7 | 1 | 13 | 7 | 1 | 20 |
| 29 | 1 skill dev | CT | analysis | 328 | development - analytical skills | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 30 | 1 skill dev | CT | analysis | 77 | CT - analysis, drawing conclusions | 8 | 0.4% | 1 | 4 | 2 | 0 | 1 | 2 | 0 | 0 | 6 | 3 | 4 | 1 | 3 | 5 |
| 31 | 1 skill dev | CT | analysis | 78 | CT - problem solving | 3 | 0.2% | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 2 | 1 | 0 | 3 |
| 32 | 1 skill dev | CT | analysis | 79 | CT - analysis of primary material | 6 | 0.3% | 1 | 2 | 2 | 0 | 1 | 4 | 0 | 1 | 1 | 2 | 2 | 2 | 3 | 3 |
| 33 | 1 skill dev | CT | analysis | 80 | CT- analysis of secondary material | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 |
| 34 | 1 skill dev | CT | analysis | 92 | CT - learned to refine / develop /clarify ideas | 7 | 0.4% | 2 | 2 | 3 | 0 | 0 | 4 | 0 | 0 | 3 | 0 | 5 | 2 | 1 | 6 |
| 35 | 1 skill dev | CT | analysis | 373 | CT - analyze from different perspectives | 6 | 0.3% | 0 | 1 | 3 | 2 | 0 | 0 | 4 | 0 | 2 | 1 | 1 | 4 | 2 | 4 |
| 36 | 1 skill dev | CT | apply | 94 | CT - applying principles / theory | 4 | 0.2% | 1 | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 3 | 2 | 2 | 0 | 1 | 3 |
| 37 | 1 skill dev | CT | argument | 90 | CT - developed an original argument / project | 17 | 0.9% | 3 | 6 | 5 | 0 | 3 | 8 | 2 | 1 | 6 | 3 | 5 | 9 | 4 | 13 |
| 38 | 1 skill dev | CT | argument | 96 | CT - addressing opposing views/information | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 39 | 1 skill dev | CT | integrate | 83 | CT - integrating knowledge from other disciplines | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 40 | 1 skill dev | CT | integrate | 86 | CT - synthesis | 13 | 0.7% | 6 | 4 | 1 | 0 | 2 | 2 | 2 | 2 | 7 | 1 | 5 | 7 | 7 | 6 |
| 41 | 1 skill dev | CT | manner | 81 | CT - creative thinking | 3 | 0.2% | 1 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 3 |
| 42 | 1 skill dev | CT | manner | 87 | CT - open-mindedness / flexible thinking | 5 | 0.3% | 0 | 1 | 3 | 1 | 0 | 2 | 2 | 0 | 1 | 1 | 2 | 2 | 1 | 4 |
| 43 | 1 skill dev | CT | manner | 650 | CT - in another language | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 44 | | **CT Total** | | | **Development of critical thinking skills: analysis, synthesis, multiple perspectives, dealing with primary sources** | **133** | **7.0%** | **26** | **54** | **36** | **6** | **11** | **56** | **23** | **7** | **47** | **21** | **59** | **53** | **39** | **94** |
| 45 | 1 skill dev | projmgt | general | 56 | project management - general | 21 | 1.1% | 8 | 5 | 8 | 0 | 0 | 8 | 5 | 2 | 6 | 4 | 5 | 12 | 4 | 17 |
| 46 | 1 skill dev | projmgt | organiz | 70 | project management - organization | 40 | 2.1% | 12 | 16 | 7 | 3 | 2 | 17 | 6 | 7 | 10 | 8 | 15 | 17 | 8 | 32 |
| 47 | 1 skill dev | projmgt | organiz | 72 | project management - goal setting | 6 | 0.3% | 1 | 2 | 1 | 1 | 1 | 2 | 0 | 1 | 3 | 2 | 2 | 2 | 2 | 4 |
| 48 | 1 skill dev | projmgt | organiz | 73 | project management - focus / reign in large project | 7 | 0.4% | 2 | 3 | 2 | 0 | 0 | 5 | 1 | 0 | 1 | 1 | 2 | 4 | 4 | 3 |
| 49 | 1 skill dev | projmgt | organiz | 629 | project management - manage multiple tasks/projects | 2 | 0.1% | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 50 | 1 skill dev | projmgt | organiz | 654 | project management - design | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 3 |
| 51 | 1 skill dev | projmgt | own | 57 | project management - working independently | 62 | 3.2% | 26 | 19 | 15 | 0 | 2 | 28 | 8 | 3 | 23 | 11 | 27 | 24 | 18 | 44 |
| 52 | 1 skill dev | projmgt | own | 59 | project management - taking responsibility | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 53 | 1 skill dev | projmgt | own | 68 | project management - see major project through from beginning to end | 46 | 2.4% | 9 | 21 | 14 | 0 | 2 | 23 | 4 | 4 | 15 | 8 | 15 | 23 | 19 | 27 |

| line | Group 1 | Group 2 | Group 3 | ID | Description | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 54 | 1 skill dev | projmgt | own | 198 | project management - taking initiative | 3 | 0.2% | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 2 | 0 | 3 |
| 55 | 1 skill dev | projmgt | own | 631 | project management - prioritizing | 4 | 0.2% | 1 | 1 | 2 | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 1 | 1 | 3 | 1 |
| 56 | 1 skill dev | projmgt | timeman | 60 | time management - general | 96 | 5.0% | 22 | 35 | 33 | 1 | 5 | 32 | 16 | 11 | 37 | 23 | 36 | 37 | 28 | 68 |
| 57 | 1 skill dev | projmgt | timeman | 61 | time management - meeting deadlines | 9 | 0.5% | 1 | 3 | 2 | 3 | 0 | 3 | 3 | 1 | 2 | 2 | 3 | 4 | 3 | 6 |
| 58 | 1 skill dev | projmgt | timeman | 643 | project management - working under pressure | 12 | 0.6% | 2 | 5 | 4 | 0 | 1 | 2 | 3 | 2 | 5 | 3 | 0 | 9 | 2 | 10 |
| 59 | 1 skill dev | projmgt | troublsh | 62 | project management - troubleshooting | 13 | 0.7% | 6 | 3 | 3 | 0 | 1 | 8 | 3 | 0 | 2 | 5 | 3 | 5 | 4 | 9 |
| 60 | 1 skill dev | projmgt | troublsh | 65 | project management - troubleshoot experiment difficulties | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 61 | 1 skill dev | projmgt | troublsh | 66 | project management - troubleshooting - overcame adversity | 3 | 0.2% | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 0 | 3 |
| 62 | | **projmgt Total** | | | **Development of project management skill development: time management, organization, working independently, perseverance** | **330** | **17.3%** | **99** | **115** | **93** | **8** | **15** | **135** | **53** | **32** | **110** | **72** | **114** | **144** | **96** | **234** |
| 63 | 1 skill dev | research | general | 1 | research skills - general | 123 | 6.4% | 34 | 48 | 28 | 5 | 8 | 40 | 28 | 10 | 45 | 27 | 48 | 48 | 34 | 89 |
| 64 | 1 skill dev | research | analysis | 25 | research - interpreting findings | 4 | 0.2% | 2 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 0 | 1 | 3 | 1 | 3 |
| 65 | 1 skill dev | research | analysis | 27 | research - data analysis | 4 | 0.2% | 3 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 3 | 1 | 0 | 3 | 1 |
| 66 | 1 skill dev | research | analysis | 343 | research - analysis - general | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 2 |
| 67 | 1 skill dev | research | comp | 2 | computer skills - programming | 10 | 0.5% | 5 | 2 | 2 | 1 | 0 | 3 | 3 | 3 | 1 | 2 | 3 | 5 | 2 | 8 |
| 68 | 1 skill dev | research | comp | 5 | computer skills - general | 4 | 0.2% | 2 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 1 | 1 | 3 | 1 |
| 69 | 1 skill dev | research | cond | 3 | research - conducting - lab skills | 15 | 0.8% | 13 | 1 | 0 | 0 | 1 | 3 | 1 | 1 | 10 | 1 | 9 | 5 | 1 | 14 |
| 70 | 1 skill dev | research | cond | 4 | research - conducting - data gathering | 9 | 0.5% | 2 | 7 | 0 | 0 | 0 | 2 | 3 | 0 | 4 | 3 | 4 | 2 | 4 | 5 |
| 71 | 1 skill dev | research | cond | 23 | research - field work specific to discipline | 4 | 0.2% | 1 | 2 | 1 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 4 |
| 72 | 1 skill dev | research | cond | 28 | research methods - general | 6 | 0.3% | 1 | 2 | 2 | 1 | 0 | 1 | 3 | 0 | 2 | 0 | 4 | 2 | 4 | 2 |
| 73 | 1 skill dev | research | design | 13 | research design - general | 5 | 0.3% | 2 | 3 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 1 | 4 | 0 | 3 | 2 |
| 74 | 1 skill dev | research | litreview | 19 | literature review - locating sources | 6 | 0.3% | 3 | 1 | 2 | 0 | 0 | 0 | 4 | 0 | 2 | 0 | 2 | 4 | 2 | 4 |
| 75 | 1 skill dev | research | litreview | 20 | literature review - evaluating materials | 12 | 0.6% | 5 | 3 | 4 | 0 | 0 | 2 | 5 | 1 | 4 | 1 | 3 | 8 | 4 | 8 |
| 76 | 1 skill dev | research | litreview | 345 | literature review - integrating sources | 3 | 0.2% | 0 | 0 | 2 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 2 | 1 | 2 |
| 77 | 1 skill dev | research | presenting | 24 | research - presenting findings | 6 | 0.3% | 3 | 1 | 1 | 0 | 1 | 1 | 2 | 0 | 3 | 1 | 2 | 3 | 1 | 5 |
| 78 | 1 skill dev | research | quant | 10 | quantitative skills - analysis | 3 | 0.2% | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 2 |
| 79 | 1 skill dev | research | quant | 11 | quantitative skills - statistics | 3 | 0.2% | 0 | 2 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 0 | 3 | 0 | 2 | 1 |
| 80 | | **research Total** | | | **Development of research skills: overall skills, design, methods, data gathering/analysis, lab, quantitative, computer, presentation** | **219** | **11.5%** | **76** | **81** | **42** | **10** | **10** | **66** | **53** | **20** | **80** | **42** | **90** | **87** | **66** | **153** |
| 81 | 1 skill dev | tech | general | 106 | technical skills - general | 8 | 0.4% | 5 | 1 | 1 | 0 | 1 | 5 | 2 | 0 | 1 | 1 | 2 | 5 | 1 | 7 |
| 82 | 1 skill dev | tech | applied | 109 | technical skills - real-world application | 12 | 0.6% | 2 | 3 | 0 | 7 | 0 | 4 | 4 | 4 | 0 | 1 | 4 | 7 | 3 | 9 |
| 83 | 1 skill dev | tech | disc | 107 | technical skills - specific to discipline | 15 | 0.8% | 4 | 2 | 1 | 7 | 1 | 2 | 8 | 0 | 5 | 3 | 5 | 7 | 5 | 10 |
| 84 | 1 skill dev | tech | skills | 506 | experience -practice with technical skills | 3 | 0.2% | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 2 |
| 85 | | **tech Total** | | | **Technical skill development** | **38** | **2.0%** | **11** | **7** | **3** | **15** | **2** | **11** | **16** | **4** | **7** | **6** | **11** | **21** | **10** | **28** |
| 86 | 2 knowledge | bigview | general | 138 | understanding - larger context - general | 4 | 0.2% | 0 | 2 | 1 | 1 | 0 | 2 | 2 | 0 | 0 | 0 | 4 | 0 | 0 | 4 |
| 87 | 2 knowledge | bigview | context | 139 | understanding - larger context - personal experience | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 88 | 2 knowledge | bigview | cultural | 222 | understanding - of others or other cultures | 9 | 0.5% | 1 | 3 | 5 | 0 | 0 | 2 | 6 | 0 | 1 | 0 | 3 | 6 | 3 | 6 |
| 89 | 2 knowledge | bigview | learn | 637 | understanding - how to learn | 5 | 0.3% | 2 | 2 | 1 | 0 | 0 | 3 | 1 | 1 | 0 | 2 | 3 | 0 | 4 | 1 |
| 90 | 2 knowledge | bigview | research | 127 | understanding - research process | 7 | 0.4% | 3 | 3 | 1 | 0 | 0 | 2 | 4 | 1 | 0 | 0 | 2 | 5 | 1 | 6 |
| 91 | 2 knowledge | bigview | thinking | 129 | intellectual independence | 6 | 0.3% | 1 | 4 | 1 | 0 | 0 | 4 | 0 | 0 | 2 | 1 | 1 | 4 | 0 | 6 |
| 92 | | **bigview Total** | | | **Understanding knowledge in a broader context** | **33** | **1.7%** | **8** | **15** | **9** | **1** | **0** | **15** | **13** | **2** | **3** | **4** | **13** | **16** | **8** | **25** |
| 93 | 2 knowledge | disciplinary | general | 118 | disciplinary knowledge - general | 27 | 1.4% | 7 | 7 | 6 | 3 | 3 | 5 | 14 | 0 | 8 | 5 | 14 | 8 | 11 | 16 |
| 94 | 2 knowledge | disciplinary | ethics | 122 | disciplinary knowledge, ethics | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 95 | 2 knowledge | disciplinary | expertise | 119 | disciplinary knowledge - expertise | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 96 | 2 knowledge | disciplinary | literature | 125 | disciplinary knowledge - literature | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 97 | 2 knowledge | disciplinary | practice | 120 | disciplinary knowledge - ways of practice | 5 | 0.3% | 0 | 1 | 0 | 3 | 1 | 0 | 4 | 0 | 1 | 1 | 2 | 2 | 0 | 5 |
| 98 | 2 knowledge | disciplinary | project | 123 | disciplinary knowledge - project area | 43 | 2.2% | 8 | 22 | 6 | 5 | 2 | 12 | 15 | 9 | 7 | 6 | 15 | 22 | 15 | 28 |
| 99 | 2 knowledge | disciplinary | theory | 124 | disciplinary knowledge - theoretical foundation | 1 | 0.1% | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 100 | | **disciplinary Total** | | | **Gaining disciplinary knowledge or knowledge in the project area** | **80** | **4.2%** | **16** | **31** | **14** | **11** | **6** | **18** | **34** | **9** | **19** | **14** | **32** | **34** | **27** | **53** |
| 101 | 2 knowledge | self | general | 110 | self-understanding - general | 9 | 0.5% | 0 | 3 | 6 | 0 | 0 | 4 | 2 | 0 | 3 | 5 | 2 | 2 | 2 | 7 |
| 102 | 2 knowledge | self | abilities | 111 | self-understanding - of own abilities | 10 | 0.5% | 2 | 4 | 3 | 0 | 1 | 4 | 3 | 1 | 2 | 2 | 4 | 4 | 4 | 6 |
| 103 | 2 knowledge | self | abilities | 113 | self-understanding - of lack of quality in performance / mistakes - general | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 |
| 104 | 2 knowledge | self | abilities | 542 | self-understanding - of own abilities - time management | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 105 | 2 knowledge | self | abilities | 549 | self-understanding - of own abilities - complete major project | 18 | 0.9% | 3 | 6 | 9 | 0 | 0 | 7 | 4 | 1 | 6 | 3 | 5 | 10 | 7 | 11 |
| 106 | 2 knowledge | self | abilities | 551 | self-understanding - of own abilities - research - design | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 |
| 107 | 2 knowledge | self | abilities | 555 | self-understanding - of own abilities - creativity | 2 | 0.1% | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 108 | 2 knowledge | self | abilities | 563 | self-understanding - of own abilities - work independently | 4 | 0.2% | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 2 | 2 | 2 |

| line | Group 1 | Group 2 | Group 3 | ID | Description | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 109 | 2 knowledge | self | abilities | 597 | self-understanding - of own abilities - can make a difference in community / world | 3 | 0.2% | 0 | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 2 | 0 | 3 |
| 110 | 2 knowledge | self | abilities | 582 | self-understanding - disposition - perseverance | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 111 | 2 knowledge | self | career | 115 | self-understanding - of career-related interests (career clarification) | 10 | 0.5% | 2 | 6 | 2 | 0 | 0 | 2 | 5 | 0 | 3 | 1 | 5 | 4 | 2 | 8 |
| 112 | 2 knowledge | self | career | 534 | self-understanding - career clarification - same/correct field | 2 | 0.1% | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 0 |
| 113 | 2 knowledge | self | career | 537 | self-understanding - career clarification - does not want to do independent research | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 114 | 2 knowledge | self | career | 559 | self-understanding - career clarification - working with others | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 1 |
| 115 | 2 knowledge | self | career | 634 | self-understanding - career clarification - help society / community | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 116 | 2 knowledge | self | career | 538 | self-understanding - career clarification - research interests/ interest in research | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 117 | 2 knowledge | self | interests | 560 | self-understanding - of interests - academic | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 2 | 0 |
| 118 | 2 knowledge | self | style | 653 | self-understanding - artistic style | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 119 | | **self Total** | | | **Gaining self-understanding of abilities, attributes, and interests (academic, personal and career)** | **74** | **3.9%** | **17** | **24** | **28** | **3** | **2** | **25** | **22** | **5** | **22** | **17** | **25** | **32** | **28** | **46** |
| 120 | 3 disposition chng | confidence | general | 156 | self-confidence - general | 16 | 0.8% | 3 | 6 | 6 | 1 | 0 | 8 | 5 | 0 | 3 | 1 | 7 | 8 | 2 | 14 |
| 121 | 3 disposition chng | confidence | academic | 157 | self-confidence - academic - general | 15 | 0.8% | 3 | 3 | 4 | 0 | 5 | 1 | 1 | 1 | 11 | 2 | 8 | 4 | 2 | 12 |
| 122 | 3 disposition chng | confidence | academic | 158 | self-confidence - academic - ability to do independent research | 9 | 0.5% | 3 | 3 | 3 | 0 | 0 | 2 | 0 | 2 | 5 | 1 | 4 | 4 | 1 | 8 |
| 123 | 3 disposition chng | confidence | academic | 159 | self-confidence - academic - writing | 7 | 0.4% | 1 | 1 | 5 | 0 | 0 | 2 | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 5 |
| 124 | 3 disposition chng | confidence | academic | 160 | self-confidence - academic - oral presentation ability | 4 | 0.2% | 2 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 3 | 0 | 1 | 3 |
| 125 | 3 disposition chng | confidence | academic | 359 | self-confidence - academic - articulating ideas | 3 | 0.2% | 0 | 0 | 2 | 1 | 0 | 2 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 3 |
| 126 | 3 disposition chng | confidence | accomplish | 150 | developed sense of accomplishment | 7 | 0.4% | 0 | 5 | 1 | 1 | 0 | 4 | 1 | 0 | 2 | 3 | 2 | 2 | 3 | 4 |
| 127 | 3 disposition chng | confidence | personal | 162 | self-confidence - personal - self-discipline | 1 | 0.1% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 128 | 3 disposition chng | confidence | personal | 163 | self-confidence - personal - reaching goals | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 129 | 3 disposition chng | confidence | personal | 164 | self-confidence - personal - complete long-term project | 23 | 1.2% | 6 | 6 | 9 | 0 | 2 | 7 | 5 | 3 | 8 | 7 | 6 | 10 | 5 | 18 |
| 130 | 3 disposition chng | confidence | personal | 165 | self-confidence - personal - creative abilities | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 131 | 3 disposition chng | confidence | personal | 630 | self-confidence - personal - interacting with others | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 132 | | **confidence Total** | | | **Increase in self-confidence in general and in abilities** | **88** | **4.6%** | **18** | **25** | **34** | **4** | **7** | **28** | **16** | **8** | **35** | **20** | **36** | **31** | **16** | **71** |
| 133 | 3 disposition chng | work value | collab | 644 | learned importance of getting input from others | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 134 | 3 disposition chng | work value | community | 601 | learned importance of work in community | 3 | 0.2% | 0 | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 2 | 0 | 1 | 2 |
| 135 | 3 disposition chng | work value | hardwork | 135 | learned importance of hard work | 9 | 0.5% | 3 | 2 | 4 | 0 | 0 | 1 | 5 | 1 | 2 | 4 | 0 | 5 | 1 | 8 |
| 136 | 3 disposition chng | work value | motiv | 196 | development - interest grew | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 137 | 3 disposition chng | work value | motiv | 142 | motivation - general | 7 | 0.4% | 1 | 4 | 1 | 0 | 1 | 2 | 2 | 1 | 2 | 0 | 3 | 4 | 0 | 7 |
| 138 | 3 disposition chng | work value | motiv | 143 | motivation - toward research | 4 | 0.2% | 0 | 1 | 3 | 0 | 0 | 2 | 1 | 0 | 1 | 0 | 3 | 1 | 0 | 4 |
| 139 | 3 disposition chng | work value | patience | 155 | learned patience necessary for research | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 140 | 3 disposition chng | work value | perseverance | 166 | perseverance | 18 | 0.9% | 5 | 6 | 5 | 0 | 2 | 9 | 5 | 0 | 4 | 4 | 5 | 9 | 3 | 15 |
| 141 | 3 disposition chng | work value | projmgt | 614 | learned importance of original research / owning work | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 142 | 3 disposition chng | work value | projmgt | 648 | learned importance of making decisions independently | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 143 | 3 disposition chng | work value | projmgt | 651 | learned importance of working independently / being self-sufficient | 1 | 0.1% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 144 | 3 disposition chng | work value | research | 652 | learned importance of - research of others | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 145 | 3 disposition chng | work value | responsible | 167 | learned how to be responsible / accountable | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 146 | 3 disposition chng | work value | tolerance | 154 | tolerance of obstacles, risk, failure, ambiguity | 3 | 0.2% | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 1 | 2 |
| 147 | 3 disposition chng | work value | work ethic | 149 | self-discipline / work ethic | 32 | 1.7% | 8 | 10 | 10 | 2 | 2 | 12 | 4 | 1 | 15 | 6 | 17 | 9 | 13 | 19 |
| 148 | | **work value Total** | | | **Increase in valuing work related attributes of research/projects: work ethic, perseverance, tolerance for obstacles, independence, responsibility, motivation** | **85** | **4.4%** | **23** | **27** | **27** | **2** | **6** | **29** | **20** | **4** | **32** | **18** | **34** | **33** | **24** | **61** |
| 149 | 4 profdevel | profdevel | general | 169 | professional development - general | 41 | 2.1% | 8 | 10 | 12 | 9 | 2 | 12 | 16 | 3 | 10 | 4 | 14 | 23 | 14 | 27 |
| 150 | 4 profdevel | profdevel | conference | 172 | professional development - gave conference presentation | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 151 | 4 profdevel | profdevel | jobprep | 175 | professional development - helped prepare for / led directly to job | 48 | 2.5% | 11 | 21 | 6 | 4 | 6 | 13 | 7 | 2 | 26 | 5 | 24 | 19 | 9 | 39 |
| 152 | 4 profdevel | profdevel | jobprep | 639 | professional development - interview skills | 8 | 0.4% | 1 | 4 | 1 | 2 | 0 | 3 | 2 | 2 | 1 | 2 | 3 | 3 | 4 | 4 |
| 153 | 4 profdevel | profdevel | portfolio | 176 | professional development - provided professional portfolio | 28 | 1.5% | 7 | 6 | 13 | 2 | 0 | 8 | 7 | 1 | 12 | 5 | 11 | 12 | 11 | 17 |
| 153 | 4 profdevel | profdevel | contacts | 800 | professional development - contacts, networking, references | 8 | 0.4% | 3 | 1 | 4 | 0 | 0 | 1 | 5 | 0 | 2 | 1 | 3 | 4 | 4 | 4 |
| 154 | 4 profdevel | profdevel | postproj | 178 | professional development - learned ways of developing project post-graduation | 8 | 0.4% | 2 | 2 | 1 | 1 | 2 | 2 | 3 | 0 | 3 | 1 | 2 | 5 | 1 | 7 |
| 155 | 4 profdevel | profdevel | publishable | 173 | professional development - produced work that was or will be published (or is publishable) | 4 | 0.2% | 1 | 2 | 1 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 3 | 2 | 2 |
| 156 | 4 profdevel | profdevel | schoolprep | 179 | preparation for grad school/professional school | 77 | 4.0% | 24 | 28 | 19 | 1 | 5 | 18 | 21 | 14 | 24 | 13 | 30 | 34 | 23 | 54 |
| 157 | 4 profdevel | profdevel | schoolprep | 199 | professional development - helped prepare for / led directly to graduate level position | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |

| line | Group 1 | Group 2 | Group 3 | ID | Description | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 158 | | **profdevel Total** | | | **Preparation for graduate/professional school or development of career skills, or preparation of materials useful for job/school applications** | **224** | **11.7%** | **57** | **76** | **57** | **19** | **15** | **60** | **61** | **22** | **81** | **31** | **88** | **105** | **69** | **155** |
| 159 | 5 experience of value | all | positive | 633 | all aspects positive/ valuable | 12 | 0.6% | 5 | 4 | 1 | 1 | 1 | 5 | 4 | 0 | 3 | 2 | 8 | 2 | 5 | 7 |
| 160 | 5 experience of value | all | positive | 484 | experience - generally valueable | 27 | 1.4% | 9 | 9 | 6 | 1 | 2 | 9 | 4 | 1 | 13 | 9 | 9 | 9 | 11 | 16 |
| 161 | | **all Total** | | | **Generally thought experience was valuable.** | **39** | **2.0%** | **14** | **13** | **7** | **2** | **3** | **14** | **8** | **1** | **16** | **11** | **17** | **11** | **16** | **23** |
| 162 | 5 experience of value | collab | outside | 627 | experience - collaboration - contacts in field | 10 | 0.5% | 3 | 2 | 0 | 3 | 2 | 2 | 4 | 0 | 4 | 1 | 3 | 6 | 1 | 9 |
| 163 | 5 experience of value | collab | peers | 517 | experience - collaboration - peers | 3 | 0.2% | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 3 | 0 | 2 | 1 |
| 164 | | **collab Total** | | | **Valued collaboration experiences with student peers and others** | **13** | **0.7%** | **3** | **3** | **1** | **4** | **2** | **3** | **5** | **1** | **4** | **1** | **6** | **6** | **3** | **10** |
| 165 | 5 experience of value | communicatio | communicatio | 492 | experience - comm - oral | 7 | 0.4% | 2 | 3 | 1 | 1 | 0 | 1 | 2 | 0 | 4 | 2 | 2 | 3 | 4 | 3 |
| 166 | 5 experience of value | communicatio | communicatio | 508 | experience - comm - writing | 10 | 0.5% | 3 | 4 | 2 | 0 | 1 | 3 | 3 | 1 | 3 | 3 | 4 | 3 | 6 | 4 |
| 167 | | **communication Total** | | | **Valued writing or oral communication experience** | **17** | **0.9%** | **5** | **7** | **3** | **1** | **1** | **4** | **5** | **1** | **7** | **5** | **6** | **6** | **10** | **7** |
| 168 | 5 experience of value | CT | CT | 646 | experience - CT - general | 3 | 0.2% | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 | 1 | 2 |
| 169 | 5 experience of value | CT | CT | 647 | experience - CT - creative thinking | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 170 | | **CT Total** | | | **Valued critical thinking experience** | **4** | **0.2%** | **1** | **3** | **0** | **0** | **0** | **0** | **0** | **0** | **4** | **0** | **0** | **4** | **2** | **2** |
| 171 | 5 experience of value | freedom | direction | 417 | freedom - to develop own research plan | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 172 | 5 experience of value | freedom | work | 411 | freedom - to work independently | 7 | 0.4% | 3 | 1 | 2 | 0 | 1 | 2 | 1 | 2 | 2 | 0 | 4 | 3 | 2 | 5 |
| 173 | 5 experience of value | freedom | work | 414 | freedom - to set own deadlines | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 174 | | **freedom Total** | | | **Valued the freedom or independence of work experienced during the capstone** | **9** | **0.5%** | **4** | **1** | **3** | **0** | **1** | **2** | **1** | **3** | **3** | **1** | **4** | **4** | **2** | **7** |
| 175 | 5 experience of value | mentor | general | 422 | mentor - great overall / great working with a mentor | 12 | 0.6% | 5 | 3 | 4 | 0 | 0 | 7 | 0 | 0 | 5 | 0 | 6 | 6 | 2 | 10 |
| 176 | 5 experience of value | mentor | collab | 448 | mentor - meetings positive | 2 | 0.1% | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 177 | 5 experience of value | mentor | feedback | 424 | mentor - helpful - feedback | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| 178 | 5 experience of value | mentor | helpful | 430 | mentor - helpful - writing process | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 179 | 5 experience of value | mentor | helpful | 431 | mentor - helpful - conducting research | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 180 | 5 experience of value | mentor | knowledge | 433 | mentor - knowledgeable - about topic | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 2 |
| 181 | | **mentor Total** | | | **Valued the relationship with the mentor** | **19** | **1.0%** | **6** | **8** | **5** | **0** | **0** | **10** | **1** | **1** | **7** | **0** | **8** | **11** | **4** | **15** |
| 182 | 5 experience of value | project | general | 293 | project - good quality | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 1 | 2 |
| 183 | 5 experience of value | project | funding | 180 | obtained funding for project | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 1 |
| 184 | 5 experience of value | project | value | 505 | experience - rewarding | 2 | 0.1% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 2 |
| 185 | 5 experience of value | project | value | 642 | experience - receiving recognition / honors | 2 | 0.1% | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 1 |
| 186 | | **project Total** | | | **Valued the rewarding nature of the project or its recognition by others** | **9** | **0.5%** | **3** | **6** | **0** | **0** | **0** | **1** | **1** | **4** | **3** | **2** | **5** | **2** | **3** | **6** |
| 187 | 5 experience of value | project type | community | 527 | community - fieldwork - positive | 8 | 0.4% | 1 | 3 | 3 | 1 | 0 | 2 | 5 | 0 | 1 | 1 | 5 | 2 | 2 | 6 |
| 188 | 5 experience of value | project type | large | 495 | experience - completing large project | 53 | 2.8% | 13 | 22 | 15 | 1 | 2 | 16 | 7 | 8 | 22 | 10 | 19 | 24 | 14 | 39 |
| 189 | 5 experience of value | project type | realworld | 626 | experience - real world / field | 26 | 1.4% | 8 | 5 | 4 | 9 | 0 | 1 | 14 | 4 | 7 | 4 | 14 | 8 | 5 | 21 |
| 190 | 5 experience of value | project type | scope | 357 | able to integrate other work or interests into project | 2 | 0.1% | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 191 | 5 experience of value | project type | topic | 490 | experience - topic | 11 | 0.6% | 3 | 4 | 2 | 1 | 1 | 4 | 1 | 1 | 5 | 4 | 5 | 2 | 4 | 7 |
| 192 | 5 experience of value | project type | work | 493 | experience - hard work | 13 | 0.7% | 6 | 5 | 0 | 2 | 0 | 4 | 3 | 3 | 3 | 3 | 5 | 5 | 7 | 6 |
| 193 | | **project type Total** | | | **Valued an attribute of the project: large scale or difficulty (sense of accomplishment, could do it), real world, ability to integrate interests** | **113** | **5.9%** | **31** | **40** | **24** | **15** | **3** | **28** | **31** | **16** | **38** | **22** | **49** | **42** | **33** | **80** |
| 194 | 5 experience of value | research | general | 485 | experience - research | 79 | 4.1% | 21 | 35 | 15 | 0 | 8 | 20 | 13 | 12 | 34 | 17 | 33 | 29 | 16 | 63 |
| 195 | 5 experience of value | research | idea dev | 488 | experience - research - develop ideas | 5 | 0.3% | 0 | 4 | 1 | 0 | 0 | 1 | 4 | 0 | 0 | 0 | 2 | 3 | 1 | 4 |
| 196 | 5 experience of value | research | lit review | 491 | experience - research - lit review | 2 | 0.1% | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 1 | 1 |
| 197 | 5 experience of value | research | analysis | 638 | experience - research - analysis and interpretation | 2 | 0.1% | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 198 | 5 experience of value | research | analysis of da | 625 | experience - research - data collection / analysis | 2 | 0.1% | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 1 | 1 |
| 199 | 5 experience of value | research | interdisc | 641 | experience - research - interdisciplinary | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 200 | 5 experience of value | research | lab | 486 | experience - research - working in lab | 7 | 0.4% | 6 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 3 | 2 | 2 | 1 | 6 |
| 201 | 5 experience of value | research | outcome | 285 | research - original | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 202 | 5 experience of value | research | outcome | 363 | research - project contributed to field | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 203 | 5 experience of value | research | outcome | 487 | experience - research - getting results / end product | 13 | 0.7% | 3 | 4 | 5 | 1 | 0 | 3 | 5 | 2 | 3 | 2 | 6 | 5 | 4 | 9 |
| 204 | 5 experience of value | research | topic | 287 | research - good topic | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 205 | | **research Total** | | | **Valued the research experience** | **114** | **6.0%** | **34** | **46** | **23** | **1** | **10** | **27** | **24** | **16** | **47** | **24** | **45** | **45** | **25** | **89** |
| 206 | | **Grand Total** | | | **Grand Total** | **1912** | **100%** | **521** | **684** | **491** | **108** | **106** | **641** | **445** | **176** | **648** | **353** | **754** | **803** | **549** | **1361** |
| 207 | | | | | | | | | | | | | | | | | | | | | |
| 208 | 7 None | none | nobenefits | 185 | none - no benefits | 24 | | | | | | | | | | | | | | | |

**Table Q3-2 : Summary Tally by Topic of Student Responses To:**

***What aspects of your capstone experience do you think will be of most value to you after you graduate?***

H=>3.50
M= 3.00 to 3.49
L=<3.00

| | | | ALL | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| line | Group 2 | Description | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
| 8 | collab Total | Development of collaboration skills | 37 | 1.9% | 7 | 18 | 11 | 1 | 0 | 14 | 10 | 3 | 10 | 6 | 15 | 16 | 11 | 26 |
| 26 | comm Total | Development of writing and oral communication skills | 234 | 12.2% | 62 | 84 | 71 | 5 | 12 | 95 | 48 | 17 | 73 | 36 | 97 | 100 | 57 | 176 |
| 44 | CT Total | Development of critical thinking skills: analysis, synthesis, multiple perspectives, dealing with primary sources | 133 | 7.0% | 26 | 54 | 36 | 6 | 11 | 56 | 23 | 7 | 47 | 21 | 59 | 53 | 39 | 94 |
| 62 | projmgt Total | Development of project management skill development: time management, organization, working independently, perseverance | 330 | 17.3% | 99 | 115 | 93 | 8 | 15 | 135 | 53 | 32 | 110 | 72 | 114 | 144 | 96 | 234 |
| 80 | research Total | Development of research skills: overall skills, design, methods, data gathering/analysis, lab, quantitative, computer, presentation | 219 | 11.5% | 76 | 81 | 42 | 10 | 10 | 66 | 53 | 20 | 80 | 42 | 90 | 87 | 66 | 153 |
| 85 | tech Total | Technical skill development | 38 | 2.0% | 11 | 7 | 3 | 15 | 2 | 11 | 16 | 4 | 7 | 6 | 11 | 21 | 10 | 28 |
| 92 | bigview Total | Understanding knowledge in a broader context | 33 | 1.7% | 8 | 15 | 9 | 1 | 0 | 15 | 13 | 2 | 3 | 4 | 13 | 16 | 8 | 25 |
| 100 | disciplinary Total | Gaining disciplinary knowledge or knowledge in the project area | 80 | 4.2% | 16 | 31 | 14 | 11 | 6 | 18 | 34 | 9 | 19 | 14 | 32 | 34 | 27 | 53 |
| 119 | self Total | Gaining self-understanding of abilities, attributes, and interests (academic, personal and career) | 74 | 3.9% | 17 | 24 | 28 | 3 | 2 | 25 | 22 | 5 | 22 | 17 | 25 | 32 | 28 | 46 |
| 132 | confidence Total | Increase in self-confidence in general and in abilities | 88 | 4.6% | 18 | 25 | 34 | 4 | 7 | 28 | 16 | 8 | 35 | 20 | 36 | 31 | 16 | 71 |
| 148 | work value Total | Increase in valuing work related attributes of research/projects: work ethic, perseverance, tolerance for obstacles, independence, responsibility, motivation | 85 | 4.4% | 23 | 27 | 27 | 2 | 6 | 29 | 20 | 4 | 32 | 18 | 34 | 33 | 24 | 61 |
| 158 | profdevel Total | Preparation for graduate/professional school or development of career skills, or preparation of materials useful for job/school applications | 224 | 11.7% | 57 | 76 | 57 | 19 | 15 | 60 | 61 | 22 | 81 | 31 | 88 | 105 | 69 | 155 |
| 161 | all Total | Generally thought experience was valuable. | 39 | 2.0% | 14 | 13 | 7 | 2 | 3 | 14 | 8 | 1 | 16 | 11 | 17 | 11 | 16 | 23 |
| 164 | collab Total | Valued collaboration experiences with student peers and others | 13 | 0.7% | 3 | 3 | 1 | 4 | 2 | 3 | 5 | 1 | 4 | 1 | 6 | 6 | 3 | 10 |
| 167 | communication Tota | Valued writing or oral communication experience | 17 | 0.9% | 5 | 7 | 3 | 1 | 1 | 4 | 5 | 1 | 7 | 5 | 6 | 6 | 10 | 7 |
| 170 | CT Total | Valued critical thinking experience | 4 | 0.2% | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 0 | 4 | 2 | 2 |
| 174 | freedom Total | Valued the freedom or independence of work experienced during the capstone | 9 | 0.5% | 4 | 1 | 3 | 0 | 1 | 2 | 1 | 3 | 3 | 1 | 4 | 4 | 2 | 7 |
| 181 | mentor Total | Valued the relationship with the mentor | 19 | 1.0% | 6 | 8 | 5 | 0 | 0 | 10 | 1 | 1 | 7 | 0 | 8 | 11 | 4 | 15 |
| 186 | project Total | Valued the rewarding nature of the project or its recognition by others | 9 | 0.5% | 3 | 6 | 0 | 0 | 0 | 1 | 1 | 4 | 3 | 2 | 5 | 2 | 3 | 6 |
| 193 | project type Total | Valued an attribute of the project: large scale or difficulty (sense of accomplishment, could do it), real world, ability to integrate interests | 113 | 5.9% | 31 | 40 | 24 | 15 | 3 | 28 | 31 | 16 | 38 | 22 | 49 | 42 | 33 | 80 |
| 205 | research Total | Valued the research experience | 114 | 6.0% | 34 | 46 | 23 | 1 | 10 | 27 | 24 | 16 | 47 | 24 | 45 | 45 | 25 | 89 |
| 206 | Grand Total | Grand Total | 1912 | 100% | 521 | 684 | 491 | 108 | 106 | 641 | 445 | 176 | 648 | 353 | 754 | 803 | 549 | 1361 |

**Table Q3-2 : Summary Tally by Topic of Student Responses To:**

***What aspects of your capstone experience do you think will be of most value to you after you graduate?***

*Highlighting color scales are across individual rows with sufficient Ns*

H=>3.50
M= 3.00 to 3.49
L=<3.00

**Percentages of column total**

| | | | ALL | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| line | Group 2 | Description | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
| 8 | collab Total | Development of collaboration skills | 37 | 1.9% | 1.3% | 2.6% | 2.2% | 0.9% | 0.0% | 2.2% | 2.2% | 1.7% | 1.5% | 1.7% | 2.0% | 2.0% | 2.0% | 1.9% |
| 26 | comm Total | Development of writing and oral communication skills | 234 | 12.2% | 11.9% | 12.3% | 14.5% | 4.6% | 11.3% | 14.8% | 10.8% | 9.7% | 11.3% | 10.2% | 12.9% | 12.5% | 10.4% | 12.9% |
| 44 | CT Total | Development of critical thinking skills: analysis, synthesis, multiple perspectives, dealing with primary sources | 133 | 7.0% | 5.0% | 7.9% | 7.3% | 5.6% | 10.4% | 8.7% | 5.2% | 4.0% | 7.3% | 5.9% | 7.8% | 6.6% | 7.1% | 6.9% |
| 62 | projmgt Total | Development of project management skill development: time management, organization, working independently, perseverance | 330 | 17.3% | 19.0% | 16.8% | 18.9% | 7.4% | 14.2% | 21.1% | 11.9% | 18.2% | 17.0% | 20.4% | 15.1% | 17.9% | 17.5% | 17.2% |
| 80 | research Total | Development of research skills: overall skills, design, methods, data gathering/analysis, lab, quantitative, computer, presentation | 219 | 11.5% | 14.6% | 11.8% | 8.6% | 9.3% | 9.4% | 10.3% | 11.9% | 11.4% | 12.3% | 11.9% | 11.9% | 10.8% | 12.0% | 11.2% |
| 85 | tech Total | Technical skill development | 38 | 2.0% | 2.1% | 1.0% | 0.6% | 13.9% | 1.9% | 1.7% | 3.6% | 2.3% | 1.1% | 1.7% | 1.5% | 2.6% | 1.8% | 2.1% |
| 92 | bigview Total | Understanding knowledge in a broader context | 33 | 1.7% | 1.5% | 2.2% | 1.8% | 0.9% | 0.0% | 2.3% | 2.9% | 1.1% | 0.5% | 1.1% | 1.7% | 2.0% | 1.5% | 1.8% |
| 100 | disciplinary Total | Gaining disciplinary knowledge or knowledge in the project area | 80 | 4.2% | 3.1% | 4.5% | 2.9% | 10.2% | 5.7% | 2.8% | 7.6% | 5.1% | 2.9% | 4.0% | 4.2% | 4.2% | 4.9% | 3.9% |
| 119 | self Total | Gaining self-understanding of abilities, attributes, and interests (academic, personal and career) | 74 | 3.9% | 3.3% | 3.5% | 5.7% | 2.8% | 1.9% | 3.9% | 4.9% | 2.8% | 3.4% | 4.8% | 3.3% | 4.0% | 5.1% | 3.4% |
| 132 | confidence Total | Increase in self-confidence in general and in abilities | 88 | 4.6% | 3.5% | 3.7% | 6.9% | 3.7% | 6.6% | 4.4% | 3.6% | 4.5% | 5.4% | 5.7% | 4.8% | 3.9% | 2.9% | 5.2% |
| 148 | work value Total | Increase in valuing work related attributes of research/projects: work ethic, perseverance, tolerance for obstacles, independence, responsibility, motivation | 85 | 4.4% | 4.4% | 3.9% | 5.5% | 1.9% | 5.7% | 4.5% | 4.5% | 2.3% | 4.9% | 5.1% | 4.5% | 4.1% | 4.4% | 4.5% |
| 158 | profdevel Total | Preparation for graduate/professional school or development of career skills, or preparation of materials useful for job/school applications | 224 | 11.7% | 10.9% | 11.1% | 11.6% | 17.6% | 14.2% | 9.4% | 13.7% | 12.5% | 12.5% | 8.8% | 11.7% | 13.1% | 12.6% | 11.4% |
| 161 | all Total | Generally thought experience was valuable. | 39 | 2.0% | 2.7% | 1.9% | 1.4% | 1.9% | 2.8% | 2.2% | 1.8% | 0.6% | 2.5% | 3.1% | 2.3% | 1.4% | 2.9% | 1.7% |
| 164 | collab Total | Valued collaboration experiences with student peers and others | 13 | 0.7% | 0.6% | 0.4% | 0.2% | 3.7% | 1.9% | 0.5% | 1.1% | 0.6% | 0.6% | 0.3% | 0.8% | 0.7% | 0.5% | 0.7% |
| 167 | communication Total | Valued writing or oral communication experience | 17 | 0.9% | 1.0% | 1.0% | 0.6% | 0.9% | 0.9% | 0.6% | 1.1% | 0.6% | 1.1% | 1.4% | 0.8% | 0.7% | 1.8% | 0.5% |
| 170 | CT Total | Valued critical thinking experience | 4 | 0.2% | 0.2% | 0.4% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.5% | 0.4% | 0.1% |
| 174 | freedom Total | Valued the freedom or independence of work experienced during the capstone | 9 | 0.5% | 0.8% | 0.1% | 0.6% | 0.0% | 0.9% | 0.3% | 0.2% | 1.7% | 0.5% | 0.3% | 0.5% | 0.5% | 0.4% | 0.5% |
| 181 | mentor Total | Valued the relationship with the mentor | 19 | 1.0% | 1.2% | 1.2% | 1.0% | 0.0% | 0.0% | 1.6% | 0.2% | 0.6% | 1.1% | 0.0% | 1.1% | 1.4% | 0.7% | 1.1% |
| 186 | project Total | Valued the rewarding nature of the project or its recognition by others | 9 | 0.5% | 0.6% | 0.9% | 0.0% | 0.0% | 0.0% | 0.2% | 0.2% | 2.3% | 0.5% | 0.6% | 0.7% | 0.2% | 0.5% | 0.4% |
| 193 | project type Total | Valued an attribute of the project: large scale or difficulty (sense of accomplishment, could do it), real world, ability to integrate interests | 113 | 5.9% | 6.0% | 5.8% | 4.9% | 13.9% | 2.8% | 4.4% | 7.0% | 9.1% | 5.9% | 6.2% | 6.5% | 5.2% | 6.0% | 5.9% |
| 205 | research Total | Valued the research experience | 114 | 6.0% | 6.5% | 6.7% | 4.7% | 0.9% | 9.4% | 4.2% | 5.4% | 9.1% | 7.3% | 6.8% | 6.0% | 5.6% | 4.6% | 6.5% |
| 206 | Grand Total | Grand Total | 1912 | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% | 100% |
| | | N= | | | 521 | 684 | 491 | 108 | 106 | 641 | 445 | 176 | 648 | 353 | 754 | 803 | 549 | 1361 |

**Table Q4-1: Detailed Counts by Topic (Subtotaled per Group 1)**
**Please tell us about any other aspects of your capstone experience that might be helpful to our study of the benefits of capstones.**

| | | | | | | ALL | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| line | Group 1 | Group 2 | Group 3 | ID | Feature (Text code) | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
| 1 | advice - oth students | collab | | 705 | ask others for help | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 2 | advice - oth students | disposition | | 766 | if you are passionate about project you will get a lot out of it | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 3 | advice - oth students | disposition | | 715 | be open to new ideas / think flexibly | 3 | 0.5% | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 1 |
| 4 | advice - oth students | integrate | | 752 | it is valuable to include other disciplines in your project | 1 | 0.2% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 5 | advice - oth students | mentor | | 703 | make sure your personality matches that of mentor | 4 | 0.6% | 0 | 3 | 1 | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 2 | 2 | 2 |
| 6 | advice - oth students | mentor | | 755 | make sure you meet with mentor regularly | 7 | 1.1% | 1 | 5 | 1 | 0 | 0 | 2 | 2 | 0 | 3 | 2 | 5 | 0 | 3 | 4 |
| 7 | advice - oth students | mentor | | 768 | make sure your mentor has knowledge of topic | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 8 | advice - oth students | mentor | | 769 | make sure your mentor has interest in project | 3 | 0.5% | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 |
| 9 | advice - oth students | prep | | 717 | pre-project - student should have writing skills before starting capstone | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 10 | advice - oth students | time | | 704 | manage your time well | 16 | 2.5% | 5 | 6 | 4 | 1 | 0 | 5 | 4 | 3 | 4 | 10 | 4 | 2 | 5 | 11 |
| 11 | advice - oth students | time | | 714 | the earlier you start the better | 5 | 0.8% | 2 | 3 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 2 | 3 | 0 | 2 | 3 |
| 12 | advice - oth students | topic | | 709 | choose topic that will help you after graduation | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 13 | advice - oth students | topic | | 712 | choose topic that you can stay interested in | 13 | 2.0% | 3 | 8 | 2 | 0 | 0 | 8 | 0 | 2 | 3 | 6 | 4 | 3 | 5 | 8 |
| 14 | advice - oth students | topic | | 760 | choose topic that has had a lot of prior research | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 15 | **advice - oth students Total** | | | | **Advice from student to other students regarding specific aspects of the capstone process** | **59** | **9.2%** | **12** | **31** | **14** | **1** | **1** | **28** | **7** | **9** | **15** | **29** | **19** | **11** | **22** | **37** |
| 16 | capst admin - negative | class | | 385 | capstone class - not useful / sometimes not useful | 5 | 0.8% | 0 | 2 | 3 | 0 | 0 | 0 | 3 | 1 | 1 | 2 | 1 | 2 | 1 | 4 |
| 17 | capst admin - negative | class | | 662 | capstone class - not flexible enough | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 18 | capst admin - negative | class | | 669 | capstone class - need more sections for clinically-based class | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 19 | capst admin - negative | class | | 677 | capstone class - should meet at least once every two weeks | 2 | 0.3% | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 2 |
| 20 | capst admin - negative | class | | 683 | capstone class - needs to be focused more on helping individuals with their specific topics | 5 | 0.8% | 0 | 2 | 3 | 0 | 0 | 0 | 3 | 2 | 0 | 2 | 1 | 2 | 0 | 5 |
| 21 | capst admin - negative | class | | 743 | capstone class - scheduled meetings were not kept | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 22 | capst admin - negative | department/major | | 663 | double majors should have freedom to choose which major for capstone | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 23 | capst admin - negative | department/major | | 698 | student's capstone experience limited by major/department | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 24 | capst admin - negative | department/major | | 731 | need more and better courses in this specific major | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 |
| 25 | capst admin - negative | department/major | | 741 | way dept chooses honors should be improved | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 26 | capst admin - negative | department/major | | 751 | department needs to be more involved in students' capstones | 2 | 0.3% | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 27 | capst admin - negative | evaluation | comps | 726 | comps were too easy | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 1 | 1 |
| 28 | capst admin - negative | evaluation | other | 729 | should receive a grade for capstone | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 29 | capst admin - negative | evaluation | proportionality | 672 | oral presentation made up disproportionate percentage of grade | 1 | 0.2% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 30 | capst admin - negative | evaluation | proportionality | 758 | weight of capstone grade does not reflect amount of work involved | 2 | 0.3% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 0 | 1 | 1 |
| 31 | capst admin - negative | fieldwork | | 403 | problems with personnel at placement | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 32 | capst admin - negative | mentor | collab | 748 | mentors should be allowed more time to work with students to develop ideas | 3 | 0.5% | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 3 | 0 | 2 | 1 |
| 33 | capst admin - negative | mentor | disposition | 666 | mentor - department should make sure the mentor is willing to work with students | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| 34 | capst admin - negative | mentor | knowledge | 749 | mentor - department should make sure mentor is expert in topic | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 2 |
| 35 | capst admin - negative | mentor | prep | 655 | mentor - there should be capstone training for mentor / make sure mentor is prepared | 8 | 1.2% | 4 | 3 | 1 | 0 | 0 | 3 | 2 | 0 | 3 | 2 | 3 | 3 | 0 | 8 |
| 36 | capst admin - negative | prep | general | 750 | pre-project - need more pre-capstone preparation for students | 16 | 2.5% | 5 | 4 | 4 | 1 | 2 | 2 | 3 | 5 | 6 | 2 | 8 | 6 | 1 | 15 |
| 37 | capst admin - negative | prep | disc | 665 | pre-project - student needed more background in chosen discipline | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 38 | capst admin - negative | research | general | 754 | capstone process - should provide a better research experience | 3 | 0.5% | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 2 | 2 | 1 |
| 39 | capst admin - negative | research | quant | 725 | capstone process - should emphasize more quantitative measures | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 40 | capst admin - negative | resources | access | 757 | resources - library primary sources often not available | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 41 | capst admin - negative | resources | equipment | 759 | resources - insufficient access to printers | 1 | 0.2% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 42 | capst admin - negative | resources | model | 765 | resources - department should make previous capstone projects available as models | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 43 | capst admin - negative | structure | general | 660 | capstone idea does not work / should be discontinued | 3 | 0.5% | 1 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 2 | 1 |
| 44 | capst admin - negative | structure | general | 730 | capstone should be optional | 5 | 0.8% | 0 | 3 | 2 | 0 | 0 | 1 | 0 | 1 | 3 | 2 | 2 | 1 | 2 | 3 |
| 45 | capst admin - negative | structure | general | 740 | students should be allowed to default to comps | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 46 | capst admin - negative | structure | general | 742 | there should be a creative writing capstone option offered | 2 | 0.3% | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 |
| 47 | capst admin - negative | structure | competing commit | 656 | need better balance between capstone and other courses | 3 | 0.5% | 1 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| 48 | capst admin - negative | structure | competing commit | 658 | capstone represents one of too many requirements | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 49 | capst admin - negative | structure | competing commit | 739 | too many competing commitments (e.g., classes, extracurriculars, post-graduate planning) | 4 | 0.6% | 0 | 2 | 1 | 0 | 1 | 0 | 0 | 2 | 2 | 2 | 2 | 0 | 1 | 3 |
| 50 | capst admin - negative | structure | departments | 682 | department capstone should be tailored to accommodate needs of different departments / major | 4 | 0.6% | 0 | 4 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 3 | 0 | 1 | 1 | 3 |
| 51 | capst admin - negative | structure | departments | 753 | all departments should have same general structure for capstone | 4 | 0.6% | 1 | 2 | 1 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 3 | 0 | 1 | 3 |
| 52 | capst admin - negative | structure | flexibility | 405 | capstone structure not flexible enough | 2 | 0.3% | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 53 | capst admin - negative | structure | flexibility | 720 | capstone structure needs to allow for time to prepare / apply for post-grad plans | 2 | 0.3% | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 |
| 54 | capst admin - negative | structure | focus | 728 | should focus more on process rather than product | 3 | 0.5% | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 0 | 1 | 1 | 2 |
| 55 | capst admin - negative | structure | guidelines | 398 | did not have system of accountability to help meet goals (e.g., fixed deadlines) | 3 | 0.5% | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 1 | 2 | 0 | 3 |
| 56 | capst admin - negative | structure | guidelines | 675 | capstone guidelines not clear | 7 | 1.1% | 0 | 1 | 2 | 1 | 3 | 0 | 1 | 0 | 6 | 2 | 2 | 3 | 2 | 5 |
| 57 | capst admin - negative | structure | organization | 744 | department needs to better organize the capstone program | 8 | 1.2% | 0 | 6 | 1 | 0 | 1 | 0 | 3 | 2 | 3 | 2 | 2 | 4 | 1 | 7 |
| 58 | capst admin - negative | time | excessive | 378 | capstone process - too long | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 59 | capst admin - negative | time | excessive | 389 | capstone process - too time consuming | 3 | 0.5% | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 1 | 1 | 0 | 3 |
| 60 | capst admin - negative | time | guidelines | 693 | capstone process - should emphasize time management and project pace | 2 | 0.3% | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 61 | capst admin - negative | time | guidelines | 738 | capstone process - students should be encouraged to finish data collection during previous term | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 62 | capst admin - negative | time | insufficient | 375 | capstone should cover longer time frame (two terms) / should be started earlier | 6 | 0.9% | 1 | 2 | 3 | 0 | 0 | 0 | 3 | 1 | 2 | 1 | 2 | 3 | 2 | 4 |
| 63 | capst admin - negative | time | insufficient | 404 | capstone process - not enough time | 8 | 1.2% | 5 | 2 | 1 | 0 | 0 | 2 | 4 | 1 | 1 | 1 | 3 | 4 | 2 | 6 |
| 64 | capst admin - negative | time | insufficient | 664 | capstone process - should cover longer time frame (three terms) | 3 | 0.5% | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 1 | 2 |
| 65 | capst admin - negative | time | organization | 408 | oral presentations took place too late in term | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 66 | capst admin - negative | time | organization | 727 | deadlines should be earlier but more flexible | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 67 | capst admin - negative | time | organization | 761 | students should finish capstones before graduation | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 68 | capst admin - negative | time | other | 701 | capstone topics should be chosen before the term in which capstones begin | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 69 | **capst admin - negative Total** | | | | **Comment regarding negative aspect(s) of administration of the capstone program** | **148** | **23.1%** | **35** | **58** | **37** | **7** | **10** | **23** | **42** | **32** | **51** | **40** | **55** | **53** | **33** | **115** |
| 70 | capst admin - neutral | structure | departments | 767 | department capstone different from other departments / majors | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 71 | capst admin - neutral | structure | other | 678 | student did capstone for minor instead of major | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 72 | capst admin - neutral | time | competing commit | 737 | was fortunate to not have other classes during capstone term | 2 | 0.3% | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 2 |
| 73 | **capst admin - neutral Total** | | | | **Neutral comment regarding aspect(s) of administration of the capstone program** | **5** | **0.8%** | **2** | **2** | **1** | **0** | **0** | **0** | **3** | **2** | **0** | **1** | **2** | **2** | **1** | **4** |
| 74 | capst admin - positive | class | | 377 | capstone class - helpful in facilitating peer collaboration | 4 | 0.6% | 1 | 1 | 2 | 0 | 0 | 0 | 1 | 0 | 3 | 1 | 3 | 0 | 1 | 3 |

| line | Group 1 | Group 2 | Group 3 | ID | Feature (Text code) | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 75 | capst admin - positive | fieldwork | | 527 | community - fieldwork - work was very involved with community | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 76 | capst admin - positive | prep | course | 355 | pre-project - junior sem was essential / helpful | 3 | 0.5% | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 2 |
| 77 | capst admin - positive | prep | wellprep | 186 | pre-project - student was well prepared in general | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 78 | capst admin - positive | resources | access | 386 | resources - student had excellent workspace access at library | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 79 | capst admin - positive | structure | general | 732 | do not make any changes to the capstone process/structure | 2 | 0.3% | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 1 | 1 |
| 80 | capst admin - positive | structure | guidelines | 365 | capstone guidelines clear and helpful / good overall program structure | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 81 | capst admin - positive | time | other | 671 | liked having multiple (three) terms for capstone | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 82 | **capst admin - positive Total** | | | | **Comment regarding positive aspect(s) of administration of the capstone program** | **14** | **2.2%** | **3** | **4** | **5** | **2** | **0** | **2** | **3** | **3** | **6** | **2** | **9** | **3** | **4** | **10** |
| 83 | did not gain - skills | projmgt | timeman | 61 | time management - meeting deadlines | 1 | 0.2% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 84 | **did not gain - skills Total** | | | | **Did not gained particular skill(s)** | **1** | **0.2%** | **0** | **0** | **0** | **1** | **0** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **0** | **1** |
| 85 | experience - negative | general | | 680 | experience - negative - general (overall poor) | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 |
| 86 | experience - negative | collab | | 722 | experience - negative - collaboration - meetings with others in field / other departments not helpf | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 87 | experience - negative | difficulty | | 528 | experience - difficulty / challenging - general | 11 | 1.7% | 3 | 5 | 1 | 1 | 1 | 5 | 1 | 1 | 4 | 1 | 5 | 5 | 2 | 9 |
| 88 | experience - negative | difficulty | | 716 | experience - difficulty - more demanding than expected | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| 89 | experience - negative | emotional | | 510 | experience - stressful | 6 | 0.9% | 1 | 0 | 3 | 0 | 2 | 1 | 0 | 0 | 5 | 3 | 0 | 3 | 1 | 5 |
| 90 | experience - negative | emotional | | 708 | experience - post-capstone anxiety | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 91 | experience - negative | freedom | direction | 763 | freedom - did not have freedom to choose own topic | 2 | 0.3% | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 92 | experience - negative | freedom | work | 699 | freedom - was not encouraged to work creatively | 2 | 0.3% | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 93 | experience - negative | freedom | work | 674 | freedom - should be able to choose mentor | 1 | 0.2% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 94 | experience - negative | mentor | collab | 477 | mentor - negative - meetings were insufficient | 2 | 0.3% | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 95 | experience - negative | mentor | collab | 684 | mentor - negative - not available | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 2 |
| 96 | experience - negative | mentor | feedback | 700 | mentor - negative - need to include feedback from non-mentors involved in project | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 97 | experience - negative | mentor | helpful | 466 | mentor - negative - did not provide enough direction | 4 | 0.6% | 0 | 2 | 1 | 1 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 4 | 1 | 3 |
| 98 | experience - negative | mentor | helpful | 685 | mentor - negative - was not helpful - writing process | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 99 | experience - negative | mentor | other | 464 | mentor - negative - did not have one | 1 | 0.2% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 100 | experience - negative | mentor | other | 471 | mentor - negative - too many advisees | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 101 | experience - negative | project | timeman | 213 | time management - started process / chose topic late; fell behind | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 102 | experience - negative | value | | 673 | experience - no special benefits of capstone experience | 2 | 0.3% | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 1 | 1 |
| 103 | **experience - negative Total** | | | | **Negative aspects of the student's capstone experience** | **43** | **6.7%** | **6** | **16** | **12** | **6** | **3** | **14** | **14** | **3** | **12** | **7** | **14** | **22** | **11** | **32** |
| 104 | experience - positive | general | | 484 | experience - positive - general (overall positive) | 36 | 5.6% | 7 | 12 | 8 | 5 | 4 | 11 | 8 | 2 | 15 | 9 | 17 | 10 | 14 | 22 |
| 105 | experience - positive | general | | 710 | experience - positive - best experience in college | 3 | 0.5% | 0 | 1 | 2 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 3 |
| 106 | experience - positive | general | | 764 | experience - positive - not as bad as thought / others say | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 107 | experience - positive | collab | | 517 | experience - positive - collaboration - working with peers | 5 | 0.8% | 2 | 0 | 3 | 0 | 0 | 1 | 1 | 0 | 3 | 3 | 2 | 0 | 0 | 5 |
| 108 | experience - positive | collab | | 627 | experience - positive - collaboration - making contacts in field / other departments | 3 | 0.5% | 0 | 2 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 1 | 1 | 1 | 2 | 1 |
| 109 | experience - positive | collab | | 659 | experience - positive - collaboration - getting to know other faculty in department | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 110 | experience - positive | communication | | 492 | experience - positive - comm - oral presentation not as bad as thought | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 111 | experience - positive | communication | | 713 | experience - positive - comm - presenting and defending ideas | 2 | 0.3% | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 112 | experience - positive | emotional | | 733 | experience - glad did it | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 113 | experience - positive | freedom | general | 409 | freedom - enjoyed, general | 5 | 0.8% | 0 | 1 | 0 | 2 | 2 | 1 | 1 | 1 | 2 | 1 | 2 | 2 | 1 | 4 |
| 114 | experience - positive | freedom | direction | 410 | freedom - enjoyed, to choose own topic | 2 | 0.3% | 0 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 1 | 1 |
| 115 | experience - positive | freedom | direction | 416 | freedom - enjoyed, to direct course of project | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 116 | experience - positive | freedom | work | 411 | freedom - enjoyed, to work independently | 2 | 0.3% | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| 117 | experience - positive | learning | | 489 | experience - learning | 6 | 0.9% | 4 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 4 | 1 | 3 | 2 | 3 | 3 |
| 118 | experience - positive | learning | | 497 | experience - knowledge - within discipline | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 119 | experience - positive | learning | | 509 | experience - capstone was excellent learning environment | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 120 | experience - positive | mentor | general | 422 | mentor - positive - was great overall / great working with a mentor | 5 | 0.8% | 1 | 3 | 1 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 2 | 2 | 0 | 5 |
| 121 | experience - positive | mentor | behavior | 440 | mentor - positive - was supportive | 5 | 0.8% | 0 | 0 | 3 | 1 | 1 | 0 | 3 | 0 | 2 | 0 | 1 | 4 | 2 | 3 |
| 122 | experience - positive | mentor | collab | 446 | mentor - positive - was available | 3 | 0.5% | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 3 |
| 123 | experience - positive | mentor | collab | 449 | mentor - positive - discussed data | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 124 | experience - positive | mentor | collab | 706 | mentor - positive - excellent relationship with mentor will be valuable in future | 2 | 0.3% | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 2 | 0 |
| 125 | experience - positive | mentor | encouraging | 442 | mentor - positive - was encouraging | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 126 | experience - positive | mentor | helpful | 423 | mentor - positive - was helpful - general | 9 | 1.4% | 2 | 1 | 2 | 3 | 1 | 2 | 5 | 1 | 1 | 0 | 6 | 3 | 2 | 7 |
| 127 | experience - positive | mentor | helpful | 429 | mentor - positive - was helpful - academically | 6 | 0.9% | 1 | 1 | 4 | 0 | 0 | 0 | 4 | 0 | 2 | 3 | 1 | 2 | 4 | 2 |
| 128 | experience - positive | mentor | interest | 435 | mentor - positive - was interested in topic/capstone | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 129 | experience - positive | mentor | interest | 454 | mentor - positive - was truly interested in student's success | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 |
| 130 | experience - positive | project | | 503 | experience - deadlines clear and helpful | 2 | 0.3% | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 2 |
| 131 | experience - positive | project | | 495 | experience - completing large project | 6 | 0.9% | 0 | 2 | 3 | 0 | 1 | 3 | 1 | 0 | 2 | 3 | 1 | 2 | 3 | 3 |
| 132 | experience - positive | project | | 626 | experience - real world / field | 4 | 0.6% | 1 | 2 | 1 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 2 | 2 | 2 | 2 |
| 133 | experience - positive | project | | 486 | experience - research - working in lab | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 134 | experience - positive | project | | 506 | experience - technical skills | 2 | 0.3% | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 2 |
| 135 | experience - positive | project | | 490 | experience - enjoyed topic | 6 | 0.9% | 2 | 2 | 1 | 0 | 1 | 4 | 0 | 0 | 2 | 1 | 2 | 3 | 1 | 5 |
| 136 | experience - positive | value | | 498 | experience - important | 5 | 0.8% | 3 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 3 | 0 | 2 | 3 | 1 | 4 |
| 137 | experience - positive | value | | 501 | experience - meaningful | 5 | 0.8% | 1 | 2 | 1 | 1 | 0 | 1 | 3 | 0 | 1 | 2 | 1 | 2 | 2 | 3 |
| 138 | experience - positive | value | | 504 | experience - worthwhile | 7 | 1.1% | 2 | 1 | 1 | 3 | 0 | 1 | 5 | 1 | 0 | 2 | 4 | 1 | 4 | 3 |
| 139 | experience - positive | value | | 505 | experience - rewarding | 12 | 1.9% | 4 | 5 | 3 | 0 | 0 | 4 | 3 | 1 | 4 | 0 | 8 | 4 | 2 | 10 |
| 140 | experience - positive | value | | 676 | experience - everyone would benefit from a capstone / it should be mandatory (or continue to be | 20 | 3.1% | 6 | 7 | 6 | 0 | 1 | 3 | 4 | 4 | 9 | 0 | 9 | 11 | 4 | 16 |
| 141 | experience - positive | value | | 686 | experience - more than just a regular paper/project | 3 | 0.5% | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 1 | 0 | 2 | 1 | 2 | 1 |
| 142 | experience - positive | value | | 688 | experience - project had personal value | 3 | 0.5% | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 2 |
| 143 | experience - positive | value | | 691 | experience - project was great way to cap off their college work | 10 | 1.6% | 3 | 2 | 4 | 1 | 0 | 3 | 2 | 1 | 4 | 0 | 3 | 7 | 3 | 7 |
| 144 | experience - positive | work | | 493 | experience - worked hard /diligently | 3 | 0.5% | 2 | 0 | 0 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| 145 | **experience - positive Total** | | | | **Positive aspects of the student's capstone experience** | **196** | **30.5%** | **50** | **61** | **52** | **20** | **13** | **50** | **66** | **14** | **66** | **36** | **83** | **77** | **64** | **132** |
| 146 | gain - disposition | challenged | | 353 | challenged self | 3 | 0.5% | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 2 | 1 |
| 147 | gain - disposition | confidence | general | 156 | self-confidence - general | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 148 | gain - disposition | confidence | academic | 157 | self-confidence - academic - general | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 149 | gain - disposition | confidence | academic | 158 | self-confidence - academic - ability to do independent research | 2 | 0.3% | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 150 | gain - disposition | confidence | academic | 159 | self-confidence - academic - writing | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 151 | gain - disposition | confidence | personal | 762 | self-confidence - personal - entering work world | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 152 | gain - disposition | motiv | project | 196 | disposition - interest in project grew | 3 | 0.5% | 1 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 1 | 0 | 2 | 1 | 2 |
| 153 | gain - disposition | reflect | reflect | 168 | self reflection | 2 | 0.3% | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |

| line | Group 1 | Group 2 | Group 3 | ID | Feature (Text code) | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 154 | gain - disposition | sense of accomplish | accomplish | 150 | developed sense of accomplishment | 8 | 1.2% | 3 | 2 | 3 | 0 | 0 | 2 | 0 | 1 | 5 | 2 | 2 | 4 | 2 | 6 |
| 155 | **gain - disposition Total** | | | | **Improved particular disposition/behavior-related trait(s)** | **22** | **3.4%** | **5** | **5** | **12** | **0** | **0** | **3** | **10** | **2** | **7** | **3** | **8** | **11** | **6** | **16** |
| 156 | gain - knowledge | general | | 190 | knowledge - intellectual growth | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 1 |
| 157 | gain - knowledge | disc | general | 118 | disciplinary knowledge - general | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 158 | gain - knowledge | disc | practice | 120 | disciplinary knowledge - learned ways of practice | 5 | 0.8% | 0 | 3 | 0 | 2 | 0 | 1 | 2 | 1 | 1 | 2 | 2 | 1 | 1 | 4 |
| 159 | gain - knowledge | disc | project | 123 | disciplinary knowledge - project area | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 160 | gain - knowledge | disc | thinking | 121 | disciplinary knowledge - learned ways of thinking | 1 | 0.2% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 161 | gain - knowledge | research | | 127 | understanding - research process | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| 162 | gain - knowledge | self | general | 110 | self-understanding - general | 5 | 0.8% | 0 | 2 | 3 | 0 | 0 | 4 | 1 | 0 | 0 | 1 | 3 | 1 | 2 | 3 |
| 163 | gain - knowledge | self | abilities | 113 | self-understanding - of lack of quality in performance / mistakes - general | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 164 | gain - knowledge | self | abilities | 111 | self-understanding - of own abilities | 3 | 0.5% | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 2 |
| 165 | gain - knowledge | self | abilities | 721 | self-understanding - of own abilities - communication - convey arguments | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 166 | gain - knowledge | self | abilities | 346 | self-understanding - of lack of quality in performance - time management | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 167 | gain - knowledge | self | abilities | 549 | self-understanding - of own abilities - complete major project | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 168 | gain - knowledge | self | abilities | 349 | self-understanding - of own abilities - research | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 169 | gain - knowledge | self | abilities | 347 | self-understanding - of own abilities - writing | 3 | 0.5% | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 3 |
| 170 | gain - knowledge | self | interests | 560 | self-understanding - of interests - academic | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 171 | gain - knowledge | value community | | 601 | learned importance of work in community / social awareness | 2 | 0.3% | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 2 |
| 172 | **gain - knowledge Total** | | | | **Gained knowledge in one or more areas** | **31** | **4.8%** | **4** | **17** | **7** | **3** | **0** | **18** | **7** | **1** | **5** | **7** | **14** | **10** | **8** | **23** |
| 173 | gain - skills | collab | advisor | 236 | collab - student developed close relationship with advisor | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 174 | gain - skills | collab | outside | 105 | collaboration skills - making contacts in field | 1 | 0.2% | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 175 | gain - skills | comm | oral | 645 | oral communication - defend ideas/theories orally | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 176 | gain - skills | comm | writing | 30 | writing - general | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 |
| 177 | gain - skills | projmgt | general | 56 | project management - general | 1 | 0.2% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 178 | gain - skills | research | general | 284 | research - good quality | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 179 | gain - skills | research | comp | 5 | computer skills - general | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 180 | gain - skills | research | cond | 3 | research - conducting - lab skills | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 181 | gain - skills | research | cond | 28 | research methods - general | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 182 | gain - skills | research | quant | 11 | quantitative skills - statistics | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 183 | **gain - skills Total** | | | | **Gained specific skill(s)** | **12** | **1.9%** | **4** | **5** | **1** | **2** | **0** | **8** | **2** | **1** | **1** | **1** | **2** | **9** | **6** | **6** |
| 184 | observations | collab | | 644 | getting input from others is valuable | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 1 | 1 |
| 185 | observations | disposition | motivation | 711 | everyone has different motivations for their capstones | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 186 | observations | disposition | self | 734 | capstone helps with self-confidence - academic | 3 | 0.5% | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 3 |
| 187 | observations | knowledge | disc | 736 | capstone helps one become expert in discipline | 3 | 0.5% | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 3 |
| 188 | observations | knowledge | self | 747 | capstone helps one learn about self | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 |
| 189 | observations | knowledge | self | 723 | capstone helps one learn about interests | 2 | 0.3% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 2 | 0 |
| 190 | observations | knowledge | self | 724 | capstone helps one learn about abilities | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 |
| 191 | observations | mentor | | 756 | capstone leads to strong relationship with a mentor | 1 | 0.2% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 192 | observations | prep | | 697 | students who performed well prior to capstone will have successful capstone | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 193 | observations | profdevel | | 745 | capstone leads to high quality, graduate-level work | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 194 | observations | profdevel | | 746 | capstone experience results in practical, applied skills | 2 | 0.3% | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 |
| 195 | observations | projmgt | | 543 | time management is important | 17 | 2.6% | 4 | 8 | 4 | 1 | 0 | 5 | 2 | 5 | 5 | 7 | 5 | 5 | 10 | 7 |
| 196 | observations | projmgt | | 544 | organization is important | 5 | 0.8% | 0 | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 1 | 4 | 0 | 2 | 3 |
| 197 | observations | projmgt | | 719 | it is okay to start a project later | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 198 | observations | projmgt | | 735 | capstone helps one learn project management skills | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 199 | observations | value - general | | 370 | capstone is better than just a classroom experience | 6 | 0.9% | 2 | 4 | 0 | 0 | 0 | 2 | 0 | 1 | 3 | 1 | 1 | 4 | 3 | 3 |
| 200 | observations | value - general | | 689 | capstone program was reason why came to this institution | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 201 | observations | value - general | | 702 | capstone program sets student apart from those of other colleges | 8 | 1.2% | 4 | 0 | 3 | 0 | 1 | 5 | 0 | 0 | 3 | 1 | 5 | 2 | 4 | 4 |
| 202 | observations | value - general | | 707 | shared experience of capstone program forges bond among students (and between students and | 3 | 0.5% | 0 | 2 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 2 |
| 203 | observations | value - general | | 718 | all schools should have a capstone | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 204 | observations | value - indep | | 614 | original research / owning work is valuable | 1 | 0.2% | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 205 | observations | value - indep | | 648 | making decisions independently / thinking on one's own is important | 2 | 0.3% | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 206 | observations | value - indep | | 651 | working independently / being self-sufficient is important | 3 | 0.5% | 1 | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 1 | 0 | 2 | 0 | 3 |
| 207 | observations | value - other | | 687 | analyzing how capstone affects employment outcomes for grads would be valuable | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 208 | observations | value - resources | | 694 | librarians are valuable to capstone process | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 209 | observations | value - topic | | 667 | choosing topic within discipline that is relevant and current is valuable | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 210 | observations | value - topic | | 670 | choosing own topic is valuable | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 211 | **observations Total** | | | | **Observation regarding specific aspect(s) of the capstone program** | **73** | **11.4%** | **17** | **33** | **18** | **2** | **3** | **28** | **11** | **14** | **20** | **20** | **24** | **29** | **30** | **43** |
| 212 | other | all | positive | 633 | all aspects of capstone were positive/ valuable | 5 | 0.8% | 1 | 1 | 2 | 1 | 0 | 0 | 4 | 0 | 1 | 2 | 1 | 2 | 4 | 1 |
| 213 | other | not sure | | 635 | not sure / cannot yet say | 1 | 0.2% | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 214 | **other Total** | | | | **Other** | **6** | **0.9%** | **2** | **1** | **2** | **1** | **0** | **0** | **5** | **0** | **1** | **2** | **2** | **2** | **4** | **2** |
| 215 | profdevel - negative | general | | 681 | professional development - did not help | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 216 | **profdevel - negative Total** | | | | **Did not help professional development** | **1** | **0.2%** | **0** | **0** | **1** | **0** | **0** | **0** | **1** | **0** | **0** | **0** | **0** | **1** | **0** | **1** |
| 217 | profdevel - positive | general | | 169 | professional development - general | 8 | 1.2% | 1 | 1 | 1 | 4 | 1 | 1 | 4 | 0 | 3 | 1 | 5 | 2 | 3 | 5 |
| 218 | profdevel - positive | career | | 690 | professional development - knowledge of career options | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 219 | profdevel - positive | funding | | 180 | obtained funding for project | 4 | 0.6% | 1 | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 1 | 2 | 2 | 2 |
| 220 | profdevel - positive | schoolprep | | 179 | preparation for grad school/professional school | 17 | 2.6% | 6 | 5 | 4 | 0 | 2 | 6 | 4 | 0 | 7 | 4 | 4 | 9 | 7 | 10 |
| 221 | profdevel - positive | schoolprep | | 692 | preparation for grad school/professional school - experience writing a thesis | 1 | 0.2% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 222 | **profdevel - positive Total** | | | | **Helped professional development** | **31** | **4.8%** | **8** | **10** | **6** | **4** | **3** | **12** | **9** | **0** | **10** | **6** | **11** | **14** | **13** | **18** |
| 223 | **Grand Total** | | | | **Grand Total** | **642** | **100.0%** | **148** | **243** | **168** | **49** | **33** | **186** | **181** | **81** | **194** | **154** | **244** | **244** | **202** | **440** |
| 224 | | | | | | | | | | | | | | | | | | | | | |

**Table Q4-2: Summary Counts by Topic**
**Please tell us about any other aspects of your capstone experience that might be helpful to our study of the benefits of capstones.**

| | | | ALL | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| line | Group 1 | Feature (Text code) | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
| 15 | **advice - oth students Total** | Advice from student to other students regarding specific aspects of the capstone process | 59 | 9.2% | 12 | 31 | 14 | 1 | 1 | 28 | 7 | 9 | 15 | 29 | 19 | 11 | 22 | 37 |
| 69 | **capst admin - negative Total** | Comment regarding negative aspect(s) of administration of the capstone program | 148 | 23.1% | 35 | 58 | 37 | 7 | 10 | 23 | 42 | 32 | 51 | 40 | 55 | 53 | 33 | 115 |
| 73 | **capst admin - neutral Total** | Neutral comment regarding aspect(s) of administration of the capstone program | 5 | 0.8% | 2 | 2 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 1 | 2 | 2 | 1 | 4 |
| 82 | **capst admin - positive Total** | Comment regarding positive aspect(s) of administration of the capstone program | 14 | 2.2% | 3 | 4 | 5 | 2 | 0 | 2 | 3 | 3 | 6 | 2 | 9 | 3 | 4 | 10 |
| 84 | **did not gain - skills Total** | Did not gained particular skill(s) | 1 | 0.2% | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 103 | **experience - negative Total** | Negative aspects of the student's capstone experience | 43 | 6.7% | 6 | 16 | 12 | 6 | 3 | 14 | 14 | 3 | 12 | 7 | 14 | 22 | 11 | 32 |
| 145 | **experience - positive Total** | Positive aspects of the student's capstone experience | 196 | 30.5% | 50 | 61 | 52 | 20 | 13 | 50 | 66 | 14 | 66 | 36 | 83 | 77 | 64 | 132 |
| 155 | **gain - disposition Total** | Improved particular disposition/behavior-related trait(s) | 22 | 3.4% | 5 | 5 | 12 | 0 | 0 | 3 | 10 | 2 | 7 | 3 | 8 | 11 | 6 | 16 |
| 172 | **gain - knowledge Total** | Gained knowledge in one or more areas | 31 | 4.8% | 4 | 17 | 7 | 3 | 0 | 18 | 7 | 1 | 5 | 7 | 14 | 10 | 8 | 23 |
| 183 | **gain - skills Total** | Gained specific skill(s) | 12 | 1.9% | 4 | 5 | 1 | 2 | 0 | 8 | 2 | 1 | 1 | 1 | 2 | 9 | 6 | 6 |
| 211 | **observations Total** | Observation regarding specific aspect(s) of the capstone program | 73 | 11.4% | 17 | 33 | 18 | 2 | 3 | 28 | 11 | 14 | 20 | 20 | 24 | 29 | 30 | 43 |
| 214 | **other Total** | Other | 6 | 0.9% | 2 | 1 | 2 | 1 | 0 | 0 | 5 | 0 | 1 | 2 | 2 | 2 | 4 | 2 |
| 216 | **profdevel - negative Total** | Did not help professional development | 1 | 0.2% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 222 | **profdevel - positive Total** | Helped professional development | 31 | 4.8% | 8 | 10 | 6 | 4 | 3 | 12 | 9 | 0 | 10 | 6 | 11 | 14 | 13 | 18 |
| 223 | **Grand Total** | Grand Total | 642 | 100.0% | 148 | 243 | 168 | 49 | 33 | 186 | 181 | 81 | 194 | 154 | 244 | 244 | 202 | 440 |

**Table Q4-3: Summary Counts by Topic**

**Please tell us about any other aspects of your capstone experience that might be helpful to our study of the benefits of capstones.**

The base for the percentages is the Grand Total for each respective column, so represents the relative frequency of occurance for each subgroup.

| | | | ALL | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| line | Group 1 | Feature (Text code) | Total | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yllw | L | M | H | M | F |
| 15 | **advice - oth students Total** | Advice from student to other students regarding specific aspects of the capstone process | 59 | 9.2% | 8.1% | 12.8% | 8.3% | 2.0% | 3.0% | 15.1% | 3.9% | 11.1% | 7.7% | 18.8% | 7.8% | 4.5% | 10.9% | 8.4% |
| 69 | **capst admin - negative Total** | Comment regarding negative aspect(s) of administration of the capstone program | 148 | 23.1% | 23.6% | 23.9% | 22.0% | 14.3% | 30.3% | 12.4% | 23.2% | 39.5% | 26.3% | 26.0% | 22.5% | 21.7% | 16.3% | 26.1% |
| 73 | **capst admin - neutral Total** | Neutral comment regarding aspect(s) of administration of the capstone program | 5 | 0.8% | 1.4% | 0.8% | 0.6% | 0.0% | 0.0% | 0.0% | 1.7% | 2.5% | 0.0% | 0.6% | 0.8% | 0.8% | 0.5% | 0.9% |
| 82 | **capst admin - positive Total** | Comment regarding positive aspect(s) of administration of the capstone program | 14 | 2.2% | 2.0% | 1.6% | 3.0% | 4.1% | 0.0% | 1.1% | 1.7% | 3.7% | 3.1% | 1.3% | 3.7% | 1.2% | 2.0% | 2.3% |
| 84 | **did not gain - skills Total** | Did not gained particular skill(s) | 1 | 0.2% | 0.0% | 0.0% | 0.0% | 2.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.0% | 0.2% |
| 103 | **experience - negative Total** | Negative aspects of the student's capstone experience | 43 | 6.7% | 4.1% | 6.6% | 7.1% | 12.2% | 9.1% | 7.5% | 7.7% | 3.7% | 6.2% | 4.5% | 5.7% | 9.0% | 5.4% | 7.3% |
| 145 | **experience - positive Total** | Positive aspects of the student's capstone experience | 196 | 30.5% | 33.8% | 25.1% | 31.0% | 40.8% | 39.4% | 26.9% | 36.5% | 17.3% | 34.0% | 23.4% | 34.0% | 31.6% | 31.7% | 30.0% |
| 155 | **gain - disposition Total** | Improved particular disposition/behavior-related trait(s) | 22 | 3.4% | 3.4% | 2.1% | 7.1% | 0.0% | 0.0% | 1.6% | 5.5% | 2.5% | 3.6% | 1.9% | 3.3% | 4.5% | 3.0% | 3.6% |
| 172 | **gain - knowledge Total** | Gained knowledge in one or more areas | 31 | 4.8% | 2.7% | 7.0% | 4.2% | 6.1% | 0.0% | 9.7% | 3.9% | 1.2% | 2.6% | 4.5% | 5.7% | 4.1% | 4.0% | 5.2% |
| 183 | **gain - skills Total** | Gained specific skill(s) | 12 | 1.9% | 2.7% | 2.1% | 0.6% | 4.1% | 0.0% | 4.3% | 1.1% | 1.2% | 0.5% | 0.6% | 0.8% | 3.7% | 3.0% | 1.4% |
| 211 | **observations Total** | Observation regarding specific aspect(s) of the capstone program | 73 | 11.4% | 11.5% | 13.6% | 10.7% | 4.1% | 9.1% | 15.1% | 6.1% | 17.3% | 10.3% | 13.0% | 9.8% | 11.9% | 14.9% | 9.8% |
| 214 | **other Total** | Other | 6 | 0.9% | 1.4% | 0.4% | 1.2% | 2.0% | 0.0% | 0.0% | 2.8% | 0.0% | 0.5% | 1.3% | 0.8% | 0.8% | 2.0% | 0.5% |
| 216 | **profdevel - negative Total** | Did not help professional development | 1 | 0.2% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.6% | 0.0% | 0.0% | 0.0% | 0.0% | 0.4% | 0.0% | 0.2% |
| 222 | **profdevel - positive Total** | Helped professional development | 31 | 4.8% | 5.4% | 4.1% | 3.6% | 8.2% | 9.1% | 6.5% | 5.0% | 0.0% | 5.2% | 3.9% | 4.5% | 5.7% | 6.4% | 4.1% |
| 223 | **Grand Total** | Grand Total | 642 | 100.0% | 148 | 243 | 168 | 49 | 33 | 186 | 181 | 81 | 194 | 154 | 244 | 244 | 202 | 440 |

# PART 6: MENTOR POST-CAPSTONE SURVEY COMMENTS

This is an analysis of responses to the open-ended questions on the post-capstone survey of faculty mentoring capstones in academic years 2009/10 and 2010/11. The tables are based on the counts after deconstructing the comments into topical coded units.

**Narrative – Analysis of Mentor Responses to the Post-capstone Open-Ended Questions**

**Tables of Counts of Topical Units**

Question 1: "Please describe any notable positive or negative aspects of this capstone for you as the mentor."

- Table Mentor Q1- 1: Detailed Tally by Topic
- Table Mentor Q1- 2: Summary of Tally of Mentor Comments by Topic Group

Question 2: "Please note any particularly significant benefits you think the student gained from this capstone."

- Table Mentor Q2 – 1: Detailed Tally to Topic
- Table Mentor Q2 – 2: Summary Counts by Topic Group
- Table Mentor Q2 – 3: Percents of Responses by Topic Group

Question 4: "Please describe areas where the student was exceptionally well prepared for this capstone. Please describe areas where the student should have been prepared better for this capstone."

- Table Mentor Q3 – 1: Detailed Tally to Topic
- Table Mentor Q3 – 2: Summary Counts by Topic Group
- Table Mentor Q3 – 3: Percents of Responses by Topic Group

Question 4: "Please share any other observations about this capstone that you think may be of interest to this study."

- Table Mentor Q4 – 1: Detailed Tally to Topic

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# Analysis of Mentor Responses to the Post-Capstone Open-Ended Questions

## Introduction – Questions and Table Descriptions

These are notes, with accompanying tables, for use by the campus steering committees in preparation of our final report and other project products.

The open-ended questions for mentors were:

- Mentor Q1: Please describe any notable positive or negative aspects of this capstone experience for you as the mentor.
- Mentor Q2: Please note any particularly significant benefits you think the student gained from this capstone.
- Mentor Q3: Please describe areas where the student was exceptionally well prepared. Please describe areas where the student should have been better prepared for this capstone.
- Mentor Q4: Please share any other observations you have about this capstone you think may be of interest to the study.

As for the student open-ended questions, the comments were deconstructed into discrete topical coding units and grouped into a hierarchical structure deemed useful for our research questions, as seen in the accompanying tables. A single comment might be deconstructed into as many as five topical units. The appended tables are labeled by the question numbers indicated above and, depending on the question, include a table giving a detailed tally of the comments by coding unit, a summary table with the tallies aggregated by a larger subgroup in the topical hierarchy, and a summary table that converts the counts to a percentage of the counts in each category for each subgroup of students. The percentages are useful, for example, to compare whether the mentors for students in one major are more likely to comment on a topic than the mentors for students in another major.

**********

## Question 1: "Please describe any notable positive or negative aspects of this capstone experience for you as the mentor."

In 2009-10, Q1 appeared as shown above. In 2010-11, it was split into two questions so that students responded for the positive and negative areas separately.

**Overall response rates.** The preponderance of comments was on the positive side. Of the 1,923 coded units, 1,165 (61%) had a positive sense, while 758 (39%) were negative**.** Although the preponderance of comments was positive, it should be noted that the number of negative comments was substantial.

**Categorization of comments.** The comments were wide-ranging with 245 discrete units identified. The tables tally the comments based on categorical groups that are, hopefully, useful for our research questions. The "Focus" category indicates whether the comment focused primarily on the mentor, the student, or the project. Table Mentor Q1-1 gives the detailed tally for each coded unit and Table Mentor Q1-2 summarizes the counts at the level of Group 2.

**Focus of the comments.** Mentors viewed their own experience primarily through the lens of their relationship with the student and the development and success of the student and the project. Indeed, only 33% of the comments were explicitly about the mentor's own experience of the capstone, with 54% focused on the student and 6% focused on the capstone product.

**Table 1**: Focus of Mentor comments

| Focus | Positive | Col % | Negative | Col % | Total | Col % | % Pos |
|---|---|---|---|---|---|---|---|
| mentor | 440 | 38% | 201 | 27% | 641 | 33% | 69% |
| student | 616 | 53% | 427 | 56% | 1043 | 54% | 59% |
| project | 86 | 7% | 28 | 4% | 114 | 6% | 75% |
| None to report | 23 | 2% | 102 | 13% | 125 | 7% | |
| Total | 1165 | 100% | 758 | 100% | 1923 | 100% | 61% |

**Comments focusing on students.** Of the comments concerning the student, the most frequent areas of comment are shown in Table 2. Again, while the preponderance of comments for these major areas is positive, there appears to be a significant percentage of capstones that engender negative comments. The major problem areas mentors reported are with project management, motivation, and failing to attend meetings or use feedback. The implications of this are that students may need more preparatory experiences or training in managing a large project, and that mentors and students may need better guidelines or more explicit expectations on how to structure their interactions during the capstone. This is complicated by the expectation that the student should conduct the capstone with a great deal of independence, but the student may still need structured mentor supervision and feedback.

**Table 2**: Mentor comments focusing on students

| Most frequent comments about students | Positive | Negative | Total | % Pos |
|---|---|---|---|---|
| Good project management by student | 122 | 115 | 237 | 51% |
| Good motivation/work ethic | 174 | 59 | 233 | 75% |
| Worked well with mentor -using feedback, attending meetings | 32 | 90 | 122 | 26% |
| Student developed academically | 96 | 10 | 106 | 91% |
| Had academic abilities needed for capstone | 46 | 38 | 84 | 55% |
| Performed with good writing, oral communication skills | 13 | 32 | 45 | 29% |
| Performed with good research skills | 21 | 17 | 38 | 55% |
| Performed with good critical thinking skills | 20 | 10 | 30 | 67% |
| Sum for cited items: | 524 | 371 | 895 | 59% |

**Comments focusing on the mentoring experience.** As noted in Table 1, about 33% of the comments concerned the mentor's own experience. Of these, 69% were positive and 31% were negative.

What positives did mentors see for their capstone mentoring experience?

- Enjoyment of working one-on-one with students: exchanging ideas, seeing projects and students develop, working with a student that was particularly capable or motivated as a colleague.
- Leaning about the topic of the student's project, in some cases because it contributed to their own research interest, but more frequently because it was simply of interest or intellectually stimulating. Some found it valuable when the topic was outside their area of expertise, but others noted the extra work required in these cases. A very small number of comments

complained about repeatedly supervising capstones on the same topic (e.g. Hitler or the Civil War).

- Improving their teaching, mentoring, or advising skills as a result of the closer relationship with the student that enabled personalizing their approach and observing and analyzing the results.
- Making new professional contacts as a result of working with a project outside their normal scholarly niche.
- Working on a project that had a successful outcome in meeting or exceeding expectations in terms of design, ideas, originality, results, or general quality.

What negatives did mentors see for their mentoring experience?

- Frustrations working with students who are unmotivated, or who have weak skills in writing, critical thinking, project management, or research.
- Students who missed meetings with the mentor.
- Students who didn't respond to feedback, particularly ignoring comments on drafts of papers.
- Students who delayed starting on their project or didn't meet project deadlines.
- Students who couldn't work independently and needed to be micromanaged.
- Students who generally underperformed.
- Co-advising problems – Several negative remarks related to difficulties stemming from co-advising, for example a project for a double major, or the students being off-campus and working with an adviser from another institution. All but one of the 25 comments relating to co-advising a project was negative.
- Support problems – There were a small number of reports of support issues with equipment, software, administrative support, etc.
- The workload – A relatively small number of responses, 17, related explicitly to the workload as an onerous addition to other duties. Another 22 comments noted the extra work of advising a capstone that was outside their area of expertise, and these might also be taken as negative comments relating to workload.

In summary, major factors in how mentors view their experience with the capstone include how well the student performed relative to their expectations, and how well the mentor and student collaborated. The length, scale, and high expectations for capstone projects, as well as the need for students to work independently, tend to expose and amplify issues with student preparation, skills, and work ethic. The capstone enables many students to shine, and mentors find this an enjoyable and highly rewarding experience. Other students struggle, due to lack of motivation, preparation or abilities, and mentors find this frustrating.

**Sample mentor remarks:**

***Positive aspects:***

*I observed that [the student] blossomed in terms of her writing skills and even her intellectually approach during the course of her capstone research. She was a pleasure to work with - not an extremely strong student, but one who really responded to suggestions and advice.*

*This student was able to explain some anomalous results in an earlier scientific project through a very well constructed series of experiments.*

*Student used his experience to obtain a graduate level position doing very similar research, a great positive in my book!*

*[This student] is a superstar with respect to I.S. She was able to work independently, take complete ownership of her project, effectively manage her time, and analyze her results. This mentoring relationship really felt more like a colleague/colleague relationship which was wonderful.*

*The enthusiasm that this student developed for research during this experience was great to watch. She is now planning to pursue a PhD in biochemistry.*

*This student experienced more growth through this process than any other student I have mentored. It is gratifying to see a weaker student begin to synthesize the knowledge from various courses, and to achieve success through hard work.*

*I really enjoyed this project. The student was incredibly engaged and we had a lot of fun discussing her ideas. I watched her writing go from being very weak to quite strong. She took ownership of the project and did a great job.*

*It is satisfying to observe our students making connections and tying together the knowledge from different courses as they study for the comprehensive exams. They graduate with a strong grounding in economic theory and its applications because of the comprehensive nature of the tests and the preparation for them.*

*Wonderful to see the student grew in confidence and understanding of methods and limitations of research.*

*The chosen topic was an application of mathematics to an area where I had no experience. I learned as much as the student and learned it almost completely through her explanations.*

*A positive aspect was observing the student's willingness to take creative risks while applying directives learned in interdisciplinary study. She did not just repeat material studied in class but created an opportunity for herself to try something original.*

*I came to understand a body of knowledge that I had little experience in before her study.*

*This was my first opportunity to work with this student on a project that stretched him to work far beyond what he thought he could do. He was surprised at what he was able to accomplish and proud of the result.*

*It made me think of an interesting problem that I plan to study in greater depth.*

*All the way through the process it was a delight to work with this student, who was so disciplined, organized, self- motivated, and responsive to my suggestions and comments.*

*This is another example of a student who never thought she could pull off such a project successfully, and yet she applied herself and did a good job. I was very gratified by that, and it reinforced my evaluation of the senior project as a very good learning experience.*

*[This student] came into the experience as an accomplished writer, communicator and analytical thinker with a lot of intellectual curiosity. He left just a enthusiastic and it was fun to work with him as a colleague.*

*[This student] achieved some intellectual thinking/work in this project that I didn't think possible. I saw her flourish intellectually and take ownership of the project.*

*Seeing the student take charge of the project and competently research a current and very relevant topic was a joy. I also enjoyed seeing the student integrate two disciplinary perspectives as he is a double major, and do so with skill and ease.*

*I knew nothing about the topic, and this is often the case in the History and International Studies program. I very much enjoyed working with the student and guiding an original piece of work to completion.*

**Negative aspects:**

*This student had a poor work ethic and had to be constantly prodded (to the point of threatening a failing grade) to pursue the project. The result was mediocre work, barely meeting the standard for the lowest passing mark. Advising a student who takes little initiative is an exhausting process!*

*This student did not communicate well with me, did not submit drafts of work in progress, and missed too many of our scheduled meetings. While he did turn in drafts at both main deadlines to the department, the drafts were not cogent, cohesive, nor did a definitive thesis emerge by the end of the process.*

*Student definitely did not want to do the project. In the final paper, the student even said I realize now I don't want to do this major "in the real world." This was obvious while pushing the student to complete the project. Makes the hours spent together much more difficult.*

*This student was simply not prepared to design, conduct and write a senior thesis. It was as if she had not been exposed to the theory and methods of anthropology. She showed little interest in conducting research, and consistently prioritized other events over this project.*

*Getting drafts completed on time was a problem at times.*

*Having four senior theses is quite a bit of work: every bit equal to having an additional class to teach.*

*This was a struggle... this student showed exceptional academic and intellectual skills in coursework, but that did not turn out to be an adequate predictor of just how much mentoring needed. I underestimated how much direction she needed. When faced with a project all her own she became hamstrung. I intend to modify my SCE expectations and advising/mentoring process in the future to avoid reoccurrence of this scenario.*

*This was a very bright student who unfortunately needed constant attention and nagging because he was late for every deadline except the final submission date. That deadline was met only through a lot of extra time spent with me during the week preceding that date.*

*Capable student but often refused to put in the time and effort to actually get things done. Makes this frustrating.*

*I learned to more closely monitor students who say they're on track but aren't sharing any "product". This student consistently missed deadlines, did not respond well to feedback until the latest stages when it was clear she may not graduate. My time with her was very inconsistent due to her lack of momentum and failure to comply with deadlines and editorial requests. She graduated only because I was willing to read through 6 drafts of her thesis in the last five days prior to the CSE deadline to address major flaws in her argumentation and misuse of social theory.*

*An integrated capstone for a double major. Not very successful. Both advisors were frustrated. This experience has made me a bit more skeptical of letting mediocre students do integrated capstones.*

*This was a frustrating experience. The student displayed very poor time management and did very little with the feedback that was provided.*

*Lack of time management on the part of the student was frustrating. A good idea was not seen through as thoroughly as I would have hoped.*

*When I have multiple students that are working on multiple independent yet unrelated projects, it becomes difficult to manage all of the teaching of experimental techniques that is required. I could try to*

*steer all of my students to only the project that I want/need them to work on, but I feel like this defeats the process of independent study.*

*The student is not one of our strongest… I micromanaged the writing process.*

*Student was MIA until the very end. No rough drafts, no communication, no input from the professor.*

*Student did not follow up on corrections to manuscript nor did she effectively pursue suggestions for conception or research.*

*The student needs to work on time management and organization. He was definitely enthusiastic about his work but had trouble staying focused.*

*This student is an example of why all students should not be required to complete the comp. This was excruciating. Her approach to data collection was sloppy, analysis was uninformed, she seemed incapable of identifying her weaknesses….*

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## Question 2: "Please note any particularly significant benefits you think the student gained from this capstone."

**Overall response rate.** Since this question asked about "particularly significant" benefits, we expect that mentors concentrated only on the major benefits they observed. An unintended consequence of this phrasing, however, is that it is difficult to interpret the absence of a response; does a blank response mean that the mentor saw no significant benefit, or did they just skip the question? If we adjust the pool of surveys to remove those where the mentor left blank *all* open ended responses, a student benefit was cited for 572 of 1,126 capstones, or 51%.

**Tally of responses by topic and student subgroup.** Tables Mentor Q2 -1 to Mentor Q2 -3 (appended to this document) indicate the counts of comments by topical coding units developed empirically to categorize the comments. In the tables, Group 1 divides the benefits into *skills*, *knowledge*, and *dispositions*, in a manner loosely based on Bloom's taxonomy. The assignment of the coding unit as a skill, knowledge, or disposition was determined as the coding units were developed from reading the original comments. To illustrate, the classification system would categorize learning a laboratory technique as developing a research skill; broadly understanding the research process would be classified as knowledge; and developing an interest in doing research would be classified as a disposition. Finally, there were several observations that did not fit into this scheme that related to an additional category of "professional development". The tallies are given overall and are also broken down by the division of the capstone major, by school, and by high, middle, and low groupings of the final college GPA. The tables present the data in various formats:

- Table Mentor Q2-1 – gives the tally at the greatest detail, that of Group 1
- Table Mentor Q2-2 – subtotals the counts at the level of Group 2
- Table Mentor Q2-3 – converts the counts in Table 2 to the column percentage for each student subgroup

**Student Benefits.** The benefits cited by mentors form a broad spectrum that goes well beyond simply gaining more disciplinary knowledge. Indeed, disciplinary knowledge accounts for only about 3% of the comments.

**Distinctive benefits of capstones.** Many of the benefits cited seem to be directly related to components of a capstone experience involving a major research or creative project, as distinguished from the work typically done in a standard upper division course:

- Managing a large project, with the accompanying needs for planning, organization, and time management.
- Working independently with minimal day-to-day supervision.
- Doing original research, whether as a new contribution to knowledge or as new to the student, with the excitement and challenges of discovery, the need to analyze data or research literature, and the need to synthesize the results into a cohesive argument.
- Pursuing a topic in depth that is of particular interest to the student and one for which they can take ownership.
- Presenting the project results through a major paper and/or oral presentation. This hones writing, critical thinking, and presentation skills in a unique way as the student develops his/her own analysis and viewpoint on the topic and presents it in a coherent manner appropriate to the style an theoretical structures of the discipline. It gives the student an experience of being the "expert" on his or her topic.
- In some cases, integrating knowledge from multiple disciplines.

**Academic skills development.** The mentor's comments note enhancement of a number of the general benefits of a college education – development of writing or oral presentation skills (11%) and critical thinking skills (13%) in particular. But the capstone experience may develop these skills in an unusually powerful way. Comments suggest that a capstone experience develops these particularly well because the typical capstone project's scale is much greater than the usual work of a course, and because students explore a topic at a depth and with an independence not seen in most courses. Often capstone papers go through multiple revisions with mentor feedback and the results are prepared for celebrations of learning, conferences or publication. Critical thinking skills are developed as students move through searching and analyzing related literature, designing a research protocol, analyzing data, and synthesizing and arguing a major thesis.

**Research skills and motivation development.** 10% of comments concerned development of specific research related skills – conducting literature searches, designing and conducting research, quantitative or qualitative analysis of data, laboratory skills, etc. 3% of comments reported an increase in technical skills related to research, and 4% reported an increase in the student's motivation toward research or pursuing their capstone project.

**Project management benefits.** Approximately 15% of the comments noted development of project management skills, the largest percentage among the Group 2 categories. For many students the capstone experience constitutes the largest academic project they have undertaken, making the capstone an important opportunity to develop planning, organizational, and time management skills. In combination with the results for a question about student preparation, for which mentors often noted that students came in poorly prepared to manage a large project, it would seem that capstones present an advising challenge – structuring the capstone in a way that balances the need for independence, while providing scaffolding such as deadlines, project goals, and feedback to ensure the student doesn't flounder. The prominence of this topic in the comments indicates that mentors should pay considerable attention to how the capstone project is structured. That most students develop in this area may be a particularly significant and distinguishing benefit of the capstone experience.

**Self-development benefits.** A variety of benefits cited are related to self-discovery, personal development, or "self-authorship". 13% noted a gain in self-confidence; 9% noted a gain in self-understanding of abilities and interests; 4% reported a gain in an interest in doing research or writing or critical thinking; 3% reported development of a more mature approach to project behaviors – patience, perseverance, and taking responsibility. Many students begin the capstone apprehensive about their ability to successfully complete a significant long term project, and end confident that they can achieve more than they thought.

**Professional development benefits.** 7% of the comments about benefits concerned an area of professional development for graduate school or employment. These ranged from a simple statement that the student developed professionally or was better prepared for graduate or professional school, to the capstone leading directly to a job offer. Students were able to include their capstone work in an application portfolio, make professional contacts through conference attendance, gain recognition through presentations or publications, get better references from their mentors, or, in one case, start their own business.

**Disciplinary knowledge.** While gaining additional disciplinary content knowledge is certainly a benefit of most capstones, this was mentioned explicitly in only 38 comments (3%), as faculty concentrated on the more general benefits noted above.

**Summary.** The mentors' comments describe a wide and varied range of benefits from specific academic skills to areas of personal and professional development, including an emphasis on building project management skills, self-confidence, and an interest in doing research. Moreover, although any standard course might promote similar benefits, the mosaic of benefits cited is arguably directly related to distinctive characteristics of the capstone experience in that a student is expected to engage in an independent, large scale project of research or inquiry.

### Sample comments from mentors:

*The student emerged much more self-aware, better at time management and with a greater respect for the process of creative-collaboration. Her writing started out quite shaky and improved by the final paper/presentation. Lastly, her confidence and clarity of ideas improved.*

*Commitment to a long term project and seeing it through.*

*I really saw him gain greatly in his confidence and sense of empowerment. He always knew that he was smart and, with the completion of his IS, he recognized that he had lived up to those expectations.*

*The project was very important in helping the student focus his wide array of ideas. There were challenges in terms of organizing and developing these ideas, and the fact that he was able finally to put everything together was very important.*

*She developed confidence in her ability to plan, manage and complete a large project; she was able to pursue a topic about which she is passionate; she read widely and developed an original argument about a little-known topic.*

*I think he learned a tough lesson in procrastinating. I think he got a great research experience.*

*This project linked his two majors of business finance and psychology*

*He learned that he could complete a project even though it seemed impossible at times.*

*There were several complications where experimental methods had to be changed during the course of the studies and the student coped well with searching out and carrying out new methods based upon literature precedence.*

*He wrote a novel, the novel he'd been wanting to write for years.*

*She took total responsibility for this project, garnering appropriate funding and demonstrating its feasibility. There is a good possibility that her work will be published and will lead to a long term useful methods for my future research students. She enhanced her confidence in contacting other researchers and technical support people to get her questions answered.*

*Some insight in the importance of not giving up and trying to see what good can be obtained from a bad situation. Perhaps some recognition into taking more responsibility for her future.*

*Although this student has a nearly perfect GPA, she is rather quiet in class. She is not shy, and I do think she is confident in her abilities, but I think this capstone experience has helped her realize that she has tremendous academic potential. She has yet to decide what direction she will pursue after graduation, but I think this experience may cause her to seriously consider graduate school. … I think the student realizes she has this potential to clearly grasp and articulate some rather difficult concepts.*

*She found her voice (in terms of writing). She learned to synthesize theory and data. She gained confidence.*

*She learned that lab work is not her forte nor her interests.*

*Confidence in original research; improved writing; stronger analytical abilities; good practice in oral communication: three separate conference presentations; showed thesis to graduate schools and impressed them.*

*Understanding that he CAN do research - graduate school acceptance with support based on IS work*

*Real confidence in handling a challenging topic*

*Learning to think and work like an artist; understanding more deeply how artists think about and evolve ideas.*

*This student found that she was much more capable of research than she thought and that she liked it quite a bit.*

*The student made a great deal of effort in his analytical thinking and it was also the biggest project he had to do in terms of writing. He did indeed grow tremendously having done it and done it quite well.*

*She gained a great sense of accomplishment.*

*More aware of what it takes to do a major project from conception to communication.*

*The student learned to summarize pertinent material effectively and to weigh and analyze arguments. She learned how to defend her opinion against conflicting views, and yet was able to concede that her position was not necessarily one that everyone would*

*This student collected and analyzed her own data. This is a critical skill that would not otherwise have been available to her. It also allowed her to pursue deeply a social issue that has had a significant effect on her own life.*

*Being able to see an independent project through from start to finish and take ownership of it*

*She was really excited about her work and now wants to do more research*

*She learned a host of applicable techniques and procedures, all of which helped her obtain a fabulous job working in a military defense laboratory, starting immediately after graduation. She also learned effective time management, trouble-shooting procedures, and how to run a project from conception to conclusion.*

*Writing a large thesis improved her writing skills, and an attempt to organize and synthesize a large number of ideas was a good exercise for her.*

*She did develop more confidence, and she learned to organize her ideas more effectively. She also loved her topic, developed original ideas about it, and articulated those ideas clearly and with passion.*

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**Question 3: "Please describe areas where the student was exceptionally well prepared." and "Please describe areas where the student should have been better prepared for this capstone"**

The responses to these questions were broken down into discrete units and tallied into a hierarchy of topical areas as reported in Tables Mentor Q3-1 to Mentor Q3-3 below:

- Table Mentor Q3-1 – a detailed tally of comments with subtotals at the Group 1 level.
- Table Mentor Q3-2 – a summary tally of comments at the Group 1 level
- Table Mentor Q3-3 – the column percentages at the Group 1 level for each student subgroup

The counts and percentages are given in these tables overall and broken down by capstone major, school, college GPA group, and gender.

**Overall response rates.** For the majority of the 1,126 mentor surveys, no comment was made either way. There were comments of a deficiency in preparation for 362 capstones (33% of capstones), and of exceptional preparation for 446 capstones (about 40% of capstones).

Table 3 summarizes the overall tally of comments by major topical groups, sorted in descending order to the total count for the various topics. The percentages in the table are based on the counts of comments made. Since, as noted above, no comments were made for the majority of capstones and some comments may have been counted under more than one coding unit, the column percents in the table indicate the relative prominence of areas of comment but not the percentage of capstones in each category.

**Table 3**: Mentor comments on student preparation

| | Deficient | | Exceptional | | Total | | |
|---|---|---|---|---|---|---|---|
| Tally of Preparation Comments | N | Col % | N | Col % | Total | Col % | % exceptional (by row) |
| Communication skills - general, written, oral | 155 | *20%* | 222 | *20%* | 377 | *20%* | *58.9%* |
| Disciplinary knowledge, theory, and ways of thinking | 120 | *16%* | 215 | *20%* | 335 | *18%* | *64.2%* |
| Personal skills and attributes: work ethic, motivation, time management, independence | 66 | *9%* | 183 | *17%* | 249 | *13%* | *73.5%* |
| Research skills: design, conducting, analysis | 97 | *13%* | 125 | *11%* | 222 | *12%* | *56.3%* |
| Project management skills: planning, organization, setting goals, working independently | 111 | *15%* | 93 | *8%* | 204 | *11%* | *45.6%* |
| Critical Thinking Skills | 95 | *12%* | 108 | *10%* | 203 | *11%* | *53.2%* |
| Literature review skills: conducting, locating sources, writing up | 49 | *6%* | 72 | *7%* | 121 | *6%* | *59.5%* |
| Quantitative reasoning skills | 38 | *5%* | 44 | *4%* | 82 | *4%* | *53.7%* |
| Collaboration skills: attending meetings, following directions, responding to feedback | 29 | *4%* | 21 | *2%* | 50 | *3%* | *42.0%* |
| Well prepared in general | 2 | *0%* | 19 | *2%* | 21 | *1%* | *90.5%* |
| **Total:** | **762** | *100%* | **1102** | *100%* | **1864** | *100%* | *59.1%* |

**Remarks:**

**Overall tally.** Exceptional preparation codings were more prominent, at 59% of the total. However, that 41% of the comments are negative and six of the ten areas have as many or more negative comments as positive suggests that there is room for improvement on each campus.

**Communication skills.** Writing skill is the most commented on preparation area, likely because it is the most common skill requirement. Mentors seem to find it particularly frustrating to deal with students with poor writing skills. Communication skills in general drew the most comments overall, 20%, with most of them about writing, and with oral communication a distant second. (The proportion of capstones involving writing is likely much larger than the proportion with an oral presentation.) About 60% of the comments about communications skills were on the exceptional side. The range of subareas of writing cited as deficient most often included mechanics - including citation styles, clarity, organization, stylistic appropriateness, and knowing how to write a long research paper.

**Disciplinary preparation.** Disciplinary preparation drew 18% of the comments. Comments tilted toward the exceptional side with regard to disciplinary knowledge as learned from general courses, and also learned specifically in preparation for the specific capstone topic, as from particular precursor courses in the major or the student's own preparation. Comments were predominantly negative, however, as to understanding the theoretical foundations of the discipline, and this may make the capstone particularly challenging for some students. Skills that are specific to a discipline, such as laboratory skills, seem to be an area where students are receiving generally good preparation.

**Project and time management.** This area drew 15% of the comments. Notably for this area, the preponderance of the comments indicated a deficiency (54%). The main complaint was students not managing their time to complete the project. A lack of pre-project planning and inability to organize the project were also noted.

**Student personal attributes.** The personal skills and attributes of students drew 13% of the comments. On the positive side, the majority of comments were favorable for perseverance, work ethic, motivation for the project/research and independence.

**Critical thinking.** Overall, critical thinking skills drew 11% of the comments, with 53% exceptional. Although exceptional comments dominated overall, deficiencies dominated in the sub-areas of argumentation and applying principles and theory.

**Quantitative skills.** Quantitative skills drew 5% of the comments, mostly in the natural and social sciences. A deficiency in statistics was noted for 20 capstones (with 10 exceptional), which is probably a fairly low percentage of the capstones where statistical methods are needed.

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**Research skills.** Preparation for conducting research drew 12% of the comments, with 56% of those indicating exceptional preparation.

**Literature searches.** Conducting literature searches drew 6% of the comments, with 40% of those indicating a deficiency. Locating sources was the specific area drawing the most deficient comments (9). Many reports of deficiencies in this area relate to technical skills that might be taught easily in a

**Collaboration skills.** These items relate to working with others as part of a research project. The principle deficiency cited was a failure to pursue help that would advance the project, such as by working well with the advisor, librarians, or reading writing center staff.

Please refer to Tables Mentor Q3-1 to 3 for break downs of the tallies by major, school, GPA group and gender**.**

**Summary observations:**

The results are mostly encouraging, but with some concerns. Clearly mentors are advising a significant proportion of seniors that have areas of deficient preparation, as well as exceptional preparation. A significant benefit of capstone programs may be that through close mentoring faculty become aware of how well the curriculum is preparing students for major academic projects. Systematically gathering this feedback could be a useful assessment tool.

The capstone exposes deficiencies in writing, close reading, and critical thinking skills that might be addressed better in the general education portion of the curriculum. Disciplinary courses may need to emphasize theoretical structures more. Training in conducting literature searches may need more attention before the capstone, perhaps in conjunction with library staff, since locating sources seems to be an issue. Students might generally benefit from more experiences in prior course work that involves applying both background disciplinary knowledge and theory to real-world problems, gathering, analyzing, synthesizing, and presenting their own data, and writing longer papers.

The capstone poses new challenges for many students in terms of conducting a large independent project. Mentor's comments suggest a need for many students to have better preparation in project management skills needed for a large and sustained project, such as planning objectives, organizing the flow of activities, creating a timeline with deadlines, etc. Specific training in time management skills might be needed for some students, and all might benefit from a more intentional effort to develop these skills through pre-capstone experiences.

For some students, the capstone exposes weaknesses in student personal attributes, such as work ethic, academic motivation, persistence, or ability to work independently. Students' lack of motivation for their capstone project might be addressed, in part, by selecting structures for the capstone topic that allow or encourage students to explore options for projects of personal interest. The four colleges have decided to make a capstone experience a universal graduation requirement rather than an elective or honors experience. Even though it would appear most students are well prepared to do excellent work during a capstone, the mentor's remarks on preparation indicate that, in a not inconsiderable number of cases, mentors are challenged by the need to work with students who have insufficient academic skills, are inexperienced with managing a large scale project, can't work as independently as expected, or don't have sufficient motivation. This is, perhaps, inevitable for a universal requirement, but requiring a universal senior capstone presents additional preparation issues for the curriculum leading up to the capstone and for mentor training in dealing with the underprepared or less motivated students.

**Sample Mentor Comments on Exceptional Preparation:**

*This student had excellent writing skills and critical thinking skills already and was strong and comfortable with oral presentations.*

*She is an excellent writer.*

*She had the work ethic to accomplish this project.*

*She knew what she wanted to look at and had a persistent strong desire to complete the project in a thoughtful way*

*He had fine knowledge of his discipline.*

*[This student] brought some extraordinarily strong writing and organizing attributes with her. This made the project simple to advise.*

*This student was very well prepared in the substantive content area of her IS project - the project clearly grew out of her coursework and knowledge of theories she could apply to the research question she identified in her study.*

*Ability to work on his own, very upbeat attitude, and an outstanding willingness to work hard.*

*Writing quality was exceptional - little, if any editing required. Independent thinker with unique and creative approach.*

*Very creative and willing to try new ideas. Unafraid of being "wrong" and effective in troubleshooting.*

*Ability to work in the lab with a variety of techniques with little assistance/guidance from me. Ability to trouble-shoot experimental difficulties.*

*Organization; originality; well-planned methodology; familiar with relevant literature; had well-developed plan for research; independent attitude and expectation for prolonged hard work.*

*She was exceptionally well prepared in terms of her ability to plan ahead and make realistic goals. She is extremely well organized and able to balance a lot of tasks at once.*

*Knowledge of the primary sources.*

*Exposure to different theories, and an understanding of how to do research.*

*He was exceptionally prepared in ALL areas - quantitative skills, writing, research conceptualization and more.*

*The student was well grounded in the concepts of the discipline and how to do research.*

*She was enthusiastic about her subject.*

*He did a fine job articulating arguments.*

*She started well in advance, took on an ambitious project by carefully planning her time and available resources (even finished a little early). She was exceptionally well prepared for this experience in every way.*

*She was exactly on target throughout the process and was exceptional in her planning and implementation of the project, needing my guidance only occasionally.*

**Sample Mentor Comments on Deficient Preparation:**

*Major writing concerns; difficulty responding to feedback; major problems with research design knowledge*

*She was not able to effectively integrate sources into her writing.*

*[This student] could not read, evaluate, and summarize scholarly sources.*

*She needed to have started her readings in the summer, as she was advised.*

*He should have been better prepared to work independently on a topic. His writing should be much better than it is. He actually appears to be frozen when asked to write something.*

*[This student] did a fine job researching her topic, and gathering data through interviews. However, her limited writing skills made it difficult for her to clearly and effectively express her thoughts and insights. This was especially true in drafts of her chapters, which were sometimes quite difficult to follow. She worked hard to polish her writing before submitting the thesis, and there was marked improvement in the final copy, but still the writing was rather wooden and plodding through much of the thesis.*

*Writing!*

*She had some difficulty finding sources for her literature review--she could have been better prepared in this area.*

*Her quantitative training was lacking, but she showed great dedication in gaining the skills necessary to conduct her research.*

*time management; sense or responsibility; presenting and summarizing data in standard formats*

*[This student] did not have good time management skills, and I don't think she fully understood how long laboratory work takes to complete. She would give herself very short windows of time in which to complete experiments, and often she couldn't get them done, or would do them so quickly that they didn't include the proper experimental controls.*

*This student clearly did not learn time-management and goal-setting skills in previous projects/coursework. Perhaps this is partially due to the lack of a smaller project during the junior year.*

*The student was enthusiastic about the idea of the capstone project but not deeply invested in doing the work.*

*She had no quantitative training.*

*His understanding of how science works was lacking - he came into his project with his mind made up, but I think learned of the complexity of natural systems and the range of problems one can and cannot solve.*

*This student struggled with writing, but never recognized it. I suggested the Writing Center many times, but she never went. She had unrealistic ideas about being a strong writer.*

*For this student, as with most pursuing a double major, this project is their first time thinking deeply about the connections between their fields of study. This is one of the challenges in interdisciplinary student research.*

*This student had very poor time-management skills. He admitted early that he was a procrastinator and demonstrated that throughout the semester.*

*The student should have been better prepared to objectively and thoroughly represent the opposition to her position and confront that opposition in greater depth. She also struggled with sentence clarity at times.*

*He showed a fairly limited knowledge of the relevant literature.*

*Understanding of social theory. Thinking critically about the implications of her findings.*

*In developing research questions and knowing how to conduct research.*

*Organizational skills.*

*Working independently and on larger-scale projects. This could hint at the general absence of term papers in our courses.*

*Time management. Balance of personal and professional responsibilities. I feel some of this students' classes suffered because of an inability to balance his student leadership responsibilities and academic obligations.*

*Time management and organizational skills.*

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**Question Q4: "Please share any other observations you have about this capstone you think may be of interest to the study"**

Prior questions on this survey gathered detailed feedback on the student's capstone while this final catchall question was intended to give the mentor an opportunity to provide additional observations. Most of the themes mentioned in the responses to this question also appeared in the responses to the specific open-ended questions about student preparation, the mentor's experience, and the benefits for the student.

Some faculty used the opportunity to make a general statement about capstones, while others provided additional information about the particular capstone they mentored. Table Mentor Q4-1 in the appendices contains the listing of coding units constructed from an analysis of the responses, along with a two-tiered hierarchical grouping of the units into topics. The table also indicates whether the comment is positive, negative, or simply observational relative to its view of the particular capstone or capstones in general, and indicates the count of occurrences of each coding unit.

There were 181 capstones for which the mentor made an additional observation, resulting in 327 coded units.

**Summary of Comments**

**Overall sense.** When simply given a chance to comment freely, most comments were positive: 207 positive to 104 negative. Many comments cited benefits for the student.

**Double majors.** There were 9 comments indicating that capstones that combine two majors are particularly difficult for students to perform successfully because integration of disciplines is difficult. Two other comments noted a double major capstone that was done successfully, but suggested this was exceptional. Comments suggested that a combined major capstone should be attempted only for gifted students or if the two majors are similar in their methodologies. The difficulty of co-mentoring a combined capstone was also mentioned.

**Grading/evaluation**. A handful of comments related to the structure relative to grading or evaluation. Some endorsed flexibility in structure to deal with students' particular difficulties with one form – the ability to do an oral exam in place of a written paper, or allowing the adviser to convert the structure to another form in midstream, such as going from a thesis to a comprehensive exam, if the original form flounders, or allowing the student to convert from a combined double major to a single major capstone.

**Mentor benefits/disadvantages.** 28 comments noted for emphasis that the experience was positive for the mentor.

Other most frequently noted positives:

- The student developed, in general (25)
- The capstone outcome was good or excellent (25)

- The student's performance was good or exceptionally good (21)
- The student's effort was good or exceptionally good (10)
- The student performed better than in a regular course (8)
- The student gained self-confidence (6)
- The capstone is valuable for the student even if the product is not exceptional (5)

And negatives:

- The student's effort was poor (10)
- The capstone outcome was poor (9)

Table Mentor Q4-1 also indicates a breakdown of the counts of the comments by school and, separately, the division of the capstone major.

**Sample of mentor comments:**

*It was the reflective component of the project that offered my student the most learning. That is, she has identified how she wants to move forward as an artist.*

*I never would have seen what this student could accomplish if not for this intensive experience. As a result of her accomplishments, I could advise her more effectively, champion for her more strongly, and help her realize her potential.*

*The number of students I started out with (5) was too many, especially as all of my time in supervising these projects was outside of load.*

*[This student] embodies the best of IS in that he was a student who started out as an average student, but who excelled in the IS process because of his own work ethic, his creativity/intellectual engagement, and his emotionally acquiring ownership of the project (which helped keep him motivated even when times got tough).*

*We really got to prepare our students for this process as early as possible.*

*[This student] had about the worst IS experience you can have, passed from three advisers and then having her test animals die (possibly due to a miscommunication between herself and her previous adviser).*

*The opportunity to do such an I.S., the composition of a collection of poems or stories, is very important for students like this one who plan to go onto graduate writing programs, to which admission is very competitive and depends upon an impressive writing portfolio. They are also important to students whose engagement to literature is best expressed through the writing and revision of their own work, but who might not be currently planning to go onto a writing program in the near future.*

*This was a project in which the student saw an application of mathematics that they wanted to pursue. However, the depth of mathematics needed to pursue the topic was beyond the ability of the student. Not all students will recognize how difficult the mathematics can be to do some relatively easy to explain ideas.*

*The key to this student's success was in determining an accessible topic of great interest to the student (in this case, related to the student's intercollegiate sport). This led to the student's desire to work hard (and to learn new content) in pursuing the project. I believe that the topic choice is particularly key for weaker students, who are more subject to early discouragement.*

*This is a student for whom academic progress is probably not central. I think he benefitted from, and enjoyed, the IS project because it increased his sense of what it takes to move from idea to finished product. Thus I think it was a very valuable part of his education.*

*The subject areas of the student's research related mathematics to issues of social justice (health care access, Third World poverty versus western wealth, etc.) The resulting interplay between the student's worldview (and religious beliefs) and her scientific research was motivating, and gave her a strong sense of the value of this work. When possible, choosing topics in a way that can acknowledges a student's deeply-held convictions can lead to a powerful connection between academia and the broader world.*

*Occasionally we have students who have exceptional technical abilities but lack some of the more creative abilities that are vital for a highly successful IS. It is amazing how well they do in our classes but do have more difficulty in the IS project.*

*This was a double major and so I had to work with a professor from another department. It worked well because the other professor and I had good chemistry. But, in general, I would discourage students from double majoring if their IS topic does not lend itself EASILY to the epistemological and methodological requirements of BOTH the disciplines.*

*This student was amazing. I had a hard time keeping up -he gave me about 15 pages of reading to edit and comment on nearly every single week. He 'created new knowledge'. This is the most successful IS experience I believe I will ever have.*

*Even when both research advisors are united behind the student and his/her work (as was the case here), there is something more difficult about co-mentored, interdisciplinary research, as compared to single-field, single-mentor work.*

*We have to have our students prepared for the process systematically.*

*I am working closely with the student to try to get her thesis published. This is an excellent opportunity for both of us, as I may not have done research in this specific area without exposure to her project and she would not have had a cheerleader who is helping her to reframe the paper into a peer-reviewable manuscript*

*This capstone was not just an academic exercise, it created a business that could be here for years to come.*

*As an art student, studio space to work is imperative. This student acquired space in order to facilitate his creative process. Students who have not acquired space are more likely to not achieve their goals. For studio art students completing their SCEs, this issue needs to be addressed at Washington College.*

*This student was a unique example of a double major completing two SCE's and she demonstrated competency completing them both - no small achievement!*

*Fabulous project - comprehensive, technical, creative, etc. involving huge investments of the student's time (~20h/week) and substantial investments of my own time during the training and trouble-shooting phases (~5-10h/week during these times).*

*This is an example of the value of a Capstone Project experience. Without it, the student had islands of knowledge and little personal development to link them. Afterwards, the student was a new person intellectually.*

*If I had had the option to stop the thesis and divert this student to comprehensive exams I would have. I am hopeful that our department will revisit this as an option rather than force students who are clearly not motivated (or in some cases able) to write a thesis to slog through and do so. We do offer alternatives to a traditional thesis, but no students choose to take this route for some reason.*

*This was my third double major CSE. I've been disappointed in all three. Students seem to conceive it as a divide and conquer rather than an integration of two disciplines. I have come away with the view that only very strong students should undertake a joint CSE and there needs to be some way to develop them*

*so that they can/need to switch to a single CSE without losing too much ground if it becomes clear that they are not capable of producing a quality double CSE.*

*Perhaps only gifted students should do integrated (double-major) capstones.*

*There should be a studio art course to prepare students for the visual art SCE - more than a Seminar course, it could be a studio course about the independent development of a cohesive set of ideas, images (paintings, drawings, digital/photo/print media) or objects (sculpture, ceramics, etc.)*

*The comprehensive exam should be a point where students can assemble a variety of topics in a cohesive manner and see relationships between courses.*

*I suspect this student would have benefited more from a well organized course on research methods.*

*This was a double-major and it again illustrated some of the difficulties in getting students to handle the responsibilities and expectations that come with such a project.*

*The capstone gives students with less than impressive academic records an opportunity to really show what they're capable of doing, as in the case of this student. This was probably the best work she's done during her college years, and she did it almost*

*Students who are not academically motivated should not be compelled to do an independent research project as their capstone.*

*This project involved the community and real-world problems in a way that few of our students accomplish. It was an enlightening and well-executed project that has the potential to have a positive impact on the LIHEAP program she studied.*

*The student greatly improved with official deadline and schedules*

*When you have a student who enjoys doing independent research and has strong communication skills, the capstone become their own and the advisor has very little hand holding to do. What a joy!*

*I think such a capstone is wonderful. I continue to hope (and wonder how) that perhaps our college curriculum can encompass this idea right from the start, at the freshmen level, with even more provision - for skills in articulation, writing*

**Post conference addendum - Summary of implications for our research questions**

1. **What is the impact of the capstone experience on outcomes leading to lifelong learning? What is the perceived impact one, five and five-plus years after graduation?**

   As with student comments on their sense of benefits, mentors most frequently noted developmental benefits that are precursors to life-long learning: managing a large project, working independently, doing original research, taking ownership of a project, and the experience of presenting project results through a major paper and/or oral presentations.

2. **How does the capstone experience benefit the student and the faculty mentor?**

   The most often cited benefits mentors saw for themselves included enjoyment of working 1:1 with students, learning about the topic of the student's project, improvement of their teaching, mentoring or advising skills, making new professional contacts, or the satisfaction of working on a project with a successful outcome.

   On the other hand, mentors cited frustrations from mentoring students who didn't perform well, were unmotivated, had weak skills in writing, critical thinking, or project management, or who missed meetings or didn't respond well to feedback.

Some mentors viewed it as a benefit that they were exposed to an area outside their expertise, but this was balanced by others who felt that this was an unreasonable burden.

Mentoring capstones involves considerable personal investment in the student:faculty relationship and the outcomes of individual student's projects. Correspondingly, the main benefit for mentors appears to be the sense of satisfaction that comes when this relationship is productive.

**3. What are the similarities and the differences in how our capstone programs are formulated?**

This is covered in other project documents.

**4. What resources (programs, structures, and personnel) are our colleges providing to support their capstone programs? What is the opportunity cost of our capstones?**

While some comments noted the workload as a counterbalancing cost, these types of comments were surprisingly few in number.

**5. How do faculty, students, and other college constituencies perceive and experience the capstone?**

We have noted that the mentors' perception of the capstone seems to be highly dependent on how well they believe the student performed relative to their expectations. Fortunately, in most cases, students perform well.

**6. How do students experience the capstone? What is the range of capstone experiences for our students, and what are the conditions and practices that result in the most positive capstone experiences?**

This is covered in other project documents.

**7. How do we modify our programs to implement best practices?**

As noted above, some mentors enjoy supervising capstones outside their area of expertise, others do not wish to. In the assignment of mentors to student projects, best practices might allow faculty of both sentiments to have options.

Mentors report frustration dealing with a significant minority of students who are not fully prepared for the capstone, notably who do not have sufficient writing or project management skills. Support services specifically targeted for seniors and capstone projects, possibly through reading/writing centers, might be helpful in dealing with those students, while reserving mentor time for other matters. "Reverse engineering" departmental curricula and the general curriculum to prepare students for the capstone experience would seem to be a necessity. In addition to writing and presenting, precursor experiences embedded in general education or departmental courses might include elements of research and project management.

Because co-advising, for example for double majors, came up several times as a source of problems, policies on responsibilities in cases of co-advising should be explicit and clear.

Associated with this were comments that questioned the ability of students, particularly weaker students, to do integrated multiple-major capstones, and most specifically if they

required a theoretical understanding in more than one discipline. Since other comments praised capstones that were successful in integrating majors, it seems that institutions should not actively discourage them, but should consider implementing special approval procedures and guidelines that would ensure the student is capable of the challenge and advisers in both disciplines are supporting the project.

8. **How can our history of universal capstones and what we learn through this study produce models for the development of similar programs at other institutions?**

   To be determined!

# PART 6 TABLES: MENTOR COMMENT TABLES

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**Table Mentor Q1 - 1: Detailed Tally by Topic**

**Please describe any notable positive or negative aspects of this capstone experience for you as the mentor.**

| line | Focus | Sub-Focus | Group 1 | Group 2 | Group 3 | Group2 | Ment Pos | Ment Neg | Total |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 mentor | cap structure | cap structure | cap admin | advising | mentor's advising of student should have been better | 0 | 7 | 7 |
| 2 | 1 mentor | cap structure | cap structure | cap admin | co-advising | co-advising - was mixed, some pros some cons | 1 | 2 | 3 |
| 3 | 1 mentor | cap structure | cap structure | cap admin | co-advising | co-advising - other mentor left | 0 | 1 | 1 |
| 4 | 1 mentor | cap structure | cap structure | cap admin | co-advising | co-advising - other mentor unprofessional | 0 | 1 | 1 |
| 5 | 1 mentor | cap structure | cap structure | cap admin | co-advising | co-advising - other department discouraged inter-disciplinary work | 0 | 1 | 1 |
| 6 | 1 mentor | cap structure | cap structure | cap admin | co-advising | co-advising - student worked with other mentor off campus | 1 | 7 | 8 |
| 7 | 1 mentor | cap structure | cap structure | cap admin | co-advising | co-advising - disagreed with other mentor's assessment | 0 | 2 | 2 |
| 8 | 1 mentor | cap structure | cap structure | cap admin | co-advising | co-advising - both disciplines watered down writing | 0 | 1 | 1 |
| 9 | 1 mentor | cap structure | cap structure | cap admin | co-advising | co-advising - general problem co-advising for two major capstone | 0 | 9 | 9 |
| 10 | 1 mentor | cap structure | cap structure | cap admin | co-advising | general - mediocre students shouldn't do double-major capstones | 0 | 1 | 1 |
| 11 | 1 mentor | cap structure | cap structure | cap admin | organiz | admin - working with college administrators | 0 | 1 | 1 |
| 12 | 1 mentor | cap structure | cap structure | cap admin | organiz | admin - organization of department comps/reading | 0 | 2 | 2 |
| 13 | 1 mentor | cap structure | cap structure | cap admin | organiz | admin - IRIS constraints | 0 | 2 | 2 |
| 14 | 1 mentor | cap structure | cap structure | cap admin | organiz | obstacle - confidential nature of topic | 0 | 1 | 1 |
| 15 | 1 mentor | cap structure | cap structure | cap admin | organiz | project management - keeping correct/workable focus/scope for project | 4 | 6 | 10 |
| 16 | 1 mentor | cap structure | cap structure | cap admin | student | student health or personal problems negatively impacted project | 0 | 11 | 11 |
| 17 | 1 mentor | cap structure | cap structure | cap admin | student | co-advising - mentor had little say in student's work | 0 | 1 | 1 |
| 18 | 1 mentor | cap structure | cap structure | cap admin | student | collab - could not meet because student abroad | 0 | 6 | 6 |
| 19 | 1 mentor | cap structure | cap structure | cap admin | student | collab - mentor needed to micromanage | 0 | 16 | 16 |
| 20 | 1 mentor | cap structure | cap structure | cap admin | student | collab - student helped by second advisor | 1 | 0 | 1 |
| 21 | 1 mentor | cap structure | cap structure | cap admin | student | collab - enjoyed working with student 1 on 1 | 22 | 0 | 22 |
| 22 | 1 mentor | cap structure | cap structure | cap admin | support | admin - equipment/facilties/software issues | 0 | 8 | 8 |
| 23 | 1 mentor | cap structure | cap structure | cap admin | support | admin - IT support | 0 | 1 | 1 |
| 24 | 1 mentor | cap structure | cap structure | cap admin | support | admin - field support | 0 | 2 | 2 |
| 25 | 1 mentor | cap structure | cap structure | cap admin | time | time period too short for project | 0 | 18 | 18 |
| 26 | | | | **cap admin Total** | | | **29** | **107** | **136** |
| 27 | 1 mentor | cap structure | cap structure | workload | other courses | other courses took away from mentoring time | 0 | 3 | 3 |
| 27 | 1 mentor | cap structure | cap structure | workload | general | burdensome or undercredited addition to workload | 0 | 8 | 8 |
| 28 | 1 mentor | cap structure | cap structure | workload | other projects | too many independent projects to mentor | 0 | 1 | 1 |
| 29 | 1 mentor | cap structure | cap structure | workload | outside area | project outside mentor's area of expertise | 0 | 22 | 22 |
| 30 | 1 mentor | cap structure | cap structure | workload | size project | individual capstone as much work as teaching a single class | 0 | 2 | 2 |
| 31 | 1 mentor | cap structure | cap structure | workload | size project | more work than final product worth | 0 | 3 | 3 |
| 32 | | | | **workload Total** | | | **0** | **39** | **39** |
| 33 | 1 mentor | development | development | knowledge | contribute | contributed to mentor's own research | 15 | 0 | 15 |
| 34 | 1 mentor | development | development | knowledge | contribute | results will inform mentor's future work/courses | 9 | 0 | 9 |
| 35 | 1 mentor | development | development | knowledge | interest | topic also of interest to mentor | 40 | 0 | 40 |
| 36 | 1 mentor | development | development | knowledge | outside area | learned about things outside specialty | 20 | 0 | 20 |
| 37 | 1 mentor | development | development | knowledge | outside area | learned about student's topic | 53 | 0 | 53 |
| 38 | 1 mentor | development | development | knowledge | outside area | read new novels | 2 | 0 | 2 |
| 39 | 1 mentor | development | development | knowledge | outside area | student made mentor interested in topic | 9 | 0 | 9 |
| 40 | 1 mentor | development | development | knowledge | outside area | opportunity to mentor double-major thesis | 8 | 0 | 8 |
| 41 | 1 mentor | development | development | knowledge | tech | learned sophisticated statistical procedures | 1 | 0 | 1 |
| 42 | 1 mentor | development | development | knowledge | topic | intellectually stimulating | 6 | 0 | 6 |
| 43 | 1 mentor | development | development | knowledge | topic | gained new understanding of topic | 7 | 0 | 7 |
| 44 | 1 mentor | development | development | knowledge | topic | mentor learned about student's host community through fieldwork | 2 | 0 | 2 |
| 45 | 1 mentor | development | development | knowledge | topic | mutual learning | 27 | 0 | 27 |
| 46 | | | | **knowledge Total** | | | **199** | **0** | **199** |
| 47 | 1 mentor | development | development | mentoring skills | criticism | mentor - skills - constructive criticism (learned how to give) | 3 | 0 | 3 |
| 48 | 1 mentor | development | development | mentoring skills | diverse | mentor - skills - learned to work with students with learning differences | 3 | 0 | 3 |
| 49 | 1 mentor | development | development | mentoring skills | guide | mentor - skills - guide student to appropriate grad schools | 1 | 0 | 1 |
| 50 | 1 mentor | development | development | mentoring skills | guide | mentor - skills - helped student find more modest project | 1 | 1 | 2 |
| 51 | 1 mentor | development | development | mentoring skills | guide | mentor - skills - linking student's interests across disciplines | 1 | 0 | 1 |
| 52 | 1 mentor | development | development | mentoring skills | guide | mentor - skills - guide original piece of work to completion | 5 | 0 | 5 |
| 53 | 1 mentor | development | development | mentoring skills | monitor | able to track student's growth | 8 | 0 | 8 |
| 54 | 1 mentor | development | development | mentoring skills | monitor | learned to monitor students more closely | 1 | 0 | 1 |
| 55 | 1 mentor | development | development | mentoring skills | new | mentoring skills - learned to do something differently | 8 | 1 | 9 |
| 56 | 1 mentor | development | development | mentoring skills | support | mentor - skills - helped student work through academic insecurity | 1 | 0 | 1 |
| 57 | 1 mentor | development | development | mentoring skills | teach | mentor - skills - teach writing | 2 | 0 | 2 |
| 58 | 1 mentor | development | development | mentoring skills | teach | mentor - skills - teach how to refine work | 3 | 1 | 4 |
| 59 | 1 mentor | development | development | mentoring skills | teach | mentor - skills - teach theory | 1 | 2 | 3 |
| 60 | 1 mentor | development | development | mentoring skills | timeman | mentor - time management problem | 0 | 5 | 5 |
| 61 | | | | **mentoring skills Total** | | | **38** | **10** | **48** |
| 62 | 1 mentor | development | development | prof dev | outside | mentor - making scholarly contacts | 3 | 0 | 3 |
| 63 | 1 mentor | development | development | prof dev | outside | mentor - making scholarly contacts - different department/discipline | 3 | 0 | 3 |
| 64 | | | | **prof dev Total** | | | **6** | **0** | **6** |
| 65 | 1 mentor | neg experience | neg experience | general exp | negative | general - frustrating for mentor | 1 | 28 | 29 |
| 66 | 1 mentor | neg experience | neg experience | general exp | outside | frustrated by lack of cooperation from other colleges in responding | 0 | 1 | 1 |
| 67 | 1 mentor | neg experience | neg experience | general exp | student | collab - student not easy to work with | 0 | 9 | 9 |

| line | Focus | Sub-Focus | Group 1 | Group 2 | Group 3 | Group2 | Ment Pos | Ment Neg | Total |
|---|---|---|---|---|---|---|---|---|---|
| 68 | 1 mentor | neg experience | neg experience | general exp | student | student tried to "game" system | 0 | 2 | 2 |
| 69 | 1 mentor | neg experience | neg experience | general exp | student | disappointed with student's progress | 1 | 5 | 6 |
| 70 | 1 mentor | pos experience | pos experience | general exp | fun | fun - unusual capstone | 1 | 0 | 1 |
| 71 | 1 mentor | pos experience | pos experience | general exp | fun | fun - to be a part of | 4 | 0 | 4 |
| 72 | 1 mentor | pos experience | pos experience | general exp | overall | general - good experience overall | 5 | 0 | 5 |
| 73 | 1 mentor | pos experience | pos experience | general exp | overall | general - excellent experience for both | 2 | 0 | 2 |
| 74 | 1 mentor | pos experience | pos experience | general exp | overall | general - positive despite challenges | 3 | 0 | 3 |
| 75 | 1 mentor | pos experience | pos experience | general exp | overall | extra attention from mentor fruitful | 2 | 0 | 2 |
| 76 | 1 mentor | pos experience | pos experience | general exp | overall | enjoyed seeing project develop | 10 | 0 | 10 |
| 77 | 1 mentor | pos experience | pos experience | general exp | student | enjoyed profitable conversations / exchange of ideas with student | 13 | 0 | 13 |
| 78 | 1 mentor | pos experience | pos experience | general exp | student | collab - great student to work with | 30 | 0 | 30 |
| 79 | 1 mentor | pos experience | pos experience | general exp | student | collab - pleasure to mentor student | 18 | 0 | 18 |
| 80 | 1 mentor | pos experience | pos experience | general exp | student | collab - liked working with colleague | 5 | 0 | 5 |
| 81 | 1 mentor | pos experience | pos experience | general exp | student | collab - became closer to student | 12 | 0 | 12 |
| 82 | 1 mentor | pos experience | pos experience | general exp | student | collab - student easy to work with | 12 | 0 | 12 |
| 83 | 1 mentor | pos experience | pos experience | general exp | student | collab - student comfortable working with mentor | 1 | 0 | 1 |
| 84 | 1 mentor | pos experience | pos experience | general exp | student | collab - mentor had previously been student's advisor | 3 | 0 | 3 |
| 85 | 1 mentor | pos experience | pos experience | general exp | student | collab - mentor has more respect for student after working together | 3 | 0 | 3 |
| 86 | 1 mentor | pos experience | pos experience | general exp | student | enjoyed seeing student develop | 42 | 0 | 42 |
| 87 | | | | **general exp Total** | | | **168** | **45** | **213** |
| 88 | 2 student | attribute | ability | ability | general | student quality - general | 1 | 0 | 1 |
| 89 | 2 student | attribute | ability | ability | general | best student worked with | 6 | 0 | 6 |
| 90 | 2 student | attribute | ability | ability | general | exceptional student | 15 | 0 | 15 |
| 91 | 2 student | attribute | ability | ability | general | intelligent student | 11 | 0 | 11 |
| 92 | 2 student | attribute | ability | ability | general | ideal student | 2 | 0 | 2 |
| 93 | 2 student | attribute | ability | ability | poor | could not perform at level necessary | 0 | 16 | 16 |
| 94 | 2 student | attribute | ability | ability | research | research skills - good | 1 | 0 | 1 |
| 95 | 2 student | attribute | ability | ability | writing | stong writing skills; neg - weak writing skills | 10 | 22 | 32 |
| 96 | | | | **ability Total** | | | **46** | **38** | **84** |
| 97 | 2 student | attribute | disposition | confidence | general | self-confidence - general | 15 | 4 | 19 |
| 98 | 2 student | attribute | disposition | confidence | abilities | over estimated own abilities | 0 | 4 | 4 |
| 99 | 2 student | attribute | disposition | confidence | academic | self-confidence lacking- academic - writing | 0 | 1 | 1 |
| 100 | 2 student | attribute | disposition | confidence | personal | self-confidence - lack conf to complete long-term project | 0 | 1 | 1 |
| 101 | 2 student | attribute | disposition | confidence | personal | lacked of self-confidence hampered project | 0 | 6 | 6 |
| 102 | | | | **confidence Total** | | | **15** | **16** | **31** |
| 103 | 2 student | attribute | disposition | motivation | general | motivation - general | 41 | 13 | 54 |
| 104 | 2 student | attribute | disposition | motivation | curiosity | had (didn't have) intellectual curiosity | 6 | 2 | 8 |
| 105 | 2 student | attribute | disposition | motivation | fieldwork | work ethic - dedication in field | 14 | 2 | 16 |
| 106 | 2 student | attribute | disposition | motivation | motivation | intellectual motivation, generally | 13 | 2 | 15 |
| 107 | 2 student | attribute | disposition | motivation | motivation | intellectual motivation, toward project | 50 | 20 | 70 |
| 108 | 2 student | attribute | disposition | motivation | work ethic | self-discipline / work ethic | 50 | 20 | 70 |
| 109 | | | | **motivation Total** | | | **174** | **59** | **233** |
| 110 | 2 student | attribute | disposition | personal | reflect | excelled at self reflection | 1 | 0 | 1 |
| 111 | 2 student | attribute | knowledge | personal | limitations | self-understanding - unable to see own weaknesses | 0 | 1 | 1 |
| 112 | | | | **personal Total** | | | **1** | **1** | **2** |
| 113 | 2 student | development | disposition | confidence | general | self-confidence - general | 2 | 0 | 2 |
| 114 | 2 student | development | disposition | confidence | academic | self-confidence - academic - ability to do independent research | 3 | 0 | 3 |
| 115 | | | | **confidence Total** | | | **5** | **0** | **5** |
| 116 | 2 student | development | disposition | motivations | project | development - participation increased | 1 | 0 | 1 |
| 117 | 2 student | development | disposition | motivations | project | development - interest grew | 4 | 0 | 4 |
| 118 | 2 student | development | disposition | motivations | responsible | learned how to be responsible / accountable | 2 | 0 | 2 |
| 119 | | | | **motivations Total** | | | **7** | **0** | **7** |
| 120 | 2 student | development | general | overall | overall | development - more than any other student | 1 | 0 | 1 |
| 121 | | | | **overall Total** | | | **1** | **0** | **1** |
| 122 | 2 student | development | knowledge | disciplinary | general | disciplinary knowledge - learned a lot; neg-had difficulties mastering | 4 | 2 | 6 |
| 123 | 2 student | development | knowledge | disciplinary | ethics | gained disciplinary knowledge, ethics | 2 | 0 | 2 |
| 124 | 2 student | development | knowledge | disciplinary | literature | gained disciplinary knowledge - literature | 4 | 0 | 4 |
| 125 | 2 student | development | knowledge | disciplinary | theory | gained disciplinary knowledge - theoretical foundation | 1 | 0 | 1 |
| 126 | | | | **disciplinary Total** | | | **11** | **2** | **13** |
| 127 | 2 student | development | knowledge | personal | accomplish | developed sense of accomplishment | 1 | 0 | 1 |
| 128 | 2 student | development | knowledge | personal | interests | self-understanding - of interests (career clarification) | 6 | 0 | 6 |
| 129 | 2 student | development | knowledge | personal | style | self-understanding - of learning style | 1 | 0 | 1 |
| 130 | | | | **personal Total** | | | **8** | **0** | **8** |
| 131 | 2 student | development | prof devel | profdevel | improve | development - intellectual growth | 19 | 0 | 19 |
| 132 | 2 student | development | prof devel | profdevel | schoolprep | preparation for grad school/professional school | 6 | 0 | 6 |
| 133 | | | | **profdevel Total** | | | **25** | **0** | **25** |
| 134 | 2 student | development | skills | communication | writing | writing - generally developed | 15 | 0 | 15 |
| 135 | | | | **communication Total** | | | **15** | **0** | **15** |
| 136 | 2 student | development | skills | critical thinking | analysis | development - analytical skills | 1 | 0 | 1 |
| 137 | 2 student | development | skills | critical thinking | analysis | CT - learned to refine / develop /clarify ideas | 3 | 3 | 6 |
| 138 | 2 student | development | skills | critical thinking | argument | CT - developed an original argument / project | 4 | 0 | 4 |

| line | Focus | Sub-Focus | Group 1 | Group 2 | Group 3 | Group2 | Ment Pos | Ment Neg | Total |
|---|---|---|---|---|---|---|---|---|---|
| 139 | 2 student | development | skills | critical thinking | general | development - CT skills | 3 | 0 | 3 |
| 140 | | | | **critical thinking Total** | | | **11** | **3** | **14** |
| 141 | 2 student | development | skills | research | methods | development - understanding of methods | 3 | 0 | 3 |
| 142 | | | | **research Total** | | | **3** | **0** | **3** |
| 143 | 2 student | development | skills | skills | prep | development - student with weak background | 2 | 5 | 7 |
| 144 | 2 student | development | skills | skills | projmgt | development - improved after slow start | 3 | 0 | 3 |
| 145 | 2 student | development | skills | skills | projmgt | development - improved after being pushed | 1 | 0 | 1 |
| 146 | 2 student | development | skills | skills | projmgt | development - improved time management - meeting deadlines | 1 | 0 | 1 |
| 147 | | | | **skills Total** | | | **7** | **5** | **12** |
| 148 | 2 student | development | skills | technical | clinical | development - clinical skills | 3 | 0 | 3 |
| 149 | | | | **technical Total** | | | **3** | **0** | **3** |
| 150 | 2 student | performance | disposition | motivations | project | motivation - toward multifaceted work | 1 | 0 | 1 |
| 151 | 2 student | performance | disposition | motivations | project | did well on ambitious project; neg - project too ambitious | 2 | 5 | 7 |
| 152 | 2 student | performance | disposition | motivations | research | motivation - toward research | 7 | 3 | 10 |
| 153 | | | | **motivations Total** | | | **10** | **8** | **18** |
| 154 | 2 student | performance | disposition | personal | maturity | showed maturity | 7 | 0 | 7 |
| 155 | 2 student | performance | disposition | personal | perseverance | perseverance | 5 | 0 | 5 |
| 156 | 2 student | performance | disposition | personal | tolerance | tolerance of obstacles, risk, failure, ambiguity | 2 | 2 | 4 |
| 157 | | | | **personal Total** | | | **14** | **2** | **16** |
| 158 | 2 student | performance | disposition | work ethic | research | work ethic - worked hard on research | 9 | 0 | 9 |
| 159 | 2 student | performance | disposition | work ethic | results | work ethic - led to success | 1 | 0 | 1 |
| 160 | 2 student | performance | disposition | work ethic | technique | work ethic - dedication to learning technique | 0 | 0 | 0 |
| 161 | 2 student | performance | disposition | work ethic | writing | work ethic - worked hard on writing | 3 | 0 | 3 |
| 162 | | | | **work ethic Total** | | | **13** | **0** | **13** |
| 163 | 2 student | performance | knowledge | underst | general | understanding - larger context - general | 3 | 4 | 7 |
| 164 | 2 student | performance | knowledge | underst | cultural | understanding - of others or other cultures | 0 | 1 | 1 |
| 165 | 2 student | performance | knowledge | underst | expectations | realized or surpassed expectations - understanding study implications | 4 | 0 | 4 |
| 166 | | | | **underst Total** | | | **7** | **5** | **12** |
| 167 | 2 student | performance | skills | collaboration | general | collaboration skills - general failure to work with mentor | 0 | 21 | 21 |
| 168 | 2 student | performance | skills | collaboration | advisor | collaboration skills - missed meetings with mentor | 0 | 23 | 23 |
| 169 | 2 student | performance | skills | collaboration | advisor | collaboration - met with mentor only toward end of capstone | 0 | 4 | 4 |
| 170 | 2 student | performance | skills | collaboration | advisor | collaboration skills - attending class | 0 | 3 | 3 |
| 171 | 2 student | performance | skills | collaboration | advisor | collaboration skills - responding to feedback | 25 | 35 | 60 |
| 172 | 2 student | performance | skills | collaboration | prep | collaboration skills - prepared for meetings | 5 | 0 | 5 |
| 173 | 2 student | performance | skills | collaboration | teamwork | collaboration skills - teamwork | 2 | 4 | 6 |
| 174 | | | | **collaboration Total** | | | **32** | **90** | **122** |
| 175 | 2 student | performance | skills | communication | oral | oral communication - presentation skills | 4 | 2 | 6 |
| 176 | 2 student | performance | skills | communication | writing | writing - thematic development | 0 | 1 | 1 |
| 177 | 2 student | performance | skills | communication | writing | writing - mechanics | 2 | 7 | 9 |
| 178 | 2 student | performance | skills | communication | writing | writing - grad-student level | 1 | 0 | 1 |
| 179 | 2 student | performance | skills | communication | writing | writing - cohesiveness | 0 | 8 | 8 |
| 180 | 2 student | performance | skills | communication | writing | writing - multiple drafts; pos-drafts improved; neg - failed to submit drafts | 6 | 14 | 20 |
| 181 | | | | **communication Total** | | | **13** | **32** | **45** |
| 182 | 2 student | performance | skills | critical thinking | general | CT - general | 3 | 5 | 8 |
| 183 | 2 student | performance | skills | critical thinking | analysis | CT - analysis skills | 5 | 4 | 9 |
| 184 | 2 student | performance | skills | critical thinking | apply | CT - applying principles / theory | 5 | 0 | 5 |
| 185 | 2 student | performance | skills | critical thinking | argument | CT - argumentation | 1 | 1 | 2 |
| 186 | 2 student | performance | skills | critical thinking | integrate | CT - integrating knowledge from other disciplines; neg - unable to | 13 | 1 | 14 |
| 187 | 2 student | performance | skills | critical thinking | integrate | CT - integrate theory and practice | 0 | 1 | 1 |
| 188 | 2 student | performance | skills | critical thinking | integrate | CT - synthesis | 3 | 0 | 3 |
| 189 | 2 student | performance | skills | critical thinking | manner | intellectual independence | 1 | 9 | 10 |
| 190 | 2 student | performance | skills | critical thinking | manner | CT - creative thinking | 5 | 1 | 6 |
| 191 | 2 student | performance | skills | critical thinking | manner | CT - complexity of thinking | 3 | 0 | 3 |
| 192 | 2 student | performance | skills | critical thinking | manner | CT - thinking at grad-student level | 3 | 0 | 3 |
| 193 | 2 student | performance | skills | critical thinking | manner | CT - comprehensive (scope) | 0 | 1 | 1 |
| 194 | | | | **critical thinking Total** | | | **42** | **23** | **65** |
| 195 | 2 student | performance | skills | project mgt. | general | project management - general | 0 | 2 | 2 |
| 196 | 2 student | performance | skills | project mgt. | expectations | realized or surpassed expectations | 3 | 0 | 3 |
| 197 | 2 student | performance | skills | project mgt. | organiz | project management - goal setting | 3 | 0 | 3 |
| 198 | 2 student | performance | skills | project mgt. | organiz | project management - pre project planning | 0 | 3 | 3 |
| 199 | 2 student | performance | skills | project mgt. | organiz | project management - planning skills | 1 | 1 | 2 |
| 200 | 2 student | performance | skills | project mgt. | organiz | project management - organization | 7 | 2 | 9 |
| 201 | 2 student | performance | skills | project mgt. | organiz | reached project goals | 6 | 0 | 6 |
| 202 | 2 student | performance | skills | project mgt. | organiz | project management - always made progress toward end goal | 1 | 0 | 1 |
| 203 | 2 student | performance | skills | project mgt. | organiz | project management - competing commitments | 0 | 3 | 3 |
| 204 | 2 student | performance | skills | project mgt. | own | project management - working independently | 42 | 13 | 55 |
| 205 | 2 student | performance | skills | project mgt. | own | project management - used own data | 1 | 0 | 1 |
| 206 | 2 student | performance | skills | project mgt. | own | project management - taking responsibility | 17 | 3 | 20 |

| line | Focus | Sub-Focus | Group 1 | Group 2 | Group 3 | Group2 | Ment Pos | Ment Neg | Total |
|---|---|---|---|---|---|---|---|---|---|
| 207 | 2 student | performance | skills | project mgt. | own | project management - see major project through from beginning to end | 1 | 2 | 3 |
| 208 | 2 student | performance | skills | project mgt. | own | project management - taking initiative | 4 | 2 | 6 |
| 209 | 2 student | performance | skills | project mgt. | timemgt | time management - general | 12 | 43 | 55 |
| 210 | 2 student | performance | skills | project mgt. | timemgt | time management - meeting deadlines | 11 | 15 | 26 |
| 211 | 2 student | performance | skills | project mgt. | timemgt | time management - started process late/ fell behind | 0 | 18 | 18 |
| 212 | 2 student | performance | skills | project mgt. | timemgt | time management - project not finished | 0 | 2 | 2 |
| 213 | 2 student | performance | skills | project mgt. | timemgt | time management - drafts | 0 | 4 | 4 |
| 214 | 2 student | performance | skills | project mgt. | troublsh | project management - troubleshooting - repeat experiments when necessary | 1 | 0 | 1 |
| 215 | 2 student | performance | skills | project mgt. | troublsh | project management - troubleshoot equipment difficulties | 3 | 0 | 3 |
| 216 | 2 student | performance | skills | project mgt. | troublsh | project management - troubleshoot experiment difficulties | 0 | 1 | 1 |
| 217 | 2 student | performance | skills | project mgt. | troublsh | project management - troubleshooting - overcame adversity | 4 | 0 | 4 |
| 218 | 2 student | performance | skills | project mgt. | troublsh | project management - troubleshooting - overcame adversity - changed topics | 2 | 1 | 3 |
| 219 | 2 student | performance | skills | project mgt. | troublsh | project management - troubleshooting - overcame adversity - worked good-naturedly | 3 | 0 | 3 |
| 220 | | | | **project mgt. Total** | | | **122** | **115** | **237** |
| 221 | 2 student | performance | skills | research | analysis | research - interpreting findings | 0 | 3 | 3 |
| 222 | 2 student | performance | skills | research | cond | research - conducting | 5 | 2 | 7 |
| 223 | 2 student | performance | skills | research | cond | research - conducting - data gathering | 4 | 4 | 8 |
| 224 | 2 student | performance | skills | research | cond | research methods - general | 2 | 0 | 2 |
| 225 | 2 student | performance | skills | research | cond | research - field work specific to discipline | 2 | 0 | 2 |
| 226 | 2 student | performance | skills | research | cond | research design - general | 0 | 2 | 2 |
| 227 | 2 student | performance | skills | research | lit review | literature review - analysis | 3 | 0 | 3 |
| 228 | 2 student | performance | skills | research | lit review | literature review - locating sources | 3 | 3 | 6 |
| 229 | 2 student | performance | skills | research | lit review | literature review - evaluating materials | 1 | 1 | 2 |
| 230 | 2 student | performance | skills | research | quant | quantitative skills - statistics | 0 | 1 | 1 |
| 231 | 2 student | performance | skills | research | research | understanding - research process; not understanding | 1 | 1 | 2 |
| 232 | | | | **research Total** | | | **21** | **17** | **38** |
| 233 | 2 student | performance | skills | technical | general | technical skills - general | 3 | 1 | 4 |
| 234 | 2 student | performance | skills | technical | disc | technical skills - specific to discipline | 0 | 1 | 1 |
| 235 | | | | **technical Total** | | | **3** | **2** | **5** |
| 236 | 2 student | preparation | other | prep | communication | pre-project - communication skills | 1 | 0 | 1 |
| 237 | 2 student | preparation | other | prep | CT | pre-project - CT skills | 1 | 0 | 1 |
| 238 | 2 student | preparation | other | prep | research | pre-project - research design skills | 0 | 3 | 3 |
| 239 | 2 student | preparation | other | prep | wellprep | pre-project - well prepared in general | 3 | 4 | 7 |
| 240 | 2 student | preparation | other | prep | wellprep | pre-project - well prepared - mentor able to teach at grad level | 1 | 0 | 1 |
| 241 | 2 student | preparation | other | prep | writing | pre-project - writing skills | 1 | 2 | 3 |
| 242 | | | | **prep Total** | | | **7** | **9** | **16** |
| 243 | 3 project | product | prof devel | prof devel | contacts | collaboration skills - made scholarly contacts | 2 | 0 | 2 |
| 244 | 3 project | product | prof devel | prof devel | conference | gave conference presentation | 5 | 0 | 5 |
| 245 | 3 project | product | prof devel | prof devel | paper | professional development - produced work that was or will be published (or is publishable) | 3 | 0 | 3 |
| 246 | 3 project | product | prof devel | prof devel | schoolprep | professional development - helped prepare for / led directly to graduate level position | 1 | 0 | 1 |
| 247 | | | | **prof devel Total** | | | **11** | **0** | **11** |
| 248 | 3 project | product | research | results | knowledge | research - resulted in successful findings | 1 | 0 | 1 |
| 249 | 3 project | product | research | results | thesis | writing - long work/research work, comprehensive thesis | 1 | 0 | 1 |
| 250 | 3 project | product | research | results | tool | technical skills - created assessment tool | 1 | 0 | 1 |
| 251 | | | | **results Total** | | | **3** | **0** | **3** |
| 252 | 3 project | quality | quality | quality | general | project - good quality (or not) | 23 | 13 | 36 |
| 253 | 3 project | quality | quality | quality | community | academics and community balanced in project | 1 | 0 | 1 |
| 254 | 3 project | quality | quality | quality | community | project benefits local community | 2 | 0 | 2 |
| 255 | 3 project | quality | quality | quality | expectations | surpassed mentor's expectations - interest | 5 | 1 | 6 |
| 256 | 3 project | quality | quality | quality | expectations | surpassed mentor's expectations (or underachieved) | 8 | 7 | 15 |
| 257 | 3 project | quality | quality | quality | research | research - good quality | 3 | 0 | 3 |
| 258 | 3 project | quality | quality | quality | research | research - original | 3 | 0 | 3 |
| 259 | 3 project | quality | quality | quality | research | interesting data /content | 3 | 0 | 3 |
| 260 | 3 project | quality | quality | quality | research | research - good topic | 13 | 0 | 13 |
| 261 | 3 project | quality | quality | quality | research | research - well-defined topic | 1 | 0 | 1 |
| 262 | 3 project | quality | quality | quality | research | research - good ideas | 3 | 0 | 3 |
| 263 | 3 project | quality | quality | quality | research | research - unique topic / took on project that had little prior research | 3 | 0 | 3 |
| 264 | 3 project | quality | quality | quality | research | research - project successful | 3 | 0 | 3 |
| 265 | 3 project | quality | quality | quality | research | research - well-conceived design | 1 | 0 | 1 |
| 266 | 3 project | quality | quality | quality | research | research - topic not unique | 0 | 3 | 3 |
| 267 | 3 project | quality | quality | quality | scope | project not ambitious enough | 0 | 4 | 4 |
| 268 | | | | **quality Total** | | | **72** | **28** | **100** |
| 269 | 4 None | No aspects | other | none | no aspects | none | 23 | 102 | 125 |
| 270 | | | | **none Total** | | | **23** | **102** | **125** |
| | | | | **Grand Total** | | | **1165** | **758** | **1923** |

**Table Mentor Q1 - 2: Summary Tally of Mentor Comments by Topic Groups**

**Please describe any notable positive or negative aspects of this capstone experience for you as the mentor.**

| line | Focus | Sub-Focus | Group 1 | Group 2 | Description | Positive | Negative | Total | % of Pos | % of Neg |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 1 mentor | cap structure | cap structure | **cap admin Total** | Capstone administration aspects: co-advising, support problems, needing to micromanage, not enough time to complete project, enjoyed working 1:1 with student | 29 | 107 | 136 | | |
| 2 | 1 mentor | cap structure | cap structure | **workload Total** | Workload issues: due to project outside area of expertise, other duties, number of projects mentoring; time required | 0 | 39 | 39 | | |
| 3 | | | | | *subtotal:* | *29* | *146* | *175* | *2.5%* | *19.3%* |
| 4 | 1 mentor | development | development | **knowledge Total** | Mentor gained knowledge: learned about area outside of specialty, learned about project area, learned things that will help with own research or future courses | 199 | 0 | 199 | | |
| 5 | 1 mentor | development | development | **mentoring skills Total** | Mentor gained advising skills | 38 | 10 | 48 | | |
| 6 | 1 mentor | development | development | **prof dev Total** | Mentor gained professionally: made scholarly contacts | 6 | 0 | 6 | | |
| 7 | | | | | *subtotal:* | *243* | *10* | *253* | *20.9%* | *1.3%* |
| 8 | 1 mentor | pos/neg experience | pos/neg experience | **general exp Total** | Mentors personal experience: enjoyed working with the student and project (or not) | 168 | 45 | 213 | | |
| 9 | | | | | *subtotal:* | *168* | *45* | *213* | *14.4%* | *5.9%* |
| 10 | | | | | ***Mentor Focus Subtotal:*** | ***440*** | ***201*** | ***641*** | *37.8%* | *26.5%* |
| 11 | 2 student | attribute | ability | **ability Total** | Student abilities: had general level of abilities needed for capstone; neg - lack of writing ability | 46 | 38 | 84 | | |
| 12 | 2 student | attribute | disposition | **confidence Total** | Student level of self-confidence helped or hindered project | 15 | 16 | 31 | | |
| 13 | 2 student | attribute | disposition | **motivation Total** | Student motivation and/or work ethic helped or hindered project | 174 | 59 | 233 | | |
| 14 | 2 student | attribute | knowledge | **personal Total** | Students ability to see own weaknesses helped or hindered project | 1 | 1 | 2 | | |
| 15 | | | | | *subtotal:* | *236* | *114* | *350* | *20.3%* | *15.0%* |
| 16 | 2 student | development | disposition | **confidence Total** | Student developed self-confidence during capstone | 5 | 0 | 5 | | |
| 17 | 2 student | development | disposition | **motivations Total** | Student motivation for research/project increased during capstone | 7 | 0 | 7 | | |
| 18 | 2 student | development | general | **overall Total** | Student developed greatly during capstone | 1 | 0 | 1 | | |
| 19 | 2 student | development | knowledge | **disciplinary Total** | Student gained disciplinary knowledge/understanding | 11 | 2 | 13 | | |
| 20 | 2 student | development | knowledge | **personal Total** | Student developed sense of accomplishment or understanding of own interests or abilities | 8 | 0 | 8 | | |
| 21 | 2 student | development | prof devel | **profdevel Total** | Student developed academically, better prepared for grad school | 25 | 0 | 25 | | |
| 22 | 2 student | development | skills | **communication Total** | Writing skills improved | 15 | 0 | 15 | | |
| 23 | 2 student | development | skills | **critical thinking Total** | Critical think skills developed - analysis, originality, clarity of ideas | 11 | 3 | 14 | | |
| 24 | 2 student | development | skills | **research Total** | Better understands research methods | 3 | 0 | 3 | | |
| 25 | 2 student | development | skills | **skills Total** | Gained in conducting project | 7 | 5 | 12 | | |
| 26 | 2 student | development | skills | **technical Total** | Developed clinical/technical skills | 3 | 0 | 3 | | |
| 27 | | | | | *subtotal:* | *96* | *10* | *106* | *8.2%* | *1.3%* |
| 28 | 2 student | performance | disposition | **motivations Total** | Demonstrated motivation toward research | 10 | 8 | 18 | | |
| 29 | 2 student | performance | disposition | **personal Total** | Demonstrated perseverance, maturity | 14 | 2 | 16 | | |
| 30 | 2 student | performance | disposition | **work ethic Total** | Worked hard | 13 | 0 | 13 | | |
| 31 | 2 student | performance | knowledge | **underst Total** | Saw larger context to project work (or not) | 7 | 5 | 12 | | |
| 32 | 2 student | performance | skills | **collaboration Total** | Worked well with mentor (or not): , using feedback, attending meetings | 32 | 90 | 122 | | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 33 | 2 student | performance | skills | **communication Total** | Demonstrated good writing, oral communication skills | 13 | 32 | 45 | | |
| 34 | 2 student | performance | skills | **critical thinking Total** | Demonstrated good critical thinking skills | 42 | 23 | 65 | | |
| 35 | 2 student | performance | skills | **project mgt. Total** | Demonstrated good project management skills: keeping pace, meeting deadlines, taking responsibility, overcoming difficulties | 122 | 115 | 237 | | |
| 36 | 2 student | performance | skills | **research Total** | Demonstrated good research skills | 21 | 17 | 38 | | |
| 37 | 2 student | performance | skills | **technical Total** | Demonstrated technical skills needed | 3 | 2 | 5 | | |
| 38 | | | | | *subtotal:* | *277* | *294* | *571* | *23.8%* | *38.8%* |
| 39 | 2 student | preparation | other | **prep Total** | Preparation was good for the capstone | 7 | 9 | 16 | | |
| 40 | | | | | *subtotal:* | *7* | *9* | *16* | *0.6%* | *1.2%* |
| 41 | | | | | ***Student Focus Subtotal:*** | ***616*** | ***427*** | ***1043*** | *52.9%* | *56.3%* |
| 42 | 3 project | product | prof devel | **prof devel Total** | Capstone produced a product useful for professional advancement | 11 | 0 | 11 | | |
| 43 | 3 project | product | research | **results Total** | Capstone produced a product that was noted | 3 | 0 | 3 | | |
| 44 | 3 project | quality | quality | **quality Total** | Project was praiseworthy (or not): good quality, surpassed expectations, had good ideas, was original or unique | 72 | 28 | 100 | | |
| 45 | | | | | ***Project Focus Subtotal:*** | ***86*** | ***28*** | ***114*** | *7.4%* | *3.7%* |
| 46 | 4 None | No aspects | other | **none Total** | none - no aspects | 23 | 102 | 125 | | |
| 47 | | | | | | | | | | |
| 48 | | | | | ***GRAND TOTAL*** | ***1165*** | ***758*** | ***1923*** | *100.0%* | *100.0%* |

**Table Mentor Q2 - 1: Detailed Tally of Counts of Mentor's Comments by Topic**
**"Please note any particularly significant benefits you think the student gained from this capstone."**

H=>3.50
M= 3.00 to 3.49
L=<3.00

| | | | | | | All | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | BY GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | Group 1 | Group 2 | Group 3 | ID | Description | count | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | H | M | L | M | F |
| 1 | 1 skills | collaboration | general | 99 | collaboration skills - general | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 2 | 1 skills | collaboration | advisor | 102 | collaboration skills - following directions | 3 | 0.2% | 2 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 2 | 2 | 1 |
| 3 | 1 skills | collaboration | advisor | 101 | collaboration skills - responding to feedback | 11 | 0.9% | 2 | 6 | 1 | 0 | 2 | 4 | 1 | 2 | 4 | 1 | 5 | 5 | 4 | 7 |
| 4 | 1 skills | collaboration | outside | 104 | collaboration skills - getting help from others | 2 | 0.2% | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| 5 | 1 skills | collaboration | teamwork | 100 | collaboration skills - teamwork | 8 | 0.6% | 3 | 3 | 2 | 0 | 0 | 3 | 3 | 1 | 1 | 2 | 2 | 4 | 4 | 4 |
| 6 | | collaboration Total | | | Working with the mentor and others: teamwork, following directions, responding to feedback, getting help | 25 | 2.0% | 8 | 9 | 6 | 0 | 2 | 11 | 6 | 3 | 5 | 4 | 10 | 11 | 10 | 15 |
| 7 | 1 skills | communication | general | 29 | communication skills - general | 7 | 0.6% | 3 | 2 | 2 | 0 | 0 | 3 | 1 | 0 | 3 | 2 | 3 | 2 | 4 | 3 |
| 8 | 1 skills | communication | oral | 51 | oral communication - presentation skills | 11 | 0.9% | 7 | 3 | 1 | 0 | 0 | 5 | 3 | 0 | 3 | 3 | 3 | 5 | 2 | 9 |
| 9 | 1 skills | communication | oral | 53 | oral communication - present to diverse audiences | 2 | 0.2% | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 10 | 1 skills | communication | oral | 50 | oral communication - general | 7 | 0.6% | 2 | 3 | 2 | 0 | 0 | 3 | 3 | 0 | 1 | 3 | 4 | 0 | 3 | 4 |
| 11 | 1 skills | communication | oral | 52 | oral communication - present difficult concepts | 2 | 0.2% | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 0 | 2 |
| 12 | 1 skills | communication | writing | 30 | writing - general | 63 | 5.0% | 14 | 22 | 24 | 2 | 1 | 37 | 5 | 11 | 10 | 24 | 22 | 17 | 24 | 39 |
| 13 | 1 skills | communication | writing | 34 | writing - multiple drafts | 10 | 0.8% | 1 | 7 | 1 | 0 | 1 | 1 | 0 | 6 | 3 | 1 | 7 | 2 | 4 | 6 |
| 14 | 1 skills | communication | writing | 36 | writing - long work/research work | 9 | 0.7% | 2 | 3 | 3 | 0 | 1 | 2 | 1 | 2 | 4 | 0 | 5 | 4 | 3 | 6 |
| 15 | 1 skills | communication | writing | 31 | writing - clarity | 5 | 0.4% | 3 | 0 | 2 | 0 | 0 | 3 | 0 | 0 | 2 | 0 | 2 | 3 | 1 | 4 |
| 16 | 1 skills | communication | writing | 37 | writing - foreign language skills | 3 | 0.2% | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 3 |
| 17 | 1 skills | communication | writing | 32 | writing - new approaches | 3 | 0.2% | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 1 |
| 18 | 1 skills | communication | writing | 35 | writing - present arguments | 2 | 0.2% | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 2 |
| 19 | 1 skills | communication | writing | 49 | writing - style | 6 | 0.5% | 1 | 0 | 5 | 0 | 0 | 3 | 2 | 0 | 1 | 1 | 3 | 2 | 3 | 3 |
| 20 | 1 skills | communication | writing | 40 | writing - being concise | 2 | 0.2% | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 21 | 1 skills | communication | writing | 39 | writing - developed own voice | 5 | 0.4% | 0 | 1 | 3 | 0 | 1 | 3 | 0 | 0 | 2 | 0 | 3 | 2 | 2 | 3 |
| 22 | 1 skills | communication | writing | 38 | writing - organization | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 23 | | communication Total | | | Written and oral communication skills | 138 | 10.9% | 37 | 43 | 50 | 2 | 6 | 68 | 15 | 23 | 32 | 37 | 58 | 43 | 49 | 89 |
| 24 | 1 skills | critical thniking | general | 75 | CT - general | 22 | 1.7% | 3 | 15 | 4 | 0 | 0 | 13 | 1 | 3 | 5 | 2 | 11 | 9 | 7 | 15 |
| 25 | 1 skills | critical thniking | analysis | 76 | CT - analysis skills | 15 | 1.2% | 0 | 9 | 5 | 0 | 1 | 8 | 1 | 3 | 3 | 3 | 6 | 6 | 3 | 12 |
| 26 | 1 skills | critical thniking | analysis | 92 | CT - learned to refine / develop /clarify ideas | 11 | 0.9% | 3 | 4 | 3 | 0 | 0 | 4 | 0 | 3 | 3 | 4 | 5 | 1 | 5 | 5 |
| 27 | 1 skills | critical thniking | analysis | 85 | CT - organize ideas | 11 | 0.9% | 0 | 2 | 9 | 0 | 0 | 7 | 0 | 3 | 1 | 2 | 6 | 3 | 2 | 9 |
| 28 | 1 skills | critical thniking | analysis | 91 | CT - learned how to grapple with difficult ideas | 3 | 0.2% | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 2 | 1 | 1 | 2 |
| 29 | 1 skills | critical thniking | analysis | 78 | CT - problem solving | 2 | 0.2% | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 |
| 30 | 1 skills | critical thniking | argument | 90 | CT - developed an original argument / project | 16 | 1.3% | 1 | 6 | 7 | 1 | 1 | 4 | 4 | 3 | 5 | 2 | 5 | 9 | 5 | 11 |
| 31 | 1 skills | critical thniking | argument | 96 | CT - addressing opposing views/information | 4 | 0.3% | 0 | 1 | 3 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 3 | 2 | 2 |
| 32 | 1 skills | critical thniking | argument | 97 | CT - argumentation | 4 | 0.3% | 1 | 2 | 1 | 0 | 0 | 1 | 0 | 1 | 2 | 1 | 2 | 1 | 1 | 3 |
| 33 | 1 skills | critical thniking | integrate | 83 | CT - integrating knowledge from other disciplines | 28 | 2.2% | 7 | 10 | 6 | 1 | 4 | 4 | 6 | 7 | 11 | 1 | 9 | 18 | 11 | 17 |
| 34 | 1 skills | critical thniking | integrate | 86 | CT - synthesis | 9 | 0.7% | 1 | 2 | 4 | 0 | 2 | 4 | 1 | 2 | 2 | 1 | 3 | 5 | 2 | 7 |
| 35 | 1 skills | critical thniking | integrate | 84 | CT - integrate theory and practice | 10 | 0.8% | 1 | 6 | 1 | 0 | 2 | 3 | 0 | 1 | 6 | 2 | 4 | 4 | 4 | 6 |
| 36 | 1 skills | critical thniking | manner | 87 | CT - open-mindedness / flexible thinking | 6 | 0.5% | 2 | 2 | 1 | 0 | 1 | 1 | 2 | 1 | 2 | 0 | 1 | 5 | 1 | 5 |
| 37 | 1 skills | critical thniking | manner | 88 | CT - complexity of thinking | 8 | 0.6% | 1 | 3 | 4 | 0 | 0 | 4 | 1 | 1 | 2 | 1 | 3 | 4 | 3 | 5 |
| 38 | 1 skills | critical thniking | manner | 129 | CT - intellectual independence | 9 | 0.7% | 5 | 2 | 1 | 0 | 1 | 3 | 1 | 0 | 5 | 2 | 4 | 3 | 4 | 5 |
| 39 | 1 skills | critical thniking | manner | 81 | CT - creative thinking | 2 | 0.2% | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 |
| 40 | 1 skills | critical thniking | manner | 93 | CT - thinking appropriate to discipline | 2 | 0.2% | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 41 | 1 skills | critical thniking | manner | 89 | CT - systematically thinking | 2 | 0.2% | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 |
| 42 | 1 skills | critical thniking | manner | 82 | CT - thinking like a researcher | 2 | 0.2% | 0 | 0 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| 43 | | critical thniking Total | | | Critical thinking skills: analysis, synthesis, problem solving, integrating knowledge from disciplines, open mindedness, developing ideas | 166 | 13.1% | 26 | 68 | 54 | 3 | 14 | 63 | 21 | 31 | 50 | 23 | 67 | 75 | 54 | 111 |
| 44 | 1 skills | project mgt. | general | 56 | project management - general | 8 | 0.6% | 1 | 3 | 0 | 4 | 0 | 2 | 3 | 2 | 1 | 2 | 3 | 3 | 3 | 5 |
| 45 | 1 skills | project mgt. | ambitious | 183 | took on ambitious project | 2 | 0.2% | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 1 |
| 46 | 1 skills | project mgt. | evolved | 184 | project evolved | 3 | 0.2% | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 3 |
| 47 | 1 skills | project mgt. | expectations | 182 | realized or surpassed expectations | 2 | 0.2% | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 2 |
| 48 | 1 skills | project mgt. | funding | 180 | obtained funding for project | 2 | 0.2% | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 1 |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | count | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | H | M | L | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49 | 1 skills | project mgt. | organiz | 70 | project management - organization | 11 | 0.9% | 2 | 4 | 4 | 0 | 1 | 7 | 0 | 1 | 3 | 5 | 4 | 2 | 6 | 5 |
| 50 | 1 skills | project mgt. | organiz | 74 | project management - pre project planning | 3 | 0.2% | 0 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 2 | 2 | 1 |
| 51 | 1 skills | project mgt. | organiz | 73 | project management - focus / reign in large project | 4 | 0.3% | 1 | 1 | 2 | 0 | 0 | 4 | 0 | 0 | 0 | 1 | 2 | 1 | 3 | 1 |
| 52 | 1 skills | project mgt. | organiz | 69 | project management - planning skills | 4 | 0.3% | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 4 |
| 53 | 1 skills | project mgt. | organiz | 72 | project management - goal setting | 3 | 0.2% | 1 | 1 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 2 |
| 54 | 1 skills | project mgt. | own | 68 | project management - see major project through from beginning to end | 57 | 4.5% | 14 | 16 | 16 | 1 | 10 | 22 | 8 | 5 | 22 | 19 | 17 | 21 | 22 | 35 |
| 55 | 1 skills | project mgt. | own | 59 | project management - taking responsibility | 11 | 0.9% | 3 | 2 | 5 | 0 | 1 | 6 | 1 | 0 | 4 | 2 | 1 | 8 | 3 | 8 |
| 56 | 1 skills | project mgt. | own | 57 | project management - working independently | 26 | 2.0% | 9 | 12 | 1 | 3 | 1 | 8 | 5 | 1 | 12 | 9 | 10 | 7 | 12 | 14 |
| 57 | 1 skills | project mgt. | own | 58 | project management - used own data | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 58 | 1 skills | project mgt. | timeman | 60 | time management - general | 30 | 2.4% | 13 | 8 | 4 | 3 | 2 | 10 | 6 | 3 | 11 | 12 | 7 | 11 | 13 | 17 |
| 59 | 1 skills | project mgt. | troublsh | 62 | project management - troubleshooting | 11 | 0.9% | 4 | 3 | 1 | 0 | 3 | 2 | 1 | 3 | 5 | 1 | 2 | 8 | 3 | 8 |
| 60 | 1 skills | project mgt. | troublsh | 65 | project management - troubleshoot experiment difficulties | 7 | 0.6% | 4 | 1 | 0 | 0 | 2 | 3 | 0 | 0 | 4 | 2 | 1 | 4 | 2 | 5 |
| 61 | 1 skills | project mgt. | troublsh | 63 | project management - troubleshooting - repeat experiments when necessary | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 2 |
| 62 | 1 skills | project mgt. | troublsh | 67 | project management - troubleshoot difficulties in foreign country | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 63 | 1 skills | project mgt. | troublsh | 64 | project management - troubleshoot equipment difficulties | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 64 | 1 skills | project mgt. | troublsh | 66 | project management - troubleshooting - overcame adversity | 6 | 0.5% | 5 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 2 | 3 | 1 | 3 | 3 |
| 65 | | project mgt. Total | | | Managing a large project: seeing it through, persisting, managing time, planning, organizing, problem solving, working independently | 196 | 15.4% | 64 | 62 | 39 | 11 | 20 | 85 | 25 | 18 | 68 | 60 | 54 | 82 | 76 | 120 |
| 66 | 1 skills | research | general | 1 | research skills - general | 25 | 2.0% | 5 | 16 | 2 | 0 | 2 | 7 | 3 | 4 | 11 | 3 | 13 | 9 | 12 | 13 |
| 67 | 1 skills | research | analysis | 25 | research - interpreting findings | 6 | 0.5% | 2 | 3 | 1 | 0 | 0 | 1 | 1 | 4 | 0 | 0 | 4 | 2 | 0 | 6 |
| 68 | 1 skills | research | analysis | 26 | research - problem-solve unanticipated findings | 4 | 0.3% | 2 | 2 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 2 | 1 | 2 | 2 |
| 69 | 1 skills | research | analysis | 27 | research - data analysis | 4 | 0.3% | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 2 | 1 | 0 | 2 | 2 | 0 | 4 |
| 70 | 1 skills | research | comp | 5 | computer skills - general | 9 | 0.7% | 5 | 2 | 2 | 0 | 0 | 3 | 1 | 1 | 4 | 4 | 3 | 2 | 3 | 6 |
| 71 | 1 skills | research | comp | 7 | computer skills - web page setup | 2 | 0.2% | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 |
| 72 | 1 skills | research | cond | 13 | research design - general | 9 | 0.7% | 1 | 6 | 1 | 1 | 0 | 2 | 1 | 2 | 4 | 2 | 2 | 5 | 5 | 4 |
| 73 | 1 skills | research | cond | 23 | research - field work specific to discipline | 8 | 0.6% | 1 | 5 | 2 | 0 | 0 | 6 | 0 | 2 | 0 | 1 | 5 | 2 | 4 | 4 |
| 74 | 1 skills | research | cond | 4 | research - conducting - data gathering | 6 | 0.5% | 0 | 5 | 0 | 1 | 0 | 0 | 3 | 3 | 0 | 0 | 4 | 2 | 1 | 5 |
| 75 | 1 skills | research | cond | 3 | research - conducting - lab skills | 10 | 0.8% | 9 | 1 | 0 | 0 | 0 | 5 | 1 | 2 | 2 | 4 | 5 | 1 | 3 | 7 |
| 76 | 1 skills | research | cond | 2 | research - conducting | 10 | 0.8% | 5 | 3 | 1 | 1 | 0 | 5 | 3 | 0 | 2 | 1 | 7 | 2 | 6 | 4 |
| 77 | 1 skills | research | cond | 28 | research methods - general | 2 | 0.2% | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 0 |
| 78 | 1 skills | research | litreview | 19 | literature review - locating sources | 6 | 0.5% | 3 | 2 | 1 | 0 | 0 | 4 | 0 | 0 | 2 | 2 | 3 | 1 | 4 | 2 |
| 79 | 1 skills | research | litreview | 18 | literature review - analysis | 4 | 0.3% | 0 | 2 | 2 | 0 | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 3 | 2 | 2 |
| 80 | 1 skills | research | litreview | 20 | literature review - evaluating materials | 6 | 0.5% | 2 | 0 | 3 | 0 | 1 | 3 | 0 | 1 | 2 | 3 | 1 | 2 | 1 | 5 |
| 81 | 1 skills | research | litreview | 17 | literature review - general | 6 | 0.5% | 2 | 3 | 1 | 0 | 0 | 4 | 0 | 0 | 2 | 2 | 2 | 2 | 1 | 5 |
| 82 | 1 skills | research | presenting | 24 | research - presenting findings | 7 | 0.6% | 1 | 3 | 2 | 1 | 0 | 1 | 2 | 2 | 2 | 0 | 5 | 2 | 0 | 7 |
| 83 | 1 skills | research | quant | 9 | quantitative skills - general | 3 | 0.2% | 2 | 1 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 2 |
| 84 | 1 skills | research | quant | 10 | quantitative skills - analysis | 3 | 0.2% | 0 | 3 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 1 | 2 | 1 |
| 85 | | research Total | | | Research skills: literature reviews, research design, technical lab and data gathering skills, field work, data analysis | 130 | 10.2% | 41 | 60 | 21 | 5 | 3 | 54 | 15 | 26 | 35 | 26 | 63 | 41 | 51 | 79 |
| 86 | 1 skills | technical | general | 106 | technical skills - general | 7 | 0.6% | 4 | 2 | 1 | 0 | 0 | 3 | 1 | 1 | 2 | 4 | 0 | 3 | 3 | 4 |
| 87 | 1 skills | technical | applied | 109 | technical skills - real-world application | 17 | 1.3% | 6 | 5 | 5 | 1 | 0 | 5 | 2 | 5 | 5 | 3 | 8 | 6 | 7 | 10 |
| 88 | 1 skills | technical | disc | 107 | technical skills - specific to discipline | 16 | 1.3% | 6 | 5 | 4 | 0 | 1 | 4 | 1 | 6 | 5 | 5 | 5 | 6 | 7 | 9 |
| 89 | 1 skills | technical | otherdisc | 108 | technical skills - in other fields | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 90 | | technical Total | | | Technical skills: specific to a discipline or real world application | 41 | 3.2% | 17 | 12 | 10 | 1 | 1 | 13 | 4 | 12 | 12 | 13 | 13 | 15 | 17 | 24 |
| 91 | 2 knowledge | broad picture | context | 139 | understanding - larger context - personal experience | 5 | 0.4% | 0 | 3 | 2 | 0 | 0 | 3 | 0 | 1 | 1 | 1 | 2 | 2 | 0 | 5 |
| 92 | 2 knowledge | broad picture | context | 140 | understanding - larger context - research | 7 | 0.6% | 4 | 3 | 0 | 0 | 0 | 5 | 0 | 0 | 2 | 2 | 3 | 2 | 3 | 4 |
| 93 | 2 knowledge | broad picture | cultural | 148 | understanding - cultural experience in another country | 5 | 0.4% | 0 | 3 | 2 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 3 | 2 | 2 | 3 |
| 94 | 2 knowledge | broad picture | relationships | 141 | understanding - personal relationships | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 95 | 2 knowledge | broad picture | research | 127 | understanding - research process | 15 | 1.2% | 8 | 3 | 2 | 1 | 1 | 6 | 5 | 2 | 2 | 2 | 8 | 5 | 6 | 9 |
| 96 | 2 knowledge | broad picture | research | 126 | understanding - how research in the field applies to specific research questions | 2 | 0.2% | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 1 | 1 |
| 97 | 2 knowledge | broad picture | writing | 128 | understanding - writing process | 3 | 0.2% | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 1 | 1 | 2 |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | count | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | H | M | L | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 98 | | broad picture Total | | | Understanding their discipline or research in a broader context or having a broadening personal experience | 38 | 3.0% | 12 | 14 | 10 | 1 | 1 | 19 | 7 | 5 | 7 | 7 | 19 | 12 | 13 | 25 |
| 99 | 2 knowledge | disciplinary | general | 118 | disciplinary knowledge - general | 26 | 2.0% | 5 | 8 | 11 | 1 | 1 | 6 | 4 | 6 | 10 | 4 | 8 | 14 | 11 | 15 |
| 100 | 2 knowledge | disciplinary | ethics | 122 | disciplinary knowledge, ethics | 2 | 0.2% | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 0 |
| 101 | 2 knowledge | disciplinary | expertise | 119 | disciplinary knowledge - expertise | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 102 | 2 knowledge | disciplinary | practice | 120 | disciplinary knowledge - ways of practice | 2 | 0.2% | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 2 | 0 |
| 103 | 2 knowledge | disciplinary | theory | 124 | disciplinary knowledge - theoretical foundation | 5 | 0.4% | 1 | 1 | 3 | 0 | 0 | 1 | 2 | 1 | 1 | 1 | 1 | 3 | 3 | 2 |
| 104 | 2 knowledge | disciplinary | thinking | 121 | disciplinary knowledge - ways of thinking | 2 | 0.2% | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 0 |
| 105 | | disciplinary Total | | | Gaining disciplinary knowledge in a particular area or relating to disciplinary theory or ethics | 38 | 3.0% | 8 | 9 | 19 | 1 | 1 | 12 | 6 | 7 | 13 | 9 | 10 | 19 | 21 | 17 |
| 106 | 2 knowledge | personal | general | 110 | self-understanding - general | 14 | 1.1% | 5 | 3 | 6 | 0 | 0 | 6 | 5 | 1 | 2 | 5 | 4 | 5 | 3 | 11 |
| 107 | 2 knowledge | personal | abilities | 111 | self-understanding - of own abilities | 19 | 1.5% | 6 | 5 | 6 | 0 | 2 | 7 | 1 | 0 | 11 | 8 | 4 | 7 | 8 | 11 |
| 108 | 2 knowledge | personal | interests | 115 | self-understanding - of interests (career clarification) | 34 | 2.7% | 11 | 10 | 10 | 0 | 3 | 11 | 6 | 3 | 14 | 5 | 15 | 14 | 10 | 24 |
| 109 | 2 knowledge | personal | limitations | 112 | self-understanding - of own limitations | 19 | 1.5% | 5 | 7 | 4 | 0 | 3 | 5 | 0 | 3 | 11 | 6 | 9 | 4 | 14 | 5 |
| 110 | 2 knowledge | personal | poor | 113 | self-understanding - of lack of quality in performance - general | 15 | 1.2% | 5 | 5 | 3 | 1 | 1 | 2 | 3 | 3 | 7 | 6 | 5 | 4 | 10 | 5 |
| 111 | 2 knowledge | personal | selfcrit | 116 | self-understanding - self-criticism / self-evaluation | 6 | 0.5% | 2 | 1 | 2 | 1 | 0 | 3 | 1 | 1 | 1 | 2 | 3 | 1 | 3 | 3 |
| 112 | 2 knowledge | personal | style | 117 | self-understanding - of learning style | 3 | 0.2% | 2 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 2 | 1 |
| 113 | | personal Total | | | Gaining self-understanding of abilities, limitations, interests, and performance | 110 | 8.7% | 36 | 31 | 32 | 2 | 9 | 34 | 18 | 11 | 47 | 33 | 42 | 35 | 50 | 60 |
| 114 | 2 knowledge | value | argument | 133 | learned importance of substantiating opinions | 3 | 0.2% | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 1 | 1 | 1 | 2 |
| 115 | 2 knowledge | value | creatproc | 132 | learned importance of creative process | 4 | 0.3% | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 0 | 3 | 0 | 1 | 3 | 1 | 3 |
| 116 | 2 knowledge | value | experdesign | 131 | learned importance of experimental design | 3 | 0.2% | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 2 | 1 | 1 | 2 |
| 117 | 2 knowledge | value | hardwork | 135 | learned importance of hard work | 14 | 1.1% | 3 | 3 | 5 | 0 | 3 | 4 | 0 | 0 | 10 | 7 | 3 | 4 | 9 | 5 |
| 118 | 2 knowledge | value | modify | 134 | learned importance of changing directions | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| 119 | 2 knowledge | value | planning | 137 | learned importance of planning | 6 | 0.5% | 2 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 3 | 1 | 2 | 3 | 2 | 4 |
| 120 | 2 knowledge | value | resquest | 136 | learned importance of clearly defined research question | 2 | 0.2% | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 2 |
| 121 | | value Total | | | Gaining an awareness of the importance of various practices relating to research: planning, experimental design, hard work, flexibility | 33 | 2.6% | 6 | 11 | 11 | 0 | 5 | 8 | 1 | 4 | 20 | 10 | 11 | 12 | 15 | 18 |
| 122 | 3 disposition | behavior | maturity | 151 | gained maturity | 3 | 0.2% | 2 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 1 | 2 | 1 |
| 123 | 3 disposition | behavior | patience | 155 | learned patience necessary for research | 6 | 0.5% | 2 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 5 | 0 | 2 | 4 | 6 | 0 |
| 124 | 3 disposition | behavior | perseverance | 166 | perseverance | 12 | 0.9% | 7 | 2 | 3 | 0 | 0 | 6 | 1 | 2 | 3 | 3 | 6 | 3 | 3 | 9 |
| 125 | 3 disposition | behavior | responsible | 167 | learned how to be responsible / accountable | 5 | 0.4% | 4 | 1 | 0 | 0 | 0 | 1 | 1 | 2 | 1 | 3 | 1 | 1 | 3 | 2 |
| 126 | 3 disposition | behavior | workethic | 149 | self-discipline / work ethic | 12 | 0.9% | 3 | 2 | 7 | 0 | 0 | 6 | 2 | 1 | 3 | 3 | 4 | 5 | 9 | 3 |
| 127 | | behavior Total | | | Developed inclination toward useful scholarly behaviors: patience, perseverance, responsibility, maturity | 38 | 3.0% | 18 | 6 | 11 | 0 | 3 | 17 | 4 | 5 | 12 | 11 | 13 | 14 | 23 | 15 |
| 128 | 3 disposition | confidence | general | 156 | self-confidence - general | 82 | 6.5% | 22 | 30 | 26 | 1 | 3 | 45 | 16 | 2 | 19 | 22 | 29 | 31 | 24 | 58 |
| 129 | 3 disposition | confidence | academic | 157 | self-confidence - academic - general | 31 | 2.4% | 11 | 9 | 8 | 0 | 3 | 9 | 5 | 4 | 13 | 11 | 11 | 9 | 10 | 21 |
| 130 | 3 disposition | confidence | academic | 158 | self-confidence - academic - ability to do independent research | 13 | 1.0% | 4 | 5 | 3 | 1 | 0 | 5 | 7 | 1 | 0 | 3 | 3 | 7 | 5 | 8 |
| 131 | 3 disposition | confidence | academic | 159 | self-confidence - academic - writing | 4 | 0.3% | 2 | 0 | 2 | 0 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 3 | 1 | 3 |
| 132 | 3 disposition | confidence | academic | 160 | self-confidence - academic - oral presentation ability | 1 | 0.1% | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 133 | 3 disposition | confidence | personal | 164 | self-confidence - personal - complete long-term project | 18 | 1.4% | 5 | 7 | 6 | 0 | 0 | 8 | 3 | 0 | 7 | 6 | 3 | 9 | 3 | 15 |
| 134 | 3 disposition | confidence | personal | 161 | self-confidence - personal - general | 4 | 0.3% | 2 | 1 | 1 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 1 | 3 | 1 | 3 |
| 135 | 3 disposition | confidence | personal | 165 | self-confidence - personal - creative abilities | 4 | 0.3% | 1 | 1 | 2 | 0 | 0 | 3 | 0 | 0 | 1 | 1 | 2 | 1 | 1 | 3 |
| 136 | 3 disposition | confidence | personal | 163 | self-confidence - personal - reaching goals | 3 | 0.2% | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 2 | 2 | 1 |
| 137 | 3 disposition | confidence | personal | 162 | self-confidence - personal - self-discipline | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 138 | | confidence Total | | | Gained self-confidence in personal or academic abilities: ability to complete a major project, do research, writing ability | 161 | 12.7% | 48 | 54 | 51 | 2 | 6 | 77 | 34 | 8 | 42 | 45 | 50 | 66 | 48 | 113 |
| 139 | 3 disposition | motivations | collab | 146 | motivation - toward collaboration on project | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 140 | 3 disposition | motivations | critical thinking | 144 | motivation - toward critical thinking | 2 | 0.2% | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 |
| 141 | 3 disposition | motivations | project | 147 | motivation - toward project | 28 | 2.2% | 4 | 9 | 12 | 2 | 1 | 9 | 3 | 7 | 9 | 8 | 12 | 8 | 11 | 17 |
| 142 | 3 disposition | motivations | research | 143 | motivation - toward research | 16 | 1.3% | 7 | 6 | 3 | 0 | 0 | 6 | 0 | 1 | 9 | 3 | 10 | 3 | 6 | 10 |
| 143 | 3 disposition | motivations | writing | 145 | motivation - toward writing | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 144 | | motivations Total | | | Developed interest in the topic of the project or toward research, writing or critical thinking | 48 | 3.8% | 13 | 15 | 17 | 2 | 1 | 17 | 4 | 9 | 18 | 12 | 22 | 14 | 18 | 30 |

| Line | Group 1 | Group 2 | Group 3 | ID | Description | count | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | H | M | L | M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 145 | 3 disposition | personal | accomplish | 150 | developed sense of accomplishment | 17 | 1.3% | 3 | 7 | 6 | 0 | 1 | 4 | 3 | 4 | 6 | 7 | 6 | 4 | 5 | 12 |
| 146 | 3 disposition | personal | reflect | 168 | self reflection | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 147 | 3 disposition | personal | tolerance | 154 | tolerance of obstacles, risk, failure, ambiguity | 6 | 0.5% | 2 | 2 | 2 | 0 | 0 | 3 | 1 | 2 | 0 | 0 | 3 | 3 | 2 | 4 |
| 148 | | personal Total | | | Gaining self-understanding of abilities, limitations, interests, and performance | 24 | 1.9% | 5 | 9 | 9 | 0 | 1 | 8 | 4 | 6 | 6 | 8 | 9 | 7 | 8 | 16 |
| 149 | 4 prof devel | profdevel | general | 169 | professional development - general | 17 | 1.3% | 3 | 6 | 6 | 0 | 2 | 5 | 5 | 5 | 2 | 0 | 4 | 13 | 5 | 12 |
| 150 | 4 prof devel | profdevel | business | 174 | professional development - created sustainable business | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 |
| 151 | 4 prof devel | profdevel | conference | 170 | professional development - attended professional conference | 8 | 0.6% | 2 | 3 | 3 | 0 | 0 | 4 | 0 | 0 | 4 | 3 | 1 | 4 | 1 | 7 |
| 152 | 4 prof devel | profdevel | improve | 190 | professional development - mentor able to give better reference | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 153 | 4 prof devel | profdevel | internship | 171 | professional development - gained supervised internship hours | 2 | 0.2% | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 2 |
| 154 | 4 prof devel | profdevel | jobprep | 175 | professional development - helped prepare for / led directly to job | 13 | 1.0% | 2 | 6 | 5 | 0 | 0 | 7 | 0 | 3 | 3 | 1 | 5 | 7 | 3 | 10 |
| 155 | 4 prof devel | profdevel | portfolio | 176 | professional development - provided professional portfolio | 1 | 0.1% | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 156 | 4 prof devel | profdevel | postproj | 178 | professional development - learned ways of developing project post-graduation | 1 | 0.1% | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 157 | 4 prof devel | profdevel | publishable | 173 | professional development - produced work that was or will be published (or is publishable) | 6 | 0.5% | 5 | 1 | 0 | 0 | 0 | 3 | 1 | 1 | 1 | 0 | 0 | 6 | 2 | 4 |
| 158 | 4 prof devel | profdevel | recognition | 177 | professional development - received recognition for work | 4 | 0.3% | 3 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 3 | 1 | 3 |
| 159 | 4 prof devel | profdevel | schoolprep | 179 | preparation for grad school/professional school | 31 | 2.4% | 19 | 8 | 4 | 0 | 0 | 15 | 4 | 3 | 9 | 4 | 12 | 15 | 14 | 17 |
| 160 | | profdevel Total | | | Benefit relating to professional development for a career or graduate school: better preparation for graduate school, made professional contacts, attended a conference, developed a product or publication | 85 | 6.7% | 34 | 27 | 22 | 0 | 2 | 35 | 11 | 17 | 22 | 8 | 26 | 51 | 27 | 58 |
| 161 | | Grand Total | | | | 1271 | 100.0% | 373 | 430 | 362 | 30 | 75 | 521 | 175 | 185 | 389 | 306 | 467 | 497 | 480 | 790 |
| 162 | | | | | | | | | | | | | | | | | | | | | |
| 163 | | | | | Total: | 1271 | | 373 | 430 | 362 | 30 | 75 | 521 | 175 | 185 | 389 | 306 | 467 | 497 | 480 | 790 |
| 164 | | | | | % of total for group: | 1 | | 29% | 34% | 29% | 2% | 6% | 41% | 14% | 15% | 31% | 24% | 37% | 39% | 38% | 62% |
| 165 | | | | | | | | | | | | | | | | | | | | | |
| 166 | 5 none | none | no benefits | 185 | none - no benefits | 11 | | 3 | 4 | 0 | 1 | 3 | 1 | 2 | 2 | 6 | 3 | 5 | 3 | 2 | 9 |

**A group 3 coding as "general" indicates that the topic was mentioned without being more specific.**

| | Table Mentor Q2 - 2: Summary Counts of Mentor's Comments, Aggregated at Group 2 Level | | | All | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | BY GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | Group 1 | **Group 2** | Description | count | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | H | M | L | M | F |
| 5 | 1 skills | **collaboration Total** | Working with the mentor and others: teamwork, following directions, responding to feedback, getting help | 24 | 2% | 7 | 9 | 6 | 0 | 2 | 11 | 5 | 3 | 5 | 4 | 10 | 10 | 10 | 14 |
| 22 | 1 skills | **communication Total** | Written and oral communication skills | 137 | 11% | 37 | 43 | 49 | 2 | 6 | 68 | 14 | 23 | 32 | 36 | 58 | 43 | 48 | 89 |
| 42 | 1 skills | **critical thniking Total** | Critical thinking skills: analysis, synthesis, problem solving, integrating knowledge from disciplines, open mindedness, developing ideas | 164 | 13% | 25 | 67 | 54 | 3 | 14 | 63 | 20 | 31 | 49 | 23 | 67 | 73 | 53 | 110 |
| 64 | 1 skills | **project mgt. Total** | Managing a large project: seeing it through, persisting, managing time, planning, organizing, problem solving, working independently | 194 | 15% | 63 | 62 | 38 | 11 | 20 | 85 | 24 | 18 | 67 | 59 | 54 | 81 | 74 | 120 |
| 84 | 1 skills | **research Total** | Research skills: literature reviews, research design, technical lab and data gathering skills, field work, data analysis | 130 | 10% | 41 | 60 | 21 | 5 | 3 | 54 | 15 | 26 | 35 | 26 | 63 | 41 | 51 | 79 |
| 89 | 1 skills | **technical Total** | Technical skills: specific to a discipline or real world application | 43 | 3% | 18 | 12 | 11 | 1 | 1 | 13 | 5 | 12 | 13 | 13 | 13 | 17 | 18 | 25 |
| | | | ***skills subtotal:*** | **692** | **55%** | **191** | **253** | **179** | **22** | **46** | **294** | **83** | **113** | **201** | **161** | **265** | **265** | **254** | **437** |
| 97 | 2 knowledge | **broad picture Total** | Understanding their discipline or research in a broader context or having a broadening personal experience | 39 | 3% | 12 | 15 | 10 | 1 | 1 | 19 | 7 | 5 | 8 | 7 | 20 | 12 | 14 | 25 |
| 104 | 2 knowledge | **disciplinary Total** | Gaining disciplinary knowledge in a particular area or relating to disciplinary theory or ethics | 33 | 3% | 7 | 8 | 17 | 1 | 0 | 12 | 4 | 7 | 10 | 8 | 8 | 17 | 18 | 15 |
| 112 | 2 knowledge | **personal Total** | Gaining self-understanding of abilities, limitations, interests, and performance | 109 | 9% | 36 | 30 | 32 | 2 | 9 | 33 | 20 | 11 | 45 | 33 | 41 | 35 | 50 | 59 |
| 120 | 2 knowledge | **value Total** | Gaining an awareness of the importance of various practices relating to research: planning, experimental design, hard work, flexibility | 34 | 3% | 7 | 11 | 11 | 0 | 5 | 8 | 1 | 4 | 21 | 10 | 12 | 12 | 16 | 18 |
| | | | ***knowledge subtotal:*** | **215** | **17%** | **62** | **64** | **70** | **4** | **15** | **72** | **32** | **27** | **84** | **58** | **81** | **76** | **98** | **117** |
| 126 | 3 disposition | **behavior Total** | Developed inclination toward useful scholarly behaviors: patience, perseverance, responsibility, maturity | 39 | 3% | 18 | 6 | 12 | 0 | 3 | 17 | 4 | 5 | 13 | 12 | 13 | 14 | 24 | 15 |
| 137 | 3 disposition | **confidence Total** | Gained self-confidence in personal or academic abilities: ability to complete a major project, do research, writing ability | 161 | 13% | 48 | 55 | 51 | 1 | 6 | 77 | 34 | 8 | 42 | 45 | 49 | 67 | 48 | 113 |
| 143 | 3 disposition | **motivations Total** | Developed interest in the topic of the project or toward research, writing or critical thinking | 46 | 4% | 12 | 14 | 17 | 2 | 1 | 16 | 4 | 9 | 17 | 12 | 20 | 14 | 17 | 29 |
| 147 | 3 disposition | **personal Total** | Developed a sense of accomplishment, or inclination to overcome obstacles | 23 | 2% | 5 | 8 | 9 | 0 | 1 | 8 | 3 | 6 | 6 | 8 | 8 | 7 | 8 | 15 |
| | | | ***dispositions subtotal:*** | **269** | **21%** | **83** | **83** | **89** | **3** | **11** | **118** | **45** | **28** | **78** | **77** | **90** | **102** | **97** | **172** |
| 159 | 4 prof devel | **profdevel Total** | Benefit relating to professional development for a career or graduate school: better preparation for graduate school, made professional contacts, attended a conference, developed a product or publication | 84 | 7% | 34 | 26 | 22 | 0 | 2 | 35 | 10 | 17 | 22 | 8 | 26 | 50 | 26 | 58 |
| | | | **Total:** | **1260** | **100%** | **370** | **426** | **360** | **29** | **74** | **519** | **170** | **185** | **385** | **304** | **462** | **493** | **475** | **784** |
| | | | **Percent within subgrouping:** | | | **29%** | **34%** | **29%** | **2%** | **6%** | **41%** | **13%** | **15%** | **31%** | **24%** | **37%** | **39%** | **38%** | **62%** |
| | | | % of capstones with completed post-fac survey: | | | **31%** | **31%** | **27%** | **7%** | **5%** | **28%** | **14%** | **30%** | **29%** | **25%** | **41%** | **35%** | **42%** | **58%** |
| | | | % of overall capstones in database: | | | **23%** | **34%** | **25%** | **16%** | **2%** | **29%** | **21%** | **16%** | **34%** | **24%** | **38%** | **38%** | **41%** | **59%** |

| Line | Table Metnor Q2 - 3: Percent of Responsed for each Group2 Item within Student Groupings | | | All | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | BY GPA GROUP | | | BY GENDER | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Group 1 | **Group 2** | Description | count | % | NS | SS | Hum | Prof | Self | Red | Tan | Wht | Yellow | H | M | L | M | F |
| 5 | 1 skills | **collaboration Total** | Working with the mentor and others: teamwork, following directions, responding to feedback, getting help | 25 | 2% | 2% | 2% | 2% | 0% | 3% | 2% | 3% | 2% | 1% | 1% | 2% | 2% | 2% | 2% |
| 21 | 1 skills | **communication Total** | Written and oral communication skills | 138 | 11% | 10% | 10% | 14% | 7% | 8% | 13% | 8% | 12% | 8% | 12% | 13% | 9% | 10% | 11% |
| 40 | 1 skills | **critical thniking Total** | Critical thinking skills: analysis, synthesis, problem solving, integrating knowledge from disciplines, open mindedness, developing ideas | 166 | 13% | 7% | 16% | 15% | 10% | 19% | 12% | 12% | 17% | 13% | 8% | 15% | 15% | 11% | 14% |
| 61 | 1 skills | **project mgt. Total** | Managing a large project: seeing it through, persisting, managing time, planning, organizing, problem solving, working independently | 196 | 15% | 17% | 15% | 11% | 38% | 27% | 16% | 14% | 10% | 17% | 19% | 12% | 16% | 16% | 15% |
| 80 | 1 skills | **research Total** | Research skills: literature reviews, research design, technical lab and data gathering skills, field work, data analysis | 130 | 10% | 11% | 14% | 6% | 17% | 4% | 10% | 9% | 14% | 9% | 9% | 14% | 8% | 11% | 10% |
| 84 | 1 skills | **technical Total** | Technical skills: specific to a discipline or real world application | 41 | 3% | 5% | 3% | 3% | 3% | 1% | 3% | 3% | 6% | 3% | 4% | 3% | 3% | 4% | 3% |
| | | | ***skills subtotal:*** | **696** | 55% | 52% | 59% | 50% | 76% | 62% | 57% | 49% | 61% | 52% | 53% | 57% | 54% | 53% | 56% |
| 91 | 2 knowledge | **broad picture Total** | Understanding their discipline or research in a broader context or having a broadening personal experience | 38 | 3% | 3% | 4% | 3% | 3% | 1% | 4% | 4% | 3% | 2% | 2% | 4% | 2% | 3% | 3% |
| 97 | 2 knowledge | **disciplinary Total** | Gaining disciplinary knowledge in a particular area or relating to disciplinary theory or ethics | 38 | 3% | 2% | 2% | 5% | 3% | 0% | 2% | 2% | 4% | 3% | 3% | 2% | 3% | 4% | 2% |
| 104 | 2 knowledge | **personal Total** | Gaining self-understanding of abilities, limitations, interests, and performance | 110 | 9% | 10% | 7% | 9% | 7% | 12% | 6% | 12% | 6% | 12% | 11% | 9% | 7% | 11% | 8% |
| 111 | 2 knowledge | **value Total** | Gaining an awareness of the importance of various practices relating to research: planning, experimental design, hard work, flexibility | 33 | 3% | 2% | 3% | 3% | 0% | 7% | 2% | 1% | 2% | 5% | 3% | 3% | 2% | 3% | 2% |
| | | | ***knowledge subtotal:*** | **219** | 17% | 17% | 15% | 19% | 14% | 20% | 14% | 19% | 15% | 22% | 19% | 18% | 15% | 21% | 15% |
| 116 | 3 disposition | **behavior Total** | Developed inclination toward useful scholarly behaviors: patience, perseverance, responsibility, maturity | 38 | 3% | 5% | 1% | 3% | 0% | 4% | 3% | 2% | 3% | 3% | 4% | 3% | 3% | 5% | 2% |
| 126 | 3 disposition | **confidence Total** | Gained self-confidence in personal or academic abilities: ability to complete a major project, do research, writing ability | 161 | 13% | 13% | 13% | 14% | 3% | 8% | 15% | 20% | 4% | 11% | 15% | 11% | 14% | 10% | 14% |
| 131 | 3 disposition | **motivations Total** | Developed interest in the topic of the project or toward research, writing or critical thinking | 48 | 4% | 3% | 3% | 5% | 7% | 1% | 3% | 2% | 5% | 4% | 4% | 4% | 3% | 4% | 4% |
| 134 | 3 disposition | **personal Total** | Developed a sense of accomplishment, or inclination to overcome obstacles | 24 | 2% | 1% | 2% | 3% | 0% | 1% | 2% | 2% | 3% | 2% | 3% | 2% | 1% | 2% | 2% |
| | | | ***dispositions subtotal:*** | **271** | 21% | 22% | 19% | 25% | 10% | 15% | 23% | 26% | 15% | 20% | 25% | 19% | 21% | 20% | 22% |
| 145 | 4 prof devel | **profdevel Total** | Benefit relating to professional development for a career or graduate school: better preparation for graduate school, made professional contacts, attended a conference, developed a product or publication | 85 | 7% | 9% | 6% | 6% | 0% | 3% | 7% | 6% | 9% | 6% | 3% | 6% | 10% | 5% | 7% |
| | | **Grand Total** | ***professional development subtotal:*** | 1271 | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |
| | | | | | | | | | | | | | | | | | | | |
| | | | **Total:** | **1271** | **100%** | **373** | **430** | **362** | **30** | **75** | **521** | **175** | **185** | **389** | **306** | **467** | **497** | **480** | **790** |

x Variation of percentages across rows is highlighed using Excel conditional formatting. Prof and Self-designed majors were excluded due to low N's.

**Table Mentor Q4 - 1: Detailed Listing and Counts for Faculty Survey Question:**
**Please share any other observations you have about this capstone you think may be of interest to the study.**

| | | | | | | Counts | | | | BY MAJOR DIVISION | | | | | | BY SCHOOL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | Group 1 | Group 2 | sense | ID | Text | Pos | Obs. | Neg | Total | NS | SS | Hum | Prof | Self | nav | Red | Tan | Wht | Yellow |
| 1 | advising | coadv | n | 28 | structure - problem coordinating advising | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 2 | advising | coadv | n | 42 | structure - difficult to do co-mentoring | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 3 | advising | coadv | o | 26 | Structure - mentoring done by outside adviser | 0 | 2 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| 4 | advising | knowstu | p | 4 | benefit - able to advise student better after | 3 | 0 | 0 | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| 5 | advising | knowstu | p | 5 | benefit - able to champion student better after | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 6 | advising | knowstu | p | 14 | benefit - adviser understood student's good abilities better | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 7 | advising | knowstu | p | 15 | benefit - adviser understood student's learning problems better | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 8 | advising | load | n | 22 | structure - advising problem - too many students | 0 | 0 | 3 | 3 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 0 |
| 9 | advising | load | n | 33 | structure - mentor work load too high | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 10 | advising | load | n | 58 | project took large mentor time/effort | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 11 | advising | mentorben | p | 44 | benefit - scholarly impact on mentor | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 12 | advising | mentorben | p | 49 | benefit - mentoring student positive exp for mentor | 28 | 0 | 0 | 28 | 12 | 6 | 6 | 2 | 2 | 0 | 7 | 2 | 5 | 14 |
| 13 | advising | mentorben | p | 88 | benefit - mentoring student positive exp for mentor due to ability to choose students | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 14 | advising | mentorneg | n | 77 | negative experience for mentor | 0 | 0 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 15 | advising | problem | n | 59 | challenge to shepherd weak project to success | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 16 | advising | problem | n | 76 | student didn't consult with mentor enough | 0 | 0 | 4 | 4 | 2 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 |
| 17 | advising | problem | n | 82 | mentor needed to give student deadlines/ schedule | 0 | 0 | 2 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 18 | advising | problem | n | 85 | faculty forced to mentor without background expertise in project area | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 19 | **advising Total** | | | | | 38 | 2 | 21 | 61 | 28 | 16 | 10 | 2 | 5 | 0 | 16 | 9 | 12 | 24 |
| 20 | facilities | facilities | n | 20 | facilities - encountered lab or other facilities problems that hampered project | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 21 | facilities | facilities | n | 102 | Computer equipment trouble | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 22 | facilities | facilities | n | 50 | facilities - student would have benefited from being able to do research at off-campus site | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 23 | facilities | facilities | p | 19 | facilities - access to primary sources via Internet | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 24 | **facilities Total** | | | | | 1 | 0 | 4 | 5 | 1 | 1 | 2 | 1 | 0 | 0 | 2 | 0 | 2 | 1 |
| 25 | prep | prep | n | 21 | preparation -need to prepare students better | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 26 | prep | prep | n | 43 | preparation - need to prepare students systematically | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 27 | prep | prep | p | 600 | preparation - student well prepared | 3 | 0 | 0 | 3 | 0 | 1 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 1 |
| 28 | prep | prep | n | 68 | preparation - business plan projects need better prep | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 |
| 29 | prep | prep | o | 89 | preparation - curriculum should prepare for capstone starting first year | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 30 | **prep Total** | | | | | 3 | 1 | 4 | 8 | 1 | 3 | 2 | 1 | 1 | 0 | 5 | 0 | 1 | 2 |
| 31 | structure | capexp | n | 23 | structure - capstone not valuable for all students | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 32 | structure | capexp | n | 78 | should not require capstones of non-motivated students | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 33 | structure | capexp | n | 84 | capstones are waste of time | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 34 | structure | capexp | p | 6 | benefit - capstone experience valuable for student, even if product not exceptional | 5 | 0 | 0 | 5 | 0 | 3 | 2 | 0 | 0 | 0 | 3 | 1 | 1 | 0 |
| 35 | structure | capexp | p | 73 | capstone gave non-stellar student a chance to shine | 3 | 0 | 0 | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 1 |
| 36 | structure | capexp | p | 87 | capstone method a good experience, should be kept | 4 | 0 | 0 | 4 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 4 |
| 37 | structure | credits | n | 62 | this project didn't deserve number of credits awarded | 0 | 0 | 4 | 4 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 4 | 0 |
| 38 | structure | dblmaj | n | 40 | structure - double majors: only do combined if similar methods | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 39 | structure | dblmaj | n | 47 | structure - this double major capstone created problem | 0 | 0 | 6 | 6 | 0 | 2 | 0 | 1 | 3 | 0 | 0 | 0 | 3 | 3 |
| 40 | structure | dblmaj | n | 67 | structure - double majors: only viable for gifted students | 0 | 0 | 2 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 |
| 41 | structure | dblmaj | p | 55 | structure - this double major capstone done successfully | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 42 | structure | grading | n | 25 | structure - lack of grading for the first half of the project a problem | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 43 | structure | grading | n | 53 | structure - comprehensive exams a poor structure for capstones | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 44 | structure | grading | n | 64 | adviser should have option to divert from thesis to comp exam if project flounders | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 45 | structure | grading | n | 66 | adviser should have option to divert double major project to single, if floundering | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 46 | structure | grading | o | 24 | structure - students should expect grade to count process as well as product | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 47 | structure | grading | p | 39 | structure - oral presentation option, as opposed to only writing, is helpful | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 48 | structure | outcome | p | 79 | project involved, may benefit community, others | 4 | 0 | 0 | 4 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 1 |
| 49 | structure | structure | n | 603 | capstones time should have been longer, e.g. two terms | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 50 | structure | structure | o | 72 | comp exam should force student to integrate courses/topics | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 51 | structure | structure | p | 27 | structure - opportunity to present results in non-class venue | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 52 | structure | structure | p | 30 | structure - reflective component most valuable | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |

| | | | | | | Counts | | | | BY MAJOR DIVISION | | | | | | BY SCHOOL | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Line | Group 1 | Group 2 | sense | ID | Text | Pos | Obs. | Neg | Total | NS | SS | Hum | Prof | Self | nav | Red | Tan | Wht | Yellow |
| 53 | structure | structure | p | 60 | capstones work well with motivated and capable students | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 54 | structure | structure | p | 61 | project successfully integrated info from multiple courses/sources | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 55 | structure | structure | p | 74 | capstones benefit students who make effort | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 56 | structure | students | n | 34 | student attribute - capstone a challenge for technically capable students that aren't as creative | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 57 | structure | students | o | 80 | student's personal or family problems (e.g. illness ) impacted this project | 0 | 7 | 0 | 7 | 1 | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | 7 |
| 58 | structure | topic | n | 29 | Structure - too difficult to synthesis a critical and creative project | 0 | 0 | 2 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 59 | structure | topic | o | 32 | structure - topic selection: choosing topic of interest to student is key for weaker students, in | 0 | 3 | 0 | 3 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 |
| 60 | **structure Total** | | | | | 25 | 12 | 26 | 63 | 8 | 22 | 23 | 3 | 7 | 0 | 11 | 8 | 21 | 23 |
| 61 | stubenefit | employ | p | 46 | benefit - product viable business | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| 62 | stubenefit | employ | p | 65 | project may aid future employment opportunities | 5 | 0 | 0 | 5 | 1 | 3 | 1 | 0 | 0 | 0 | 2 | 0 | 2 | 1 |
| 63 | stubenefit | gen dev | p | 54 | benefit - student benefited/developed in general | 25 | 0 | 0 | 25 | 13 | 6 | 4 | 2 | 0 | 0 | 7 | 4 | 2 | 12 |
| 64 | stubenefit | gradschl | p | 16 | benefit - valuable prep for graduate programs | 3 | 0 | 0 | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 3 | 0 | 0 | 0 |
| 65 | stubenefit | projmgt | p | 1 | benefit - managing large project | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 66 | stubenefit | projmgt | p | 8 | benefit - learning what is required to do a large project | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 67 | stubenefit | scholar | p | 2 | benefit - experiencing rewards of research | 5 | 0 | 0 | 5 | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 |
| 68 | stubenefit | scholar | p | 7 | benefit - experience as practitioner of discipline | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 69 | stubenefit | scholar | p | 9 | benefit - opportunity to integrate disciplines | 6 | 0 | 0 | 6 | 2 | 3 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 |
| 70 | stubenefit | scholar | p | 10 | benefit - opportunity to integrate academic and personal interests | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 71 | stubenefit | scholar | p | 11 | benefit - self understanding as practitioner of discipline | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 72 | stubenefit | scholar | p | 45 | benefit - product potentially publishable | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 |
| 73 | stubenefit | self | p | 3 | benefit - self confidence | 6 | 0 | 0 | 6 | 3 | 2 | 1 | 0 | 0 | 0 | 2 | 3 | 0 | 1 |
| 74 | stubenefit | self | p | 12 | benefit - student gained self knowledge of high abilities | 3 | 0 | 0 | 3 | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 75 | stubenefit | capvsreg | n | 75 | would have benefited more from regular course | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 76 | stubenefit | capvsreg | p | 13 | Benefit - student benefitted more/differently than in regular course | 2 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 77 | **stubenefit Total** | | | | | 66 | 0 | 1 | 67 | 23 | 26 | 16 | 2 | 0 | 0 | 28 | 10 | 9 | 20 |
| 78 | stuperform | ability | n | 83 | student's project beyond his/her ability | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 79 | stuperform | ability | p | 93 | student's high ability contributed to successful capstone | 3 | 0 | 0 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 3 | 0 |
| 80 | stuperform | ability | n | 601 | student's lack of self-confidence hindered project | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 81 | stuperform | effort | n | 51 | student effort - poor | 0 | 0 | 10 | 10 | 3 | 6 | 1 | 0 | 0 | 0 | 4 | 2 | 2 | 2 |
| 82 | stuperform | effort | p | 48 | student effort - good or exceptionally good | 10 | 0 | 0 | 10 | 3 | 3 | 3 | 1 | 0 | 0 | 5 | 0 | 3 | 2 |
| 83 | stuperform | feedback | n | 90 | student required negative feedback, and did not respond well | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 |
| 84 | stuperform | feedback | o | 86 | student required negative feedback, but responded well | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 85 | stuperform | feedback | p | 63 | student responsiveness to criticism a plus | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 86 | stuperform | motiv | n | 36 | student attribute - not motivated | 0 | 0 | 8 | 8 | 5 | 1 | 1 | 0 | 1 | 0 | 4 | 1 | 0 | 3 |
| 87 | stuperform | prep | n | 31 | preparation - student project topic was too advanced for student's level | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 |
| 88 | stuperform | prep | n | 52 | preparation - student poorly prepared | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 89 | stuperform | prep | n | 69 | student not prepared for theoretical challenges of research | 0 | 0 | 2 | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 90 | stuperform | prep | n | 71 | preparation - student needed a specific course to better prepare | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 91 | stuperform | prep | p | 70 | preparation - student well prepared in project area by outside experience | 4 | 0 | 0 | 4 | 3 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 1 | 0 |
| 92 | stuperform | prep | p | 81 | prior course with mentor meant good preparation | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 93 | stuperform | product | n | 57 | capstone outcome - poor, generally | 0 | 0 | 9 | 9 | 3 | 1 | 2 | 0 | 3 | 0 | 3 | 1 | 0 | 5 |
| 94 | stuperform | product | n | 17 | student performed poorly - generally | 0 | 0 | 3 | 3 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 |
| 95 | stuperform | product | n | 610 | student performed poorly - writing | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 96 | stuperform | product | n | 611 | student performed poorly - CT | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 2 | 0 | 1 |
| 97 | stuperform | product | n | 612 | student performed poorly - time management | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 2 |
| 98 | stuperform | product | p | 35 | student performance - good or exceptionally good | 21 | 0 | 0 | 21 | 5 | 5 | 7 | 1 | 3 | 0 | 14 | 3 | 1 | 3 |
| 99 | stuperform | product | p | 56 | capstone outcome - good or excellent | 25 | 0 | 0 | 25 | 3 | 10 | 8 | 1 | 2 | 1 | 7 | 2 | 6 | 10 |
| 100 | stuperform | capvsreg | n | 18 | student performed worse that in regular course | 0 | 0 | 2 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| 101 | stuperform | capvsreg | p | 38 | student performed better than in regular course | 8 | 0 | 0 | 8 | 1 | 3 | 3 | 0 | 1 | 0 | 4 | 2 | 0 | 2 |
| | **stuperform Total** | | | | | 74 | 1 | 48 | 123 | 32 | 38 | 38 | 3 | 11 | 1 | 52 | 15 | 20 | 36 |
| | **Grand Total** | | | | | 207 | 16 | 104 | 327 | 93 | 106 | 91 | 12 | 24 | 1 | 114 | 42 | 65 | 106 |

**Table Mentor Q3 - 1: Codebook Listing and Detailed Counts for Faculty Survey Questions:**
**Please describe areas where the student was exceptionally well prepared.**
**Please describe areas where the student should have been better prepared for this capstone.**

| | | | | | Counts for Prep | | DEFICIENT | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA | | | Gender | |
| Line | Group 1 | Group 2 | ID | Text | defi-cient | excep-tional | NS | SS | HU | PR | Self | R | T | W | Y | H | M | L | M | F |
| 1 | General all | gen all | 101 | general - well prepared in general (or not) | 2 | 19 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 1 |
| 2 | **General all T** | | | Well prepared in general | **2** | **19** | **0** | **2** | **0** | **0** | **0** | **0** | **0** | **0** | **2** | **0** | **2** | **0** | **1** | **1** |
| 3 | Collab | Collab | 1 | collaboration skills - attending meetings | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 4 | Collab | Collab | 2 | collaboration skills - following directions | 2 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 5 | Collab | Collab | 3 | collaboration skills - general | 9 | 7 | 2 | 4 | 0 | 0 | 2 | 3 | 1 | 2 | 3 | 2 | 7 | 0 | 3 | 6 |
| 6 | Collab | Collab | 4 | collaboration skills - getting help from others | 8 | 4 | 0 | 5 | 2 | 0 | 1 | 4 | 0 | 1 | 3 | 3 | 2 | 3 | 4 | 4 |
| 7 | Collab | Collab | 102 | collaboration skills - making scholarly contacts | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 |
| 8 | Collab | Collab | 5 | collaboration skills - responding to feedback | 7 | 8 | 3 | 2 | 1 | 1 | 0 | 3 | 1 | 3 | 0 | 5 | 1 | 1 | 4 | 3 |
| 9 | **Collab Total** | | | Collaboration skills: attending meetings, following directions, responding to feedback | **29** | **21** | **6** | **13** | **4** | **1** | **4** | **12** | **3** | **6** | **8** | **13** | **12** | **4** | **13** | **16** |
| 10 | Commun | com general | 103 | communication skills - general | 1 | 16 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 11 | Commun | oral | 92 | oral communication - general | 1 | 10 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 12 | Commun | oral | 40 | oral exam experience | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 13 | Commun | oral | 41 | oral presentation skills | 5 | 14 | 2 | 1 | 2 | 0 | 0 | 2 | 2 | 0 | 1 | 2 | 0 | 3 | 0 | 5 |
| 14 | Commun | write gen | 68 | writing - general | 81 | 141 | 29 | 27 | 24 | 1 | 0 | 34 | 8 | 13 | 26 | 40 | 31 | 10 | 30 | 51 |
| 15 | Commun | write - basic | 65 | writing - citation style | 6 | 1 | 2 | 1 | 3 | 0 | 0 | 0 | 1 | 3 | 2 | 2 | 2 | 2 | 2 | 4 |
| 16 | Commun | write - basic | 70 | writing - mechanics | 14 | 3 | 2 | 3 | 8 | 0 | 1 | 5 | 0 | 5 | 4 | 7 | 6 | 1 | 8 | 6 |
| 17 | Commun | write - basic | 77 | writing - technical terminology | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 18 | Commun | write - org | 82 | writing - long work/research work | 6 | 2 | 0 | 1 | 1 | 0 | 4 | 0 | 0 | 1 | 5 | 3 | 3 | 0 | 1 | 5 |
| 19 | Commun | write - org | 71 | writing - organization | 9 | 7 | 2 | 2 | 5 | 0 | 0 | 2 | 0 | 2 | 5 | 4 | 5 | 0 | 2 | 7 |
| 20 | Commun | write - org | 78 | writing - thematic development | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 21 | Commun | write - oth | 67 | writing - foreign language skills | 1 | 5 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 22 | Commun | write - oth | 69 | writing - integrating sources | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 2 |
| 23 | Commun | write - stylistic | 64 | writing - being concise | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| 24 | Commun | write - stylistic | 66 | writing - clarity | 8 | 11 | 3 | 3 | 2 | 0 | 0 | 5 | 0 | 2 | 1 | 2 | 6 | 0 | 3 | 5 |
| 25 | Commun | write - stylistic | 90 | writing - persuasive | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 26 | Commun | write - stylistic | 74 | writing - reflective | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 27 | Commun | write - stylistic | 75 | writing - scholarly manner | 4 | 1 | 2 | 2 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 1 | 1 | 2 | 0 | 4 |
| 28 | Commun | write - stylistic | 76 | writing - style | 5 | 4 | 4 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 2 | 0 | 2 | 3 | 0 | 5 |
| 29 | Commun | write - stylistic | 86 | writing - style of discipline | 7 | 2 | 5 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 3 | 2 | 3 | 2 | 3 | 4 |
| 30 | **Commun Total** | | | Communication skills - general, written, oral | **155** | **222** | **57** | **40** | **52** | **1** | **5** | **58** | **17** | **31** | **49** | **67** | **63** | **25** | **52** | **103** |
| 31 | CritThk | CT gen | 12 | CT - general | 22 | 29 | 5 | 5 | 10 | 0 | 2 | 3 | 1 | 6 | 12 | 9 | 7 | 6 | 5 | 17 |
| 32 | CritThk | CT - synthesis | 89 | CT - originality/creativity | 2 | 12 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 2 |
| 33 | CritThk | CT - synthesis | 15 | CT - problem solving | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 34 | CritThk | CT - synthesis | 83 | CT - synthesis | 4 | 11 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 2 | 1 | 1 | 3 |
| 35 | CritThk | CT anal | 88 | CT - analysis of primary material | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 36 | CritThk | CT anal | 8 | CT - analysis skills | 11 | 12 | 1 | 7 | 1 | 0 | 2 | 3 | 0 | 1 | 7 | 6 | 2 | 3 | 4 | 7 |
| 37 | CritThk | CT anal | 105 | CT - reading closely | 7 | 16 | 1 | 0 | 6 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 2 | 0 | 2 | 5 |
| 38 | CritThk | CT anal | 17 | CT- analysis of secondary material | 5 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 1 | 4 | 3 | 2 |
| 39 | CritThk | CT anal | 18 | CT -analysis, drawing conclusions | 6 | 5 | 1 | 4 | 1 | 0 | 0 | 2 | 1 | 3 | 0 | 2 | 1 | 3 | 0 | 6 |

| | | | | | Counts for Prep | | DEFICIENT | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA | | | Gender | |
| Line | Group 1 | Group 2 | ID | Text | defi-cient | excep-tional | NS | SS | HU | PR | Self | R | T | W | Y | H | M | L | M | F |
| 40 | CritThk | CT argument | 10 | CT - applying information | 3 | 4 | 1 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 1 | 2 | 1 |
| 41 | CritThk | CT argument | 11 | CT - argumentation | 14 | 2 | 3 | 6 | 5 | 0 | 0 | 3 | 1 | 7 | 3 | 6 | 7 | 1 | 8 | 6 |
| 42 | CritThk | CT argument | 16 | CT - thinking approp to discipline | 3 | 1 | 0 | 3 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 3 |
| 43 | CritThk | CT argument | 19 | CT- applying principles/theory | 11 | 8 | 1 | 6 | 3 | 0 | 1 | 4 | 0 | 4 | 3 | 4 | 7 | 0 | 3 | 8 |
| 44 | CritThk | CT -mult views | 80 | CT - addressing opposing views/information | 2 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 | 0 | 2 |
| 45 | CritThk | CT -mult views | 14 | CT - open mindedness | 3 | 2 | 0 | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 1 | 1 | 2 | 1 |
| 46 | **CritThk Total** | | | Critical Thinking Skills | **95** | **108** | **15** | **38** | **37** | **0** | **5** | **21** | **4** | **30** | **40** | **37** | **36** | **22** | **30** | **65** |
| 47 | Discipline | DK general | 22 | disciplinary knowledge - general | 24 | 59 | 10 | 4 | 10 | 0 | 0 | 9 | 2 | 8 | 5 | 15 | 5 | 4 | 7 | 17 |
| 48 | Discipline | DK ethics | 81 | disciplinary knowledge, ethics | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 0 | 2 | 0 |
| 49 | Discipline | DK lit | 96 | disciplinary knowledge - literature | 1 | 13 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 50 | Discipline | DK multi disc | 28 | integrating disciplines | 8 | 13 | 1 | 3 | 0 | 0 | 4 | 3 | 0 | 0 | 5 | 0 | 4 | 4 | 2 | 6 |
| 51 | Discipline | DK proj area | 23 | disciplinary knowledge - project area | 41 | 69 | 8 | 8 | 17 | 2 | 6 | 6 | 8 | 7 | 20 | 12 | 13 | 16 | 18 | 23 |
| 52 | Discipline | DK theory | 21 | disciplinary knowledge - disciplinary perspective | 2 | 2 | 0 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 |
| 53 | Discipline | DK theory | 25 | disciplinary knowledge - theoretical foundation | 33 | 24 | 1 | 16 | 15 | 0 | 1 | 12 | 1 | 11 | 9 | 8 | 13 | 12 | 10 | 23 |
| 54 | Discipline | DK theory | 26 | disciplinary ways of thinking | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 55 | Discipline | DS skills/tech | 24 | disciplinary skills - skills/techniques/methods | 8 | 33 | 0 | 1 | 4 | 0 | 3 | 2 | 0 | 3 | 3 | 4 | 3 | 1 | 3 | 5 |
| 56 | **Discipline Total** | | | Disciplinary knowledge, theory, and ways of thinking | **120** | **215** | **20** | **33** | **49** | **2** | **15** | **35** | **11** | **31** | **43** | **43** | **38** | **39** | **44** | **76** |
| 57 | LitReview | litrev | 30 | literature review - analysis | 6 | 13 | 2 | 3 | 1 | 0 | 0 | 4 | 0 | 2 | 0 | 0 | 4 | 2 | 1 | 5 |
| 58 | LitReview | litrev | 33 | literature review - evaluating materials | 4 | 9 | 1 | 1 | 1 | 0 | 1 | 0 | 2 | 1 | 1 | 3 | 0 | 1 | 1 | 3 |
| 59 | LitReview | litrev | 32 | literature review - knowing how to conduct | 3 | 6 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 1 | 2 | 0 | 0 | 3 |
| 60 | LitReview | litrev | 35 | literature review - locating sources | 15 | 20 | 5 | 6 | 3 | 0 | 1 | 5 | 3 | 4 | 3 | 8 | 6 | 1 | 3 | 12 |
| 61 | LitReview | litrev | 36 | literature review - writing up | 5 | 1 | 2 | 1 | 2 | 0 | 0 | 2 | 0 | 1 | 2 | 2 | 1 | 2 | 1 | 4 |
| 62 | LitReview | litrev gen | 34 | literature review - general | 16 | 23 | 4 | 9 | 2 | 0 | 1 | 7 | 0 | 6 | 3 | 6 | 5 | 5 | 8 | 8 |
| 63 | **LitReview Total** | | | Literature review skills: conducting, locating sources, writir | **49** | **72** | **15** | **21** | **9** | **1** | **3** | **19** | **5** | **16** | **9** | **20** | **18** | **11** | **14** | **35** |
| 64 | ProjMgt | ProjMgt | 85 | project management - experience with large projects | 5 | 5 | 0 | 2 | 1 | 1 | 1 | 1 | 0 | 2 | 2 | 3 | 0 | 2 | 2 | 3 |
| 65 | ProjMgt | ProjMgt | 43 | project management - goal setting | 3 | 5 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 2 | 0 | 2 | 1 | 2 | 1 |
| 66 | ProjMgt | ProjMgt | 44 | project management - organization | 15 | 39 | 3 | 6 | 5 | 1 | 0 | 1 | 0 | 5 | 9 | 7 | 7 | 1 | 9 | 6 |
| 67 | ProjMgt | ProjMgt | 94 | project management - pre project planning | 12 | 7 | 4 | 5 | 2 | 0 | 1 | 6 | 0 | 3 | 3 | 4 | 6 | 2 | 5 | 7 |
| 68 | ProjMgt | ProjMgt | 46 | project management - taking responsibility | 5 | 5 | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 3 | 1 | 2 | 2 | 4 | 1 |
| 69 | ProjMgt | ProjMgt | 42 | project management - general | 5 | 2 | 2 | 0 | 3 | 0 | 0 | 2 | 3 | 0 | 0 | 0 | 2 | 3 | 2 | 3 |
| 70 | ProjMgt | TimeMgt | 62 | time management - general | 63 | 25 | 17 | 21 | 19 | 0 | 6 | 20 | 6 | 13 | 24 | 29 | 22 | 12 | 30 | 33 |
| 71 | ProjMgt | TimeMgt | 63 | time management - meeting deadlines | 3 | 5 | 0 | 1 | 2 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | 0 | 0 | 3 |
| 72 | **ProjMgt Total** | | | Project management skills: planning, organization, setting goals, time management | **111** | **93** | **29** | **37** | **33** | **3** | **9** | **32** | **11** | **24** | **44** | **45** | **43** | **23** | **54** | **57** |
| 73 | Quant | Quant | 49 | quantitative skills - general | 6 | 17 | 2 | 4 | 0 | 0 | 0 | 4 | 0 | 0 | 2 | 5 | 1 | 0 | 3 | 3 |
| 74 | Quant | Quant | 6 | computer skills - graphics, GIS, other specific | 3 | 9 | 3 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 2 | 0 | 1 | 2 |
| 75 | Quant | Quant | 95 | computer skills - programming | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 76 | Quant | Quant | 7 | computer skills - web page setup | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| 77 | Quant | Quant | 48 | quantitative skills - analysis | 6 | 2 | 2 | 4 | 0 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 1 | 5 |
| 78 | Quant | Quant | 99 | quantitative skills - graphs | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 79 | Quant | Quant | 50 | quantitative skills - statistics | 22 | 10 | 7 | 14 | 1 | 0 | 0 | 9 | 4 | 4 | 5 | 1 | 7 | 14 | 6 | 16 |
| 80 | **Quant Total** | | | Quantitative reasoning skills | **38** | **44** | **14** | **22** | **2** | **0** | **0** | **18** | **5** | **6** | **9** | **10** | **12** | **16** | **12** | **26** |
| 81 | Research | res - anal | 9 | research methods -data analysis | 5 | 4 | 1 | 3 | 0 | 0 | 1 | 3 | 0 | 0 | 2 | 4 | 0 | 1 | 2 | 3 |

| | | | | | Counts for Prep | | DEFICIENT | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA | | | Gender | |
| Line | Group 1 | Group 2 | ID | Text | defi-cient | excep-tional | NS | SS | HU | PR | Self | R | T | W | Y | H | M | L | M | F |
| 82 | Research | res - anal | 13 | research methods -data interpretation | 4 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 4 | 0 | 2 | 2 |
| 83 | Research | res - conduct | 58 | research skills - general | 23 | 32 | 3 | 5 | 13 | 1 | 1 | 4 | 2 | 6 | 11 | 11 | 9 | 3 | 8 | 15 |
| 84 | Research | res - conduct | 51 | research - conducting | 2 | 10 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 2 |
| 85 | Research | res - conduct | 104 | research - lab skills | 5 | 22 | 3 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 4 | 1 | 2 | 2 | 2 | 3 |
| 86 | Research | res - conduct | 57 | research methods -general | 12 | 11 | 1 | 8 | 1 | 0 | 2 | 6 | 1 | 3 | 2 | 6 | 4 | 2 | 6 | 6 |
| 87 | Research | res - conduct | 59 | research skills - technical | 3 | 5 | 0 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 2 | 0 | 1 | 2 | 1 |
| 88 | Research | res - conduct | 525 | research skills - understanding of foreign language | 6 | 7 | 0 | 4 | 1 | 0 | 1 | 3 | 0 | 1 | 2 | 1 | 2 | 3 | 1 | 5 |
| 89 | Research | res - design | 52 | research design skills - general | 16 | 10 | 6 | 9 | 0 | 1 | 0 | 6 | 4 | 5 | 1 | 6 | 4 | 6 | 10 | 6 |
| 90 | Research | res - design | 87 | research design - qualitative | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 91 | Research | res - design | 53 | research design skills - recog methodological limitations | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 92 | Research | res - design | 54 | research methods - designing research question | 9 | 2 | 1 | 6 | 1 | 1 | 0 | 0 | 3 | 3 | 3 | 0 | 8 | 1 | 3 | 6 |
| 93 | Research | res - presenting | 79 | research - presenting findings | 4 | 3 | 0 | 3 | 1 | 0 | 0 | 1 | 0 | 2 | 1 | 0 | 3 | 1 | 1 | 3 |
| 94 | Research | res -data | 55 | research methods -data analysis | 2 | 8 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 2 |
| 95 | Research | res -data | 56 | research methods -data gathering | 4 | 10 | 0 | 1 | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 3 | 1 | 0 | 4 |
| 96 | **Research Total** | | | Research skills: design, conducting, analysis | **97** | **125** | **18** | **47** | **21** | **3** | **8** | **28** | **15** | **23** | **31** | **31** | **44** | **22** | **38** | **59** |
| 97 | Self | self - conduct | 45 | perseverance | 2 | 10 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 |
| 98 | Self | self - conduct | 84 | self -discipline / work ethic | 4 | 38 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 4 | 3 | 0 | 1 | 2 | 2 |
| 99 | Self | self - conduct | 93 | working hard | 4 | 13 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 |
| 100 | Self | self - conduct | 530 | independence | 14 | 33 | 3 | 4 | 5 | 0 | 2 | 1 | 1 | 6 | 6 | 7 | 5 | 2 | 5 | 9 |
| 101 | Self | self - confid | 61 | self-confidence | 9 | 2 | 3 | 1 | 5 | 0 | 0 | 5 | 1 | 1 | 2 | 1 | 6 | 2 | 1 | 8 |
| 102 | Self | self - confid | 97 | self-confidence - intellectual abilities | 1 | 2 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 |
| 103 | Self | self - personal | 526 | self-personal - problems with health, emotions, etc. | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 |
| 104 | Self | self - other | 98 | knowledge - personal background | 0 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 105 | Self | self - underst | 60 | self reflection | 1 | 3 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 106 | Self | self - underst | 73 | self-understanding - of lack of quality in performance, writi | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 2 | 0 | 2 |
| 107 | Self | self -motivatior | 38 | motivation - in general/academic | 14 | 26 | 7 | 2 | 5 | 0 | 0 | 6 | 4 | 3 | 1 | 6 | 6 | 2 | 5 | 9 |
| 108 | Self | self -motivatior | 100 | motivation - likes doing research | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 109 | Self | self -motivatior | 37 | motivation for project | 14 | 36 | 3 | 5 | 4 | 1 | 1 | 1 | 3 | 6 | 4 | 5 | 8 | 1 | 4 | 10 |
| 110 | **Self Total** | | | Personal skills and attributes: work ethic, motivation, time management, independence | **66** | **183** | **23** | **14** | **23** | **1** | **5** | **16** | **11** | **18** | **21** | **24** | **28** | **14** | **22** | **44** |
| 111 | **Grand Total** | | | | **762** | **1102** | **197** | **267** | **230** | **12** | **54** | **239** | **82** | **185** | **256** | **290** | **296** | **176** | **280** | **482** |
| 112 | | | | | | | | | | | | | | | | | | | | |
| 113 | xomit | gen none | 106 | none - no exceptional area of prep | 0 | 60 | | | | | | | | | | | | | | |
| 114 | xomit | gen none | 39 | none - no poor area of prep | 125 | 0 | 38 | 38 | 36 | 5 | 7 | 51 | 15 | 31 | 28 | 14 | 39 | 72 | 40 | 85 |

**Table Mentor Q3 - 1: Codebook Listing and Detailed Counts for Faculty Survey Questions:**
**Please describe areas where the student was exceptionally well prepared.**
**Please describe areas where the student should have been better prepared for this capstone.**

| Line | Group 1 | Group 2 | ID | Text | Counts for Prep: defi-cient | Counts for Prep: excep-tional | EXCEPTIONAL BY MAJOR DIVISION: NS | SS | HU | PR | Self | EXCEPTIONAL BY SCHOOL: R | T | W | Y | EXCEPTIONAL GPA: H | M | L | Gender: M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | General all | gen all | 101 | general - well prepared in general (or not) | 2 | 19 | 6 | 7 | 5 | 1 | 0 | 3 | 5 | 7 | 4 | 1 | 5 | 13 | 3 | 16 |
| 2 | **General all T** | | | Well prepared in general | **2** | **19** | **6** | **7** | **5** | **1** | **0** | **3** | **5** | **7** | **4** | **1** | **5** | **13** | **3** | **16** |
| 3 | Collab | Collab | 1 | collaboration skills - attending meetings | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| 4 | Collab | Collab | 2 | collaboration skills - following directions | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | Collab | Collab | 3 | collaboration skills - general | 9 | 7 | 1 | 2 | 1 | 1 | 2 | 1 | 2 | 1 | 3 | 2 | 2 | 3 | 1 | 6 |
| 6 | Collab | Collab | 4 | collaboration skills - getting help from others | 8 | 4 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 3 | 1 | 0 | 4 |
| 7 | Collab | Collab | 102 | collaboration skills - making scholarly contacts | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 8 | Collab | Collab | 5 | collaboration skills - responding to feedback | 7 | 8 | 1 | 1 | 4 | 0 | 2 | 1 | 0 | 4 | 3 | 2 | 5 | 1 | 4 | 4 |
| 9 | **Collab Total** | | | Collaboration skills: attending meetings, following directions, responding to feedback | **29** | **21** | **3** | **5** | **7** | **2** | **4** | **4** | **3** | **7** | **7** | **5** | **11** | **5** | **5** | **16** |
| 10 | Commun | com general | 103 | communication skills - general | 1 | 16 | 9 | 3 | 3 | 0 | 1 | 2 | 1 | 2 | 11 | 1 | 5 | 10 | 7 | 9 |
| 11 | Commun | oral | 92 | oral communication - general | 1 | 10 | 2 | 2 | 5 | 0 | 1 | 2 | 1 | 0 | 7 | 3 | 2 | 5 | 4 | 6 |
| 12 | Commun | oral | 40 | oral exam experience | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 13 | Commun | oral | 41 | oral presentation skills | 5 | 14 | 5 | 2 | 5 | 2 | 0 | 3 | 6 | 1 | 4 | 4 | 9 | 1 | 7 | 7 |
| 14 | Commun | write gen | 68 | writing - general | 81 | 141 | 44 | 47 | 43 | 0 | 7 | 50 | 16 | 29 | 46 | 16 | 45 | 80 | 48 | 93 |
| 15 | Commun | write - basic | 65 | writing - citation style | 6 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 |
| 16 | Commun | write - basic | 70 | writing - mechanics | 14 | 3 | 0 | 2 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 3 | 0 | 3 |
| 17 | Commun | write - basic | 77 | writing - technical terminology | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 18 | Commun | write - org | 82 | writing - long work/research work | 6 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 |
| 19 | Commun | write - org | 71 | writing - organization | 9 | 7 | 2 | 1 | 4 | 0 | 0 | 1 | 3 | 2 | 1 | 1 | 2 | 4 | 2 | 5 |
| 20 | Commun | write - org | 78 | writing - thematic development | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 21 | Commun | write - oth | 67 | writing - foreign language skills | 1 | 5 | 0 | 0 | 4 | 0 | 1 | 4 | 0 | 0 | 1 | 0 | 2 | 3 | 0 | 5 |
| 22 | Commun | write - oth | 69 | writing - integrating sources | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 23 | Commun | write - stylistic | 64 | writing - being concise | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 24 | Commun | write - stylistic | 66 | writing - clarity | 8 | 11 | 0 | 2 | 8 | 0 | 1 | 4 | 3 | 3 | 1 | 3 | 5 | 3 | 2 | 9 |
| 25 | Commun | write - stylistic | 90 | writing - persuasive | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 26 | Commun | write - stylistic | 74 | writing - reflective | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 27 | Commun | write - stylistic | 75 | writing - scholarly manner | 4 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 |
| 28 | Commun | write - stylistic | 76 | writing - style | 5 | 4 | 1 | 1 | 2 | 0 | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 3 | 1 | 3 |
| 29 | Commun | write - stylistic | 86 | writing - style of discipline | 7 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 2 |
| 30 | **Commun Total** | | | Communication skills - general, written, oral | **155** | **222** | **69** | **63** | **77** | **2** | **11** | **72** | **35** | **42** | **73** | **29** | **75** | **118** | **73** | **149** |
| 31 | CritThk | CT gen | 12 | CT - general | 22 | 29 | 11 | 4 | 10 | 0 | 3 | 9 | 5 | 7 | 8 | 1 | 10 | 18 | 15 | 14 |
| 32 | CritThk | CT - synthesis | 89 | CT - originality/creativity | 2 | 12 | 4 | 1 | 6 | 0 | 1 | 4 | 1 | 3 | 4 | 1 | 3 | 8 | 6 | 6 |
| 33 | CritThk | CT - synthesis | 15 | CT - problem solving | 1 | 3 | 2 | 0 | 1 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 1 | 1 | 2 | 1 |
| 34 | CritThk | CT - synthesis | 83 | CT - synthesis | 4 | 11 | 4 | 1 | 6 | 0 | 0 | 5 | 2 | 3 | 1 | 1 | 5 | 5 | 3 | 8 |
| 35 | CritThk | CT anal | 88 | CT - analysis of primary material | 1 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 2 | 0 | 1 | 1 |
| 36 | CritThk | CT anal | 8 | CT - analysis skills | 11 | 12 | 4 | 6 | 1 | 0 | 1 | 5 | 1 | 0 | 6 | 0 | 2 | 10 | 6 | 6 |
| 37 | CritThk | CT anal | 105 | CT - reading closely | 7 | 16 | 8 | 1 | 6 | 0 | 1 | 5 | 2 | 2 | 7 | 0 | 6 | 10 | 2 | 14 |
| 38 | CritThk | CT anal | 17 | CT- analysis of secondary material | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 39 | CritThk | CT anal | 18 | CT -analysis, drawing conclusions | 6 | 5 | 0 | 2 | 3 | 0 | 0 | 1 | 0 | 1 | 3 | 3 | 0 | 2 | 4 | 1 |

| Line | Group 1 | Group 2 | ID | Text | Counts for Prep defi-cient | Counts for Prep excep-tional | EXCEPTIONAL BY MAJOR DIVISION NS | SS | HU | PR | Self | EXCEPTIONAL BY SCHOOL R | T | W | Y | EXCEPTIONAL GPA H | M | L | Gender M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | CritThk | CT argument | 10 | CT - applying information | 3 | 4 | 0 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 0 | 3 | 1 | 0 | 4 |
| 41 | CritThk | CT argument | 11 | CT - argumentation | 14 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 |
| 42 | CritThk | CT argument | 16 | CT - thinking approp to discipline | 3 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 |
| 43 | CritThk | CT argument | 19 | CT- applying principles/theory | 11 | 8 | 0 | 6 | 2 | 0 | 0 | 6 | 0 | 2 | 0 | 0 | 1 | 7 | 4 | 4 |
| 44 | CritThk | CT -mult views | 80 | CT - addressing opposing views/information | 2 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 |
| 45 | CritThk | CT -mult views | 14 | CT - open mindedness | 3 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 2 |
| 46 | **CritThk Total** | | | Critical Thinking Skills | **95** | **108** | **34** | **26** | **39** | **1** | **7** | **39** | **14** | **22** | **33** | **9** | **34** | **65** | **46** | **62** |
| 47 | Discipline | DK general | 22 | disciplinary knowledge - general | 24 | 59 | 25 | 10 | 18 | 2 | 4 | 17 | 5 | 19 | 18 | 10 | 27 | 22 | 20 | 39 |
| 48 | Discipline | DK ethics | 81 | disciplinary knowledge, ethics | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 49 | Discipline | DK lit | 96 | disciplinary knowledge - literature | 1 | 13 | 0 | 7 | 3 | 0 | 2 | 9 | 0 | 1 | 3 | 3 | 5 | 5 | 8 | 5 |
| 50 | Discipline | DK multi disc | 28 | integrating disciplines | 8 | 13 | 5 | 3 | 2 | 0 | 3 | 6 | 0 | 0 | 7 | 1 | 4 | 8 | 6 | 7 |
| 51 | Discipline | DK proj area | 23 | disciplinary knowledge - project area | 41 | 69 | 12 | 26 | 24 | 3 | 4 | 32 | 7 | 6 | 24 | 13 | 32 | 24 | 33 | 36 |
| 52 | Discipline | DK theory | 21 | disciplinary knowledge - disciplinary perspective | 2 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 2 |
| 53 | Discipline | DK theory | 25 | disciplinary knowledge - theoretical foundation | 33 | 24 | 4 | 15 | 3 | 0 | 2 | 18 | 1 | 2 | 3 | 6 | 6 | 12 | 5 | 19 |
| 54 | Discipline | DK theory | 26 | disciplinary ways of thinking | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 2 | 0 | 0 | 2 |
| 55 | Discipline | DS skills/tech | 24 | disciplinary skills - skills/techniques/methods | 8 | 33 | 4 | 5 | 20 | 1 | 3 | 10 | 8 | 7 | 8 | 9 | 8 | 16 | 15 | 18 |
| 56 | **Discipline Total** | | | Disciplinary knowledge, theory, and ways of thinking | **120** | **215** | **51** | **69** | **70** | **6** | **18** | **94** | **21** | **36** | **64** | **42** | **85** | **88** | **87** | **128** |
| 57 | LitReview | litrev | 30 | literature review - analysis | 6 | 13 | 5 | 5 | 2 | 0 | 1 | 4 | 3 | 2 | 4 | 0 | 5 | 8 | 4 | 9 |
| 58 | LitReview | litrev | 33 | literature review - evaluating materials | 4 | 9 | 4 | 3 | 2 | 0 | 0 | 3 | 2 | 1 | 3 | 0 | 5 | 4 | 3 | 6 |
| 59 | LitReview | litrev | 32 | literature review - knowing how to conduct | 3 | 6 | 0 | 3 | 3 | 0 | 0 | 2 | 1 | 1 | 2 | 1 | 2 | 3 | 1 | 5 |
| 60 | LitReview | litrev | 35 | literature review - locating sources | 15 | 20 | 7 | 6 | 6 | 1 | 0 | 7 | 4 | 4 | 5 | 3 | 8 | 9 | 5 | 15 |
| 61 | LitReview | litrev | 36 | literature review - writing up | 5 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 62 | LitReview | litrev gen | 34 | literature review - general | 16 | 23 | 7 | 9 | 5 | 0 | 2 | 5 | 4 | 10 | 4 | 1 | 9 | 13 | 2 | 21 |
| 63 | **LitReview Total** | | | Literature review skills: conducting, locating sources, writir | **49** | **72** | **23** | **27** | **18** | **1** | **3** | **21** | **14** | **19** | **18** | **5** | **30** | **37** | **15** | **57** |
| 64 | ProjMgt | ProjMgt | 85 | project management - experience with large projects | 5 | 5 | 1 | 3 | 1 | 0 | 0 | 4 | 1 | 0 | 0 | 2 | 1 | 2 | 1 | 4 |
| 65 | ProjMgt | ProjMgt | 43 | project management - goal setting | 3 | 5 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 2 | 2 | 0 | 1 | 4 | 0 | 5 |
| 66 | ProjMgt | ProjMgt | 44 | project management - organization | 15 | 39 | 13 | 12 | 12 | 1 | 1 | 15 | 6 | 8 | 10 | 4 | 13 | 22 | 7 | 32 |
| 67 | ProjMgt | ProjMgt | 94 | project management - pre project planning | 12 | 7 | 1 | 3 | 3 | 0 | 0 | 4 | 1 | 2 | 0 | 0 | 3 | 4 | 0 | 7 |
| 68 | ProjMgt | ProjMgt | 46 | project management - taking responsibility | 5 | 5 | 1 | 1 | 3 | 0 | 0 | 3 | 0 | 1 | 1 | 1 | 2 | 2 | 1 | 4 |
| 69 | ProjMgt | ProjMgt | 42 | project management - general | 5 | 2 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 1 |
| 70 | ProjMgt | TimeMgt | 62 | time management - general | 63 | 25 | 8 | 6 | 9 | 0 | 2 | 6 | 4 | 9 | 6 | 2 | 10 | 13 | 4 | 21 |
| 71 | ProjMgt | TimeMgt | 63 | time management - meeting deadlines | 3 | 5 | 1 | 0 | 3 | 0 | 1 | 2 | 0 | 3 | 0 | 0 | 5 | 0 | 1 | 4 |
| 72 | **ProjMgt Total** | | | Project management skills: planning, organization, setting goals, time management | **111** | **93** | **26** | **27** | **34** | **1** | **5** | **35** | **12** | **26** | **20** | **9** | **37** | **47** | **15** | **78** |
| 73 | Quant | Quant | 49 | quantitative skills - general | 6 | 17 | 11 | 4 | 2 | 0 | 0 | 9 | 0 | 3 | 5 | 3 | 4 | 10 | 12 | 5 |
| 74 | Quant | Quant | 6 | computer skills - graphics, GIS, other specific | 3 | 9 | 1 | 4 | 3 | 0 | 1 | 2 | 2 | 0 | 5 | 3 | 3 | 3 | 2 | 7 |
| 75 | Quant | Quant | 95 | computer skills - programming | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 1 | 3 | 0 | 2 | 5 | 0 |
| 76 | Quant | Quant | 7 | computer skills - web page setup | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 77 | Quant | Quant | 48 | quantitative skills - analysis | 6 | 2 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 2 |
| 78 | Quant | Quant | 99 | quantitative skills - graphs | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 79 | Quant | Quant | 50 | quantitative skills - statistics | 22 | 10 | 2 | 8 | 0 | 0 | 0 | 1 | 0 | 7 | 2 | 0 | 6 | 4 | 2 | 8 |
| 80 | **Quant Total** | | | Quantitative reasoning skills | **38** | **44** | **21** | **16** | **6** | **0** | **1** | **15** | **3** | **13** | **13** | **10** | **13** | **21** | **22** | **22** |
| 81 | Research | res - anal | 9 | research methods -data analysis | 5 | 4 | 0 | 2 | 1 | 0 | 1 | 2 | 0 | 0 | 2 | 1 | 0 | 3 | 2 | 2 |

| Line | Group 1 | Group 2 | ID | Text | Counts for Prep defi-cient | Counts for Prep excep-tional | EXCEPTIONAL BY MAJOR DIVISION NS | SS | HU | PR | Self | EXCEPTIONAL BY SCHOOL R | T | W | Y | EXCEPTIONAL GPA H | M | L | Gender M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 82 | Research | res - anal | 13 | research methods -data interpretation | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 83 | Research | res - conduct | 58 | research skills - general | 23 | 32 | 10 | 6 | 15 | 0 | 1 | 16 | 3 | 8 | 5 | 2 | 11 | 19 | 10 | 22 |
| 84 | Research | res - conduct | 51 | research - conducting | 2 | 10 | 2 | 3 | 3 | 0 | 2 | 1 | 0 | 4 | 5 | 1 | 4 | 5 | 0 | 10 |
| 85 | Research | res - conduct | 104 | research - lab skills | 5 | 22 | 21 | 0 | 0 | 0 | 1 | 10 | 0 | 1 | 11 | 4 | 11 | 7 | 9 | 13 |
| 86 | Research | res - conduct | 57 | research methods -general | 12 | 11 | 3 | 8 | 0 | 0 | 0 | 5 | 1 | 5 | 0 | 2 | 6 | 3 | 6 | 5 |
| 87 | Research | res - conduct | 59 | research skills - technical | 3 | 5 | 1 | 2 | 1 | 0 | 1 | 4 | 0 | 0 | 1 | 1 | 2 | 2 | 2 | 3 |
| 88 | Research | res - conduct | 525 | research skills - understanding of foreign language | 6 | 7 | 0 | 3 | 3 | 0 | 1 | 2 | 2 | 1 | 2 | 0 | 1 | 6 | 5 | 2 |
| 89 | Research | res - design | 52 | research design skills - general | 16 | 10 | 2 | 7 | 1 | 0 | 0 | 6 | 1 | 3 | 0 | 1 | 3 | 6 | 3 | 7 |
| 90 | Research | res - design | 87 | research design - qualitative | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |
| 91 | Research | res - design | 53 | research design skills - recog methodological limitations | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 92 | Research | res - design | 54 | research methods - designing research question | 9 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 1 | 1 |
| 93 | Research | res - presenting | 79 | research - presenting findings | 4 | 3 | 2 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 2 | 1 | 2 |
| 94 | Research | res -data | 55 | research methods -data analysis | 2 | 8 | 2 | 4 | 1 | 1 | 0 | 2 | 3 | 1 | 2 | 2 | 2 | 4 | 3 | 5 |
| 95 | Research | res -data | 56 | research methods -data gathering | 4 | 10 | 3 | 5 | 1 | 0 | 1 | 4 | 2 | 2 | 2 | 3 | 3 | 4 | 2 | 8 |
| 96 | **Research Total** | | | Research skills: design, conducting, analysis | **97** | **125** | **46** | **43** | **26** | **2** | **8** | **53** | **14** | **27** | **31** | **19** | **45** | **61** | **44** | **81** |
| 97 | Self | self - conduct | 45 | perseverance | 2 | 10 | 6 | 1 | 2 | 0 | 1 | 6 | 1 | 0 | 3 | 3 | 2 | 5 | 3 | 7 |
| 98 | Self | self - conduct | 84 | self -discipline / work ethic | 4 | 38 | 13 | 12 | 10 | 1 | 2 | 11 | 6 | 8 | 13 | 6 | 14 | 18 | 10 | 28 |
| 99 | Self | self - conduct | 93 | working hard | 4 | 13 | 7 | 4 | 2 | 0 | 0 | 3 | 3 | 4 | 3 | 1 | 5 | 7 | 4 | 9 |
| 100 | Self | self - conduct | 530 | independence | 14 | 33 | 18 | 8 | 6 | 0 | 1 | 16 | 0 | 7 | 10 | 2 | 10 | 21 | 11 | 22 |
| 101 | Self | self - confid | 61 | self-confidence | 9 | 2 | 0 | 0 | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 0 |
| 102 | Self | self - confid | 97 | self-confidence - intellectual abilities | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 |
| 103 | Self | self - personal | 526 | self-personal - problems with health, emotions, etc. | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 104 | Self | self - other | 98 | knowledge - personal background | 0 | 18 | 2 | 8 | 5 | 0 | 3 | 3 | 1 | 7 | 7 | 3 | 5 | 10 | 5 | 13 |
| 105 | Self | self - underst | 60 | self reflection | 1 | 3 | 0 | 3 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 3 |
| 106 | Self | self - underst | 73 | self-understanding - of lack of quality in performance, writi | 2 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 |
| 107 | Self | self -motivatior | 38 | motivation - in general/academic | 14 | 26 | 3 | 11 | 7 | 3 | 2 | 11 | 2 | 8 | 5 | 6 | 9 | 11 | 6 | 20 |
| 108 | Self | self -motivatior | 100 | motivation - likes doing research | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 |
| 109 | Self | self -motivatior | 37 | motivation for project | 14 | 36 | 6 | 10 | 14 | 0 | 6 | 11 | 3 | 7 | 15 | 17 | 10 | 9 | 17 | 19 |
| 110 | **Self Total** | | | Personal skills and attributes: work ethic, motivation, time management, independence | **66** | **183** | **58** | **57** | **49** | **4** | **15** | **66** | **16** | **43** | **58** | **43** | **58** | **82** | **61** | **122** |
| 111 | **Grand Total** | | | | **762** | **1102** | **337** | **340** | **331** | **20** | **72** | **402** | **137** | **242** | **321** | **172** | **393** | **537** | **371** | **731** |
| 112 | | | | | | | | | | | | | | | | | | | | |
| 113 | xomit | gen none | 106 | none - no exceptional area of prep | 0 | 60 | 14 | 27 | 14 | 0 | 5 | 15 | 4 | 18 | 23 | 29 | 24 | 7 | 18 | 42 |
| 114 | xomit | gen none | 39 | none - no poor area of prep | 125 | 0 | | | | | | | | | | | | | | |

**Table Mentor Q3 - 2: Summary Counts for Faculty Survey Questions:**
**Please describe areas where the student was exceptionally well prepared.**
**Please describe areas where the student should have been better prepared for this capstone.**

| | | | | Counts for Prep | | DEFICIENT | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA | | | Gender | |
| Line | Group 1 | Group 2 | Text | defi-cient | excep-tional | NS | SS | HU | PR | Self | R | T | W | Y | H | M | L | M | F |
| 2 | General all T | | Well prepared in general | 2 | 19 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 2 | 0 | 1 | 1 |
| 9 | Collab Total | | Collaboration skills: attending meetings, following directions, responding to feedback | 29 | 21 | 6 | 13 | 4 | 1 | 4 | 12 | 3 | 6 | 8 | 13 | 12 | 4 | 13 | 16 |
| 30 | Commun Total | | Communication skills - general, written, oral | 155 | 222 | 57 | 40 | 52 | 1 | 5 | 58 | 17 | 31 | 49 | 67 | 63 | 25 | 52 | 103 |
| 46 | CritThk Total | | Critical Thinking Skills | 95 | 108 | 15 | 38 | 37 | 0 | 5 | 21 | 4 | 30 | 40 | 37 | 36 | 22 | 30 | 65 |
| 56 | Discipline Total | | Disciplinary knowledge, theory, and ways of thinking | 120 | 215 | 20 | 33 | 49 | 2 | 15 | 35 | 11 | 31 | 43 | 43 | 38 | 39 | 44 | 76 |
| 63 | LitReview Total | | Literature review skills: conducting, locating sources, writing up | 49 | 72 | 15 | 21 | 9 | 1 | 3 | 19 | 5 | 16 | 9 | 20 | 18 | 11 | 14 | 35 |
| 72 | ProjMgt Total | | Project management skills: planning, organization, setting goals, time management | 111 | 93 | 29 | 37 | 33 | 3 | 9 | 32 | 11 | 24 | 44 | 45 | 43 | 23 | 54 | 57 |
| 80 | Quant Total | | Quantitative reasoning skills | 38 | 44 | 14 | 22 | 2 | 0 | 0 | 18 | 5 | 6 | 9 | 10 | 12 | 16 | 12 | 26 |
| 96 | Research Total | | Research skills: design, conducting, analysis | 97 | 125 | 18 | 47 | 21 | 3 | 8 | 28 | 15 | 23 | 31 | 31 | 44 | 22 | 38 | 59 |
| 110 | Self Total | | Personal skills and attributes: work ethic, motivation, time management, independence | 66 | 183 | 23 | 14 | 23 | 1 | 5 | 16 | 11 | 18 | 21 | 24 | 28 | 14 | 22 | 44 |
| 111 | Grand Total | | | 762 | 1102 | 197 | 267 | 230 | 12 | 54 | 239 | 82 | 185 | 256 | 290 | 296 | 176 | 280 | 482 |

**Table Mentor Q3 - 2: Summary Counts for Faculty Survey Questions:**
**Please describe areas where the student was exceptionally well prepared.**
**Please describe areas where the student should have been better prepared for this cap**

| | | | | Counts for Prep | | EXCEPTIONAL | | | | | | | | | EXCEPTIONAL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA | | | Gender | |
| Line | Group 1 | Group 2 | Text | defi-cient | excep-tional | NS | SS | HU | PR | Self | R | T | W | Y | H | M | L | M | F |
| 2 | General all T | | Well prepared in general | 2 | 19 | 6 | 7 | 5 | 1 | 0 | 3 | 5 | 7 | 4 | 1 | 5 | 13 | 3 | 16 |
| 9 | Collab Total | | Collaboration skills: attending meetings, following directions, responding to feedback | 29 | 21 | 3 | 5 | 7 | 2 | 4 | 4 | 3 | 7 | 7 | 5 | 11 | 5 | 5 | 16 |
| 30 | Commun Total | | Communication skills - general, written, oral | 155 | 222 | 69 | 63 | 77 | 2 | 11 | 72 | 35 | 42 | 73 | 29 | 75 | 118 | 73 | 149 |
| 46 | CritThk Total | | Critical Thinking Skills | 95 | 108 | 34 | 26 | 39 | 1 | 7 | 39 | 14 | 22 | 33 | 9 | 34 | 65 | 46 | 62 |
| 56 | Discipline Total | | Disciplinary knowledge, theory, and ways of thinking | 120 | 215 | 51 | 69 | 70 | 6 | 18 | 94 | 21 | 36 | 64 | 42 | 85 | 88 | 87 | 128 |
| 63 | LitReview Total | | Literature review skills: conducting, locating sources, writing up | 49 | 72 | 23 | 27 | 18 | 1 | 3 | 21 | 14 | 19 | 18 | 5 | 30 | 37 | 15 | 57 |
| 72 | ProjMgt Total | | Project management skills: planning, organization, setting goals, time management | 111 | 93 | 26 | 27 | 34 | 1 | 5 | 35 | 12 | 26 | 20 | 9 | 37 | 47 | 15 | 78 |
| 80 | Quant Total | | Quantitative reasoning skills | 38 | 44 | 21 | 16 | 6 | 0 | 1 | 15 | 3 | 13 | 13 | 10 | 13 | 21 | 22 | 22 |
| 96 | Research Total | | Research skills: design, conducting, analysis | 97 | 125 | 46 | 43 | 26 | 2 | 8 | 53 | 14 | 27 | 31 | 19 | 45 | 61 | 44 | 81 |
| 110 | Self Total | | Personal skills and attributes: work ethic, motivation, time management, independence | 66 | 183 | 58 | 57 | 49 | 4 | 15 | 66 | 16 | 43 | 58 | 43 | 58 | 82 | 61 | 122 |
| 111 | Grand Total | | | 762 | 1102 | 337 | 340 | 331 | 20 | 72 | 402 | 137 | 242 | 321 | 172 | 393 | 537 | 371 | 731 |

**Table Mentor Q3 - 3: Codebook Listing and Summary Counts for Faculty Survey Questions:**
**Please describe areas where the student was exceptionally well prepared.**
**Please describe areas where the student should have been better prepared for this capstone.**

| | | | | | DEFICIENT | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Counts for Prep | | | BY MAJOR DIVISION | | | | | BY SCHOOL | | | | GPA | | | Gender | |
| Line | Group 1 | Text | defi-cient | excep-tional | Def N | NS | SS | HU | PR | Self | R | T | W | Y | H | M | L | M | F |
| 2 | General all Total | Well prepared in general | 0.3% | 1.7% | 2 | 0.0% | 0.7% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.8% | 0.0% | 0.7% | 0.0% | 0.4% | 0.2% |
| 9 | Collab Total | Collaboration skills: attending meetings, following directions, responding to feedback | 3.8% | 1.9% | 29 | 3.0% | 4.9% | 1.7% | 8.3% | 7.4% | 5.0% | 3.7% | 3.2% | 3.1% | 4.5% | 4.1% | 2.3% | 4.6% | 3.3% |
| 30 | Commun Total | Communication skills - general, written, oral | 20.3% | 20.1% | 155 | 28.9% | 15.0% | 22.6% | 8.3% | 9.3% | 24.3% | 20.7% | 16.8% | 19.1% | 23.1% | 21.3% | 14.2% | 18.6% | 21.4% |
| 46 | CritThk Total | Critical Thinking Skills | 12.5% | 9.8% | 95 | 7.6% | 14.2% | 16.1% | 0.0% | 9.3% | 8.8% | 4.9% | 16.2% | 15.6% | 12.8% | 12.2% | 12.5% | 10.7% | 13.5% |
| 56 | Discipline Total | Disciplinary knowledge, theory, and ways of thinking | 15.7% | 19.5% | 120 | 10.2% | 12.4% | 21.3% | 16.7% | 27.8% | 14.6% | 13.4% | 16.8% | 16.8% | 14.8% | 12.8% | 22.2% | 15.7% | 15.8% |
| 63 | LitReview Total | Literature review skills: conducting, locating sources, writing up | 6.4% | 6.5% | 49 | 7.6% | 7.9% | 3.9% | 8.3% | 5.6% | 7.9% | 6.1% | 8.6% | 3.5% | 6.9% | 6.1% | 6.3% | 5.0% | 7.3% |
| 72 | ProjMgt Total | Project management skills: planning, organization, setting goals, time management | 14.6% | 8.4% | 111 | 14.7% | 13.9% | 14.3% | 25.0% | 16.7% | 13.4% | 13.4% | 13.0% | 17.2% | 15.5% | 14.5% | 13.1% | 19.3% | 11.8% |
| 80 | Quant Total | Quantitative reasoning skills | 5.0% | 4.0% | 38 | 7.1% | 8.2% | 0.9% | 0.0% | 0.0% | 7.5% | 6.1% | 3.2% | 3.5% | 3.4% | 4.1% | 9.1% | 4.3% | 5.4% |
| 96 | Research Total | Research skills: design, conducting, analysis | 12.7% | 11.3% | 97 | 9.1% | 17.6% | 9.1% | 25.0% | 14.8% | 11.7% | 18.3% | 12.4% | 12.1% | 10.7% | 14.9% | 12.5% | 13.6% | 12.2% |
| 110 | Self Total | Personal skills and attributes: work ethic, motivation, time management, independence | 8.7% | 16.6% | 66 | 11.7% | 5.2% | 10.0% | 8.3% | 9.3% | 6.7% | 13.4% | 9.7% | 8.2% | 8.3% | 9.5% | 8.0% | 7.9% | 9.1% |
| 111 | **Grand Total** | | 100.0% | 100.0% | 762 | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | Total N: | 762 | 1,102 | | 197 | 267 | 230 | 12 | 54 | 239 | 82 | 185 | 256 | 290 | 296 | 176 | 280 | 482 |

Excel conditional highlighting is used to show variation within individual rows, within the deficient and exceptional areas, separately.

Rows or columns with N under 25 have been excluded from the highlighting.

**Table Mentor Q3 - 3: Codebook Listing and Summary Counts for Faculty S**
**Please describe areas where the student was exceptionally well preparec**
**Please describe areas where the student should have been better prepar**

| Line | Group 1 | Text | Counts for Prep defi-cient | Counts for Prep excep-tional | EXCEPTIONAL Exc N | BY MAJOR DIVISION NS | SS | HU | PR | Self | BY SCHOOL R | T | W | Y | GPA H | M | L | Gender M | F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | General all Total | Well prepared in general | 0.3% | 1.7% | 19 | 1.8% | 2.1% | 1.5% | 5.0% | 0.0% | 0.7% | 3.6% | 2.9% | 1.2% | 0.6% | 1.3% | 2.4% | 0.8% | 2.2% |
| 9 | Collab Total | Collaboration skills: attending meetings, following directions, responding to feedback | 3.8% | 1.9% | 8 | 0.9% | 1.5% | 2.1% | 10.0% | 5.6% | 1.0% | 2.2% | 2.9% | 2.2% | 2.9% | 2.8% | 0.9% | 1.3% | 2.2% |
| 30 | Commun Total | Communication skills - general, written, oral | 20.3% | 20.1% | 2 | 20.5% | 18.5% | 23.3% | 10.0% | 15.3% | 17.9% | 25.5% | 17.4% | 22.7% | 16.9% | 19.1% | 22.0% | 19.7% | 20.4% |
| 46 | CritThk Total | Critical Thinking Skills | 12.5% | 9.8% | 2 | 10.1% | 7.6% | 11.8% | 5.0% | 9.7% | 9.7% | 10.2% | 9.1% | 10.3% | 5.2% | 8.7% | 12.1% | 12.4% | 8.5% |
| 56 | Discipline Total | Disciplinary knowledge, theory, and ways of thinking | 15.7% | 19.5% | 33 | 15.1% | 20.3% | 21.1% | 30.0% | 25.0% | 23.4% | 15.3% | 14.9% | 19.9% | 24.4% | 21.6% | 16.4% | 23.5% | 17.5% |
| 63 | LitReview Total | Literature review skills: conducting, locating sources, writing up | 6.4% | 6.5% | 23 | 6.8% | 7.9% | 5.4% | 5.0% | 4.2% | 5.2% | 10.2% | 7.9% | 5.6% | 2.9% | 7.6% | 6.9% | 4.0% | 7.8% |
| 72 | ProjMgt Total | Project management skills: planning, organization, setting goals, time management | 14.6% | 8.4% | 5 | 7.7% | 7.9% | 10.3% | 5.0% | 6.9% | 8.7% | 8.8% | 10.7% | 6.2% | 5.2% | 9.4% | 8.8% | 4.0% | 10.7% |
| 80 | Quant Total | Quantitative reasoning skills | 5.0% | 4.0% | 10 | 6.2% | 4.7% | 1.8% | 0.0% | 1.4% | 3.7% | 2.2% | 5.4% | 4.0% | 5.8% | 3.3% | 3.9% | 5.9% | 3.0% |
| 96 | Research Total | Research skills: design, conducting, analysis | 12.7% | 11.3% | 10 | 13.6% | 12.6% | 7.9% | 10.0% | 11.1% | 13.2% | 10.2% | 11.2% | 9.7% | 11.0% | 11.5% | 11.4% | 11.9% | 11.1% |
| 110 | Self Total | Personal skills and attributes: work ethic, motivation, time management, independence | 8.7% | 16.6% | 36 | 17.2% | 16.8% | 14.8% | 20.0% | 20.8% | 16.4% | 11.7% | 17.8% | 18.1% | 25.0% | 14.8% | 15.3% | 16.4% | 16.7% |
| 111 | **Grand Total** | | 100.0% | 100.0% | 183 | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% | 100.0% |
| | | Total N: | 762 | 1,102 | | 337 | 340 | 331 | 20 | 72 | 402 | 137 | 242 | 321 | 172 | 393 | 537 | 371 | 731 |

Excel conditional highlighting is used to show variation within individual rows, within the defici

Rows or columns with N under 25 have been excluded from the highlighting.

# PART 7: ALUMNI SURVEY REPORT

## SECTION 1: General Analysis of Results

## SECTION 2: Analysis of Responses to the open-ended question: "What about your capstone experience (good or bad) had the most impact on you?"

## APPENDICES

**Appendix A**

- Table A1 – Composite Results
- Table A1 – Section F Results by College

**Appendix B – Capstone Contribution to Development Means**

- Table B1 – By College
- Table B2 – By Gender
- Table B3 – By Cohort
- Table B4 – By College GPA
- Table B5 – By Primary Major of Capstone

**Appendix C – Capstone Experiences Questions Means**

- Table C1 – By College
- Table C2 – By Gender
- Table C3 – By Cohort
- Table C4 – By College GPA
- Table C5 – By Primary Major of Capstone

**Appendix D – General Linear Models for:**

- Overall Capstone Experience
- Capstone Contribution to Development
- Capstone Experience Rating Average
- Developed more academically from capstone than from a regular course
- Capstone more valuable than an additional course in the major

**Appendix E – Correlations of Key Capstone Evaluation Questions with Other Relevant Questions**

**Appendix F – Comparison of Result Means by Academic Division**

**Appendix G – Comments Categorized with Frequencies**

**Appendix H – Blank Alumni Survey Form (HEDS Main Survey and Capstone Supplemental Questions)**

# Section 1: Alumni Survey Overview and General Analysis of Results

## Overview

The four private liberal arts colleges in the Teagle Capstone study (Allegheny College, Augustana College, The College of Wooster, and Washington College, referred to here as the "Teagle Colleges") participated in the 2009-10 Higher Education Data Sharing (HEDS) Alumni Survey to investigate alumni reports of the impact of the senior capstone experience on their post-graduate personal and professional lives, and their retrospective thoughts on the nature and value of the capstone experience. Supplemental questions focusing on capstone experiences were added to the standard HEDS Alumni Survey for this purpose. A copy of the main survey and supplemental questions is included in the appendix. The graduating class cohorts of 2007, 2004 and 1999 were surveyed to represent different post-graduate life/career stages - two, five and ten years out, respectively.

In addition to analyzing the composite overall results for the Teagle Colleges, this report looks at the results for each or the four colleges separately as part of an attempt to discover best practices and cost/benefit issues for structuring capstone programs. Also of note is that while many colleges have senior capstone programs in selected areas, most usually in the sciences, or programs that are restricted to high ability students, the Teagle Colleges have, or in one case, are developing, a *universal* senior capstone requirement. The research questions for our study include whether the impact of the capstone experiences vary by the student's academic discipline, academic ability, academic major, or gender (see Tables 4-6).

Because of the potential sensitivity of presenting data in the fine detail provided below, the Teagle Colleges are identified by aliases: Red, Tan, White, and Yellow. Three of the institutions had a universal capstone requirement in place for the three graduating classes, while Tan College is only currently implementing a universal senior capstone program and did not have it in place for these classes. For uniformity, alums from Tan College were asked to respond to the capstone experience questions only if they completed a senior capstone experience. Nonetheless, the results for Tan are not strictly comparable.

## Characteristics of Respondents

The number of respondents from each college and cohort is given below:

| Cohort | Red | Tan | White | Yellow | Total |
|---|---|---|---|---|---|
| 1999 | 60 | 54 | 20 | 155 | 289 |
| 2004 | 71 | 53 | 40 | 145 | 309 |
| 2007 | 118 | 69 | 0 | 117 | 304 |
| Total | 249 | 176 | 60 | 417 | 902 |
| % of Total | 27.6% | 19.5% | 6.7% | 46.2% | 100.0% |

The sampling does present some concerns in interpreting the results. Due to a miscommunication, White did not survey the 2007 cohort. Also, in the composite results below, which are unweighted by institution, White will be underrepresented and Yellow overrepresented. Finally, sample bias is a potential issue since, as is typical, only a minority of alumni responded to the surveys. The percentage of the graduating classes that responded was approximately 10% for Tan, 23% for Red, 16% for White, and 35% for Yellow. Females were overrepresented in the respondents, with 63% being female, 37% male, although part of this is because we estimate about 55%-58% of our graduates are female.

## Composite Results

Table A1 in Appendix A is a tabular report of the basic descriptive statistics for the combined responses from the Teagle Colleges, and displays a summary of response percentages and means for the entire survey. In addition, the separate values by school are given for Section F, the capstone specific supplemental questions. Section F is the focus for the remarks below:

- **Overall capstone experience.** Alums rated the overall capstone experience highly. 72% of alums rated the experience "very good" or "exceptionally good"; 90% rated it "good" or better. The mean ratings were not statistically significant by academic major (aggregated by division into natural sciences -NS, social sciences - SS, humanities -HUM). A general linear model analysis with school, gender, and college GPA included, showed significant effects for school and college GPA. Red showed the highest means overall and for each academic division (Appendix F). Further details by subgroup are discussed below.

- **Contribution to skill development.** Alums also rated the contribution of their senior project to their development highly in many critical thinking and skill areas, as shown in the following table, which is sorted by the percent responding "quite a bit" or "very much". The top seven items, those over 70%, are developmental outcomes that one might expect from almost every capstone. The last two items, "ability to make an oral presentation" and "integrating ideas from multiple disciplines" may be lower because not all capstones include an oral presentation or are interdisciplinary.

| Capstone Contribution to development - % quite a bit or very much | |
|---|---|
| Learning effectively on my own | 81.1% |
| Ability to think critically and analytically | 79.9% |
| Ability to write effectively (NS+) | 78.4% |
| Skill in the interpreting of data, evidence, texts, and/or works (NS +, SS+) | 78.4% |
| Managing a large project | 76.1% |
| Having confidence in my own abilities | 73.1% |
| Ability to think creatively (HUM+) | 70.7% |
| Ability to make an effective oral presentation (NS+) | 61.3% |
| Integrating ideas from multiple disciplines (SS+, HUM+) | 58.0% |

An analysis of means shows some significant differences by academic divisions as noted above for the higher mean divisions, some of which may reflect the relative emphasis on a skill within the division or in preparation. For instance, is development of writing and oral presentation skill during the capstone rated higher among NS alumni because the capstone emphasizes these skills more than in a typical science course? (c.f. Appendix F)

The contribution to development means also varied by college GPA level, with the peak rating generally occurring at the A- level (see table 5 below).

- **Growth Contributions.** Alumni also rated the capstone experience highly as a contributor to intellectual growth, self-understanding, and personal growth, as well as preparation for a job or

graduate school. Lower rated was the impact of the capstone on clarifying job or graduate school objectives, possibly because for the majority of alumni, those objectives were determined prior to the capstone.

| Capstone experience - % agree or strongly agree | |
|---|---|
| Positive influence on intellectual growth/interest in ideas | 82.6% |
| Led to better understanding of skills, abilities, interests | 75.9% |
| Positive influence on personal growth, attitudes, values | 69.6% |
| Feel better prepared for job or grad school than peers | 67.7% |
| More intellectually challenging than my reg coursework | 67.6% |
| Developed more academically than from a reg course | 55.9% |
| Helped me clarify my career of graduate school objectives | 37.0% |

- **Comparison to regular courses.** When comparing the capstone experience to regular courses, a slight majority seem to favor the capstone. 56% of alums felt they developed more academically from their capstone than they did from "a regular course". In the context of this question, "a regular course" would likely be interpreted by the respondent as any standard lecture type course as contrasted to their capstone research or individual project experience. Similarly, when comparing the capstone to an additional course in the major, 51% felt the capstone was more valuable than an additional course in the major; 36% were neutral; 13% thought an additional course in the major would be more valuable.

  In summary, the results seem largely supportive of the value of a senior capstone experience as a significant contributor to intellectual and personal growth and self-understanding. However, only a slight majority indicated they felt they developed more academically from their capstone than from a regular course or an additional course in their major.

## Overall Results by Institution, Primary Major, Gender, and Academic GPA Level

A factor analysis of the nine "contribution to development" questions and six "capstone experience" questions indicated that each set of questions was based on a single latent factor and that the averages of the items could be use as reliable scales.[1] Accordingly, the "capstone contribution to development average" and the capstone experiences rating average" are used below as summary scales in the tables below.

The tables below give breakdowns of the means for the overall rating items in Section F, including the two scales indicated above. If ANOVA indicated the differences in the means were statistically significant $p<.05$ for an item, the highest mean for that item has been bolded.

The scales for the items are as follows:

- Overall capstone experience: 7=exceptionally good, 6=very good, 5= good, 4=neutral, 3=poor, 2=very poor, 1= exceptionally poor

[1] Appendices B and C show the items included in the "contribution to development" and "capstone experience" questions, respectively, and their detailed means.

- Capstone contribution questions: 5=very much, 4=quite a bit, 3=somewhat, 2=very little, 1=not at all
- Capstone experiences questions: 5=strongly agree, 4=agree, 3=neutral, 2=disagree, 1=strongly disagree
- Compared value questions: 3=capstone is rated more valuable, 2=capstone as valuable, 1=capstone less valuable

**Table 2: Overall Ratings by Cohort**

| Cohort | Overall capstone experience | Capstone contribution to development average | Capstone experiences rating average | Compared value: Additional courses in major | Compared value: Additional courses outside of major | Compared value: Participating in co-curricular activities | N |
|---|---|---|---|---|---|---|---|
| 1999 | 5.78 | 3.93 | 3.69 | 2.39 | 2.51 | 2.44 | 268 |
| 2004 | 5.87 | 4.05 | 3.86 | 2.35 | 2.53 | 2.41 | 287 |
| 2007 | 5.97 | **4.12** | **3.91** | 2.40 | 2.57 | 2.48 | 286 |
| Total | 5.88 | 4.04 | 3.82 | 2.38 | 2.54 | 2.44 | 841 |

Looking at the overall means for the three cohorts, on average, alums:

- rate the capstone experience as "very good" (about 6 as an average),
- feel the capstone contributed "quite a bit" to their development, when assessed over a variety of academic areas, and,
- generally consider the capstone as more valuable than the alternative options of an additional course either in or outside the major, or participating in additional co-curricular experiences.

When considered by cohort, the overall pattern in Table 2 appears to be that the capstone experience and development ratings are decreasing with the length of time from graduation. In comparing this data with that from questions 1 and 6 from the main survey, where alums rate other college experiences, it appears that the ratings for the impact of academic experiences are generally lower for the 1999 cohort than for the 2007 cohort, but there are enough exceptions to make one hesitate to conclude that this is, for example, some sort of fading memory phenomenon or some other phenomenon we can readily explain. Of course, the capstone programs or related curricular programs may have simply improved over time.

**Table 3: Overall Ratings by School**

| school | Overall capstone experience | Capstone contribution to development average | Capstone experiences rating average | Compared value: Additional courses in major | Compared value: Additional courses outside of major | Compared value: Participating in co-curricular activities | N |
|---|---|---|---|---|---|---|---|
| Red | **6.16** | **4.20** | **4.09** | **2.57** | 2.59 | **2.54** | 242 |
| Tan | 5.63 | 3.81 | 3.62 | 2.20 | 2.48 | 2.41 | 126 |
| White | 5.68 | 3.90 | 3.67 | 2.28 | 2.46 | 2.28 | 59 |
| Yellow | 5.81 | 4.03 | 3.75 | 2.34 | 2.54 | 2.42 | 414 |
| Total | 5.88 | 4.04 | 3.82 | 2.38 | 2.54 | 2.44 | 841 |

The ratings by school in Table 3 are statistically significant for five of the six items, and strongly suggest that the capstone program at Red is having a stronger impact. If this is corroborated by other project data, this could be a useful result in that it opens an area of investigation that may lead to a better understanding of how various practices may impact capstone outcomes. Yellow's means also show apparent strength relative to Tan or White.

**Table 4: Overall Ratings by Gender**

| Sex | Overall capstone experience | Capstone contribution to development average | Capstone experiences rating average | Compared value: Additional courses in major | Compared value: Additional courses outside of major | Compared value: Participating in co-curricular activities | N |
|---|---|---|---|---|---|---|---|
| Male | 5.84 | 3.95 | 3.75 | 2.40 | 2.54 | 2.41 | 315 |
| Female | 5.90 | **4.09** | **3.87** | 2.37 | 2.54 | 2.46 | 521 |
| Total | 5.88 | 4.04 | 3.83 | 2.38 | 2.54 | 2.44 | 836 |

Table 4 shows statistically significant higher means for female students on the capstone experiences rating average and contribution to development scales. Looking more closely at the experience questions in Appendix C, females had statistically significant higher means for clarifying their graduate school objectives, feeling better prepared for graduate school, the capstone having a positive influence on their intellectual growth, and the capstone being a positive influence on their personal growth.

**Table 5: Overall Ratings by Self-Reported Undergraduate GPA**

| Overall grade received as undergrad | Overall capstone experience | Capstone contribution to development average | Capstone experiences rating average | Compared value: Additional courses in major | Compared value: Additional courses outside of major | Compared value: Participating in co-curricular activities | N |
|---|---|---|---|---|---|---|---|
| A | 6.04 | 4.11 | 3.88 | 2.46 | 2.60 | **2.58** | 235 |
| A- | **6.06** | **4.17** | **3.96** | **2.47** | **2.62** | 2.45 | 180 |
| B+ | 5.94 | 4.12 | 3.93 | 2.43 | 2.57 | 2.51 | 168 |
| B | 5.73 | 3.90 | 3.64 | 2.30 | 2.50 | 2.35 | 157 |
| B-/C+ or below | 5.28 | 3.67 | 3.50 | 2.06 | 2.25 | 2.22 | 98 |
| Total | 5.88 | 4.04 | 3.82 | 2.38 | 2.54 | 2.44 | 838 |

Table 5 shows there are statistically significant differences in ratings of the capstone experience based on overall GPA, with students with higher GPAs generally rating the capstone higher. The results for A/A/B+ students are fairly clustered and aggregating shows groups might be reasonable, but significant drops occur for each of the steps to B and to "B-/C+ and below".

**Table 6: Overall Ratings by Primary Major of Capstone Project**

| Primary Major | Overall capstone experience | Capstone contribution to development average | Capstone experiences rating average | Compared value: Additional courses in major | Compared value: Additional courses outside of major | Compared value: Participating in co-curricular activities | N |
|---|---|---|---|---|---|---|---|
| Teacher Education | 5.68 | 4.28 | 3.97 | 2.64 | 2.82 | **2.81** | 22 |
| Languages/Lit/Comm | 5.77 | 4.00 | 3.82 | 2.37 | 2.44 | 2.30 | 125 |
| Humanities | 6.38 | 4.11 | 4.08 | 2.52 | 2.67 | 2.48 | 21 |
| Natural Sciences | 5.86 | 4.02 | 3.77 | 2.37 | 2.57 | 2.49 | 249 |
| Social Sciences | 5.90 | 4.06 | 3.84 | 2.39 | 2.54 | 2.44 | 354 |
| Visual and Performing Arts | 6.08 | 4.05 | 3.82 | 2.27 | 2.30 | 2.49 | 37 |
| Business | 5.79 | 3.85 | 3.99 | 2.50 | 2.61 | 2.44 | 19 |
| Total | 5.88 | 4.04 | 3.83 | 2.39 | 2.54 | 2.45 | 827 |

Table 6 indicates the ratings by the primary major relevant to the capstone project, as reported by the alumni. These have been clustered using the College Instructional Program (CIP) 2000 classifications. Although the means appear to differ notably in some cases, ANOVA showed the differences were not statistically significant for five of the six variables, and if "Teacher Education" as a major was removed, none of the variables would have statistically significant differences. (The "Teacher Education" results are based almost entirely on alums from Tan where the capstone experience is student teaching.) Since many colleges promote undergraduate research most extensively in the sciences, this table gives an encouraging result in that it appears that capstone experiences can be successfully provided for students in any liberal arts area.

The breakdown of the items averaged in Table 6, as given in Appendix B, shows teacher education majors have a particularly high mean for the capstone contribution to "ability to make an effective oral presentation", "ability to think creatively" and "integrating ideas from multiple disciplines" and "better understanding of skills, abilities, interests". Social science majors had a particularly high mean for "skill in interpreting data, evidence, text or works".

To simplify the analysis by major while eliminating majors with small Ns, the capstone majors have been consolidated in the table below into the natural sciences, social sciences and humanities/arts. Business was included with the social sciences and teacher education majors were excluded. The table shows that the ratings are remarkably similar for the three groups (and they were not statistically significant).

**Table 7: Overall Ratings by Division of the Capstone Project**

| Primary Major Groups | Overall capstone experience | Capstone contribution to development average | Capstone experiences rating average | Compared value: Additional courses in major | Compared value: Additional courses outside of major | Compared value: Participating in co-curricular activities | N |
|---|---|---|---|---|---|---|---|
| lang/lit/comm/arts/humanities | 5.90 | 4.02 | 3.85 | 3.58 | 2.37 | 2.44 | 186 |
| nat sci/math/cs | 5.86 | 4.02 | 3.77 | 3.49 | 2.37 | 2.57 | 250 |
| soc sci/business | 5.90 | 4.05 | 3.85 | 3.56 | 2.39 | 2.55 | 374 |
| Total | 5.89 | 4.03 | 3.82 | 3.54 | 2.38 | 2.53 | 810 |

## General Linear Modeling – Combining School, Cohort, Gender, Major and GPA

Tables 2 to 7 above give breakdowns of response means shown individually by school, gender, capstone major, and college GPA level. Additional exploration of potential interactions of these variables when taken together was done by incorporating all these variables using General Linear Modeling (GLM) in SPSS. The resulting models for predicting the overall capstone experience, capstone contribution to development average, and capstone experiences average indicated that the dominant effects were from school, college GPA, and, in some cases an interaction effect from school and college GPA. Also:

- Gender and graduation cohort did not have a significant effect when combined with school and college
- The model incorporating the major division of the capstone with the school and college GPA resulting was too complicated to be intelligible, with significant interactions of school*major and school*major*college GPA. The dominant factor, however, appeared to be school. Based on this majors were removed as a variable in the GLMs and the school/major interaction explored separately - see Appendix F.

The predictive models that emerged from the GLM analysis for key rating items and scales are shown in Appendix D. The models each predict a value for a key rating indicator based on school and college GPA, the two dominant effects. An interaction effect between school and college GPA, which was statistically significant for all the models shown, will manifest itself as differences in the slopes of the lines for the schools.

## Implications for our Research Question: What is the impact of the capstone experience on outcomes leading to lifelong learning? What is the perceived impact one, five and five-plus years after graduation?

Alumni responses indicate the capstone experience contributes to lifelong learning in at least three ways: 1) Having a positive learning experience during the capstone itself, thereby contributing to an interest or inclination to engage later in similar challenging learning activities; 2) Developing the academic and project management skills required for independent learning; and 3) Developing confidence in one's ability to succeed and be effective at learning tasks. These three areas are essential for significant lifelong learning.

As to having a positive learning experience, we have noted that alumni at all levels surveyed (one, five, and ten years out) rated their overall capstone experience highly: 90% rated it "good", "very good", or "exceptionally good". Additionally, 62% of alumni indicated they were "very satisfied" with "independent study/research" services.

We have also noted above that alumni also felt the capstone contributed significantly to their development of academic skills and self-confidence, perhaps most notably for life-long learning that 81% indicated the capstone contributed quite a bit or very much to "learning effectively on my own", the top percentage among the contribution to development items.

There is also evidence that capstone experiences contribute to career, advanced degree, or lifestyle choices that require higher levels of cognitive challenge.

- 74% of alumni rated their independent study experience as a "moderate" or "extensive" contributor to their "personal or professional life after graduation".

- With regard to advanced degrees, the alumni survey asks alumni to report degrees received, working on, or hoped for. Alumni showed strong interest in advanced degrees: 56% of alumni reported they had received or were working on a masters degree, 19% a professional degree (law, medicine, other), 11% a doctoral degree. 21% hoped to eventually earn a doctorate. Only 13% reported they had no further educational plans. 84% felt their undergraduate education prepared them "moderately" (26%) or "greatly" (58%) for post-baccalaureate education. We are unable to isolate the impact on advance degrees of the capstone experience alone.
- With regard to occupational choices, the ultimate career choices of alumni, including those pending advanced degree completion, are highly related to lifelong commitments to learning: 21% education related (teaching, educational administration, librarian, counseling), 10% health services related (medical doctoral level), 9% science/math related (including 4.4% as a scientific researcher), 5% arts/humanities related (including 3% writer, journalist or publisher), 19% social service related (including 4.5% law, 4.4% government/public policy, 4.4% non-profit/philanthropy, and 16% business/finance related (including 4.6% business executive, and 4.0% business owner/entrepreneur). 80% felt their undergraduate experience prepared them "moderately" (37%) or "greatly" (43%) for their current career. What appears to be a lower rating for preparation for an alumni's current career than for advanced degree preparation is perhaps explained by alumni migrating to careers less closely related to their undergraduate major.
- Alumni also report "moderate" or "a lot" of participation in organizations: professional, 47%; civic/community, 33%; cultural/arts, 31%; religious, 27%; political, 10%; service (e.g. Rotary, Kiwanis), 11%.
- Overall, these results seem to point to alumni lifestyles with strong lifelong learning attributes. That the capstone experience makes a unique contribution to these results is suggested by the responses to the questions noted above regarding the capstone's contribution, and also by alumni open-ended responses to the question "What about your capstone experience (good or bad) had the most impact on you?", which echoed the same positive themes for lifelong learning (see discussion in Section 2 below). When categorized by topic and ranked by frequency count, the most frequent topics are listed below, and were commented on by at least 10 to 25 percent of alumni. In descending order of frequency they are:
    - Project management
    - Sense of accomplishment
    - A positive adviser experience
    - Independence/freedom
    - Positive for graduate school
    - Confidence-building
    - Time-management
    - Writing skills
    - Research skills – ability to do research
    - Positive career impact

In summary, the alumni survey indicates that alumni in all the cohorts surveys, 1, 5, and 10 years out, generally perceive the capstone as having been a positive experience that contributed to their skill development, intellectual self-confidence, and career and graduate school preparation. Their graduate degree plans and attainment, career choices, and participation in profession and civic organizations are further evidence of lifestyles drawing on lifelong learning.

## Concluding Remarks

That gender is not significant in predicting the ratings is encouraging, as it would not be desirable to have capstone programs that have lower impact based on gender. Similarly, the ratings for the capstone experience and contribution to development seem fairly high and even across academic divisions. As noted above, while the general trend is lower ratings for students with lower overall GPAs, the first drop in the ratings occurs going from the A/A-/B+ group down to the B level, so the results are about the same for the highest achieving students down to the B+ level, about 80% of our senior students. The lower rating for the lower 20% of students is still a concern to explore, of course. The higher ratings for Red College provide an opportunity to explore whether Red is doing something special in their approach that is worth emulating. Since Tan College is currently just developing a universal senior capstone program, the lower ratings by Tan alumni may actually be an encouraging result for our study in that it might indicate that higher impacts can be achieved through centrally developed and supported universal capstone programs that are a focus of the overall curriculum rather than through programs fielded only by selected majors.

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## SECTION 2: Analysis of Responses to the open-ended question: "What about your capstone experience (good or bad) had the most impact on you?"

## Teagle Capstone Project
## HEDS 2010 Alumni Survey, Additional Capstone Impact Question

The four private liberal arts colleges in the Teagle Capstone study (Allegheny College, Augustana College, The College of Wooster, and Washington College) participated in the 2009-10 Higher Education Data Sharing (HEDS) Alumni Survey to investigate alumni reports of the impact of the senior capstone experience on their post-graduate personal and professional lives, and their retrospective thoughts on the nature and value of the capstone experience. The graduating class cohorts of 2007, 2004 and 1999 were surveyed to represent different post-graduate life/career stages - two, five and ten years out, respectively.

A set of supplemental questions focusing on capstone experiences was added to the survey. This report describes the responses to the single open-ended question included in the supplemental questions: What about your capstone experience (good or bad) had the most impact on you?

For this report, the four participating colleges are identified by aliases: Red, Tan, White, and Yellow. Three of the institutions (Red, White, and Yellow) had a universal capstone requirement in place for the three graduating classes. Tan College is currently in the process of implementing a universal senior capstone program, so comments from Tan are not included in this report.

***General Findings***

Of 757 alumni from the Red, White, and Yellow schools, 461 responded with comments to this open-ended capstone impact question. Ranked by frequency count, at least 10 to 25 percent of alumni who responded to the open-ended question commented on the following 10 categories:

Project management (104)
Sense of accomplishment (90)
Positive advisor experience (82)
Independence / freedom (81)
Positive for graduate school (75)
Confidence-building (64)
Time management (62)
Liberal arts skills - writing (61)
Research skills – ability to do research (54)
Positive for career (44)

From this list we can see that many alumni reported that the capstone experience provided opportunities to develop project management and time management skills, they felt a sense of accomplishment, they considered the capstone a confidence-building experience, they had positive advising experiences, they enjoyed the independence/freedom that the project granted, and it was a positive experience in terms of graduate schools and careers. Toward the bottom of the list are a liberal arts skill - writing and a research skill.

Most of these categories are reported by at least 10 percent of alumni from each of the three schools. ("Confidence-building" does not appear on the White school list, and "positive for career" appears only on the Red school list. At least 10 percent of alumni of the White school also reported on "negative advisor experience" and "good topic".) The rankings by frequency of reporting differ for each school. For example, "positive advising experience" is ranked first by the Red school, fourth by the White school, and ninth by the Yellow school. "Positive for graduate school" is ranked seventh for the Red school, and third for the White and Yellow schools is another example.

Questions we might consider:

- Is there significance to *this* set of top ten comment categories and the ordering?
- Is there anything significant about what *didn't* make the top 10? A category we might have expected?

However, if we were to create umbrella categories (described below) for gains in research skills, gains in liberal arts skills, and academic-related comments, then 15 to 30 percent of alumni commenting on capstone impact reported gains in one or more research skills, one or more liberal arts skills, and one or more of other academic-related skills/activities. These three umbrella categories would not only appear on the top-ten list, but research skills and liberal arts skills would top that list. Alumni who responded to the Impact question commented on these three umbrella areas:

Research skills (126)
Liberal arts skills (117)
Academic-related (66)

**Research skills** include doing research, dealing with failure, choosing a topic, having a bad topic chosen, developing ideas, having an oral defense, accepting criticism, communicating results, working at an off-site research center, meeting professionals in the field, becoming conversant in the field, appreciating scientific process, doing field research, having a laboratory experience, and applying for a grant.

**Liberal arts skills** include applying knowledge, writing, creative thinking, lifelong learning, communicating verbally, critical thinking, memorizing, analyzing, having information fluency, problem-solving, having technology skills, having disciplinary skills, and having a multitude of skills.

**Academic-related comments** include coursework or disciplinary integration, culminating experience, exploration of a topic in depth, pursuing own interests, continuation of study in the capstone area, continuation of considering questions related to capstone, learning experience, creation of an original work, and introduction to research.

The following 10 categories of responses produced the next highest frequency of comments about the capstone impact (from 4 to 9.9 percent of alumni responding to the question):

Negative advisor experience (39)
Influenced future life choices (29)
Liberal arts skills – critical thinking (28)
Research skills – oral defense (27)
Personal qualities that helped capstone (25)
Personal development (22)
Research skills – choosing a topic (20)
Academic - learning experience (19)
Liberal arts skills – oral communication (18)
Liberal arts skills – analysis (18)

The first negative comment about the capstone experience, a poor or weak advising experience, appears in this grouping with nearly 10 percent of alumni who responded to the question reporting a negative advising experience. Additional individual liberal arts skills (critical thinking, oral communication, analysis, and research skills), oral defense, and choosing a topic are also on this second-tier list.

The final listing is made up of comment categories by at least a handful of alumni (10 to 17):

Academic – depth (15)
Academic – continue to study topic (14)
Research skills – poor topic chosen (14)
Positive impact of process (13)
Project size (13)
Recognition (10)
Research skills – dealing with failure (10)
Research skills – development of ideas (10)
Sets school or students apart (10)
Stressful experience (10)
Academic – integrate courses or fields (10)

Two additional negative comment categories appear on this third-tier list of comments: research skills - poor topic chosen, and stressful experience. Several of the academic-related comments also appear here: the capstone was an opportunity to explore a topic in depth, alumni continue to study their capstone topic, they learned to deal with failure in research, and they had the opportunity to develop ideas as well as to integrate learning from multiple courses or disciplines.

***Alumni reporting a poor, very poor, or exceptionally poor overall capstone experience:***

For the 22 alumni reporting a poor overall capstone experience, 17 responded to the capstone impact question. Ten alumni, nine of whom were female, commented that they had had a bad or weak advising experience. Comments ranged from having advisors with personal problems that interfered with their advising to having advisors who disliked them and were out to "destroy their reputation." Others noted that their advisor didn't understand their topics, were very rigid and stifled their creativity, and were not understanding about personal issues affecting the project (alumni's mother was diagnosed with cancer). Another alumni's advisor was changed just before senior year, and others noted that their advisors were not supportive, did not have time, or simply were not a good fit.

Although negative advising was the only common factor for a majority of alumni reporting an overall poor capstone, the majority of alumni reporting a negative advising experience had a good or neutral overall capstone experience. Half of the alumni reporting a negative advising experience (19 out of 38) had an overall good capstone experience, and one-quarter reporting a negative advising experience (n=9) had an overall neutral capstone experience.

Questions we might consider:

- What are the characteristics of a bad (good) advising experience?
- Do other capstone experiences/elements occur together with a bad advising experience (e.g., capstone topic, gender)?
- What are the characteristics of an overall 'good' capstone experience when the advising experience was 'bad'? Did having to compensate for the bad advising help the student develop more strongly in some areas?
- Do the results from last year's senior surveys show a similar result?

Other than the negative advising experience, the comments from alumni who had a poor overall experience varied. Three alumni reported that they had problems with their topics – not being allowed to select their topic or having a topic they did not want to research; these three were also females who had negative advising experiences. One alumnus reported having had both a poor advisor and a good

advisor, but had a negative second reader and departmental problems, the combination leading to a poor capstone experience. Comments focused on the process being too restrictive, inequities in capstone requirements between academic divisions, the opportunity cost of the capstone (i.e. lost time to apply for jobs and graduate school), preference to have done a community project rather than an academic project, inoperable equipment in the department that was neglected, rapid turnover of faculty in the department, project being irrelevant to future education or career, capstone being too stressful, and a negative experience with a visiting faculty member. (Overall, only two comments were made regarding a negative experience with a visiting faculty member.)

Selected comments include:

> *While I felt good about the achievement of writing such a lengthy project, I received such negative support from my faculty advisor that it has caused me to view the entire project negatively. If I had felt more supported in my efforts, I believe I would view the project in a better light.*
>
> *Not having an advisor that was a good fit for me or a topic that I wanted to research.*
>
> *I was told that I did not have enough experience to do the capstone that I wanted to do, which to me defeats the purpose of the learning experience.*

Characteristics of the 22 alumni who reported having a poor capstone experience include:

By overall capstone experience: exceptionally poor (3), very poor (5), and poor (14)
By graduation year: 1999 (8), 2004 (6), and 2007 (8)
By college: Red (4), White (2), and Yellow (16)
By sex: female (12), male (10)
By average grade: A/A- (7), B+/B (5), B-/C+ (9), C or lower (1)
By capstone grade: 1(3), 2(6), 3(4), 4(3), and not reported (6)
By capstone discipline: Art History (1), Biochemistry (1), Business (1), Chemistry (3), Communication (1), Environmental Science (4), English (3), Geology (1), Political Science (2), Psychology (3), and Theatre (1).

***Alumni reporting a neutral overall capstone experience:***

For the 39 alumni who reported that they had a neutral overall capstone experience, 25 responded to the capstone impact question with a large minority commenting on a bad or weak advising experience. Nine alumni, eight of whom were female, commented that they had had a negative advising experience. Comments ranged from poor communication with the advisor, little help from the advisor with structure, topic, and general support, difficulty contacting the advisor, lack of clarity and effort from the advisor, little feedback until the last-minute from the advisor who also forgot the due date, and competing interests of the advisor and another faculty member during the oral defense.

Four of the 25 alumni who commented, reported on negative issues related to their topics. One chose a topic that was not interesting and another chose a topic in which he became disinterested as the project progressed. The two others wished they had had more guidance from their advisors on choosing a topic, one reporting that her advisor had little knowledge on her topic or related topics.

Questions we might consider:

- Do female students have a different set of expectations regarding the senior-mentor relationship from male students?
- It appears that advisor and topic problems can lead to a less than positive experience. Are these independent?

Other comments were scattered across a range of topics. Some were positive, some negative, and some neutral. Among the positive comments were three alumni who wrote that the capstone helped prepare them for graduate school, another three that it helped with time management, and yet another three that it helped with large-project management. Three commented that they benefited from the research and writing skills that they gained from their capstone projects; one of these three alumni had no comments indicating a negative experience and two of these three commented on a negative advising experience. Some of the negative comments related to a second reader, the lack of independence, personal qualities (procrastination and lack of motivation), that made it difficult to do a good job, stress related to the project, and a lack of resources for the project.

Selected comments include:

> *I did it on a topic that wasn't really interesting to me. At the time, I didn't have any better ideas, but would have done something different if I could go back. Because the topic wasn't in my wheelhouse, I didn't put as much into it, or get as much out of it as I could/should have.*
>
> *My thesis adviser was the worst thing about my capstone experience. He was not particularly helpful, didn't seem very interested, and made no effort to clearly explain what he was looking for. The research and writing experience of a large research project were a good background to prepare me for graduate school.*
>
> *I don't feel the proper guidance, direction, aid was given. Perhaps more knowledge on my topic or related topics to help guide me to a better topic, resources etc. would have been beneficial. I learned a significant amount more in grad school on the topic and area I chose, if I had been pointed in the right direction and resources made known etc. it would have been much more beneficial.*
>
> *I think that more structure/assistance in finding a topic would have been helpful for me.*

Characteristics of the 39 alumni who reported having a neutral capstone experience include:

- By graduation year: 1999 (17), 2004 (15), and 2007 (7)
- By college: Red (10), White (5), and Yellow (24)
- By sex: female (22), male (17)
- By average grade: A/A- (10), B+/B (19), B-/C+ (8), C or lower (2)
- By capstone grade: 1(0), 2(15), 3(12), 4(4), and not reported (8)
- By capstone discipline: Chemistry (2), Communication (4), Computer Science (1), Economics (4), English (4), Environmental Science (3), Geology (1), German (1), International Studies (4), Mathematics (1), Political Science (4), Psychology (6), Sociology (1), and unknown (3).
- By single/double major: single majors (33), double majors (6)

***Alumni reporting a good, very good, or exceptionally good overall capstone experience:***

For the 655 alumni who reported that they had a good overall capstone experience, 416 responded to the capstone impact question. Of the 416 who commented, a small minority of 19 had a negative advising experience and a good overall capstone experience. Four of these 19 commented that they had both a positive and negative advising experience. One was a double major with a good and bad advising experience. One had an advisor who put the alumni in touch with someone off-campus who became the surrogate advisor. Two alumni commented that they found other faculty within the department with whom they could work and developed strong professional relationships. Four additional alumni also had negative issues with research topics. A lack of resources was noted by three alumni with weak advising experiences. A couple other alumni noted that they weren't really prepared to take on the capstone, and one commented that he made minimal effort after being accepted to graduate school.

The positive impacts on which these alumni with weak advising experiences commented included liberal arts-based and other outcomes: improving writing, critical thinking, and oral communication skills, project and time management skills, and research skills, as well as the benefit of working at a major research center. Others wrote about the positive aspects of the "independence" of the project and "freedom" to create, and that the capstone gave them an edge in the job market, or helped prepare them for graduate school.

> *My senior capstone proved to me that I could synthesize information on a high enough level to generate an eighty page paper. I learned that I love research, the value of coffee and list-making and how to work effectively on my own. My advisor helped me very little with my senior capstone, which pushed me to ask for help from other departmental professors and ultimately led to several strong professional and personal relationships. While daunting initially, the IS process is a huge time of growth that I will never forget.*

> *The ability to do hands-on molecular biology research was good but the tools were primitive and the coaching was sporadic which somewhat diminished the value of the project.*

***Exceptionally good capstone experience:***

Of the 416 alumni, who commented on the capstone impact and had a good, very good, or exceptionally good experience, 170 had an exceptionally good experience. What is the capstone impact that makes for an "exceptionally good" capstone experience? Alumni who reported having exceptionally good capstone experiences reported a favorable advising experience more than any other impact comment; nearly one-third reported a favorable advising experience. The table below ranks the top 10 impact categories commented on by alumni reporting an exceptionally good experience as well as the umbrella comments for research skills, liberal arts skills, and academic-related gains. Twelve to 31 percent of alumni, who commented on the impact question and had an exceptionally good experience, reported an impact in the umbrella categories.

| Teagle Capstone Project | | | | | | |
|---|---|---|---|---|---|---|
| Number of Comments by Degree of Good Overall Capstone Experience | | | | | | |
| | Overall Capstone Experience | | | | | |
| | Exceptionally good | | Very good | | Good | |
| Comment on Capstone Impact: | Number | Percent | Number | Percent | Number | Percent |
| Positive advising experience | 53 | 31.2% | 24 | 13.3% | 3 | 4.6% |
| Project management | 49 | 28.8% | 42 | 23.2% | 10 | 15.4% |
| Sense of accomplishment | 47 | 27.6% | 34 | 18.8% | 6 | 9.2% |
| Independence / freedom | 36 | 21.2% | 33 | 18.2% | 9 | 13.8% |
| Confidence | 33 | 19.4% | 27 | 14.9% | 4 | 6.2% |
| Positive for graduate school | 33 | 19.4% | 32 | 17.7% | 6 | 9.2% |
| Time management | 26 | 15.3% | 23 | 12.7% | 9 | 13.8% |
| Research skills - doing research | 25 | 14.7% | 18 | 9.9% | 8 | 12.3% |
| Liberal arts skills - writing | 25 | 14.7% | 28 | 15.5% | 5 | 7.7% |
| Positive for career | 20 | 11.8% | 18 | 9.9% | 5 | 7.7% |
| Umbrella skills | | | | | | |
| Research skills | 50 | 29.4% | 46 | 25.4% | 19 | 29.2% |
| Liberal Arts skills | 47 | 27.6% | 57 | 31.5% | 10 | 15.4% |
| Academic-related | 32 | 18.8% | 26 | 14.4% | 6 | 9.2% |

Question we might consider:

- Is there anything to be learned by looking at the *bottom* 10 categories of comments? The categories that had the least impact?

The alumni who commented on a positive advising experience and had an exceptionally good experience commented on an average of over four categories. A comment of a positive advising experience combined with research skills (21 times) and a sense of accomplishment (19 times) more than any other comment categories. Seventy percent of all those who commented on a positive advising experience and an exceptionally good capstone experience were female, with 62 percent from the Red school and an approximately equal division among the three graduating cohorts. Alumni who had a very good experience had similarly high frequencies of comments in impact areas that the alumni with exceptionally good experiences had; exceptions included positive advising experiences, sense of accomplishment, confidence, and research skills – doing research. The greatest differential was with a positive advising experience, where alumni who reported an exceptionally good overall capstone experience were more than twice as likely to comment on a favorable advising experience.

Selected comments:

> *I had an absolutely fantastic advisor who made me feel excited about my research project and confident in my intellectual abilities.*
>
> *It gave me an advantage in my graduate programs - having completed a thesis with original fieldwork, experience, and data was invaluable to my acceptance into further programs. My work today continues to build on things I explored in my undergraduate thesis.*
>
> *Pros: Work on long-term project, self-guided education, publication opportunities; Cons: None.*

***Good capstone experience:***

Of the 417 alumni, who commented on the capstone impact and had a good, very good, or exceptionally good experience, 65 had a good experience. What is the capstone impact that makes for a "good" capstone experience and how does it differ from one that makes for an "exceptionally good" capstone experience? The table above shows that very few alumni commented on a positive advising experience who rated the overall capstone experience good. The only comment categories where percent of responses between alumni who rated the overall capstone experience exceptionally good or good are similar are time management and umbrella research skills.

Selected comments:

> *Being able to finish it and defend it orally has given me a great deal of confidence in my abilities to do that at work.*
>
> *I learned project management skills and how to work independently without a lot of direction.*
>
> *It looks good on my CV, and was an absolute necessity to have on my graduate school application. My doctoral program rarely accepted individuals who had not completed a research project as an undergraduate or post-bac.*
>
> *The time and dedication along with the ability to manage such a project had a positive impact on my confidence to tackle similar projects since graduation.*

Characteristics of the 655 alumni who reported having a good overall capstone experience include:

By overall capstone exp.: exceptionally good (228), very good (300), and good (127)
By graduation year: 1999 (206), 2004 (232), and 2007 (217)
By college: Red (229), White (51), and Yellow (375)
By sex: female (407), male (245), and no response (3)
By average grade: A/A- (316), B+/B (270), B-/C+ (60), C or lower (6), and no response (3)
By capstone grade: 1(1), 2(30), 3(188), 4(368), and not reported (67)

Questions we might consider:

- What categories of comments had the most positive responses?
- What categories of comments had the most negative responses?
- Do any areas overlap all quality-of-capstone categories?
- Does this tell us anything about what *contributes to* the quality of a capstone?
- Does not feeling prepared for the capstone appear as an issue?

The above commentary is by Thersa Ford, College of Wooster.

See Appendix G below for a table of the frequencies of comments as categorized by topic.

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# ALUMNI SURVEY REPORT APPENDICES

**Table A1. Composite Results**

**ALUMNI SURVEY - Classes of 1999, 2004 and 2007**
**Teagle Senior Capstone Study**

| All | N= | 902 |
|---|---|---|
| *Font coloration threshold values:* | *Percents:* | *5.0%* |
| | *Means* | *0.15* |

## A. Evaluation of your Undergraduate Education

**1. The list below contains some abilities and types of knowledge that may be developed in a bachelor's degree program. Please indicate 1) how important each is in your personal and professional life, and 2) the extent to which each was enhanced by your undergraduate experiences.**

| *4-point scale: Not at all - Greatly* | Current importance | | Extent enhanced | |
|---|---|---|---|---|
| | % greatly | mean | % greatly | mean |
| **Critical Thinking** | | | | |
| Acquire new skills and knowledge | 84.3% | 3.82 | 70.2% | 3.67 |
| Think analytically and logically | 88.6% | 3.87 | 76.0% | 3.74 |
| Formulate creative/original ideas | 75.0% | 3.71 | 63.5% | 3.56 |
| Academic ability | 50.9% | 3.39 | 65.2% | 3.60 |
| **Skills/Learning** | | | | |
| Write effectively | 72.9% | 3.68 | 70.5% | 3.66 |
| Use quantitative tools | 48.3% | 3.33 | 40.2% | 3.16 |
| Appreciate arts, literature, music, drama | 28.3% | 2.78 | 42.4% | 3.13 |
| Gain in-depth knowledge of a field | 67.5% | 3.62 | 54.3% | 3.41 |
| Read or speak a foreign language | 11.3% | 2.06 | 15.3% | 2.13 |
| **Social/Moral Awareness** | | | | |
| Develop an awareness of social problems | 48.7% | 3.31 | 41.5% | 3.21 |
| Place current problems in perspective | 58.4% | 3.48 | 43.3% | 3.25 |
| Understand moral/ethical issues | 62.1% | 3.53 | 45.7% | 3.29 |
| **Self Development** | | | | |
| Understand myself | 63.7% | 3.55 | 57.9% | 3.47 |
| Function independently, without supervision | 87.0% | 3.86 | 65.5% | 3.59 |
| Develop self-esteem | 62.7% | 3.53 | 52.8% | 3.39 |
| Establish a course of action to accomplish goals | 82.4% | 3.79 | 59.7% | 3.53 |
| Intellectual self-confidence | 74.9% | 3.72 | 60.8% | 3.52 |
| Develop desire for continued learning | 73.9% | 3.68 | 67.9% | 3.59 |
| **Relationship Skills** | | | | |
| Lead and supervise tasks and groups of people | 58.0% | 3.43 | 36.3% | 3.07 |
| Relate well to different races, nations, religions | 65.1% | 3.53 | 41.2% | 3.10 |
| Function effectively as a member of a team | 77.4% | 3.71 | 52.0% | 3.37 |
| Communicate well orally | 88.1% | 3.87 | 55.9% | 3.45 |
| Understand others | 79.1% | 3.77 | 51.8% | 3.43 |
| **Understanding Science and Technology** | | | | |
| Understand the process of science | 35.8% | 2.92 | 35.4% | 3.00 |
| Use technology | 60.2% | 3.49 | 34.2% | 3.05 |

**2. Using the perspective gained since you graduated, how satisfied are you with each of the following services or aspects of your college?**

*4-point scale: Very dissatisfied - Very satisfied*

| | Satisfaction | |
|---|---|---|
| | % very sat. | mean |
| **Academic Experiences** | | |
| Academic advising | 53.2% | 3.44 |
| Contact with faculty | 75.2% | 3.72 |
| Quality of teaching | 74.6% | 3.74 |
| Courses in major field | 62.9% | 3.59 |
| Courses outside your major | 43.7% | 3.40 |
| Independent study/research | 62.4% | 3.57 |
| **Campus Services and Facilities** | | |
| Career services | 18.6% | 2.82 |
| Financial services | 24.7% | 3.09 |
| Library resources | 45.9% | 3.43 |
| Recreation/athletics | 43.9% | 3.38 |
| Residential life | 37.6% | 3.25 |
| **Campus Climate** | | |
| Student voice in policies | 22.5% | 3.06 |
| Campus safety | 54.4% | 3.51 |
| Sense of belonging | 64.3% | 3.60 |
| Ethnic/racial diversity | 20.9% | 2.88 |
| Social life on campus | 46.2% | 3.37 |

**3. To what extent did your undergraduate experience fulfill your original expectations in the following areas?**

*4-point scale: Not at all - Greatly*

| | Fulfilled Expectations | |
|---|---|---|
| | % greatly | mean |
| Enhance your intellectual growth | 75.7% | 3.73 |
| Acquire in-depth knowledge in a particular field | 58.5% | 3.49 |
| Develop competency in career relevant skills | 41.2% | 3.19 |
| Foster your personal growth | 71.9% | 3.67 |
| Promote your ability to form relationships | 55.9% | 3.46 |

**4. Overall, how satisfied have you been with your undergraduate education?**

*4-point scale: Very dissatisfied - Very satisfied*

| | Satisfaction | |
|---|---|---|
| Very satisfied | 73.7% | |
| Generally satisfied | 23.6% | |
| Generally dissatisfied | 1.9% | |
| Very dissatisfied | 0.8% | |
| mean: | | 3.70 |

**5. Would you encourage a high school senior who is like you were as a high school senior (similar background, interests, and temperament) to attend your undergraduate institution?**

*5-point scale: Definitely not - Definitely would*

| | |
|---|---|
| Definitely would | 75.1% |
| Probably would | 15.2% |
| Maybe | 6.2% |
| Probably not | 2.8% |
| Definitely not | 0.7% |
| mean: | 4.61 |

## B. College Impact

**6. Please evaluate each of the following activities for your level of involvement while an undergraduate. For those activities in which you were involved, please evaluate the contribution of each activity to your personal or professional life after graduation.**

| *4 point contribution scale :* *1=none, 2=a little, 3=moderate, 4=extensive* | Involvement | Contribution** | |
|---|---|---|---|
| | % moderate or extensive | % moderate or extensive | mean |
| **Extracurricular Activities** | | | |
| Student or campus government | 12.5% | 36.7% | 2.24 |
| Intercollegiate athletics | 29.9% | 67.7% | 2.95 |
| Intramural sports | 31.2% | 37.2% | 2.20 |
| Student publications | 12.0% | 37.8% | 2.26 |
| Performing arts/music | 33.1% | 56.0% | 2.70 |
| Political organization or club | 23.7% | 46.1% | 2.41 |
| Community service | 47.1% | 57.3% | 2.70 |
| Fraternity/Sorority | 35.3% | 69.7% | 2.99 |
| Religious groups | 17.1% | 51.2% | 2.63 |
| **Academic Activities** | | | |
| Internships | 44.5% | 81.2% | 3.28 |
| Study abroad | 30.2% | 93.5% | 3.67 |
| Work on faculty research | 60.4% | 65.0% | 2.89 |
| Independent study | 59.6% | 74.3% | 3.08 |
| **Employment Activities** | | | |
| On-campus employment | 68.8% | 58.2% | 2.68 |
| Off-campus employment | 27.4% | 57.0% | 2.66 |

*** Contribution to Development excludes those whose involvement was "none".*

**7. To what extent did your undergraduate experience prepare you for the following activities?**

| *4-point scale: Not at all - Greatly* | Experience Prepared | |
|---|---|---|
| | % moderately or greatly | mean |
| Post-Baccalaureate education | 84.2% | 3.34 |
| Current career | 79.8% | 3.19 |
| Social and civic involvement | 62.2% | 2.81 |
| Interpersonal relationships and family living | 72.3% | 3.02 |

## C. Continuing Involvement with Alma Mater

**8. In the past five years, how frequently have you participated in the following activities sponsored by your undergraduate alma mater?**

*4-point scale: Never - Frequently*

| Activity | Participated in Activity: % frequently or occasionally | mean |
|---|---|---|
| Read campus publications | 72.2% | 2.97 |
| Visited the institution's website | 67.4% | 2.79 |
| Visited campus for any purpose | 44.1% | 2.33 |
| Attended alumni functions on campus | 19.1% | 1.61 |
| Attended alumni functions off campus | 21.3% | 1.67 |
| Attended alma mater sporting events | 13.5% | 1.50 |
| Served as an alumni admissions volunteer | 3.4% | 1.12 |
| Participated in a career advisory program | 4.8% | 1.24 |
| Participated in an alumni continuing education program | 0.2% | 1.02 |
| Participated in an alumni community service program | 4.2% | 1.14 |
| Contributed to or solicited for the annual fund | 31.6% | 1.94 |
| Maintained contact with other alumni | 90.3% | 3.56 |
| Maintained contact with faculty members | 41.6% | 2.28 |
| Maintained contact with administrators | 11.4% | 1.40 |

**9. To what extent do you identify with your undergraduate alma mater?**

*4-point scale: Not at all - Very strongly*

| | |
|---|---|
| Very strongly | 35.4% |
| Strongly | 40.2% |
| Somewhat | 19.2% |
| Very little | 4.6% |
| Not at all | 0.7% |
| mean: | 4.05 |

## D. Post-Graduation Activities

**10. Which of the following best describes your primary activities during the year immediately following your undergraduate degree and currently?**

| Primary Activity | Immediately after grad % | Currently % |
|---|---|---|
| Employment full-time | 55.2% | 69.8% |
| Employment part-time | 22.8% | 11.9% |
| Graduate/professional school full-time | 32.7% | 18.6% |
| Graduate/professional school part-time | 5.2% | 9.5% |
| Not employed, seeking employment | 5.5% | 2.8% |
| Not employed by choice (homemaker, volunteer, etc | 3.3% | 2.4% |

**11. What was your principal occupation immediately after graduation? What is your current occupation? What career would you ultimately like to have?**

| Percentages of non-blank responses | Year after graduation | Currently | Ultimately |
|---|---|---|---|
| | % | % | % |
| **Business/Finance Related** | | | |
| Accounting | 1.1% | 0.9% | 0.6% |
| Advertising, Public Relations | 0.7% | 1.0% | 0.8% |
| Business, clerical | 3.0% | 0.6% | 0.0% |
| Business Executive | 1.2% | 4.6% | 4.6% |
| Business Owner, Proprietor, Entrepreneur | 0.8% | 1.4% | 4.0% |
| Business sales person or buyer | 4.0% | 1.5% | 0.1% |
| Event Coordinator | 0.7% | 0.9% | 1.1% |
| Finance | 2.7% | 3.7% | 1.8% |
| Hospitality, Travel/Tourism | 1.5% | 1.0% | 0.2% |
| Human Resources Recruiting | 1.5% | 1.8% | 1.7% |
| Insurance Broker | 0.7% | 0.5% | 0.0% |
| Real Estate | 0.4% | 0.9% | 0.8% |
| | 18.3% | 18.8% | 15.8% |
| **Education Related** | | | |
| College/University Administration | 2.8% | 2.5% | 1.5% |
| College/University Teaching or Research | 1.7% | 3.6% | 7.2% |
| Education:teacher/administrator/counselor (primary/sec | 10.2% | 12.6% | 11.0% |
| Librarian or information science | 0.2% | 0.7% | 1.3% |
| | 14.9% | 19.4% | 21.0% |
| **Arts/Humanities Related** | | | |
| Arts/Entertainment | 0.7% | 0.5% | 0.5% |
| Broadcasting, Media Productions | 0.5% | 0.5% | 0.3% |
| Graphic Designer | 0.0% | 0.0% | 0.0% |
| Interior Decorator | 0.0% | 0.0% | 0.0% |
| Museum curator/gallery worker | 0.2% | 0.2% | 0.5% |
| Music/Film industry | 0.2% | 0.5% | 0.9% |
| Writer, journalist, or publisher | 1.9% | 0.9% | 2.9% |
| | 3.5% | 2.5% | 5.1% |
| **Health Services Related** | | | |
| Clinical Psychologist | 0.1% | 0.6% | 1.8% |
| Dentist (including Orthodontist | 0.0% | 0.3% | 0.5% |
| Dietician | 0.0% | 0.0% | 0.0% |
| Nurse | 0.0% | 0.6% | 1.0% |
| Optometrist | 0.0% | 0.2% | 0.3% |
| Pharmacist | 0.1% | 0.6% | 0.7% |
| Physician | 0.8% | 2.0% | 3.4% |
| Therapist | 0.9% | 1.8% | 2.4% |
| Veterinarian | 0.0% | 0.6% | 1.0% |
| | 2.0% | 6.7% | 11.3% |
| **Science/Math Related** | | | |
| Archeologist | 0.4% | 0.1% | 0.3% |
| Architect | 0.5% | 0.8% | 0.8% |
| Computer Programmer/analyst | 2.1% | 1.8% | 1.5% |
| Conservationist or Forester | 0.4% | 0.7% | 0.7% |
| Engineer | 0.8% | 1.4% | 1.0% |
| Lab technician or hygienist | 0.0% | 0.0% | 0.0% |
| Scientific Researcher | 6.3% | 5.4% | 4.4% |
| | 10.4% | 10.2% | 8.7% |

| | | | |
|---|---|---|---|
| **Social Service Related** | | | |
| Clergy | 0.5% | 1.1% | 1.5% |
| Foreign Service, Diplomacy, International Relations | 0.2% | 0.1% | 1.4% |
| Government, Politics, Public Policy | 2.8% | 4.4% | 4.1% |
| Law enforcement officer | 0.0% | 0.3% | 0.7% |
| Lawyer (attorney) or judge | 0.2% | 4.5% | 6.1% |
| Non-profit/Philanthropy | 6.1% | 4.4% | 3.6% |
| Social activist/Community organizer | 1.1% | 0.3% | 0.3% |
| Social welfare or recreation worker | 1.7% | 1.1% | 1.0% |
| Sports, recreation | 0.0% | 0.0% | 0.0% |
| | 12.6% | 16.4% | 18.7% |
| **Other** | | | |
| Farmer or Rancher | 0.4% | 0.2% | 0.2% |
| Homemaker | 0.1% | 1.6% | 1.1% |
| Military Science | 0.2% | 0.2% | 0.1% |
| Other | 36.4% | 23.6% | 11.0% |
| Undecided | 1.1% | 0.5% | 6.9% |
| | 38.2% | 26.0% | 19.4% |
| Total non-blank responses | 846 | 883 | 871 |

**12. What is your current annual income range before taxes?**

| | N | % |
|---|---|---|
| No earned income | 58 | 6.5% |
| Less than $19,999 | 110 | 12.4% |
| $20,000 to $39,999 | 222 | 24.9% |
| $40,000 to $59,999 | 240 | 27.0% |
| $60,000 to $79,999 | 119 | 13.4% |
| $80,000 to $99,999 | 69 | 7.8% |
| $100,000 to $119,999 | 31 | 3.5% |
| $more than $120,000 | 41 | 4.6% |
| | 890 | 100.0% |
| % $60,000 or more | 260 | 29.2% |

**13. To what extent have you voluntarily participated in the following organizations since graduating from your alma mater?**

| | Participation Extent | |
|---|---|---|
| **Type of Organization** | % Not at all | % Moderately or a lot |
| Civic/community | 26.8% | 33.1% |
| Cultural/arts | 34.9% | 30.8% |
| Educational service (e.g. PTA) | 71.9% | 14.8% |
| Political | 64.5% | 10.1% |
| Professional | 23.3% | 47.4% |
| Recreational (e.g., sports club) | 31.2% | 37.5% |
| Religious | 50.2% | 27.3% |
| Service (e.g., Rotary, Kiwanis) | 72.2% | 11.4% |
| Youth (e.g. little league, scouting) | 69.5% | 14.0% |

**14. What further degree(s) have you received or are you currently working toward or do you hope to attain in the future?**

| | | Further Degrees Percents | | | |
|---|---|---|---|---|---|
| | | received | working on | subtotal recv'd or working on | %highest hoped for |
| **Second Bachelors** | | **4.8%** | **1.7%** | **6.4%** | **1.2%** |
| **Masters** | **Masters total:** | **35.7%** | **20.0%** | **55.7%** | **24.7%** |
| Architecture | | 0.0% | 0.0% | 0.0% | 0.1% |
| Business | | 4.4% | 2.8% | 7.2% | 6.5% |
| Education | | 6.4% | 4.8% | 11.2% | 4.0% |
| Engineering | | 0.2% | 0.2% | 0.4% | 0.6% |
| Humanities or Arts | | 2.9% | 2.1% | 5.0% | 2.9% |
| Life Science | | 2.2% | 1.0% | 3.2% | 1.0% |
| Math or Computer | | 0.8% | 0.2% | 1.0% | 1.0% |
| Physical Science | | 1.1% | 0.4% | 1.6% | 0.9% |
| Psychology | | 2.5% | 0.7% | 3.2% | 0.4% |
| Religion | | 1.1% | 0.6% | 1.7% | 0.6% |
| Social Science | | 3.4% | 1.9% | 5.3% | 1.9% |
| Other Masters | | 10.5% | 5.3% | 15.9% | 4.9% |
| **Professional Degrees** | **Prof Degrees total:** | **12.0%** | **7.4%** | **19.4%** | **6.3%** |
| Law school | | 4.4% | 2.8% | 7.2% | 3.2% |
| Medical school | | 2.8% | 2.5% | 5.3% | 1.2% |
| Other professional | | 4.8% | 2.1% | 6.9% | 1.9% |
| **Doctorate** | **Doctorate total:** | **4.1%** | **7.1%** | **11.2%** | **21.3%** |
| Education | | 0.0% | 0.3% | 0.3% | 4.0% |
| Engineering | | 0.0% | 0.0% | 0.0% | 0.3% |
| Humanities or Arts | | 0.1% | 1.6% | 1.7% | 3.3% |
| Life Science | | 1.7% | 1.7% | 3.3% | 2.3% |
| Math or Computer | | 0.3% | 0.2% | 0.6% | 0.6% |
| Physical Science | | 0.6% | 1.0% | 1.6% | 1.7% |
| Psychology | | 0.2% | 0.9% | 1.1% | 2.3% |
| Religion | | 0.0% | 0.2% | 0.2% | 1.3% |
| Social Science | | 0.7% | 1.0% | 1.7% | 2.3% |
| Other doctorate | | 0.6% | 0.2% | 0.8% | 3.1% |
| | | | | | |
| **No further educational plans** | | 12.5% | | | |

## E. Alumni Profile

| 15. In what year did you complete your undergraduate degree? | N | % |
|---|---|---|
| 1999 | 289 | 32.0% |
| 2004 | 309 | 34.3% |
| 2007 | 304 | 33.7% |
| Other | 0 | 0.0% |

**16. What was the field of study of your undergraduate major(s)? (Select more than one ONLY if you had a double major)**

| | Primary Major | | Secondary Major | |
|---|---|---|---|---|
| | N | % | N | % |
| **Business Related** | | | | |
| Accounting | 7 | 0.8% | 2 | 0.7% |
| Business | 38 | 4.3% | 7 | 2.4% |
| International Business | 45 | 0.2% | 0 | 0.0% |
| *subtotal:* | 90 | 5.3% | 9 | 3.1% |
| **Education Related** | | | | |
| Early Childhood Devel | 0 | 0.0% | 1 | 0.3% |
| Education | 21 | 2.4% | 21 | 7.1% |
| Higher Education Administrator | 0 | 0.0% | 0 | 0.0% |
| *subtotal:* | 21 | 2.4% | 22 | 7.5% |
| **Arts Related** | | | | |
| Art History | 7 | 0.8% | 5 | 1.7% |
| Dance | 1 | 0.1% | 1 | 0.3% |
| Music/Jazz/Popular Music | 10 | 1.1% | 4 | 1.4% |
| Photography | 1 | 0.1% | 1 | 0.3% |
| Theatre/Drama | 10 | 1.1% | 1 | 0.3% |
| *subtotal:* | 29 | 3.3% | 12 | 4.1% |
| **Humanities** | | | | |
| Humanities | 3 | 0.3% | 3 | 1.0% |
| Philosophy | 13 | 1.5% | 12 | 4.1% |
| Theology/Religion | 9 | 1.0% | 14 | 4.8% |
| *subtotal:* | 25 | 2.8% | 29 | 9.9% |
| **Language/Communications Related** | | | | |
| English | 72 | 8.1% | 24 | 8.2% |
| Communications, media | 38 | 4.3% | 12 | 4.1% |
| Foreign Languages | 10 | 1.1% | 33 | 11.2% |
| Journalism | 1 | 0.1% | 0 | 0.0% |
| Language and Literature | 2 | 0.2% | 1 | 0.3% |
| *subtotal:* | 123 | 13.9% | 70 | 23.8% |
| **Natural Science Related** | | | | |
| Biological/Life Sciences | 11 | 1.2% | 1 | 0.3% |
| Biology | 102 | 11.5% | 7 | 2.4% |
| Chemistry | 36 | 4.1% | 6 | 2.0% |
| Computer Sciences | 21 | 2.4% | 0 | 0.0% |
| Dental Hygiene/Medicine | 0 | 0.0% | 1 | 0.3% |
| Earth Sciences | 10 | 1.1% | 1 | 0.3% |
| Engineering | 2 | 0.2% | 0 | 0.0% |
| Environmental Studies | 35 | 3.9% | 6 | 2.0% |
| Health Related Field | 2 | 0.2% | 1 | 0.3% |
| Information Systems | 0 | 0.0% | 1 | 0.3% |
| Mathematics | 21 | 2.4% | 12 | 4.1% |
| Medicine | 7 | 0.8% | 2 | 0.7% |
| Nursing | 0 | 0.0% | 0 | 0.0% |
| Physics | 11 | 1.2% | 3 | 1.0% |
| Public Health | 0 | 0.0% | 0 | 0.0% |
| Statistics | 0 | 0.0% | 0 | 0.0% |
| Veterinary Medicine | 0 | 0.0% | 1 | 0.3% |
| Zoology | 0 | 0.0% | 0 | 0.0% |
| *subtotal:* | 258 | 29.1% | 42 | 14.3% |
| **Social Science Related** | | | | |

| | | | | |
|---|---|---|---|---|
| Anthropology | 12 | 1.4% | 2 | 0.7% |
| Archaeology | 6 | 0.7% | 0 | 0.0% |
| Clinical Psychology | 1 | 0.1% | 0 | 0.0% |
| Cultural Studies | 2 | 0.2% | 0 | 0.0% |
| Economics | 42 | 4.7% | 14 | 4.8% |
| History | 54 | 6.1% | 8 | 2.7% |
| Industrial/Organizational Psych | 0 | 0.0% | 0 | 0.0% |
| International Relations | 19 | 2.1% | 4 | 1.4% |
| Law | 0 | 0.0% | 0 | 0.0% |
| Political Science/Government | 64 | 7.2% | 16 | 5.4% |
| Psychology | 91 | 10.3% | 24 | 8.2% |
| Public Policy | 0 | 0.0% | 2 | 0.7% |
| Social Work | 0 | 0.0% | 3 | 1.0% |
| Sociology | 22 | 2.5% | 11 | 3.7% |
| Urban Studies | 2 | 0.2% | 0 | 0.0% |
| Women Studies | 3 | 0.3% | 3 | 1.0% |
| *subtotal:* | 318 | 35.9% | 87 | 29.6% |
| **Other** | | | | |
| American Sign Language | 0 | 0.0% | 0 | 0.0% |
| Architecture | 0 | 0.0% | 0 | 0.0% |
| Forensic Psychology | 0 | 0.0% | 0 | 0.0% |
| Recreation, Parks Admin, Leisure | 0 | 0.0% | 0 | 0.0% |
| Other | 66 | 7.4% | 23 | 7.8% |
| *subtotal:* | 66 | 7.4% | 23 | 7.8% |
| Total non-blank responses | 887 | | 294 | |

**17. How relevant is your undergraduate major field(s) of study to your current career?**

*3-point scale: Unrelated - Directly related*

| | | |
|---|---|---|
| Unrelated | 11.7% | |
| Indirectly related | 35.3% | |
| Directly related | 53.0% | |
| mean: | | 2.41 |

**18. What was the overall grade you received during your undergraduate career?**

| | |
|---|---|
| A | 20.0% |
| A- | 27.8% |
| B+ | 21.4% |
| B | 19.2% |
| B-/C+ | 10.2% |
| C or below | 1.3% |

**19. Did you receive any of the following undergraduate awards as a senior?**

| | |
|---|---|
| Latin honors | 39.8% |
| Phi Beta Kappa | 14.2% |
| Sigma Xi | 1.4% |
| Honors in major | 32.7% |

**20. Did you receive financial aid? If YES, indicate all that you received**

| | |
|---|---|
| YES, received financial aid | 89.5% |
| **If yes, did you receive…** | |
| Merit award | 73.7% |
| Need-based grant | 46.8% |
| Loan | 62.3% |
| Work study | 50.7% |

**21. At the time you graduated, what was the total amount borrowed to finance your undergraduate education which you were personally responsible for paying?**

| | |
|---|---|
| No loans | 30.2% |

| | |
|---|---|
| Less than $4,999 | 2.0% |
| $5000 to $9,999 | 3.8% |
| $10,000 to $14,999 | 6.7% |
| $15,000 to $19,999 | 13.1% |
| $20,000 - $24,999 | 12.9% |
| $25,000 - $29,999 | 6.4% |
| $30,000 or more | 19.1% |
| More than $0, but unable to estimate amount | 5.8% |

**22. To what extent have your undergraduate educational loans cause the following?**

**For those who used loans: "Great extent"**

| | |
|---|---|
| Allowed me to go to otherwise unaffordable institution | 46.6% |
| Focused job search on higher paying fields | 12.7% |
| Postponed or canceled post-baccalaureate education | 6.3% |

**23. What is your sex?**

| | |
|---|---|
| Male | 37.2% |
| Female | 62.8% |

**24. What is your age?**

| | |
|---|---|
| 25 or younger | 32.2% |
| 26 to 29 | 35.8% |
| 30 or older | 32.0% |

**25. What is your citizenship status?**

| | |
|---|---|
| United States Citizen | 98.2% |
| US Permanent Resident | 0.8% |
| Non-US Citizen | 1.0% |

**26. What is your racial/ethnic background? (Select all that apply)**

| | N | % all responses |
|---|---|---|
| Asian, Pacific Islander | 16 | 1.8% |
| Black, Non-Hispanic | 13 | 1.4% |
| Hispanic | 6 | 0.7% |
| Native American | 3 | 0.3% |
| White, Non-Hispanic | 855 | 94.2% |
| Other | 15 | 1.7% |
| Total responses (multiple selections allowed): | 908 | 100.0% |

**27. What is your personal status?**

| | |
|---|---|
| Married or living with partner | 55.2% |
| Widowed | 0.1% |
| Separated or divorced | 0.9% |
| Single | 43.8% |

**28. How many dependent children do you have?**

| | |
|---|---|
| None | 80.0% |
| 1 or 2 | 17.4% |
| More than 2 | 2.2% |

| **29. How old is your oldest child/youngest child ?** | Oldest | Youngest |
|---|---|---|
| 0 to 2 | 70.9% | 87.9% |
| 3 to 5 | 19.8% | 7.6% |
| 6 to 10 | 8.5% | 3.2% |
| 11 to 15 | 0.4% | 0.0% |
| 16 to 20 | 0.4% | 1.3% |
| 20 or older | 0.0% | 0.0% |

## F. Capstone Experience

ALL SCHOOLS COMBINED

**1. Please rate your overall capstone experience**

*7-point scale: Exceptionally poor - Exceptionally good*

| | N | % |
|---|---|---|
| 7 - Exceptionally good | 260 | 30.9% |
| 6 - Very good | 344 | 40.9% |
| 5 - Good | 155 | 18.4% |
| 4 - Neutral | 51 | 6.1% |
| 3 - Poor | 21 | 2.5% |
| 2 - Very poor | 6 | 0.7% |
| 1 - Exceptionally poor | 4 | 0.5% |
| total: | 841 | 100.0% |
| mean: | | 5.88 |

**2. Please indicate the degree to which your senior project contributed to your development in the following areas:**

*5-point scale: Not at all - Exceptionally good*

| | Contribution to development | | | |
|---|---|---|---|---|
| | % not at all or very little | % somewhat | % quite a bit | % very much |
| Managing a large project | 6.8% | 17.0% | 25.9% | 50.2% |
| Learning effectively on my own | 3.7% | 15.2% | 34.2% | 47.0% |
| Ability to make an effective oral presentation | 11.2% | 27.5% | 32.0% | 29.3% |
| having confidence in my own abilities | 7.6% | 19.3% | 32.6% | 40.5% |
| Ability to think critically and analytically | 3.3% | 16.8% | 35.0% | 44.8% |
| Ability to think creatively | 9.4% | 19.8% | 32.9% | 37.9% |
| Ability to write effectively | 5.0% | 16.5% | 31.2% | 47.2% |
| Skill in the interpreting of data, evidence, texts, and/or w | 6.0% | 15.6% | 32.0% | 46.4% |
| Integrating ideas from multiple disciplines | 14.2% | 27.8% | 24.6% | 33.4% |
| * Working collaboratively | 36.8% | 18.8% | 17.9% | 26.5% |
| * Seeing a connection between my intended career and its effect on society | 28.6% | 20.2% | 18.5% | 32.8% |

** Tan only questions*

**3. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

*5-point scale: Strongly disagree - Strongly agree*

| *Percents of non-blank responses* | Experience | | | |
|---|---|---|---|---|
| | % strongly disagree or disagree | % neutral | % agree or strongly agree | Total N |
| More intellectually challenging than my reg coursework | 9.4% | 23.0% | 67.6% | 842 |
| Developed more academically than from a reg course | 17.9% | 26.2% | 55.9% | 839 |
| Led to better understanding of skills, abilities, interests | 8.7% | 15.5% | 75.9% | 841 |
| ** Helped me clarify my career of graduate school objectives | 31.6% | 31.4% | 37.0% | 713 |
| Feel better prepared for job or grad school than peers | 12.7% | 19.6% | 67.7% | 841 |
| Positive influence on intellectual growth/int in ideas | 5.6% | 11.8% | 82.6% | 839 |
| Positive influence on personal growth, attitudes, values | 7.3% | 23.2% | 69.6% | 841 |

*** Not asked on Tan's version*

**4. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

| *Percents of non-blank responses* | Compared value: | | | |
|---|---|---|---|---|
| | More valuable than my capstone | As valuable as my capstone | Less valuable then my capstone | Total N |
| Additional courses in major | 13.1% | 35.7% | 51.2% | 838 |
| Additional courses outside of major | 10.1% | 26.1% | 63.8% | 831 |
| Participating in co-curricular activities | 11.8% | 32.1% | 56.1% | 829 |

## F. Capstone Experience

SCHOOL RED ALUMNI

**1. Please rate your overall capstone experience**

*7-point scale: Exceptionally poor - Exceptionally good*

| | N | % |
|---|---|---|
| 7 - Exceptionally good | 108 | 44.6% |
| 6 - Very good | 84 | 34.7% |
| 5 - Good | 36 | 14.9% |
| 4 - Neutral | 10 | 4.1% |
| 3 - Poor | 3 | 1.2% |
| 2 - Very poor | 1 | 0.4% |
| 1 - Exceptionally poor | 0 | 0.0% |
| total: | 242 | 100.0% |
| mean: | | 6.16 |

**2. Please indicate the degree to which your senior project contributed to your development in the following areas:**

*5-point scale: Not at all - Exceptionally good*

| | Contribution to development | | | |
|---|---|---|---|---|
| | % not at all or very little | % somewhat | % quite a bit | % very much |
| Managing a large project | 2.9% | 10.8% | 22.8% | 63.5% |
| Learning effectively on my own | 1.2% | 8.2% | 32.1% | 58.4% |
| Ability to make an effective oral presentation | 10.7% | 30.6% | 33.9% | 24.8% |
| having confidence in my own abilities | 2.9% | 15.6% | 34.2% | 47.3% |
| Ability to think critically and analytically | 1.7% | 11.6% | 34.0% | 52.7% |
| Ability to think creatively | 3.7% | 16.6% | 34.9% | 44.8% |
| Ability to write effectively | 2.5% | 9.6% | 30.8% | 57.1% |
| Skill in the interpreting of data, evidence, texts, and/or w | 3.3% | 11.7% | 33.9% | 51.0% |
| Integrating ideas from multiple disciplines | 10.1% | 29.0% | 25.6% | 35.3% |
| * Working collaboratively | | | | |
| * Seeing a connection between my intended career and its effect on society | | | | |

** Tan only questions*

**3. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

*5-point scale: Strongly disagree - Strongly agree*

| *Percents of non-blank responses* | Experience | | | |
|---|---|---|---|---|
| | % strongly disagree or disagree | % neutral | % agree or strongly agree | Total N |
| More intellectually challenging than reg course | 7.4% | 11.1% | 81.5% | 243 |
| Developed more academically than reg course | 9.5% | 20.6% | 70.0% | 243 |
| Better understanding of skills, abilities, interests | 5.3% | 6.2% | 88.5% | 243 |
| ** Clarified my career of graduate school objectives | 27.0% | 27.4% | 45.6% | 241 |
| Feel better prepared for job or grad school | 9.5% | 13.2% | 77.3% | 242 |
| Positive influence on intellectual growth/int in ideas | 2.1% | 8.6% | 89.3% | 243 |
| Positive influence on personal growth | 4.1% | 19.4% | 76.4% | 242 |

*** Not asked on Tan's version*

**4. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

| *Percents of non-blank responses* | Compared value: | | | |
|---|---|---|---|---|
| | More valuable than my capstone | As valuable as my capstone | Less valuable then my capstone | Total N |
| Additional courses in major | 6.2% | 30.2% | 63.6% | 242 |
| Additional courses outside of major | 7.1% | 27.2% | 65.7% | 239 |
| Participating in co-curricular activities | 8.4% | 29.0% | 62.6% | 238 |

## F. Capstone Experience

SCHOOL TAN ALUMNI

**1. Please rate your overall capstone experience**

*7-point scale: Exceptionally poor - Exceptionally good*

| | N | % |
|---|---|---|
| 7 - Exceptionally good | 32 | 25.4% |
| 6 - Very good | 46 | 36.5% |
| 5 - Good | 28 | 22.2% |
| 4 - Neutral | 12 | 9.5% |
| 3 - Poor | 6 | 4.8% |
| 2 - Very poor | 1 | 0.8% |
| 1 - Exceptionally poor | 1 | 0.8% |
| total: | 126 | 100.0% |
| mean: | | 5.63 |

**2. Please indicate the degree to which your senior project contributed to your development in the following areas:**

*5-point scale: Not at all - Exceptionally good*

| | Contribution to development | | | |
|---|---|---|---|---|
| | % not at all or very little | % somewhat | % quite a bit | % very much |
| Managing a large project | 13.0% | 31.7% | 26.0% | 29.3% |
| Learning effectively on my own | 4.8% | 29.6% | 33.6% | 32.0% |
| Ability to make an effective oral presentation | 16.0% | 21.8% | 31.9% | 30.3% |
| having confidence in my own abilities | 13.6% | 20.8% | 32.8% | 32.8% |
| Ability to think critically and analytically | 5.6% | 29.0% | 33.1% | 32.3% |
| Ability to think creatively | 12.0% | 20.8% | 35.2% | 32.0% |
| Ability to write effectively | 7.2% | 29.6% | 32.0% | 31.2% |
| Skill in the interpreting of data, evidence, texts, and/or w | 10.0% | 25.0% | 34.2% | 30.8% |
| Integrating ideas from multiple disciplines | 13.7% | 35.5% | 18.5% | 32.3% |
| * Working collaboratively | 36.8% | 18.8% | 17.9% | 26.5% |
| * Seeing a connection between my intended career and its effect on society | 28.6% | 20.2% | 18.5% | 32.8% |

** Tan only questions*

**3. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

*5-point scale: Strongly disagree - Strongly agree*

| *Percents of non-blank responses* | Experience | | | |
|---|---|---|---|---|
| | % strongly disagree or disagree | % neutral | % agree or strongly agree | Total N |
| More intellectually challenging than reg course | 12.7% | 24.6% | 62.7% | 126 |
| Developed more academically than reg course | 23.8% | 30.2% | 46.0% | 126 |
| Better understanding of skills, abilities, interests | 10.4% | 26.4% | 63.2% | 125 |
| ** Clarified my career of graduate school objectives | | | | 0 |
| Feel better prepared for job or grad school | 20.6% | 25.4% | 54.0% | 126 |
| Positive influence on intellectual growth/int in ideas | 8.7% | 13.5% | 77.8% | 126 |
| Positive influence on personal growth | 7.1% | 31.0% | 61.9% | 126 |

*** Not asked on Tan's version*

**4. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

| *Percents of non-blank responses* | Compared value: | | | |
|---|---|---|---|---|
| | More valuable than my capstone | As valuable as my capstone | Less valuable then my capstone | Total N |
| Additional courses in major | 20.0% | 40.0% | 40.0% | 125 |
| Additional courses outside of major | 13.1% | 25.4% | 61.5% | 122 |
| Participating in co-curricular activities | 13.8% | 31.7% | 54.5% | 123 |

## F. Capstone Experience

SCHOOL WHITE ALUMNI

**1. Please rate your overall capstone experience**

*7-point scale: Exceptionally poor - Exceptionally good*

| | N | % |
|---|---|---|
| 7 - Exceptionally good | 14 | 23.7% |
| 6 - Very good | 25 | 42.4% |
| 5 - Good | 12 | 20.3% |
| 4 - Neutral | 5 | 8.5% |
| 3 - Poor | 2 | 3.4% |
| 2 - Very poor | 0 | 0.0% |
| 1 - Exceptionally poor | 1 | 1.7% |
| total: | 59 | 100.0% |
| mean: | | 5.68 |

**2. Please indicate the degree to which your senior project contributed to your development in the following areas:**

*5-point scale: Not at all - Exceptionally good*

| | Contribution to development | | | |
|---|---|---|---|---|
| | % not at all or very little | % somewhat | % quite a bit | % very much |
| Managing a large project | 12.3% | 14.0% | 29.8% | 43.9% |
| Learning effectively on my own | 6.8% | 16.9% | 37.3% | 39.0% |
| Ability to make an effective oral presentation | 23.4% | 23.4% | 23.4% | 29.8% |
| having confidence in my own abilities | 13.6% | 18.6% | 28.8% | 39.0% |
| Ability to think critically and analytically | 5.2% | 17.2% | 37.9% | 39.7% |
| Ability to think creatively | 13.8% | 20.7% | 34.5% | 31.0% |
| Ability to write effectively | 3.4% | 10.3% | 31.0% | 55.2% |
| Skill in the interpreting of data, evidence, texts, and/or w | 7.0% | 15.8% | 26.3% | 50.9% |
| Integrating ideas from multiple disciplines | 16.1% | 23.2% | 28.6% | 32.1% |
| * Working collaboratively | | | | |
| * Seeing a connection between my intended career and its effect on society | | | | |

** Tan only questions*

**3. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

*5-point scale: Strongly disagree - Strongly agree*

| *Percents of non-blank responses* | Experience | | | |
|---|---|---|---|---|
| | % strongly disagree or disagree | % neutral | % agree or strongly agree | Total N |
| More intellectually challenging than reg course | 10.2% | 20.3% | 69.5% | 59 |
| Developed more academically than reg course | 27.1% | 30.5% | 42.4% | 59 |
| Better understanding of skills, abilities, interests | 13.6% | 27.1% | 59.3% | 59 |
| ** Clarified my career of graduate school objectives | 37.3% | 33.9% | 28.8% | 59 |
| Feel better prepared for job or grad school | 13.6% | 30.5% | 55.9% | 59 |
| Positive influence on intellectual growth/int in ideas | 8.6% | 10.3% | 81.0% | 58 |
| Positive influence on personal growth | 13.6% | 25.4% | 61.0% | 59 |

*** Not asked on Tan's version*

**4. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

| *Percents of non-blank responses* | Compared value: | | | |
|---|---|---|---|---|
| | More valuable than my capstone | As valuable as my capstone | Less valuable then my capstone | Total N |
| Additional courses in major | 15.8% | 40.4% | 43.9% | 57 |
| Additional courses outside of major | 14.0% | 26.3% | 59.6% | 57 |
| Participating in co-curricular activities | 14.0% | 43.9% | 42.1% | 57 |

## F. Capstone Experience

**1. Please rate your overall capstone experience**

SCHOOL YELLOW ALUMNI

*7-point scale: Exceptionally poor - Exceptionally good*

| | N | % |
|---|---|---|
| 7 - Exceptionally good | 106 | 25.6% |
| 6 - Very good | 189 | 45.7% |
| 5 - Good | 79 | 19.1% |
| 4 - Neutral | 24 | 5.8% |
| 3 - Poor | 10 | 2.4% |
| 2 - Very poor | 4 | 1.0% |
| 1 - Exceptionally poor | 2 | 0.5% |
| total: | 414 | 100.0% |
| mean: | | 5.81 |

**2. Please indicate the degree to which your senior project contributed to your development in the following areas:**

*5-point scale: Not at all - Exceptionally good*

| | Contribution to development | | | |
|---|---|---|---|---|
| | % not at all or very little | % somewhat | % quite a bit | % very much |
| Managing a large project | 6.5% | 16.7% | 27.1% | 49.6% |
| Learning effectively on my own | 4.3% | 14.7% | 35.1% | 45.9% |
| Ability to make an effective oral presentation | 8.7% | 27.8% | 31.9% | 31.6% |
| having confidence in my own abilities | 7.7% | 21.2% | 32.2% | 38.9% |
| Ability to think critically and analytically | 3.4% | 16.1% | 35.8% | 44.7% |
| Ability to think creatively | 11.4% | 21.3% | 30.8% | 36.6% |
| Ability to write effectively | 6.1% | 17.5% | 31.1% | 45.3% |
| Skill in the interpreting of data, evidence, texts, and/or w | 6.3% | 15.0% | 31.0% | 47.7% |
| Integrating ideas from multiple disciplines | 16.5% | 25.4% | 25.4% | 32.8% |
| * Working collaboratively | | | | |
| * Seeing a connection between my intended career and its effect on society | | | | |

** Tan only questions*

**3. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

*5-point scale: Strongly disagree - Strongly agree*

| *Percents of non-blank responses* | Experience | | | |
|---|---|---|---|---|
| | % strongly disagree or disagree | % neutral | % agree or strongly agree | Total N |
| More intellectually challenging than reg course | 9.4% | 30.0% | 60.6% | 414 |
| Developed more academically than reg course | 19.7% | 27.7% | 52.6% | 411 |
| Better understanding of skills, abilities, interests | 9.4% | 15.9% | 74.6% | 414 |
| ** Clarified my career of graduate school objectives | 33.4% | 33.4% | 33.2% | 413 |
| Feel better prepared for job or grad school | 12.1% | 20.0% | 67.9% | 414 |
| Positive influence on intellectual growth/int in ideas | 6.3% | 13.3% | 80.3% | 412 |
| Positive influence on personal growth | 8.2% | 22.7% | 69.1% | 414 |

*** Not asked on Tan's version*

**4. Please indicate how strongly you agree with each of the following statements about your capstone experience.**

| *Percents of non-blank responses* | Compared value: | | | |
|---|---|---|---|---|
| | More valuable than my capstone | As valuable as my capstone | Less valuable then my capstone | Total N |
| Additional courses in major | 14.7% | 37.0% | 48.3% | 414 |
| Additional courses outside of major | 10.4% | 25.7% | 63.9% | 413 |
| Participating in co-curricular activities | 12.9% | 32.4% | 54.7% | 411 |

**Appendix Tables: Contribution to Development Means**

*5 point scale: 1=not at all to 5 = very much; Highest mean in each row bolded iff differences (by row) were statistically significant p<.05.*
*Coloration is Excel 2007 conditional formatting green-yellow-red color scaling.*

**Table B1**

**Contribution to Development - By College**

| | school | | | | | Sig. |
|---|---|---|---|---|---|---|
| | Red | Tan | White | Yellow | Total | |
| CapstoneContrib Capstone contribution to development average | **4.20** | 3.81 | 3.90 | 4.03 | 4.04 | *** |
| Contribution to development: Managing a large project | **4.46** | 3.71 | 3.98 | 4.16 | 4.17 | *** |
| Contribution to development: Learning effectively on own | **4.48** | 3.93 | 4.07 | 4.22 | 4.24 | *** |
| Contribution to development: Ability to make an effective oral presentation | 3.71 | 3.71 | 3.53 | 3.84 | 3.77 | |
| Contribution to development: Having confidence in abilities | **4.26** | 3.81 | 3.88 | 4.00 | 4.04 | *** |
| Contribution to development: Ability to think critically and analytically | **4.37** | 3.91 | 4.10 | 4.21 | 4.21 | *** |
| Contribution to development: Ability to think creatively | **4.20** | 3.86 | 3.76 | 3.91 | 3.97 | *** |
| Contribution to development: Ability to write effectively | **4.43** | 3.86 | 4.38 | 4.14 | 4.20 | *** |
| Contribution to development:Skill in the interpreting of data, evidence, texts, and/or works | **4.32** | 3.85 | 4.19 | 4.18 | 4.17 | *** |
| Contribution to development:Integrating ideas from multiple disciplines | 3.84 | 3.63 | 3.70 | 3.70 | 3.73 | |

**Table B2**

**Contribution to Development - By Gender**

| | Sex | | | Sig. |
|---|---|---|---|---|
| | Male | Female | Total | |
| Capstone contribution to development average | 3.95 | **4.09** | 4.04 | * |
| Contribution to development: Managing a large project | 3.91 | **4.33** | 4.17 | *** |
| Contribution to development: Learning effectively on own | 4.12 | **4.31** | 4.24 | ** |
| Contribution to development: Ability to make an effective oral presentation | 3.69 | 3.82 | 3.77 | |
| Contribution to development: Having confidence in abilities | 3.98 | 4.08 | 4.04 | |
| Contribution to development: Ability to think critically and analytically | 4.18 | 4.23 | 4.21 | |
| Contribution to development: Ability to think creatively | 3.90 | 4.02 | 3.97 | |
| Contribution to development: Ability to write effectively | 4.07 | **4.28** | 4.20 | ** |
| Contribution to development: Skill in the interpreting of data, evidence, texts, and/or works | 4.11 | 4.21 | 4.18 | |
| Contribution to development: Integrating ideas from multiple disciplines | 3.73 | 3.73 | 3.73 | |

**Table B3**

**Contribution to Development - By Graduation Cohort**

Mean

| | graduation cohort 1=1999, 2=2004, 3=2007, | | | | Sig. |
|---|---|---|---|---|---|
| | 1999 | 2004 | 2007 | Total | |
| Capstone contribution to development average | 3.93 | 4.05 | **4.12** | 4.04 | * |
| Contribution to development: Managing a large project | 4.00 | 4.18 | **4.31** | 4.17 | ** |
| Contribution to development: Learning effectively on own | 4.14 | 4.22 | **4.34** | 4.24 | * |
| Contribution to development: Ability to make an effective oral presentation | 3.66 | 3.78 | 3.85 | 3.77 | |
| Contribution to development: Having confidence in abilities | 3.90 | 4.04 | **4.16** | 4.04 | * |
| Contribution to development: Ability to think critically and analytically | 4.13 | 4.25 | 4.23 | 4.21 | |
| Contribution to development: Ability to think creatively | 3.86 | 3.99 | 4.06 | 3.97 | |
| Contribution to development: Ability to write effectively | 4.13 | 4.24 | 4.22 | 4.20 | |
| Contribution to development: Skill in the interpreting of data, evidence, texts, and/or works | 4.08 | 4.20 | 4.24 | 4.17 | |
| Contribution to development: Integrating ideas from multiple disciplines | 3.63 | 3.73 | 3.83 | 3.73 | |

**Table B4**

**Contribution to Development - By Self-Reported Overall College GPA**

Mean

| | B-/C+ or below | B | B+ | A- | A | Total | Sig. |
|---|---|---|---|---|---|---|---|
| Capstone contribution to development average | 3.67 | 3.90 | 4.12 | **4.17** | 4.11 | 4.04 | *** |
| Contribution to development: Managing a large project | 3.64 | 4.06 | 4.24 | **4.33** | 4.27 | 4.17 | *** |
| Contribution to development: Learning effectively on own | 3.95 | 4.03 | 4.31 | 4.34 | **4.39** | 4.24 | *** |
| Contribution to development: Ability to make an effective oral presentation | 3.51 | 3.62 | 3.88 | **3.88** | 3.79 | 3.77 | * |
| Contribution to development: Having confidence in abilities | 3.67 | 3.91 | 4.10 | **4.18** | 4.11 | 4.04 | *** |
| Contribution to development: Ability to think critically and analytically | 3.84 | 4.08 | 4.30 | **4.33** | 4.26 | 4.20 | *** |
| Contribution to development: Ability to think creatively | 3.66 | 3.84 | **4.10** | 4.09 | 4.01 | 3.97 | ** |
| Contribution to development: Ability to write effectively | 3.81 | 3.98 | 4.32 | **4.34** | 4.28 | 4.20 | *** |
| Contribution to development: Skill in the interpreting of data, evidence, texts, and/or works | 3.78 | 4.06 | 4.22 | **4.31** | 4.26 | 4.17 | *** |
| Contribution to development: Integrating ideas from multiple disciplines | 3.32 | 3.57 | 3.83 | 3.88 | 3.78 | 3.73 | *** |

**Table B5**

**Contribution to Development - By Primary Major of Capstone**

Mean

| | Teacher Education | Languages /Lit/Comm | Humanities | Natural Sciences | Social Sciences | Visual and Performing Arts | Business | Total | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| Capstone contribution to development average | 4.28 | 4.00 | 4.11 | 4.02 | 4.06 | 4.05 | 3.85 | 4.04 | |
| Contribution to development: Managing a large project | 4.38 | 4.20 | 4.10 | 4.12 | 4.21 | 4.30 | 4.06 | 4.18 | |
| Contribution to development: Learning effectively on own | 4.32 | 4.21 | 4.19 | 4.22 | 4.25 | 4.46 | 4.16 | 4.24 | |
| Contribution to development: Ability to make an effective oral presentation | **4.36** | 3.58 | 3.90 | 3.94 | 3.68 | 3.56 | 3.68 | 3.77 | ** |
| Contribution to development: Having confidence in abilities | 4.64 | 4.02 | 4.19 | 4.00 | 4.04 | 4.14 | 3.89 | 4.04 | |
| Contribution to development: Ability to think critically and analytically | 4.14 | 4.15 | 4.29 | 4.24 | 4.21 | 4.17 | 4.17 | 4.21 | |
| Contribution to development: Ability to think creatively | **4.55** | 4.26 | 4.14 | 3.81 | 3.95 | 4.25 | 3.39 | 3.98 | *** |
| Contribution to development: Ability to write effectively | 4.00 | 4.32 | 4.33 | 4.09 | 4.26 | 4.03 | 4.16 | 4.20 | |
| Contribution to development: Skill in the interpreting of data, evidence, texts, and/or works | 3.58 | 3.90 | 4.05 | 4.25 | **4.29** | 3.71 | 4.28 | 4.17 | *** |
| Contribution to development: Integrating ideas from multiple disciplines | **4.29** | 3.65 | 4.10 | 3.58 | 3.82 | 3.69 | 3.39 | 3.72 | * |

**Appendix Tables: Capstone Experiences Questions**

*5 point scale: 1= strongly disagree to 5 = strongly agree; Highest mean in each row bolded iff differences (by row) were statistically significant p<.05.*
*Coloration is Excel 2007 conditional formatting green-yellow-red color scaling.*

**Table C1**

**Capstone Experiences - By College**

| | school | | | | | |
|---|---|---|---|---|---|---|
| | Red | Tan | White | Yellow | Total | Sig. |
| Capstone experiences rating average | **4.09** | 3.62 | 3.67 | 3.75 | 3.82 | *** |
| Experience: More intellectually challenging | **4.03** | 3.63 | 3.85 | 3.67 | 3.78 | *** |
| Experience: Developed more academically | **3.89** | 3.32 | 3.29 | 3.43 | 3.54 | *** |
| Experience: Better understanding of skills, abilities, interests | **4.16** | 3.71 | 3.61 | 3.84 | 3.90 | *** |
| Experience: Clarified my career or graduate school objectives | 3.32 | | 2.88 | 3.00 | 3.10 | #N/A |
| Experience: Feel better prepared for job or grad school | **4.07** | 3.53 | 3.66 | 3.81 | 3.83 | *** |
| Experience: Positive influence on intellectual growth | **4.30** | 3.86 | 4.02 | 3.97 | 4.05 | *** |
| Experience: Positive influence on personal growth. | **4.07** | 3.70 | 3.58 | 3.79 | 3.84 | *** |

**Table C2**

**Capstone Experiences - By Gender**

| | Sex | | | |
|---|---|---|---|---|
| | Male | Female | Total | Sig. |
| Capstone experiences rating average | 3.75 | **3.87** | 3.83 | * |
| Experience: More intellectually challenging | 3.75 | 3.80 | 3.78 | |
| Experience: Developed more academically | 3.46 | 3.59 | 3.54 | |
| Experience: Better understanding of skills, abilities, interests | 3.84 | 3.93 | 3.90 | |
| Experience: Clarified my career or graduate school objectives | 2.99 | **3.17** | 3.10 | * |
| Experience: Feel better prepared for job or grad school | 3.70 | **3.92** | 3.84 | ** |
| Experience: Positive influence on intellectual growth | 3.96 | **4.11** | 4.05 | * |
| Experience: Positive influence on personal growth. | 3.76 | **3.89** | 3.84 | * |

**Table C3**

**Capstone Experiences - By Graduation Cohort**

| | graduation cohort 1=1999, 2=2004, 3=2007, | | | | |
|---|---|---|---|---|---|
| | 1999 | 2004 | 2007 | Total | Sig. |
| Capstone experiences rating average | 3.69 | 3.86 | **3.91** | 3.82 | ** |
| Experience: More intellectually challenging | 3.59 | 3.85 | **3.89** | 3.78 | *** |
| Experience: Developed more academically | 3.37 | 3.56 | **3.67** | 3.54 | ** |
| Experience: Better understanding of skills, abilities, interests | 3.76 | 3.94 | **3.98** | 3.90 | ** |
| Experience: Clarified my career or graduate school objectives | 2.99 | 3.10 | 3.20 | 3.10 | |
| Experience: Feel better prepared for job or grad school | 3.75 | 3.89 | 3.85 | 3.83 | |
| Experience: Positive influence on intellectual growth | 3.95 | 4.06 | **4.15** | 4.05 | * |
| Experience: Positive influence on personal growth. | 3.73 | 3.85 | **3.94** | 3.84 | * |

**Table C4**

**Capstone Experiences - By Self-Reported Overall College GPA**

| | B-/C+ or below | B | B+ | A- | A | Total | Sig. |
|---|---|---|---|---|---|---|---|
| Capstone experiences rating average | 3.50 | 3.64 | 3.93 | **3.96** | 3.88 | 3.82 | *** |
| Experience: More intellectually challenging | 3.68 | 3.58 | 3.84 | **3.90** | 3.78 | 3.78 | ** |
| Experience: Developed more academically | 3.27 | 3.35 | **3.66** | 3.65 | 3.57 | 3.54 | ** |
| Experience: Better understanding of skills, abilities, interests | 3.61 | 3.75 | 3.99 | **4.02** | 3.92 | 3.90 | *** |
| Experience: Clarified my career or graduate school objectives | 2.71 | 2.85 | 3.14 | **3.37** | 3.15 | 3.10 | *** |
| Experience: Feel better prepared for job or grad school | 3.35 | 3.60 | 3.92 | **4.03** | 3.96 | 3.83 | *** |
| Experience: Positive influence on intellectual growth | 3.60 | 3.89 | 4.14 | **4.20** | 4.18 | 4.05 | *** |
| Experience: Positive influence on personal growth. | 3.48 | 3.68 | **4.01** | 3.96 | 3.86 | 3.84 | *** |

**Table C5**

**Capstone Experiences - By Primary Major of Capstone**

| | Teacher Education | Languages/ Lit/Comm | Humanities | Natural Sciences | Social Sciences | Visual and Performain g Arts | Business | Total | Sig. |
|---|---|---|---|---|---|---|---|---|---|
| Capstone experiences rating average | 3.97 | 3.82 | 4.08 | 3.77 | 3.84 | 3.82 | 3.99 | 3.83 | |
| Experience: More intellectually challenging | 3.55 | 3.81 | 4.00 | 3.67 | 3.84 | 3.81 | 4.06 | 3.78 | |
| Experience: Developed more academically | 3.64 | 3.52 | 3.86 | 3.49 | 3.54 | 3.59 | 3.83 | 3.54 | |
| Experience: Better understanding of skills, abilities, interests | 4.27 | 3.88 | 4.00 | 3.85 | 3.89 | 4.00 | 4.06 | 3.90 | |
| Experience: Clarified my career or graduate school objectives | 5.00 | 2.94 | 3.00 | 3.19 | 3.05 | 3.26 | 3.08 | 3.10 | |
| Experience: Feel better prepared for job or grad school | 4.19 | 3.62 | 4.05 | 3.92 | 3.85 | 3.57 | 3.94 | 3.84 | |
| Experience: Positive influence on intellectual growth | 4.00 | 4.12 | 4.43 | 3.96 | 4.08 | 4.08 | 4.11 | 4.06 | |
| Experience: Positive influence on personal growth. | 4.18 | 3.93 | 4.14 | 3.71 | 3.86 | 3.84 | 3.94 | 3.84 | |

**Overall Capstone Experience - GLM Model**

Overall Capstone Experience by School with Gollege GPA

| | |
|---|---|
| intercept | 3.397 |
| model coefficients for: | |
| colgpa | 0.727 |

| | Red | Tan | White | Yellow |
|---|---|---|---|---|
| school | 1.885 | 2.301 | 0.461 | 0 |
| school*colgpa | -0.473 | -0.747 | -0.187 | 0 |

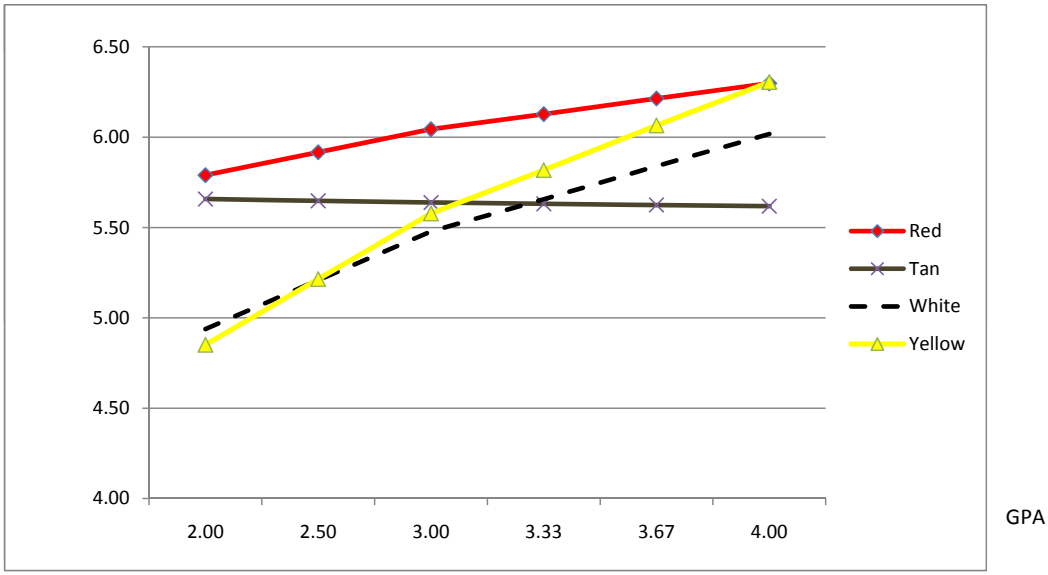
Predicted Scores

| colgpa | Red | Tan | White | Yellow |
|---|---|---|---|---|
| 2.00 | 5.79 | 5.66 | 4.94 | 4.85 |
| 2.50 | 5.92 | 5.65 | 5.21 | 5.21 |
| 3.00 | 6.04 | 5.64 | 5.48 | 5.58 |
| 3.33 | 6.13 | 5.63 | 5.66 | 5.82 |
| 3.67 | 6.21 | 5.62 | 5.84 | 6.07 |
| 4.00 | 6.30 | 5.62 | 6.02 | 6.31 |

Actual Scores

| colgpa | Red | Tan | White | Yellow | Total |
|---|---|---|---|---|---|
| 2.00 | 5.33 | 6.00 | 7.00 | 4.40 | 5.00 |
| 2.50 | 6.28 | 5.27 | 4.43 | 5.08 | 5.30 |
| 3.00 | 5.89 | 5.89 | 5.56 | 5.65 | 5.71 |
| 3.33 | 6.08 | 5.62 | 6.00 | 5.95 | 5.99 |
| 3.67 | 6.22 | 5.74 | 5.82 | 6.09 | 6.11 |
| 4.00 | 6.34 | 5.51 | 5.80 | 6.11 | 6.19 |
| Total | 6.17 | 5.63 | 5.68 | 5.81 | 5.92 |

Predictive Model: Scale 1= exceptionally poor to 7= exceptionally good




Significant effects for school, colgpa, and school*colgpa

School effects between Yellow and White were not signficant.

**Capstone Contribution to Development Average - GLM Model**
by School with Gollege GPA

Average of 10 qustions relating to the capstone's contribution to development

| | |
|---|---|
| intercept | 2.318 |
| model coefficients for: | |
| colgpa | 0.515 |

| | Red | Tan | White | Yellow |
|---|---|---|---|---|
| school | 1.601 | 1.751 | 0.428 | 0 |
| school*colgpa | -0.434 | -0.59 | -0.173 | 0 |

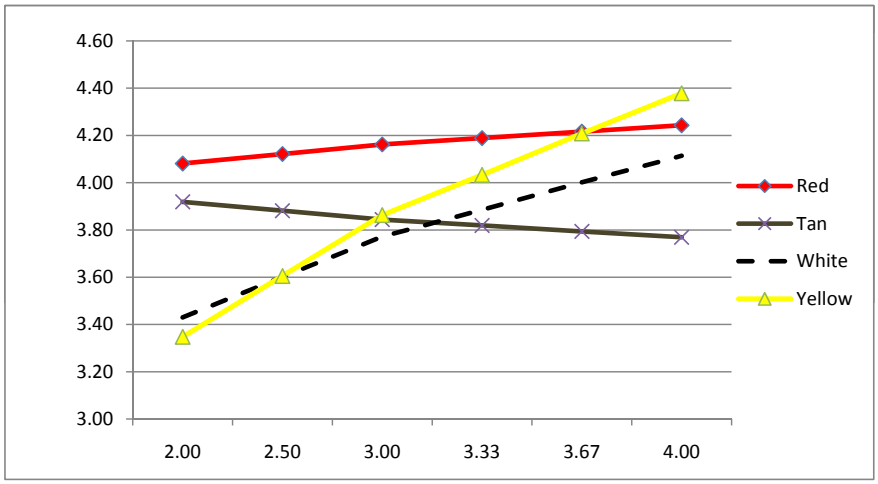
Predicted Scores

| colgpa | Red | Tan | White | Yellow |
|---|---|---|---|---|
| 2.00 | 4.08 | 3.92 | 3.43 | 3.35 |
| 2.50 | 4.12 | 3.88 | 3.60 | 3.61 |
| 3.00 | 4.16 | 3.84 | 3.77 | 3.86 |
| 3.33 | 4.19 | 3.82 | 3.88 | 4.03 |
| 3.67 | 4.22 | 3.79 | 4.00 | 4.21 |
| 4.00 | 4.24 | 3.77 | 4.11 | 4.38 |

Actual Scores

| colgpa | Red | Tan | White | Yellow | Total |
|---|---|---|---|---|---|
| 2.00 | 4.01 | 4.88 | 4.88 | 3.55 | 3.95 |
| 2.50 | 4.16 | 3.76 | 3.63 | 3.43 | 3.64 |
| 3.00 | 4.04 | 3.86 | 3.43 | 3.90 | 3.90 |
| 3.33 | 4.26 | 3.82 | 3.88 | 4.16 | 4.12 |
| 3.67 | 4.28 | 3.78 | 4.00 | 4.22 | 4.17 |
| 4.00 | 4.17 | 3.78 | 4.28 | 4.23 | 4.11 |
| Total | 4.20 | 3.81 | 3.90 | 4.03 | 4.04 |

Predictive Model: Scale: 1 to 5




GPA

Significant effects for school, colgpa, and school*colgpa
School effects between Yellow and White were not signfificant.

**Capstone Experience Rating Average - GLM Model**
by School with Gollege GPA

Average of six strongly agree to strongly disagree questions about the capstone experience

| | |
|---|---|
| intercept | 2.375 |
| model coefficients for: | |
| colgpa | 0.415 |

| | Red | Tan | White | Yellow |
|---|---|---|---|---|
| school | 1.702 | 0.809 | 0.263 | 0 |
| school*colgpa | -0.412 | -0.289 | -0.109 | 0 |

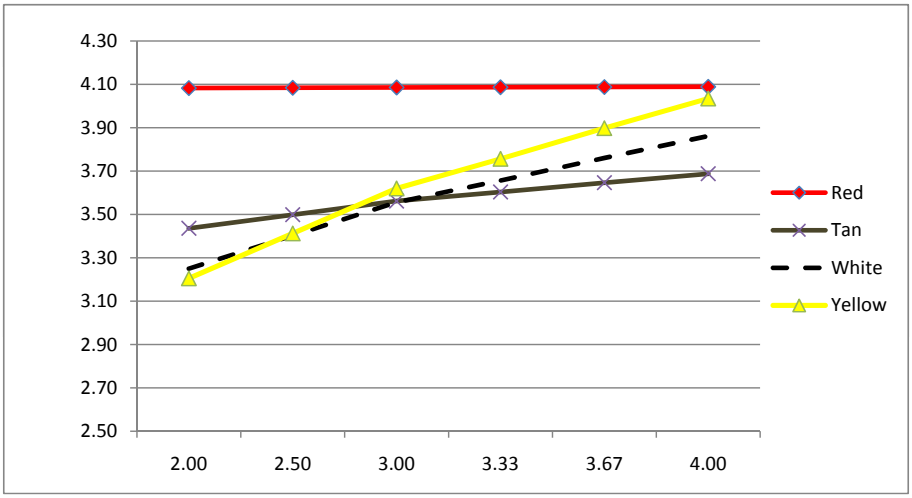
Predicted Scores

| colgpa | Red | Tan | White | Yellow |
|---|---|---|---|---|
| 2.00 | 4.08 | 3.44 | 3.25 | 3.21 |
| 2.50 | 4.08 | 3.50 | 3.40 | 3.41 |
| 3.00 | 4.09 | 3.56 | 3.56 | 3.62 |
| 3.33 | 4.09 | 3.60 | 3.66 | 3.76 |
| 3.67 | 4.09 | 3.65 | 3.76 | 3.90 |
| 4.00 | 4.09 | 3.69 | 3.86 | 4.04 |

Actual Scores

| colgpa | Red | Tan | White | Yellow | Total |
|---|---|---|---|---|---|
| 2.00 | 4.39 | 3.33 | 5.00 | 3.70 | 4.00 |
| 2.50 | 4.18 | 3.31 | 3.12 | 3.26 | 3.44 |
| 3.00 | 3.85 | 3.66 | 3.22 | 3.60 | 3.64 |
| 3.33 | 4.09 | 3.68 | 4.01 | 3.89 | 3.93 |
| 3.67 | 4.25 | 3.71 | 3.61 | 3.90 | 3.96 |
| 4.00 | 3.99 | 3.61 | 3.95 | 3.93 | 3.88 |
| Total | 4.09 | 3.62 | 3.67 | 3.75 | 3.82 |

Predictive Model: Scale: 1 to 5




GPA

Significant effects for school, colgpa, and school*colgpa
School effects among Yellow and White and Tan were not signfificant.

**Developed more academically from capstone than from regular course - GLM Model**
Capstone28 by School with Gollege GPA

| | |
|---|---|
| intercept | 2.018 |
| model coefficients for: | |
| colgpa | 0.425 |

| | Red | Tan | White | Yellow |
|---|---|---|---|---|
| school | 2.053 | 1.6 | 1.013 | 0 |
| school*colgpa | -0.477 | -0.512 | -0.349 | 0 |

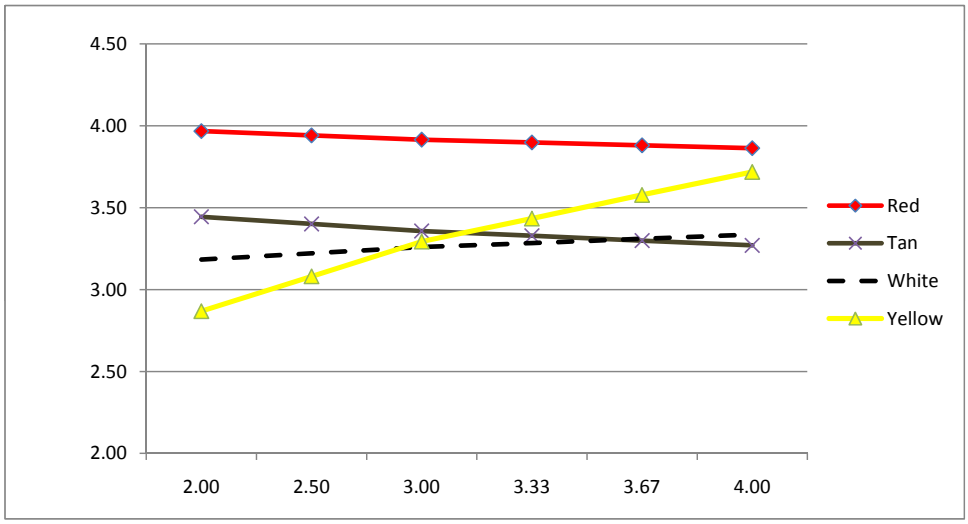
Predicted Scores

| colgpa | Red | Tan | White | Yellow |
|---|---|---|---|---|
| 2.00 | 3.97 | 3.44 | 3.18 | 2.87 |
| 2.50 | 3.94 | 3.40 | 3.22 | 3.08 |
| 3.00 | 3.92 | 3.36 | 3.26 | 3.29 |
| 3.33 | 3.90 | 3.33 | 3.28 | 3.43 |
| 3.67 | 3.88 | 3.30 | 3.31 | 3.58 |
| 4.00 | 3.86 | 3.27 | 3.34 | 3.72 |

Actual Scores

| colgpa | Red | Tan | White | Yellow | Total |
|---|---|---|---|---|---|
| 2.00 | | | | | |
| 2.50 | | | | | |
| 3.00 | | | | | |
| 3.33 | | | | | |
| 3.67 | | | | | |
| 4.00 | | | | | |
| Total | | | | | |

Predictive Model:




GPA

School and school*colgpa effects are significant

**Capstone value vs additional course in the major - GLM Model**

Capstone33 by School with Gollege GPA

| | |
|---|---|
| intercept | 1.553 |
| model coefficients for: | |
| colgpa | 0.236 |

| | Red | Tan | White | Yellow |
|---|---|---|---|---|
| school | 0.57 | -0.286 | -1.087 | 0 |
| school*colgpa | -0.105 | 0.032 | 0.301 | 0 |

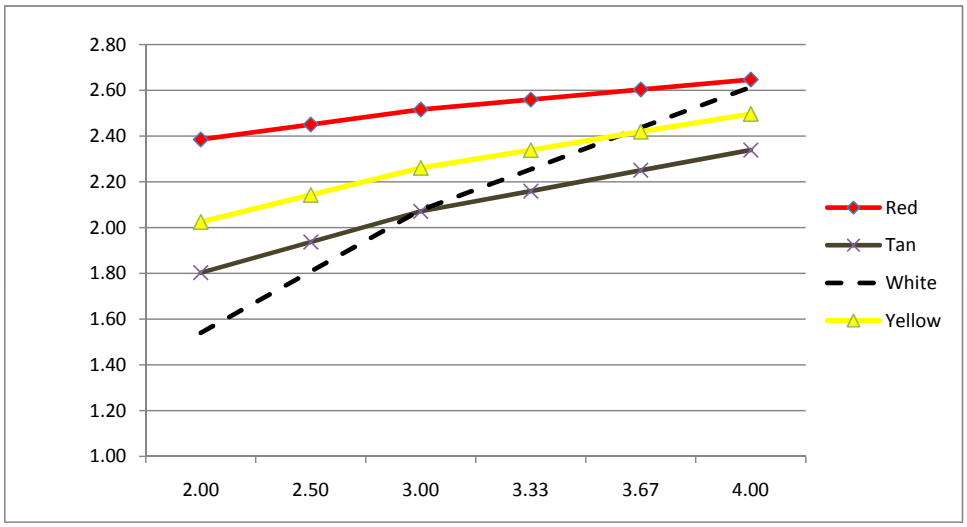
Predicted Scores

| colgpa | Red | Tan | White | Yellow |
|---|---|---|---|---|
| 2.00 | 2.39 | 1.80 | 1.54 | 2.03 |
| 2.50 | 2.45 | 1.94 | 1.81 | 2.14 |
| 3.00 | 2.52 | 2.07 | 2.08 | 2.26 |
| 3.33 | 2.56 | 2.16 | 2.25 | 2.34 |
| 3.67 | 2.60 | 2.25 | 2.44 | 2.42 |
| 4.00 | 2.65 | 2.34 | 2.61 | 2.50 |

Actual Scores

| colgpa | Red | Tan | White | Yellow | Total |
|---|---|---|---|---|---|
| 2.00 | | | | | |
| 2.50 | | | | | |
| 3.00 | | | | | |
| 3.33 | | | | | |
| 3.67 | | | | | |
| 4.00 | | | | | |
| Total | | | | | |

Predictive Model:




GPA

Only significant effect is from colgp.
Differences by school were not significant.
School*colgpa not a significant effect.

## Appendix E: Correlations of Overall Evaluations of the Capstone and Undergraduate Education with Other Survey Questions

The table in this appendix indicates the correlations of various capstone related questions on the alumni survey with some key evaluation questions relating to the capstone and their undergraduate education, namely:

Capstone14: Overall capstone experience
CapstoneExperRating: Capstone experiences rating average
CapstoneContrib: Capstone contribution to development average
q7a Preparation: Post-baccalaureate education
q7b Preparation: Current career
q4: Satisfaction with undergraduate education
q5: Would encourage others to attend

The table is intended as a reference for questions that may arise about interrelationships among the responses. It is exploratory in nature, and it should be kept in mind that correlations may show associations that are not causative. The statistical significance of the correlations relates to the probability that the true correlation is non-zero. Given the large number of tests for significance, some false positives are likely to occur, so judgments should also be made about reasonableness of the results. Of particular interest are things that might differentiate alumni who had the best capstone experience from those with poorer experiences.

The "Overall Evaluation of the Capstone" section relates the seven key questions mentioned above to each other, and it seems reasonable and favorable that all the inter-correlations are positive with moderate to high values. In a coherent package, having a good capstone experience is positively related to the capstone contributing to development, feeling well prepared for graduate school or the current career, satisfaction with one's undergraduate education and encouraging others to attend the same college.

The "Importance in Current Activities" and "Extent Enhanced by Undergraduate Experience" sections indicate that higher capstone ratings are most highly associated with higher life-long learning interests, including formulating ideas, gaining knowledge, and a desire for continued learning. It would be interesting to know how much of this is caused by the capstone experience as opposed to a predisposition toward life-long learning that might precede the capstone.

The "Satisfaction with College Experiences" section shows higher capstone ratings have a strong positive correlation with satisfaction with independent study/research, as might be expected, but also with most of the academic program areas. In contrast, as might also be expect if students are giving valid responses, the correlations with most college services (financial, recreation/athletics, residential life, campus safety) are not significant.

A question pertinent to our research agenda is whether students who have the better capstone experiences tended to give up involvement with co-curricular activities such as student government, performing arts/music or athletics. The "Level of Involvement" section of the table shows the correlations are generally small and not statistically significant. Even the statistically significant

correlations were quite small: -0.087 with fraternity/sorority participation, +0.071 with internships, and -0.099 with off-campus employment. Similarly the contribution of development that alumni attribute to various co-curricular activities does not appear to negatively correlated with having a better capstone experience. The question of whether capstones may force a trade off with other co-curricular activities would be better addressed with direct questions, but these correlations at least do not seem to raise any red flags.

| Correlations with Key Questions - Color scaling is within topic blocks. Asterisks indicate statistical significance, 2-tailed. [1] | Capstone14 Overall capstone experience | | CapstoneExperRating Capstone experiences rating average | | CapstoneContrib Capstone contribution to development average | | q7a Preparation: Post-baccalaureate education | | q7b Preparation: Current career | | q4 Satisfaction with undergraduate education | | q5 Would encourage others to attend | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| Correlations | | | | | | | | | | | | | | |
| **Overall Evaluation of the Capstone** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| Capstone14 Overall capstone experience | 1.000 | *** | 0.654 | *** | 0.630 | *** | 0.288 | *** | 0.271 | *** | 0.339 | *** | 0.293 | *** |
| CapstoneExperRating Capstone experiences rating average | 0.654 | *** | 1.000 | *** | 0.788 | *** | 0.349 | *** | 0.352 | *** | 0.391 | *** | 0.309 | *** |
| CapstoneContrib Capstone contribution to development a | 0.630 | *** | 0.788 | *** | 1.000 | *** | 0.285 | *** | 0.360 | *** | 0.376 | *** | 0.290 | *** |
| q7a Preparation: Post-baccalaureate education | 0.288 | *** | 0.349 | *** | 0.285 | *** | 1.000 | *** | 0.424 | *** | 0.380 | *** | 0.329 | *** |
| q7b Preparation: Current career | 0.271 | *** | 0.352 | *** | 0.360 | *** | 0.424 | *** | 1.000 | *** | 0.437 | *** | 0.407 | *** |
| q4 Satisfaction with undergraduate education | 0.339 | *** | 0.391 | *** | 0.376 | *** | 0.380 | *** | 0.437 | *** | 1.000 | *** | 0.632 | *** |
| q5 Would encourage others to attend | 0.293 | *** | 0.309 | *** | 0.290 | *** | 0.329 | *** | 0.407 | *** | 0.632 | *** | 1.000 | *** |
| **Importance in Current Activities** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| q1a1 Importance: Acquire new skills | 0.120 | *** | 0.138 | *** | 0.171 | *** | 0.117 | *** | 0.159 | *** | 0.164 | *** | 0.092 | ** |
| q1a2 Importance: Think analytically | 0.091 | ** | 0.138 | *** | 0.152 | *** | 0.198 | *** | 0.187 | *** | 0.160 | *** | 0.135 | *** |
| q1a3 Importance: Formulate ideas | 0.194 | *** | 0.271 | *** | 0.287 | *** | 0.142 | *** | 0.193 | *** | 0.163 | *** | 0.161 | *** |
| q1a4 Importance: Academic ability | 0.178 | *** | 0.226 | *** | 0.251 | *** | 0.248 | *** | 0.230 | *** | 0.246 | *** | 0.201 | *** |
| q1a5 Importance: Write effectively | 0.136 | *** | 0.217 | *** | 0.254 | *** | 0.189 | *** | 0.149 | *** | 0.125 | *** | 0.092 | ** |
| q1a6 Importance: Use quant tools | 0.072 | * | 0.078 | * | 0.166 | *** | 0.086 | ** | 0.144 | *** | 0.151 | *** | 0.105 | ** |
| q1a7 Importance: Appreciate arts | 0.080 | * | 0.213 | *** | 0.218 | *** | 0.113 | *** | 0.092 | ** | 0.152 | *** | 0.116 | *** |
| q1a8 Importance: Gain knowledge | 0.205 | *** | 0.190 | *** | 0.188 | *** | 0.221 | *** | 0.247 | *** | 0.174 | *** | 0.145 | *** |
| q1a9 Importance: Speak foreign language | 0.069 | * | 0.154 | *** | 0.133 | *** | 0.057 | | 0.054 | | 0.060 | | 0.016 | |
| q1a10 Importance: Societal awareness | 0.070 | * | 0.195 | *** | 0.175 | *** | 0.133 | *** | 0.137 | *** | 0.159 | *** | 0.081 | * |
| q1a11 Importance: Place probs in perspective | 0.059 | | 0.211 | *** | 0.186 | *** | 0.109 | ** | 0.177 | *** | 0.147 | *** | 0.070 | * |
| q1a12 Importance: Understand moral issues | 0.075 | * | 0.143 | *** | 0.145 | *** | 0.145 | *** | 0.146 | *** | 0.178 | *** | 0.099 | ** |
| q1a13 Importance: Self-understanding | 0.091 | ** | 0.186 | *** | 0.226 | *** | 0.141 | *** | 0.179 | *** | 0.180 | *** | 0.142 | *** |
| q1a14 Importance: Function independently | 0.151 | *** | 0.191 | *** | 0.226 | *** | 0.058 | | 0.166 | *** | 0.131 | *** | 0.102 | ** |
| q1a15 Importance: Develop self-esteem | 0.132 | *** | 0.203 | *** | 0.248 | *** | 0.091 | ** | 0.153 | *** | 0.174 | *** | 0.149 | *** |
| q1a16 Importance: Establish course of action | 0.139 | *** | 0.177 | *** | 0.196 | *** | 0.146 | *** | 0.157 | *** | 0.204 | *** | 0.131 | *** |
| q1a17 Importance: Intellectual self-confidence | 0.172 | *** | 0.201 | *** | 0.232 | *** | 0.123 | *** | 0.204 | *** | 0.187 | *** | 0.151 | *** |
| q1a18 Importance: Desire for continued learning | 0.222 | *** | 0.253 | *** | 0.259 | *** | 0.226 | *** | 0.168 | *** | 0.193 | *** | 0.186 | *** |
| q1a19 Importance: Lead and supervise | 0.095 | ** | 0.132 | *** | 0.187 | *** | 0.129 | *** | 0.172 | *** | 0.145 | *** | 0.082 | * |
| q1a20 Importance: Relate well to others | 0.050 | | 0.117 | *** | 0.182 | *** | 0.115 | *** | 0.165 | *** | 0.177 | *** | 0.162 | *** |
| q1a21 Importance: Function as member of team | 0.041 | | 0.086 | * | 0.156 | *** | 0.066 | * | 0.123 | *** | 0.107 | ** | 0.103 | ** |
| q1a22 Importance: Communicate orally | 0.103 | ** | 0.127 | *** | 0.187 | *** | 0.108 | ** | 0.126 | *** | 0.142 | *** | 0.124 | *** |
| q1a23 Importance: Understand others | 0.087 | * | 0.122 | *** | 0.186 | *** | 0.088 | ** | 0.143 | *** | 0.132 | *** | 0.121 | *** |
| q1a24 Importance: Understand scientific process | 0.115 | *** | 0.131 | *** | 0.168 | *** | 0.171 | *** | 0.196 | *** | 0.159 | *** | 0.072 | * |
| q1a25 Importance: Use technology | -0.042 | | 0.016 | | 0.085 | * | 0.072 | * | 0.134 | *** | 0.056 | | 0.056 | |



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| | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Extent Enhanced by Undergraduate Experience** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| q1b1 Enhanced: Acquire new skills | 0.294 | *** | 0.360 | *** | 0.388 | *** | 0.302 | *** | 0.400 | *** | 0.425 | *** | 0.367 | *** |
| q1b2 Enhanced: Think analytically | 0.250 | *** | 0.304 | *** | 0.352 | *** | 0.264 | *** | 0.380 | *** | 0.332 | *** | 0.253 | *** |
| q1b3 Enhanced: Formulate ideas | 0.315 | *** | 0.359 | *** | 0.392 | *** | 0.230 | *** | 0.357 | *** | 0.316 | *** | 0.273 | *** |
| q1b4 Enhanced: Academic ability | 0.285 | *** | 0.307 | *** | 0.333 | *** | 0.275 | *** | 0.333 | *** | 0.384 | *** | 0.344 | *** |
| q1b5 Enhanced: Write effectively | 0.200 | *** | 0.235 | *** | 0.311 | *** | 0.239 | *** | 0.222 | *** | 0.248 | *** | 0.159 | *** |
| q1b6 Enhanced: Use quant tools | 0.110 | ** | 0.162 | *** | 0.264 | *** | 0.157 | *** | 0.264 | *** | 0.264 | *** | 0.216 | *** |
| q1b7 Enhanced: Appreciate arts | 0.105 | ** | 0.208 | *** | 0.216 | *** | 0.125 | *** | 0.146 | *** | 0.195 | *** | 0.212 | *** |
| q1b8 Enhanced: Gain knowledge | 0.293 | *** | 0.342 | *** | 0.354 | *** | 0.286 | *** | 0.334 | *** | 0.359 | *** | 0.279 | *** |
| q1b9 Enhanced: Speak foreign language | 0.085 | * | 0.130 | *** | 0.119 | *** | 0.089 | ** | 0.071 | * | 0.076 | * | 0.064 | |
| q1b10 Enhanced: Societal awareness | 0.101 | ** | 0.210 | *** | 0.210 | *** | 0.166 | *** | 0.200 | *** | 0.254 | *** | 0.206 | *** |
| q1b11 Enhanced: Place probs in perspective | 0.128 | *** | 0.236 | *** | 0.237 | *** | 0.157 | *** | 0.242 | *** | 0.286 | *** | 0.206 | *** |
| q1b12 Enhanced: Understand moral issues | 0.103 | ** | 0.219 | *** | 0.250 | *** | 0.204 | *** | 0.298 | *** | 0.302 | *** | 0.255 | *** |
| q1b13 Enhanced: Self-understanding | 0.155 | *** | 0.202 | *** | 0.273 | *** | 0.187 | *** | 0.239 | *** | 0.336 | *** | 0.299 | *** |
| q1b14 Enhanced: Function independently | 0.229 | *** | 0.252 | *** | 0.305 | *** | 0.178 | *** | 0.287 | *** | 0.281 | *** | 0.245 | *** |
| q1b15 Enhanced: Develop self-esteem | 0.211 | *** | 0.258 | *** | 0.342 | *** | 0.193 | *** | 0.274 | *** | 0.370 | *** | 0.323 | *** |
| q1b16 Enhanced: Establish course of action | 0.239 | *** | 0.288 | *** | 0.366 | *** | 0.261 | *** | 0.315 | *** | 0.368 | *** | 0.329 | *** |
| q1b17 Enhanced: Intellectual self-confidence | 0.214 | *** | 0.255 | *** | 0.332 | *** | 0.245 | *** | 0.311 | *** | 0.385 | *** | 0.352 | *** |
| q1b18 Enhanced: Desire for continued learning | 0.303 | *** | 0.336 | *** | 0.378 | *** | 0.407 | *** | 0.322 | *** | 0.372 | *** | 0.380 | *** |
| q1b19 Enhanced: Lead and supervise | 0.141 | *** | 0.213 | *** | 0.288 | *** | 0.140 | *** | 0.270 | *** | 0.246 | *** | 0.208 | *** |
| q1b20 Enhanced: Relate well to others | 0.119 | *** | 0.205 | *** | 0.291 | *** | 0.131 | *** | 0.211 | *** | 0.244 | *** | 0.224 | *** |
| q1b21 Enhanced: Function as member of team | 0.103 | ** | 0.207 | *** | 0.292 | *** | 0.137 | *** | 0.251 | *** | 0.258 | *** | 0.218 | *** |
| q1b22 Enhanced: Communicate orally | 0.113 | ** | 0.194 | *** | 0.325 | *** | 0.173 | *** | 0.249 | *** | 0.280 | *** | 0.241 | *** |
| q1b23 Enhanced: Understand others | 0.112 | ** | 0.212 | *** | 0.297 | *** | 0.192 | *** | 0.297 | *** | 0.263 | *** | 0.261 | *** |
| q1b24 Enhanced: Understand scientific process | 0.132 | *** | 0.186 | *** | 0.231 | *** | 0.216 | *** | 0.203 | *** | 0.213 | *** | 0.162 | *** |
| q1b25 Enhanced: Use technology | 0.055 | | 0.152 | *** | 0.229 | *** | 0.147 | *** | 0.251 | *** | 0.226 | *** | 0.183 | *** |
| **Satisfaction with College Experiences** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| q2a Satisfaction: Academic advising | 0.348 | *** | 0.349 | *** | 0.339 | *** | 0.218 | *** | 0.264 | *** | 0.376 | *** | 0.313 | *** |
| q2b Satisfaction: Contact with faculty | 0.318 | *** | 0.255 | *** | 0.237 | *** | 0.210 | *** | 0.180 | *** | 0.299 | *** | 0.247 | *** |
| q2c Satisfaction: Quality of teaching | 0.187 | *** | 0.157 | *** | 0.201 | *** | 0.218 | *** | 0.235 | *** | 0.353 | *** | 0.356 | *** |
| q2d Satisfaction: Courses in major field | 0.188 | *** | 0.188 | *** | 0.225 | *** | 0.226 | *** | 0.230 | *** | 0.333 | *** | 0.274 | *** |
| q2e Satisfaction: Courses outside major field | 0.113 | ** | 0.203 | *** | 0.204 | *** | 0.176 | *** | 0.165 | *** | 0.266 | *** | 0.243 | *** |
| q2f Satisfaction: Independent study/research | 0.505 | *** | 0.450 | *** | 0.434 | *** | 0.280 | *** | 0.237 | *** | 0.358 | *** | 0.292 | *** |
| q2g Satisfaction: Career services | 0.146 | *** | 0.168 | *** | 0.164 | *** | 0.160 | *** | 0.280 | *** | 0.287 | *** | 0.299 | *** |
| q2h Satisfaction: Financial services | 0.043 | | 0.117 | ** | 0.120 | ** | 0.129 | *** | 0.156 | *** | 0.225 | *** | 0.226 | *** |
| q2i Satisfaction: Library resources | 0.062 | | 0.091 | ** | 0.099 | ** | 0.049 | | 0.063 | | 0.116 | *** | 0.143 | *** |
| q2j Satisfaction: Recreation/athletics | 0.029 | | 0.013 | | 0.056 | | -0.017 | | 0.083 | * | 0.111 | ** | 0.151 | *** |
| q2k Satisfaction: Residential life | 0.006 | | 0.076 | * | 0.080 | * | 0.077 | * | 0.067 | * | 0.187 | *** | 0.190 | *** |
| q2l Satisfaction: Student voice in policies | 0.199 | *** | 0.212 | *** | 0.232 | *** | 0.165 | *** | 0.192 | *** | 0.265 | *** | 0.266 | *** |
| q2m Satisfaction: Campus safety | 0.045 | | 0.097 | ** | 0.105 | ** | 0.081 | * | 0.099 | ** | 0.131 | *** | 0.097 | ** |

| | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| q2n Satisfaction: Sense of belonging | 0.146 | *** | 0.205 | *** | 0.249 | *** | 0.136 | *** | 0.159 | *** | 0.393 | *** | 0.399 | *** |
| q2o Satisfaction: Ethnic/racial diversity | 0.024 | | 0.080 | * | 0.117 | *** | 0.027 | | 0.111 | ** | 0.161 | *** | 0.161 | *** |
| q2p Satisfaction: Social life on campus | 0.090 | ** | 0.125 | *** | 0.172 | *** | 0.093 | ** | 0.186 | *** | 0.292 | *** | 0.340 | *** |
| q3a Expectations: Enhance intellectual growth | 0.293 | *** | 0.350 | *** | 0.365 | *** | 0.352 | *** | 0.413 | *** | 0.478 | *** | 0.467 | *** |
| q3b Expectations: Acquire knowledge of a field | 0.285 | *** | 0.343 | *** | 0.347 | *** | 0.316 | *** | 0.411 | *** | 0.426 | *** | 0.387 | *** |
| q3c Expectations: Develop competency in skills | 0.261 | *** | 0.333 | *** | 0.348 | *** | 0.357 | *** | 0.548 | *** | 0.416 | *** | 0.342 | *** |
| q3d Expectations: Foster personal growth | 0.194 | *** | 0.264 | *** | 0.331 | *** | 0.267 | *** | 0.341 | *** | 0.455 | *** | 0.440 | *** |
| q3e Expectations: Promote ability to form relationships | 0.180 | *** | 0.265 | *** | 0.321 | *** | 0.224 | *** | 0.275 | *** | 0.384 | *** | 0.381 | *** |
| **Level of Involvement** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| q6a1 Involvement: Student government | 0.028 | | 0.024 | | 0.009 | | 0.025 | | 0.030 | | 0.048 | | 0.031 | |
| q6a2 Involvement: Intercollegiate athletics | -0.039 | | -0.065 | | -0.057 | | -0.058 | | -0.066 | * | -0.039 | | -0.012 | |
| q6a3 Involvement: Intramural sports | -0.020 | | 0.020 | | 0.047 | | -0.059 | | -0.021 | | -0.027 | | -0.010 | |
| q6a4 Involvement: Student publications | 0.022 | | 0.052 | | 0.037 | | -0.003 | | 0.009 | | -0.020 | | -0.068 | * |
| q6a5 Involvement: Performing arts/music | 0.053 | | 0.117 | *** | 0.079 | * | 0.065 | | 0.062 | | 0.052 | | 0.036 | |
| q6a6 Involvement: Political organization | -0.010 | | 0.056 | | 0.039 | | 0.052 | | -0.001 | | 0.010 | | -0.020 | |
| q6a7 Involvement: Community service | 0.045 | | 0.101 | ** | 0.127 | *** | 0.068 | * | 0.085 | * | 0.111 | *** | 0.064 | |
| q6a8 Involvement: Fraternity/sorority | -0.087 | * | -0.091 | ** | -0.030 | | -0.067 | * | 0.006 | | 0.023 | | 0.036 | |
| q6a9 Involvement: Religious group | 0.027 | | 0.020 | | 0.023 | | 0.077 | * | 0.052 | | 0.070 | * | 0.074 | * |
| q6a10 Involvement: Internships | 0.071 | * | 0.099 | ** | 0.101 | ** | 0.093 | ** | 0.127 | *** | 0.068 | * | 0.021 | |
| q6a11 Involvement: Study abroad | 0.023 | | 0.107 | ** | 0.021 | | 0.057 | | -0.014 | | 0.053 | | 0.042 | |
| q6a12 Involvement: Faculty research | 0.160 | *** | 0.178 | *** | 0.148 | *** | 0.160 | *** | 0.092 | ** | 0.094 | ** | 0.048 | |
| q6a13 Involvement: Independent study | 0.258 | *** | 0.287 | *** | 0.230 | *** | 0.184 | *** | 0.085 | * | 0.109 | ** | 0.092 | ** |
| q6a14 Involvement: On-campus employment | 0.036 | | 0.029 | | 0.006 | | 0.068 | * | 0.060 | | 0.016 | | 0.036 | |
| q6a15 Involvement: Off-campus employment | -0.099 | ** | -0.058 | | -0.084 | * | -0.073 | * | -0.006 | | -0.055 | | -0.079 | * |
| **Contribution to Your Development** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| q6b1 Contribution: Student government | 0.098 | | 0.096 | | 0.118 | | 0.173 | ** | 0.152 | * | 0.146 | * | 0.100 | |
| q6b2 Contribution: Intercollegiate athletics | 0.040 | | 0.071 | | 0.041 | | 0.160 | ** | 0.155 | ** | 0.128 | * | 0.094 | |
| q6b3 Contribution: Intramural sports | 0.111 | * | 0.165 | *** | 0.170 | *** | 0.003 | | 0.088 | | 0.090 | | 0.049 | |
| q6b4 Contribution: Student publications | -0.015 | | 0.051 | | 0.016 | | -0.062 | | 0.015 | | 0.053 | | -0.048 | |
| q6b5 Contribution: Performing arts/music | -0.048 | | 0.016 | | 0.011 | | 0.017 | | 0.022 | | -0.011 | | 0.020 | |
| q6b6 Contribution: Political organization | 0.176 | ** | 0.188 | *** | 0.215 | *** | 0.213 | *** | 0.191 | *** | 0.174 | ** | 0.071 | |
| q6b7 Contribution: Community service | 0.108 | ** | 0.114 | ** | 0.126 | ** | 0.156 | *** | 0.122 | ** | 0.166 | *** | 0.125 | *** |
| q6b8 Contribution: Fraternity/sorority | 0.063 | | 0.016 | | 0.062 | | 0.073 | | 0.119 | * | 0.080 | | 0.091 | |
| q6b9 Contribution: Religious group | 0.077 | | 0.065 | | 0.059 | | 0.114 | | 0.027 | | 0.125 | * | 0.130 | * |
| q6b10 Contribution: Internships | 0.087 | | 0.131 | ** | 0.096 | * | 0.163 | *** | 0.211 | *** | 0.085 | | 0.038 | |
| q6b11 Contribution: Study abroad | 0.070 | | 0.083 | | 0.044 | | 0.083 | | 0.155 | ** | 0.076 | | -0.023 | |
| q6b12 Contribution: Faculty research | 0.231 | *** | 0.299 | *** | 0.240 | *** | 0.174 | ** | 0.094 | | 0.048 | | -0.001 | |
| q6b13 Contribution: Independent study | 0.398 | *** | 0.452 | *** | 0.387 | *** | 0.324 | *** | 0.246 | *** | 0.244 | *** | 0.190 | *** |
| q6b14 Contribution: On-campus employment | 0.119 | ** | 0.219 | *** | 0.218 | *** | 0.183 | *** | 0.205 | *** | 0.120 | ** | 0.061 | |
| q6b15 Contribution: Off-campus employment | -0.014 | | 0.064 | | 0.028 | | -0.037 | | 0.098 | | -0.033 | | -0.002 | |

Appendix E

| | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Misc. Preparation** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| q7c Preparation: Social and civic involvement | 0.172 | *** | 0.247 | *** | 0.251 | *** | 0.315 | *** | 0.388 | *** | 0.343 | *** | 0.311 | *** |
| q7d Preparation: Interpersonal relationships | 0.158 | *** | 0.234 | *** | 0.293 | *** | 0.269 | *** | 0.303 | *** | 0.351 | *** | 0.352 | *** |
| **Alumni Continuing Involvement with Alma Mater** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| q8a Continuing Involvement: Read campus publications | 0.126 | *** | 0.115 | *** | 0.100 | ** | 0.138 | *** | 0.175 | *** | 0.196 | *** | 0.206 | *** |
| q8b Continuing Involvement: Visited the institution's Web site | 0.142 | *** | 0.185 | *** | 0.200 | *** | 0.143 | *** | 0.185 | *** | 0.204 | *** | 0.250 | *** |
| q8c Continuing Involvement: Visited campus for any purpose | 0.071 | * | 0.099 | ** | 0.124 | *** | 0.119 | *** | 0.156 | *** | 0.150 | *** | 0.166 | *** |
| q8d Continuing Involvement: Attended alumni functions on campus | 0.093 | ** | 0.071 | * | 0.143 | *** | 0.049 | | 0.113 | *** | 0.136 | *** | 0.146 | *** |
| q8e Continuing Involvement: Attended alumni functions off campus | 0.079 | * | 0.056 | | 0.101 | ** | 0.059 | | 0.073 | * | 0.103 | ** | 0.116 | *** |
| q8f Continuing Involvement: Attended alma mater sporting events | 0.053 | | 0.029 | | 0.092 | ** | 0.009 | | 0.065 | | 0.075 | * | 0.126 | *** |
| q8g Continuing Involvement: Served as an alumni admissions volunteer | 0.089 | * | 0.084 | * | 0.086 | * | 0.079 | * | 0.078 | * | 0.060 | | 0.078 | * |
| q8h Continuing Involvement: Participated in a career advisory program | 0.099 | ** | 0.075 | * | 0.091 | ** | 0.053 | | 0.094 | ** | 0.067 | * | 0.043 | |
| q8i Continuing Involvement: Participated in alumni continuing education program | 0.044 | | 0.025 | | 0.068 | | 0.002 | | 0.003 | | -0.041 | | 0.014 | |
| q8j Continuing Involvement: Participated in alumni community service program | 0.056 | | 0.060 | | 0.040 | | 0.031 | | 0.030 | | 0.015 | | 0.050 | |
| q8k Continuing Involvement: Contributed or solicited for the annual fund | 0.010 | | 0.046 | | 0.085 | * | 0.143 | *** | 0.158 | *** | 0.168 | *** | 0.169 | *** |
| q8l Continuing Involvement: Maintained contact with other alumni | 0.069 | * | 0.132 | *** | 0.131 | *** | 0.063 | | 0.120 | *** | 0.200 | *** | 0.192 | *** |
| q8m Continuing Involvement: Maintained contact with faculty members | 0.250 | *** | 0.267 | *** | 0.252 | *** | 0.187 | *** | 0.218 | *** | 0.172 | *** | 0.102 | ** |
| q8n Continuing Involvement: Maintained contact with administrators | 0.088 | * | 0.114 | *** | 0.146 | *** | 0.087 | ** | 0.135 | *** | 0.137 | *** | 0.113 | *** |
| q9 Identification with your alma mater | 0.238 | *** | 0.268 | *** | 0.292 | *** | 0.331 | *** | 0.376 | *** | 0.487 | *** | 0.549 | *** |
| **Misc - grades/honors/financial aid** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| q17 Relevance of undergraduate major to current career | 0.186 | *** | 0.200 | *** | 0.131 | *** | 0.269 | *** | 0.443 | *** | 0.191 | *** | 0.178 | *** |
| q18 Overall grade received as undergrad (note scale: A=1 to 6=C or below) | -0.206 | *** | -0.185 | *** | -0.163 | *** | -0.269 | *** | -0.201 | *** | -0.153 | *** | -0.173 | *** |
| q19a Awarded: Latin honors | 0.154 | *** | 0.105 | ** | 0.097 | ** | 0.190 | *** | 0.138 | *** | 0.094 | ** | 0.086 | ** |
| q19b Awarded: Phi Beta Kappa | 0.087 | * | 0.035 | | 0.047 | | 0.124 | *** | 0.149 | *** | 0.065 | | 0.071 | * |
| q19c Awarded: Sigma Xi | 0.071 | * | 0.051 | | 0.025 | | -0.035 | | 0.006 | | -0.002 | | -0.012 | |

| | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| q19d Awarded: Honors in major | 0.274 | *** | 0.261 | *** | 0.218 | *** | 0.190 | *** | 0.147 | *** | 0.115 | *** | 0.097 | ** |
| q20 Financial Aid recipient | 0.019 | | 0.047 | | 0.054 | | -0.047 | | -0.022 | | -0.016 | | -0.022 | |
| q20a Received: Merit award | 0.044 | | 0.025 | | -0.005 | | 0.141 | *** | 0.094 | ** | 0.079 | * | 0.139 | *** |
| q20b Received: Need-based grant | -0.013 | | -0.068 | * | -0.087 | * | -0.068 | * | -0.070 | * | -0.085 | * | 0.011 | |
| q20c Received: Loan | -0.090 | ** | -0.094 | ** | -0.118 | *** | -0.030 | | -0.035 | | -0.069 | * | -0.007 | |
| q20d Received: Work study | -0.025 | | -0.075 | * | -0.095 | ** | -0.028 | | -0.059 | | -0.067 | * | -0.017 | |
| q21 Total amount of undergraduate loans | -0.052 | | -0.080 | * | -0.066 | | -0.063 | | -0.033 | | -0.079 | * | -0.035 | |
| q22a Attend an unaffordable institution | 0.048 | | 0.045 | | 0.070 | * | 0.053 | | 0.069 | * | 0.098 | ** | 0.054 | |
| q22b Focus job search on higher paying fields | 0.063 | | 0.077 | * | 0.131 | *** | 0.002 | | 0.043 | | 0.073 | * | 0.037 | |
| q22c Postponed or canceled further education | 0.010 | | 0.014 | | 0.058 | | -0.064 | | 0.020 | | 0.028 | | -0.011 | |
| q22d Made sacrifices in my personal budget because of student loan payments | 0.028 | | 0.032 | | 0.047 | | 0.001 | | -0.027 | | 0.015 | | -0.022 | |
| **Capstone Experiences** | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
| Capgrade Reported cap grade | 0.481 | *** | 0.361 | *** | 0.360 | *** | 0.253 | *** | 0.200 | *** | 0.191 | *** | 0.155 | *** |
| Capstone16 Contribution to development: Managing a large project | 0.496 | *** | 0.546 | *** | 0.657 | *** | 0.258 | *** | 0.249 | *** | 0.264 | *** | 0.242 | *** |
| Capstone17 Contribution to development: Learning effectively on own | 0.518 | *** | 0.620 | *** | 0.792 | *** | 0.241 | *** | 0.270 | *** | 0.293 | *** | 0.235 | *** |
| Capstone18 Contribution to development: Ability to make an effective oral presentation | 0.410 | *** | 0.462 | *** | 0.725 | *** | 0.229 | *** | 0.279 | *** | 0.260 | *** | 0.214 | *** |
| Capstone19 Contribution to development: Having confidence in abilities | 0.570 | *** | 0.633 | *** | 0.836 | *** | 0.229 | *** | 0.317 | *** | 0.322 | *** | 0.236 | *** |
| Capstone20 Contribution to development: Ability to think critically and analytically | 0.557 | *** | 0.633 | *** | 0.843 | *** | 0.272 | *** | 0.349 | *** | 0.337 | *** | 0.277 | *** |
| Capstone21 Contribution to development: Ability to think creatively | 0.529 | *** | 0.607 | *** | 0.785 | *** | 0.214 | *** | 0.292 | *** | 0.336 | *** | 0.282 | *** |
| Capstone22 Contribution to development: Ability to write effectively | 0.507 | *** | 0.571 | *** | 0.726 | *** | 0.271 | *** | 0.267 | *** | 0.319 | *** | 0.270 | *** |
| Capstone23 Contribution to development:Skill in the interpreting of data, evidence, texts, and/or works | 0.462 | *** | 0.523 | *** | 0.744 | *** | 0.219 | *** | 0.210 | *** | 0.263 | *** | 0.186 | *** |
| Capstone24 Contribution to development:Integrating ideas from multiple disciplines | 0.387 | *** | 0.612 | *** | 0.708 | *** | 0.228 | *** | 0.284 | *** | 0.266 | *** | 0.196 | *** |
| Capstone25 Contribution to development:Working collaboratively | 0.414 | *** | 0.686 | *** | 0.622 | *** | 0.120 | *** | 0.183 | *** | 0.215 | *** | 0.159 | *** |
| Capstone27 Experience: More intellectually challenging | 0.494 | *** | 0.752 | *** | 0.524 | *** | 0.250 | *** | 0.187 | *** | 0.246 | *** | 0.196 | *** |
| Capstone28 Experience: Developed more academically | 0.560 | *** | 0.806 | *** | 0.629 | *** | 0.225 | *** | 0.198 | *** | 0.251 | *** | 0.192 | *** |
| Capstone29 Experience: Better understanding of skills, abilities, interests | 0.379 | *** | 0.649 | *** | 0.391 | *** | 0.261 | *** | 0.235 | *** | 0.233 | *** | 0.203 | *** |

Appendix E

| | cap overall | | cap exp avg | | cont dev | | gsch prep | | job prep | | sat educ | | oth attnd | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Capstone30 Experience: Feel better prepared for job or grad school | 0.509 | *** | 0.779 | *** | 0.550 | *** | 0.365 | *** | 0.373 | *** | 0.377 | *** | 0.300 | *** |
| Capstone31 Experience: Positive influence on intellectual growth | 0.610 | *** | 0.824 | *** | 0.616 | *** | 0.302 | *** | 0.308 | *** | 0.362 | *** | 0.284 | *** |
| Capstone32 Experience: Positive influence on personal growth. | 0.533 | *** | 0.782 | *** | 0.593 | *** | 0.280 | *** | 0.295 | *** | 0.365 | *** | 0.285 | *** |
| Capstone33 Compared value: Additional courses in major | 0.440 | *** | 0.530 | *** | 0.433 | *** | 0.150 | *** | 0.118 | *** | 0.182 | *** | 0.148 | *** |
| Capstone34 Compared value: Additional courses outside of major | 0.387 | *** | 0.433 | *** | 0.325 | *** | 0.171 | *** | 0.211 | *** | 0.185 | *** | 0.155 | *** |
| Capstone35 Compared value: Participating in co-curricular activities | 0.308 | *** | 0.297 | *** | 0.236 | *** | 0.141 | *** | 0.166 | *** | 0.134 | *** | 0.124 | *** |

[1] Significance is as computed by the SPSS Correlations procedure for the hypothesis that the Pearson correlation is non-zero, two-tailed.

## Appendix F - Comparisons of Result Means By Academic Division

**Do alumni perceptions of the capstone vary by the academic division of the capstone?**

The comments below are base on the data from schools Red, White and Yellow only (excluding Tan), and the divisions of the capstone discipline are denoted by:

Hum = humanities, literature, languages, and arts
NS = natural sciences
SS= social sciences.

Based on the means and statistical significance at $p<=0.05$:

The ratings of the "overall capstone experience" were not statistically significant by division. This result and the overall average rating of 5.93 shows a general agreement across all divisions by most alumni that the capstone was a very good or excellent experience.

The capstone's contributions to development were rated differently for a few areas:

- Ability to make an effective oral presentation was rated higher by the NS alumni.
- Ability to think creatively was rated higher by Hum alumni.
- Ability to write effectively was rated lower by NS alumni.
- Skill in the interpreting of data, evidence, texts, and/or works was rated lower by Hum alumni
- Integrating ideas from multiple disciplines was rated lower by NS alumni

Most of these results might arguably reflect the natures of the various disciplines and might have been expected. However, does the lower rating by NS alumni for writing development reflect shorter papers or different expectations for writing in the natural sciences? Does the higher rating by NS alumni for development of effect oral presentation skills indicate that oral presentations are a rarer event for those majors prior to the capstone? If so, should more oral presentation opportunities be incorporated in the pre-capstone NS courses?

There was no statistical difference among the divisions in opinions about whether the capstone was more/or less valuable than taking an additional course in or outside of the major or participating in co-curricular activities.

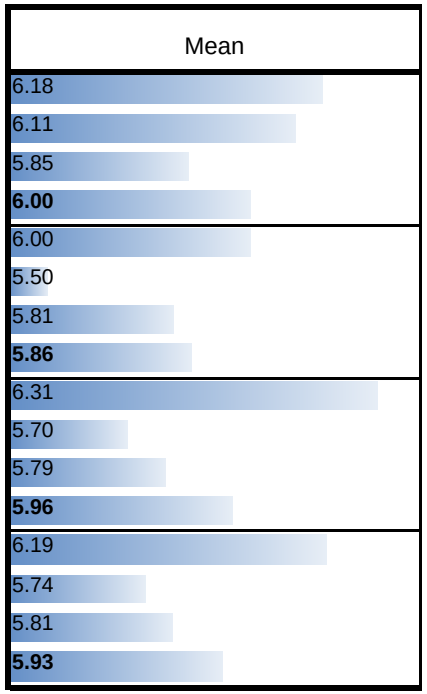
In summary, alumni perceptions of the capstone support the notion of a universal requirement in that the experience can be successful and of developmental value for students in all disciplines.

**Alumni Survey - Means by School and Division of the Capstone**

Table F1

Capstone14 Overall capstone experience

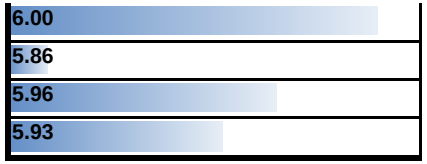
| CapDivGrp academic division of capstone | school | Mean | N | Std. Deviation |
|---|---|---|---|---|
| 24 Humanities/art/lit | Red | 6.18 | 62 | .933 |
| | White | 6.11 | 9 | .782 |
| | Yellow | 5.85 | 78 | 1.207 |
| Hum | Total | 6.00 | 149 | 1.084 |
| 40 Natural Sciences | Red | 6.00 | 67 | 1.115 |
| | White | 5.50 | 8 | .756 |
| | Yellow | 5.81 | 153 | 1.011 |
| NS | Total | 5.86 | 228 | 1.037 |
| 45 Social Sciences | Red | 6.31 | 105 | .812 |
| | White | 5.70 | 33 | 1.185 |
| | Yellow | 5.79 | 177 | 1.064 |
| SS | Total | 5.96 | 315 | 1.030 |
| Total | Red | 6.19 | 234 | .944 |
| | White | 5.74 | 50 | 1.065 |
| | Yellow | 5.81 | 408 | 1.071 |
| All | Total | 5.93 | 692 | 1.044 |




Color scale highlighting is within each column.

Restatement of above data for the composite data from all schools:

| | | | | |
|---|---|---|---|---|
| Hum | Total | 6.00 | 149 | 1.084 |
| NS | Total | 5.86 | 228 | 1.037 |
| SS | Total | 5.96 | 315 | 1.030 |
| All | Total | 5.93 | 692 | 1.044 |
| | Sig: | 0.364 | | |




No significant differences by division.

**Alumni Survey - Means by School and Division of the Capstone**

**Table F2**

| CapDivGrp academic division of capstone | school | Capstone16 Contribution to development: Managing a large project | Capstone17 Contribution to development: Learning effectively on own | Capstone18 Contribution to development: Ability to make an effective oral presentation | Capstone19 Contribution to development: Having confidence in abilities | Capstone20 Contribution to development: Ability to think critically and analytically | Capstone21 Contribution to development: Ability to think creatively | Capstone22 Contribution to development: Ability to write effectively | Capstone23 Contribution to development:Skill in the interpreting of data, evidence, texts, and/or works | Capstone24 Contribution to development:Integrating ideas from multiple disciplines |
|---|---|---|---|---|---|---|---|---|---|---|
| 24 Humanities/art/lit | Red | 4.50 | 4.57 | 3.64 | 4.34 | 4.35 | 4.43 | 4.46 | 4.05 | 3.97 |
| | White | 4.33 | 4.20 | 2.83 | 4.10 | 4.10 | 4.10 | 4.56 | 3.67 | 4.00 |
| | Yellow | 4.28 | 4.20 | 3.79 | 4.03 | 4.20 | 4.33 | 4.30 | 3.86 | 3.68 |
| Hum | Total | 4.37 | 4.35 | 3.69 | 4.16 | 4.25 | 4.36 | 4.38 | 3.93 | 3.81 |
| 40 Natural Sciences | Red | 4.36 | 4.33 | 4.00 | 4.24 | 4.34 | 3.95 | 4.27 | 4.32 | 3.49 |
| | White | 3.38 | 3.50 | 3.00 | 3.13 | 3.63 | 2.88 | 3.75 | 3.63 | 3.00 |
| | Yellow | 4.09 | 4.20 | 3.95 | 3.93 | 4.24 | 3.78 | 4.07 | 4.27 | 3.65 |
| NS | Total | 4.15 | 4.21 | 3.94 | 4.00 | 4.25 | 3.80 | 4.12 | 4.26 | 3.58 |
| 45 Social Sciences | Red | 4.54 | 4.53 | 3.52 | 4.20 | 4.43 | 4.25 | 4.53 | 4.47 | 3.99 |
| | White | 4.06 | 4.19 | 3.76 | 4.06 | 4.22 | 4.00 | 4.56 | 4.55 | 3.94 |
| | Yellow | 4.19 | 4.23 | 3.77 | 4.05 | 4.18 | 3.83 | 4.11 | 4.23 | 3.73 |
| SS | Total | 4.30 | 4.32 | 3.68 | 4.10 | 4.27 | 3.99 | 4.30 | 4.34 | 3.84 |
| Total | Red | 4.48 | 4.48 | 3.69 | 4.25 | 4.38 | 4.21 | 4.44 | 4.32 | 3.84 |
| | White | 4.00 | 4.08 | 3.47 | 3.92 | 4.10 | 3.84 | 4.43 | 4.23 | 3.79 |
| | Yellow | 4.17 | 4.21 | 3.84 | 4.00 | 4.21 | 3.91 | 4.13 | 4.17 | 3.69 |
| All | Total | 4.26 | 4.29 | 3.77 | 4.08 | 4.26 | 4.00 | 4.26 | 4.23 | 3.75 |

Color scale highlighting is within each column.

Restatement of above data for the composite data from all schools:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Hum | Total | 4.37 | 4.35 | 3.69 | 4.16 | 4.25 | 4.36 | 4.38 | 3.93 | 3.81 |
| NS | Total | 4.15 | 4.21 | 3.94 | 4.00 | 4.25 | 3.80 | 4.12 | 4.26 | 3.58 |
| SS | Total | 4.30 | 4.32 | 3.68 | 4.10 | 4.27 | 3.99 | 4.30 | 4.34 | 3.84 |
| All | Total | 4.26 | 4.29 | 3.77 | 4.08 | 4.26 | 4.00 | 4.26 | 4.23 | 3.75 |
| | Sig: | 0.066 | 0.216 | 0.011 | 0.245 | 0.968 | 0.000 | 0.009 | 0.000 | 0.025 |
| | | | | * | | | *** | ** | *** | * |
| | | | | NS higher | | | Hum/arts higher | NS lower | Hum/art lower | NS lower |

**Alumni Survey - Means by School and Division of the Capstone**

**Table F3**

| CapDivGrp academic division of capstone | school | Capstone27 Experience: More intellectually challenging | Capstone28 Experience: Developed more academically | Capstone29 Experience: Better understanding of skills, abilities, interests | clarify Experience: Clarified my career or graduate school objectives | Capstone30 Experience: Feel better prepared for job or grad school | Capstone31 Experience: Positive influence on intellectual growth | Capstone32 Experience: Positive influence on personal growth. |
|---|---|---|---|---|---|---|---|---|
| 24 Humanities/art/lit | Red | 4.13 | 3.95 | 4.23 | 3.03 | 3.95 | 4.35 | 4.19 |
| | White | 3.80 | 3.40 | 3.90 | 2.90 | 3.40 | 4.30 | 3.60 |
| | Yellow | 3.72 | 3.42 | 3.87 | 2.99 | 3.71 | 4.05 | 3.92 |
| Hum | Total | 3.89 | 3.64 | 4.02 | 3.00 | 3.79 | 4.19 | 4.01 |
| 40 Natural Sciences | Red | 3.79 | 3.73 | 3.94 | 3.39 | 4.08 | 4.06 | 3.74 |
| | White | 3.50 | 3.13 | 3.13 | 2.50 | 3.63 | 3.75 | 3.38 |
| | Yellow | 3.67 | 3.40 | 3.84 | 3.14 | 3.86 | 3.90 | 3.73 |
| NS | Total | 3.70 | 3.49 | 3.84 | 3.19 | 3.91 | 3.94 | 3.72 |
| 45 Social Sciences | Red | 4.10 | 3.95 | 4.25 | 3.40 | 4.15 | 4.42 | 4.18 |
| | White | 3.97 | 3.24 | 3.61 | 3.00 | 3.79 | 4.13 | 3.70 |
| | Yellow | 3.64 | 3.45 | 3.81 | 2.86 | 3.82 | 3.98 | 3.77 |
| SS | Total | 3.83 | 3.60 | 3.94 | 3.05 | 3.93 | 4.14 | 3.90 |
| Total | Red | 4.02 | 3.89 | 4.16 | 3.30 | 4.08 | 4.30 | 4.06 |
| | White | 3.86 | 3.25 | 3.59 | 2.90 | 3.69 | 4.10 | 3.63 |
| | Yellow | 3.67 | 3.42 | 3.83 | 2.99 | 3.81 | 3.96 | 3.78 |
| All | Total | 3.80 | 3.57 | 3.92 | 3.09 | 3.89 | 4.09 | 3.87 |

Color scale highlighting is within each column.

Restatement of above data for the composite data from all schools:

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Hum | Total | 3.89 | 3.64 | 4.02 | 3.00 | 3.79 | 4.19 | 4.01 |
| NS | Total | 3.70 | 3.49 | 3.84 | 3.19 | 3.91 | 3.94 | 3.72 |
| SS | Total | 3.83 | 3.60 | 3.94 | 3.05 | 3.93 | 4.14 | 3.90 |
| All | Total | 3.80 | 3.57 | 3.92 | 3.09 | 3.89 | 4.09 | 3.87 |
| | Sig: | 0.082 | 0.303 | 0.154 | 0.204 | 0.411 | 0.006 ** | 0.009 ** |
| | | | | | | | NS lower | NS lower Hum higher |

**Alumni Survey - Means by School and Division of the Capstone**

**Table F4**

| CapDivGrp academic division of capstone | school | Capstone33 Compared value: Additional courses in major | Capstone34 Compared value: Additional courses outside of major | Capstone35 Compared value: Participating in co-curricular activities |
|---|---|---|---|---|
| 24 Humanities/art/lit | Red | 2.55 | 2.41 | 2.48 |
| | White | 2.22 | 2.44 | 2.33 |
| | Yellow | 2.38 | 2.54 | 2.32 |
| Hum | Total | 2.44 | 2.48 | 2.39 |
| 40 Natural Sciences | Red | 2.45 | 2.64 | 2.58 |
| | White | 2.13 | 2.38 | 2.00 |
| | Yellow | 2.36 | 2.55 | 2.48 |
| NS | Total | 2.38 | 2.57 | 2.49 |
| 45 Social Sciences | Red | 2.67 | 2.64 | 2.54 |
| | White | 2.38 | 2.50 | 2.31 |
| | Yellow | 2.31 | 2.54 | 2.43 |
| SS | Total | 2.44 | 2.57 | 2.46 |
| Total | Red | 2.58 | 2.58 | 2.54 |
| | White | 2.31 | 2.47 | 2.27 |
| | Yellow | 2.34 | 2.54 | 2.43 |
| All | Total | 2.42 | 2.55 | 2.45 |

Color scale highlighting is within each column.

Restatement of above data for the composite data from all schools:

| | | | | |
|---|---|---|---|---|
| Hum | Total | 2.44 | 2.48 | 2.39 |
| NS | Total | 2.38 | 2.57 | 2.49 |
| SS | Total | 2.44 | 2.57 | 2.46 |
| All | Total | 2.42 | 2.55 | 2.45 |
| | Sig: | 0.594 | 0.368 | 0.361 |

No sig. differences

Alumni Survey: Appendix G

# Teagle Capstone Project

## APPENDIX: HEDS Alumni Survey Comments Categorized with Frequencies by Total, Graduation Cohort, Gender, School, and Overall Capstone Experience

| Variable Names | Variable Short Description | Variable Long Description | Total No. | Graduation Cohort | | | Gender | | School | | | Overall Capstone Experience | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2007 | 2004 | 1999 | Female | Male | Red | White | Yellow | Good | Neutral | Poor |
| | | Number of Comments: | 460 | 153 | 160 | 146 | 300 | 159 | 167 | 40 | 253 | 416 | 25 | 17 |
| GradSchlPos | Graduate School Positive | Capstone was good preparation for graduate school or provided an edge into getting into graduate school | 75 | 24 | 24 | 26 | 59 | 16 | 24 | 9 | 42 | 71 | 3 | 0 |
| GradSchlNeg | Graduate School Negative | Capstone neither prepared them for graduate school nor helped them get into graduate school | 2 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 2 | 0 | 0 |
| CareerPos | Career Positive | Capstone was good preparation for career or provided an edge in the job market | 44 | 6 | 19 | 19 | 31 | 13 | 17 | 3 | 24 | 43 | 1 | 0 |
| CareerNeg | Career Negative | Capstone neither prepared them for a career nor helped them get a job | 4 | 1 | 1 | 2 | 4 | 0 | 1 | 0 | 3 | 4 | 0 | 0 |
| SetsApart | Sets School or Students Apart | Capstone sets students (or school) apart from other students (or schools) | 10 | 4 | 3 | 3 | 7 | 3 | 2 | 1 | 7 | 10 | 0 | 0 |
| PersDev | Personal Development | Capstone helped student to grow, develop, or change personally | 22 | 7 | 11 | 4 | 15 | 7 | 15 | 1 | 6 | 21 | 1 | 0 |
| FutLifCh | Future Life Choices | Capstone helped guide students in decisions about future graduate school, career, or other interests or life choices | 29 | 9 | 11 | 9 | 20 | 9 | 9 | 1 | 19 | 28 | 1 | 0 |
| AdvPos | Advisor Positive | Positive experience with capstone advisor(s) / mentor(s) | 82 | 33 | 25 | 24 | 55 | 27 | 48 | 8 | 26 | 80 | 1 | 1 |
| OutAdvPos | Outside Advisor Positive | Positive experience with outside capstone advisor | 4 | 1 | 0 | 3 | 2 | 2 | 2 | 1 | 1 | 4 | 0 | 0 |
| FacPos | Faculty Positive | Positive experience with faculty member(s) helping with capstone not identified as advisor(s) | 6 | 5 | 1 | 0 | 4 | 2 | 6 | 0 | 0 | 6 | 0 | 0 |
| 2ndReadNeg | Second Reader Negative | Negative experience with capstone second reader | 2 | 0 | 2 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 | 1 |
| AdvCont | Advisor Continue to Work With | Continue to work with capstone advisor after graduation | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 0 | 0 | 2 | 0 | 0 |
| AdvNeg | Advisor Negative | Negative or weak experience with capstone advisor | 38 | 13 | 12 | 13 | 31 | 7 | 12 | 4 | 22 | 19 | 9 | 10 |
| VisFacNeg | Visiting Faculty Advisor Negative | Negative experience with visiting faculty member as advisor | 2 | 1 | 1 | 0 | 2 | 0 | 1 | 1 | 0 | 1 | 0 | 1 |
| DeptProb | Departmental Problems | Problems within the department that affected capstone | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 |

KEY: Blue => 10% of all alumni commenting; Green = 5-9.9%; Yellow = 4%; and Pink = counts of 10-17.

## Teagle Capstone Project

### APPENDIX: HEDS Alumni Survey Comments Categorized with Frequencies by Total, Graduation Cohort, Gender, School, and Overall Capstone Experience

| Variable Names | Variable Short Description | Variable Long Description | Total No. | Graduation Cohort | | | Gender | | School | | | Overall Capstone Experience | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2007 | 2004 | 1999 | Female | Male | Red | White | Yellow | Good | Neutral | Poor |
| | | Number of Comments: | 460 | 153 | 160 | 146 | 300 | 159 | 167 | 40 | 253 | 416 | 25 | 17 |
| Team | Teamwork | Good team work or collaborative experience with capstone | 4 | 1 | 1 | 2 | 3 | 1 | 2 | 0 | 2 | 4 | 0 | 0 |
| PeerShare | Peers - Shared Experience | Capstone was a positive shared experience among peers in major, department, or college | 9 | 2 | 3 | 4 | 6 | 3 | 5 | 0 | 4 | 9 | 0 | 0 |
| PeerLack | Peers - Lack of Shared Experience | Lack of shared experience by students doing similar capstone projects | 2 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 2 | 0 | 0 |
| Confid | Confidence-building | Capstone was a confidence-building experience | 64 | 31 | 15 | 18 | 49 | 15 | 32 | 3 | 29 | 64 | 0 | 0 |
| Indepen | Independence / Freedom | Independent thought, research, project development, etc. / Freedom to choose had a positive impact on capstone | 80 | 27 | 27 | 26 | 57 | 23 | 32 | 9 | 39 | 78 | 1 | 1 |
| IndepNot | Independence Lacking | Not independent capstone project, not self-directed | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 |
| SensofAccomp | Sense of Accomplishment | Sense of accomplishment or pride, proud of capstone | 89 | 38 | 30 | 21 | 53 | 36 | 32 | 10 | 47 | 87 | 1 | 1 |
| PersQualPos | Personal Qualities Positive | Personal qualities that helped the capstone - perseverance, endurance, self-motivation, sense of accountability, work ethic | 25 | 9 | 7 | 9 | 15 | 10 | 10 | 0 | 15 | 25 | 0 | 0 |
| PersQualNeg | Personal Qualities Lacking | Personal qualities that were lacking and therefore, didn't help the capstone | 9 | 4 | 2 | 3 | 4 | 5 | 3 | 1 | 5 | 8 | 1 | 0 |
| StressManage | Stress Management | Capstone helped with stress management | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| Process | Process | Entire capstone process had a positive impact | 13 | 5 | 2 | 6 | 8 | 5 | 4 | 0 | 9 | 13 | 0 | 0 |
| ProjTM | Project Time Management | Time management skills gained with capstone | 62 | 19 | 25 | 18 | 44 | 18 | 22 | 5 | 35 | 58 | 3 | 0 |
| ProjManage | Project Management | Managing, leading, directing, planning, organizing, completing a large capstone project was a positive experience | 104 | 32 | 34 | 38 | 75 | 29 | 46 | 7 | 51 | 101 | 3 | 0 |
| ProjSize | Project Size | Size or volume of the capstone project was positive | 13 | 4 | 3 | 6 | 7 | 6 | 2 | 1 | 10 | 10 | 2 | 0 |
| Stress | Stressful Experience | Capstone was a stress-inducing experience | 10 | 4 | 2 | 4 | 5 | 5 | 2 | 2 | 6 | 7 | 1 | 2 |

KEY: Blue => 10% of all alumni commenting; Green = 5-9.9%; Yellow = 4%; and Pink = counts of 10-17.

# Teagle Capstone Project

## APPENDIX: HEDS Alumni Survey Comments Categorized with Frequencies by Total, Graduation Cohort, Gender, School, and Overall Capstone Experience

| Variable Names | Variable Short Description | Variable Long Description | Total No. | Graduation Cohort | | | Gender | | School | | | Overall Capstone Experience | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2007 | 2004 | 1999 | Female | Male | Red | White | Yellow | Good | Neutral | Poor |
| | | Number of Comments: | 460 | 153 | 160 | 146 | 300 | 159 | 167 | 40 | 253 | 416 | 25 | 17 |
| RSResearch | Research Skills - Research | Gained research skills with capstone - ability to do research | 54 | 19 | 21 | 14 | 38 | 16 | 21 | 5 | 28 | 51 | 3 | 0 |
| RSFail | Research Skills - Dealing with Failure | Gained research skills with capstone - dealing with failure or obstacles in the research process | 10 | 2 | 3 | 5 | 5 | 5 | 3 | 1 | 6 | 10 | 0 | 0 |
| RSTopic | Research Skills - Choosing a Topic | Gained research skills with capstone - choosing a topic | 20 | 7 | 5 | 8 | 18 | 2 | 13 | 4 | 3 | 20 | 0 | 0 |
| RSTopicNeg | Research Skills - Bad Topic Chosen | Gained research skills with capstone - choosing a bad topic, having an uninteresting topic chosen for student, not narrowing down the topic | 14 | 6 | 5 | 3 | 10 | 4 | 6 | 0 | 8 | 7 | 4 | 3 |
| RSDevIdeas | Research Skills - Development of Ideas | Gained research skills with capstone - development of ideas | 10 | 6 | 2 | 2 | 7 | 3 | 6 | 0 | 4 | 10 | 0 | 0 |
| RSDefense | Research Skills - Oral Defense | Gained research skills with capstone - oral defense | 27 | 6 | 6 | 15 | 13 | 14 | 4 | 0 | 23 | 26 | 1 | 0 |
| RSAcceptCrit | Research Skills - Accepting Criticism | Gained research skills with capstone - accepting criticism | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| RSCommResults | Research Skills - Communicating Results | Gained research skills with capstone - communicating results | 2 | 0 | 1 | 1 | 2 | 0 | 1 | 0 | 1 | 2 | 0 | 0 |
| RSOffSiteResCntr | Research Skills - Off-Site Research Center | Gained research skills with capstone - experience of working at an off-site research center, access to resources and exposure to other scientists in the field | 2 | 1 | 0 | 1 | 1 | 1 | 2 | 0 | 0 | 2 | 0 | 0 |
| RSProfinFld | Research Skills - Meeting Professionals in Field | Gained research skills with capstone - meeting other professionals within the discipline | 4 | 0 | 2 | 2 | 4 | 0 | 2 | 1 | 1 | 4 | 0 | 0 |
| RSConversant | Research Skills - Becoming Conversant in Field | Gained research skills with capstone - becoming conversant within the discipline | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| RSSciProcess | Research Skills - Scientific Process | Gained research skills with capstone - appreciation of the scientific process | 5 | 3 | 2 | 0 | 4 | 1 | 1 | 0 | 4 | 5 | 0 | 0 |
| RSFldRes | Research Skills - Field Research | Gained research skills with capstone - field research | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 |
| RSLabExp | Research Skills - Laboratory Experience | Gained research skills with capstone - laboratory experience | 5 | 2 | 2 | 1 | 3 | 2 | 1 | 0 | 4 | 5 | 0 | 0 |

KEY: Blue => 10% of all alumni commenting; Green = 5-9.9%; Yellow = 4%; and Pink = counts of 10-17.

## Teagle Capstone Project

### APPENDIX: HEDS Alumni Survey Comments Categorized with Frequencies by Total, Graduation Cohort, Gender, School, and Overall Capstone Experience

| Variable Names | Variable Short Description | Variable Long Description | Total No. | Graduation Cohort | | | Gender | | School | | | Overall Capstone Experience | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2007 | 2004 | 1999 | Female | Male | Red | White | Yellow | Good | Neutral | Poor |
| | | Number of Comments: | 460 | 153 | 160 | 146 | 300 | 159 | 167 | 40 | 253 | 416 | 25 | 17 |
| RSGrant | Research Skills - Applying for a Grant | Gained research skills with capstone - how to apply for a grant | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| RSUmbrella | Research Skills - Umbrella grouping | Aggregation of any research skill gained | 126 | | | | | | | | | | | |
| SkApplic | Skills - Application of knowledge | Gained academic skills in the application of knowledge often to real-world experiences | 4 | 0 | 1 | 3 | 3 | 0 | 1 | 1 | 2 | 4 | 0 | 0 |
| SkWriting | Skills - Writing | Gained academic skills in writing or the writing process - outlining, drafting, revising, rewriting, etc. | 61 | 24 | 24 | 13 | 47 | 14 | 27 | 4 | 30 | 58 | 3 | 0 |
| SkCreat | Skills - Creative Thinking | Gained academic skills in creative thinking, creativity | 8 | 2 | 2 | 4 | 4 | 4 | 4 | 1 | 3 | 8 | 0 | 0 |
| SkLifLongLearn | Skills - Lifelong Learning | Gained academic skills in lifelong learning, curiosity | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| SkOralComm | Skills - Oral Communication | Gained academic skills in oral communication - presenting findings, speaking about research | 18 | 7 | 6 | 5 | 8 | 10 | 7 | 0 | 11 | 18 | 0 | 0 |
| SkCritTh | Skills - Critical Thinking | Gained academic skills in critical thinking - developing and defending an argument, synthesizing ideas, think outside the box, interpret, etc. | 28 | 6 | 15 | 7 | 21 | 7 | 11 | 2 | 15 | 28 | 0 | 0 |
| SkMem | Skills - Memorizing | Gained academic skills in memorizing | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| SkAnalysis | Skills - Analysis | Gained academic skills in data analysis, analytical thinking, | 18 | 7 | 7 | 4 | 14 | 4 | 4 | 3 | 11 | 18 | 0 | 0 |
| SkInfoFlu | Skills - Information Fluency | Gained academic skills in finding information, researching primary and secondary sources, navigating library, conducting literature searches, using electronic search engines, etc. | 9 | 2 | 2 | 5 | 5 | 4 | 5 | 1 | 3 | 9 | 0 | 0 |
| SkProbSolv | Skills - Problem Solving | Gained academic skills in problem solving | 6 | 1 | 3 | 2 | 3 | 3 | 3 | 1 | 2 | 6 | 0 | 0 |
| SkTech | Skills - Technology Skills | Gained academic skills in technology use | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| SkinFld | Skills - in Field | Gained academic skills in my field | 2 | 0 | 1 | 1 | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 0 |
| SkMult | Skills - Multitude | Gained a multitude of skills | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | 2 | 2 | 0 | 0 |

KEY: Blue => 10% of all alumni commenting; Green = 5-9.9%; Yellow = 4%; and Pink = counts of 10-17.

## Teagle Capstone Project

### APPENDIX: HEDS Alumni Survey Comments Categorized with Frequencies by Total, Graduation Cohort, Gender, School, and Overall Capstone Experience

| Variable Names | Variable Short Description | Variable Long Description | Total No. | Graduation Cohort | | | Gender | | School | | | Overall Capstone Experience | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2007 | 2004 | 1999 | Female | Male | Red | White | Yellow | Good | Neutral | Poor |
| | | Number of Comments: | 460 | 153 | 160 | 146 | 300 | 159 | 167 | 40 | 253 | 416 | 25 | 17 |
| LASkills | Liberal Arts Skills - Umbrella grouping | Aggregation of any liberal arts skill gained | 117 | | | | | | | | | | | |
| Focused | Focused student | Became a better, more focused student because of the capstone | 2 | 1 | 1 | 0 | 2 | 0 | 1 | 0 | 1 | 1 | 1 | 0 |
| Travel | Travel | Appreciated the capstone travel opportunities | 7 | 3 | 4 | 0 | 5 | 2 | 5 | 0 | 2 | 7 | 0 | 0 |
| 2MajNeg | Double Major Negative | Double major - one good, one bad experience; 2 advisors who did not communicate; spread too thin | 3 | 1 | 0 | 2 | 1 | 2 | 2 | 0 | 1 | 3 | 0 | 0 |
| 2MajPos | Double Major Positive | Double major - positive experiences | 6 | 2 | 2 | 2 | 4 | 2 | 3 | 0 | 3 | 6 | 0 | 0 |
| AIntegCorsFlds | Academic - Integrate Courses or Fields | Able to integrate knowledge from several courses or different fields | 10 | 5 | 3 | 2 | 6 | 4 | 4 | 1 | 5 | 10 | 0 | 0 |
| ACulmExp | Academic - Culminating Experience | Capstone was culminating undergraduate experience | 4 | 1 | 2 | 1 | 1 | 3 | 1 | 0 | 3 | 4 | 0 | 0 |
| Adepth | Academic - Depth | Capstone was an opportunity to explore a topic in depth over a period of time | 15 | 3 | 4 | 8 | 12 | 3 | 5 | 2 | 8 | 15 | 0 | 0 |
| APursInt | Academic - Pursue Interests | Capstone was an opportunity to pursue own interests, passions | 9 | 2 | 4 | 3 | 5 | 4 | 1 | 2 | 6 | 9 | 0 | 0 |
| Acont | Academic - Continue to Study | Continues to study in the capstone area | 14 | 3 | 7 | 3 | 7 | 7 | 6 | 2 | 6 | 13 | 1 | 0 |
| AContQues | Academic - Continue to Question | Continues to think of questions/ways to expand capstone | 3 | 1 | 1 | 1 | 2 | 1 | 2 | 0 | 1 | 3 | 0 | 0 |
| ALrngExp | Academic - Learning Experience | Capstone was a learning experience, opportunity to create new knowledge | 19 | 8 | 8 | 3 | 10 | 9 | 7 | 1 | 11 | 18 | 1 | 0 |
| AOrigWork | Academic - Original Work | Capstone allowed one to create an original work | 4 | 1 | 2 | 1 | 0 | 4 | 1 | 0 | 3 | 4 | 0 | 0 |
| AIntroRes | Academic - Introduction to Research | Capstone was first introduction to research | 2 | 0 | 1 | 1 | 0 | 2 | 0 | 1 | 1 | 2 | 0 | 0 |
| Academic | Academic -related umbrella grouping | Aggregation of any academic-related comment | 66 | | | | | | | | | | | |
| Recog | Recognition | Received some sort of recognition for capstone - conference presentation or other award, publication, recognition of graduate-level work for undergraduate capstone | 10 | 3 | 3 | 3 | 3 | 7 | 6 | 0 | 4 | 10 | 0 | 0 |

KEY: Blue => 10% of all alumni commenting; Green = 5-9.9%; Yellow = 4%; and Pink = counts of 10-17.

## Teagle Capstone Project

### APPENDIX: HEDS Alumni Survey Comments Categorized with Frequencies by Total, Graduation Cohort, Gender, School, and Overall Capstone Experience

| Variable Names | Variable Short Description | Variable Long Description | Total No. | Graduation Cohort | | | Gender | | School | | | Overall Capstone Experience | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2007 | 2004 | 1999 | Female | Male | Red | White | Yellow | Good | Neutral | Poor |
| | | Number of Comments: | 460 | 153 | 160 | 146 | 300 | 159 | 167 | 40 | 253 | 416 | 25 | 17 |
| Advice | Advice | Alumni who provided some sort of advice to change the capstone | 9 | 4 | 3 | 2 | 4 | 5 | 2 | 2 | 5 | 5 | 2 | 2 |
| PrepCap | Preparation for Capstone | Schools had well prepared students for capstone | 4 | 2 | 1 | 1 | 4 | 0 | 2 | 0 | 2 | 4 | 0 | 0 |
| DescPos | Description - Positive | Positive descriptors of capstone | 11 | 6 | 1 | 4 | 10 | 1 | 8 | 0 | 3 | 11 | 0 | 0 |
| DescNeg | Description - Negative | Negative descriptors of capstone | 11 | 6 | 4 | 1 | 7 | 4 | 5 | 1 | 5 | 8 | 0 | 3 |
| DescBoth | Description - Both Positive and Negative | Both positive and negative descriptors of capstone | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| Comps | Took Comps not Thesis | Took Comps not Thesis - only Washington | 3 | 0 | 0 | 3 | 2 | 1 | 0 | 3 | 0 | 1 | 1 | 0 |
| SwitchN2P | Switch from Negative to Positive | Initially had a negative view of Capstone which changed to a positive one | 7 | 4 | 1 | 2 | 4 | 3 | 5 | 0 | 2 | 7 | 0 | 0 |
| SwitchP2N | Switch from Positive to Negative | Initially had a positive view of Capstone which changed to a negative one | 2 | 1 | 0 | 1 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 2 |
| Benefits | Benefits | Benefits of capstone | 3 | 1 | 1 | 1 | 2 | 1 | 1 | 0 | 2 | 2 | 1 | 0 |
| Lib-related | Library-Related | Library comments - liked carrol, library navigation, minimal help from librarians | 3 | 0 | 2 | 1 | 2 | 1 | 2 | 0 | 1 | 3 | 0 | 0 |
| WritCntr | Writing Center | Used Writing Center for capstone | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| ResSubjPos | Research Subjects Positive | Became fond of/developed good relationship with Capstone research subjects | 3 | 0 | 2 | 1 | 1 | 2 | 0 | 0 | 3 | 3 | 0 | 0 |
| BestExp | Best Experience | Best, most rewarding experience of undergraduate years, life | 9 | 4 | 3 | 2 | 4 | 5 | 2 | 1 | 6 | 9 | 0 | 0 |
| NLackMotiv | Negative - Lack of Motivation | Negative impact - not motivated for various reasons | 2 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 0 |
| NWrkLdBal | Negative - Workload Balance | Negative impact - difficulty balancing heavy courseload, etc. with capstone | 2 | 1 | 0 | 1 | 0 | 2 | 0 | 0 | 2 | 2 | 0 | 0 |
| NNoDIff | Negative - No Different | Negative impact - no different from other courses, more hype than work | 5 | 1 | 2 | 2 | 3 | 2 | 0 | 1 | 4 | 4 | 1 | 0 |
| NOpptCost | Negative - Opportunity Cost | Negative impact - opportunity costs noted - seniors taken out of academic/social life of college, preferred another course in major, preferred to work on graduate school application or career options | 5 | 2 | 2 | 1 | 2 | 3 | 1 | 0 | 4 | 3 | 0 | 2 |
| NBadExp | Negative - Bad Experience | Negative impact - overall bad experience | 4 | 2 | 1 | 1 | 3 | 1 | 1 | 0 | 3 | 1 | 0 | 3 |

KEY: Blue => 10% of all alumni commenting; Green = 5-9.9%; Yellow = 4%; and Pink = counts of 10-17.

## Teagle Capstone Project

### APPENDIX: HEDS Alumni Survey Comments Categorized with Frequencies by Total, Graduation Cohort, Gender, School, and Overall Capstone Experience

| Variable Names | Variable Short Description | Variable Long Description | Total No. | Graduation Cohort | | | Gender | | School | | | Overall Capstone Experience | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2007 | 2004 | 1999 | Female | Male | Red | White | Yellow | Good | Neutral | Poor |
| | | Number of Comments: | 460 | 153 | 160 | 146 | 300 | 159 | 167 | 40 | 253 | 416 | 25 | 17 |
| Nrestrictns | Negative - Restrictions | Negative impact - requirements are too restrictive, bureaucratic | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 1 |
| NNotPrep | Negative - Not Prepared | Negative impact - not prepared for certain aspects of capstone | 7 | 2 | 1 | 4 | 3 | 4 | 0 | 1 | 6 | 7 | 0 | 0 |
| NTooIndep | Negative - Too Independent | Negative impact - Capstone is too independent, real world is more collaborative | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 |
| NLackRes | Negative - Lack of Resources | Negative impact - lack of resources, broken equipment | 8 | 3 | 1 | 4 | 7 | 1 | 1 | 0 | 7 | 6 | 1 | 1 |
| NCapIneq | Negative - Capstone Inequities | Negative impact - inequities in requirements/expecations among departments | 2 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 1 |

KEY: Blue => 10% of all alumni commenting; Green = 5-9.9%; Yellow = 4%; and Pink = counts of 10-17.

APPENDIX C

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Builder | Answers editor

## Survey builder

HEDS - Master Alumni Survey

Page 1 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

# Institution Name

Welcome to the **ALUMNI SURVEY**. Please complete the following questions to provide your feedback. Thanks for contributing your information.

## Instructions

The survey is organized into several pages with questions on each page. Complete the questions on each page and then click the [Next page >>] button. If you need to return to a previous page, click the [<< Previous page] button. You may save your progress and return to the survey at a later time, but, click the [Save progress] button before closing your browser - use the same method to return to the survey that you first used to access the survey.

Page 2 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

# Part A. Evaluation of your Undergraduate Education

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## Undergraduate Education - Importance in Current Activities

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

The list below contains some abilities and types of knowledge that may be developed in a bachelor's degree program. Please indicate how important each is today in both your personal and professional life. (Click a circle for each item.)

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 1. Critical Thinking-Importance in Current Activities

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Acquire new skills and knowledge | ○ | ○ | ○ | ○ |
| Think analytically and logically | ○ | ○ | ○ | ○ |
| Formulate creative/original ideas | ○ | ○ | ○ | ○ |
| Academic ability | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 2. Skills/Learning-Importance in Current Activities

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Write effectively | | | | |
| Use quantitative tools | | | | |
| Appreciate arts, literature, music, drama | | | | |
| Gain in-depth knowledge of a field | | | | |
| Read or speak a foreign language | | | | |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 3. Social/Moral Awareness-Importance in Current Activities

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Develop awareness of societal problems | | | | |
| Place current problems in perspective | | | | |
| Understand moral/ethical issues | | | | |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 4. Self Development-Importance in Current Activities

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Understand myself | | | | |
| Function independently, without supervision | | | | |
| Develop self-esteem | | | | |
| Establish a course of action to accomplish goals | | | | |
| Intellectual self-confidence | | | | |
| Develop desire for continued learning | | | | |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 5. Relationship Skills-Importance in Current Activities

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Lead and supervise tasks and groups of people | | | | |
| Relate well to people of different cultures/races | | | | |
| Function effectively as a member of a team | | | | |
| Communicate well orally | | | | |
| Understand others | | | | |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 6. Understanding Science and Technology-Importance in Current Activities

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Understand the process of science | | | | |
| Use technology | | | | |

**Page 3** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

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## Undergraduate Education - Extent enhanced by undergraduate experience

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

The list below contains the same abilities and types of knowledge that may be developed in a bachelor's degree program. Please indicate the extent to which each capacity was enhanced by your undergraduate experiences. (Click a circle for each item.)

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 7. Critical Thinking-Extent enhanced by undergraduate experience

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Acquire new skills and knowledge | ○ | ○ | ○ | ○ |
| Think analytically and logically | ○ | ○ | ○ | ○ |
| Formulate creative/original ideas | ○ | ○ | ○ | ○ |
| Academic ability | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 8. Skills/Learning-Extent enhanced by undergraduate experience

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Write effectively | ○ | ○ | ○ | ○ |
| Use quantitative tools | ○ | ○ | ○ | ○ |
| Appreciate arts, literature, music, drama | ○ | ○ | ○ | ○ |
| Gain in-depth knowledge of a field | ○ | ○ | ○ | ○ |
| Read or speak a foreign language | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 9. Social/Moral Awareness-Extent enhanced by undergraduate experience

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Develop awareness of societal problems | ○ | ○ | ○ | ○ |
| Place current problems in perspective | ○ | ○ | ○ | ○ |
| Understand moral/ethical issues | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 10. Self Development-Extent enhanced by undergraduate experience

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Understand myself | ○ | ○ | ○ | ○ |
| Function independently, without supervision | ○ | ○ | ○ | ○ |
| Develop self-esteem | ○ | ○ | ○ | ○ |
| Establish a course of action to accomplish goals | ○ | ○ | ○ | ○ |
| Intellectual self-confidence | ○ | ○ | ○ | ○ |
| Develop desire for continued learning | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 11. Relationship Skills-Extent enhanced by undergraduate experience

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Lead and supervise tasks and groups of people | ○ | ○ | ○ | ○ |
| Relate well to people of different cultures/races | ○ | ○ | ○ | ○ |

| | | | | |
|---|---|---|---|---|
| Function effectively as a member of a team | ○ | ○ | ○ | ○ |
| Communicate well orally | ○ | ○ | ○ | ○ |
| Understand others | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 12. Understanding Science and Technology-Extent enhanced by undergraduate experience

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Understand the process of science | ○ | ○ | ○ | ○ |
| Use technology | ○ | ○ | ○ | ○ |

Page 4 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

## College Experiences

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

Using the perspective gained since you graduated, how satisfied are you with each of the following services or aspects of your college? (Click a circle for each item.)

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 13. Academic Experiences

| | Very Dissatisfied | Generally Dissatisfied | Generally Satisfied | Very Satisfied | Not Relevant |
|---|---|---|---|---|---|
| Academic advising | ○ | ○ | ○ | ○ | ○ |
| Contact with faculty | ○ | ○ | ○ | ○ | ○ |
| Quality of teaching | ○ | ○ | ○ | ○ | ○ |
| Courses in major field | ○ | ○ | ○ | ○ | ○ |
| Courses outside major field | ○ | ○ | ○ | ○ | ○ |
| Independent study/research | ○ | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 14. Campus Services and Facilities

| | Very Dissatisfied | Generally Dissatisfied | Generally Satisfied | Very Satisfied | Not Relevant |
|---|---|---|---|---|---|
| Career services | ○ | ○ | ○ | ○ | ○ |
| Financial services | ○ | ○ | ○ | ○ | ○ |
| Library resources | ○ | ○ | ○ | ○ | ○ |
| Recreation/athletics | ○ | ○ | ○ | ○ | ○ |
| Residential life | ○ | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 15. Campus Climate

| | Very Dissatisfied | Generally Dissatisfied | Generally Satisfied | Very Satisfied | Not Relevant |
|---|---|---|---|---|---|
| Student voice in policies | ○ | ○ | ○ | ○ | ○ |

| | | | | | |
|---|---|---|---|---|---|
| Campus safety | ○ | ○ | ○ | ○ | ○ |
| Sense of belonging | ○ | ○ | ○ | ○ | ○ |
| Ethnic/racial diversity | ○ | ○ | ○ | ○ | ○ |
| Social life on campus | ○ | ○ | ○ | ○ | ○ |

Page 5 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

## Expectations

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

To what extent did your undergraduate experience fulfill your original expectations in the following areas? (Click a circle for each item.)

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 16. Expectations

| | Not at All | A Little | Moderately | Greatly |
|---|---|---|---|---|
| Enhance your intellectual growth | ○ | ○ | ○ | ○ |
| Acquire in-depth knowledge in a particular field | ○ | ○ | ○ | ○ |
| Develop competency in career relevant skills | ○ | ○ | ○ | ○ |
| Foster your personal growth | ○ | ○ | ○ | ○ |
| Promote your ability to form relationships | ○ | ○ | ○ | ○ |

Page 6 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 17. Overall, how satisfied have you been with your undergraduate education?

○ Very Dissatisfied ○ Generally Dissatisfied ○ Generally Satisfied ○ Very Satisfied

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 18. Would you encourage a high school senior who is like you were as a high school senior (similar background, interests, and temperament) to attend your undergraduate institution?

○ Definitely not ○ Probably Not ○ Maybe ○ Probably Would ○ Definitely Would

Page 7 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

# Part B. College Impact

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

## Activities - Your Level of Involvement

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

Please review the following list of undergraduate activities. Evaluate each for your level of involvement while an undergraduate (click a circle for each item).

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 19. Extracurricular Activities-Your Level of Involvement

| | None | A little | Moderate | Extensive |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Student or campus government | ○ | ○ | ○ | ○ |
| Intercollegiate athletics | ○ | ○ | ○ | ○ |
| Intramural sports | ○ | ○ | ○ | ○ |
| Student publications | ○ | ○ | ○ | ○ |
| Performing arts/music | ○ | ○ | ○ | ○ |
| Political organization or club | ○ | ○ | ○ | ○ |
| Community service | ○ | ○ | ○ | ○ |
| Fraternity/sorority | ○ | ○ | ○ | ○ |
| Religious groups | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 20. Academic Activities-Your Level of Involvement

| | None | A little | Moderate | Extensive |
|---|---|---|---|---|
| Internships | ○ | ○ | ○ | ○ |
| Study abroad | ○ | ○ | ○ | ○ |
| Work on faculty research | ○ | ○ | ○ | ○ |
| Independent study | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 21. Employment Activities-Your Level of Involvement

| | None | A little | Moderate | Extensive |
|---|---|---|---|---|
| On-campus employment | ○ | ○ | ○ | ○ |
| Off-campus employment | ○ | ○ | ○ | ○ |

**Page 8** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

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## Activities - Contribution to Your Development

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

For those activities in which you were involved, please evaluate the contribution of each activity to your personal or professional life after graduation.

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

### 22. Extracurricular Activities-Contribution to Your Development

| | None | A little | Moderate | Extensive | Not relevant |
|---|---|---|---|---|---|
| Student or campus government | ○ | ○ | ○ | ○ | ○ |
| Intercollegiate athletics | ○ | ○ | ○ | ○ | ○ |
| Intramural sports | ○ | ○ | ○ | ○ | ○ |
| Student publications | ○ | ○ | ○ | ○ | ○ |
| Performing arts/music | ○ | ○ | ○ | ○ | ○ |
| Political organization or club | ○ | ○ | ○ | ○ | ○ |
| Community service | ○ | ○ | ○ | ○ | ○ |

| | | | | | |
|---|---|---|---|---|---|
| Fraternity/sorority | ○ | ○ | ○ | ○ | ○ |
| Religious groups | ○ | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**23. Academic Activities-Contribution to Your Development**

| | None | A little | Moderate | Extensive | Not relevant |
|---|---|---|---|---|---|
| Internships | ○ | ○ | ○ | ○ | ○ |
| Study abroad | ○ | ○ | ○ | ○ | ○ |
| Work on faculty research | ○ | ○ | ○ | ○ | ○ |
| Independent study | ○ | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**24. Employment Activities-Contribution to Your Development**

| | None | A little | Moderate | Extensive | Not relevant |
|---|---|---|---|---|---|
| On-campus employment | ○ | ○ | ○ | ○ | ○ |
| Off-campus employment | ○ | ○ | ○ | ○ | ○ |

**Page 9** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**25. To what extent did your undergraduate experience prepare you for the following activities? (Click a circle for each item.)**

| | Not at all | A little | Moderately | Greatly |
|---|---|---|---|---|
| Post-Baccalaureate education | ○ | ○ | ○ | ○ |
| Current career | ○ | ○ | ○ | ○ |
| Social and civic involvement | ○ | ○ | ○ | ○ |
| Interpersonal relationships and family living | ○ | ○ | ○ | ○ |

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Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

# Part C. Continuing Involvement with Alma Mater

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**26. In the past five years, how frequently have you participated in the following activities sponsored by your undergraduate alma mater? (Click a circle for each item.)**

| | Never | Briefly | Occasionally | Frequently |
|---|---|---|---|---|
| Read campus publications | ○ | ○ | ○ | ○ |
| Visited the institution's web site | ○ | ○ | ○ | ○ |
| Visited campus for any purpose | ○ | ○ | ○ | ○ |
| Attended alumni functions on campus | ○ | ○ | ○ | ○ |
| Attended alumni functions off campus | ○ | ○ | ○ | ○ |
| Attended alma mater sporting events | ○ | ○ | ○ | ○ |

| | | | | |
|---|---|---|---|---|
| Served as an alumni admissions volunteer | ○ | ○ | ○ | ○ |
| Participated in a career advisory program | ○ | ○ | ○ | ○ |
| Participated in an alumni continuing education program | ○ | ○ | ○ | ○ |
| Participated in an alumni community service program | ○ | ○ | ○ | ○ |
| Contributed to or solicited for the annual fund | ○ | ○ | ○ | ○ |
| Maintained contact with other alumni | ○ | ○ | ○ | ○ |
| Maintained contact with faculty members | ○ | ○ | ○ | ○ |
| Maintained contact with administrators | ○ | ○ | ○ | ○ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**27. To what extent do you identify with your undergraduate alma mater?**

○ Not at all ○ Very little ○ Somewhat ○ Strongly ○ Very strongly

**Page 11** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

# Part D. Post-Graduation Activities

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**28. Which of the following best describes your primary activities during the year immediately following your undergraduate degree and currently? (Choose as many items as apply in each column.)**

| | Immediately after graduation | Currently |
|---|---|---|
| Employment full-time | ☐ | ☐ |
| Employment part-time | ☐ | ☐ |
| Graduate/professional school full-time | ☐ | ☐ |
| Graduate/professional school part-time | ☐ | ☐ |
| Not employed, seeking employment | ☐ | ☐ |
| Not employed by choice (homemaker, volunteer, traveling, etc.) | ☐ | ☐ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**29. What was your principal occupation immediately after graduation; what is your current occupation; and what career would you ultimately like to have? *(Please select a specific occupation below the topical headings.)***

Year Following Graduation
[Choose Occupation]

Currently
[Choose Occupation]

Ultimately
[Choose Occupation]

**Page 12** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**30. What is your current annual income range before taxes?**

- ◯ No earned income
- ◯ less than $19,999
- ◯ $20,000 to $39,999
- ◯ $40,000 to $59,999
- ◯ $60,000 to $79,999
- ◯ $80,000 to $99,999
- ◯ $100,000 to $119,999
- ◯ more than $120,000

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**31. To what extent have you voluntarily participated in the following organizations since graduating from your alma mater? (Click a circle for each item.)**

| | Not at all | A little | Moderately | A lot |
|---|---|---|---|---|
| Civic/Community | ◯ | ◯ | ◯ | ◯ |
| Cultural/Arts | ◯ | ◯ | ◯ | ◯ |
| Educational Service (e.g., PTA) | ◯ | ◯ | ◯ | ◯ |
| Political | ◯ | ◯ | ◯ | ◯ |
| Professional | ◯ | ◯ | ◯ | ◯ |
| Recreational (e.g., sports club) | ◯ | ◯ | ◯ | ◯ |
| Religious | ◯ | ◯ | ◯ | ◯ |
| Service (e.g., Rotary, Kiwanis) | ◯ | ◯ | ◯ | ◯ |
| Youth (e.g., little league, scouting) | ◯ | ◯ | ◯ | ◯ |

**Page 13** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

**Voters who did answer to If you have no educational plans beyond ... with No educational plans are redirected to page 15 (Delete rule)**

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

## Further Degrees

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**32. If you have no educational plans beyond your undergraduate degree, please mark here.**

☐ No educational plans

**Page 14** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

## Further Degrees

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

What further degree(s) have you received, are you currently working toward or do you hope to attain in the future? (Mark all that apply.)

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**33. Bachelors Degree:**

| | Degree received | Currently enrolled or working toward | Highest degree you hope to attain |
|---|---|---|---|
| Second Bachelor's Degree | ☐ | ☐ | ☐ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**34. Masters Degrees:**

| | Degree received | Currently enrolled or working toward | Highest degree you hope to attain |
|---|---|---|---|

| | | | |
|---|---|---|---|
| Architecture | ☐ | ☐ | ☐ |
| Business | ☐ | ☐ | ☐ |
| Education | ☐ | ☐ | ☐ |
| Engineering | ☐ | ☐ | ☐ |
| Humanities or Arts | ☐ | ☐ | ☐ |
| Life Sciences | ☐ | ☐ | ☐ |
| Mathematics or Computer Sciences | ☐ | ☐ | ☐ |
| Physical Sciences | ☐ | ☐ | ☐ |
| Psychology | ☐ | ☐ | ☐ |
| Religion/Theology | ☐ | ☐ | ☐ |
| Social Sciences | ☐ | ☐ | ☐ |
| Other Master's degree – (Please specify below) | ☐ | ☐ | ☐ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**35. If you chose "Other Master's Degree" above, please specify here.**

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**36. Professional Degrees:**

| | Degree received | Currently enrolled or working toward | Highest degree you hope to attain |
|---|---|---|---|
| Law (LLB or JD) | ☐ | ☐ | ☐ |
| Medical Degree (M.D., D.O., D.D.S., D.V.M) | ☐ | ☐ | ☐ |
| Other professional degree – (Please specify below) | ☐ | ☐ | ☐ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**37. If you chose "Other Professional Degree" above, please specify here.**

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**38. Doctoral Degrees:**

| | Degree received | Currently enrolled or working toward | Highest degree you hope to attain |
|---|---|---|---|
| Education | ☐ | ☐ | ☐ |
| Engineering | ☐ | ☐ | ☐ |
| Humanities or Arts | ☐ | ☐ | ☐ |
| Life Sciences | ☐ | ☐ | ☐ |
| Mathematics or Computer Sciences | ☐ | ☐ | ☐ |
| Physical Sciences | ☐ | ☐ | ☐ |
| Psychology | ☐ | ☐ | ☐ |

| | | | |
|---|---|---|---|
| Religion/Theology | ☐ | ☐ | ☐ |
| Social Sciences | ☐ | ☐ | ☐ |
| Other Doctoral degree – (Please specify below) | ☐ | ☐ | ☐ |

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**39. If you chose "Other Doctoral Degree" above, please specify here.**

Page 15 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

# Part E. Alumni Profile

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**40. In what year did you complete your undergraduate major?**

Year
[Choose a year]

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**41. What was the field of study of your undergraduate major? (Mark more than one ONLY if you had a double major.)**

| | | | |
|---|---|---|---|
| ☐ Architecture and Design | ☐ Art and Music | ☐ Business and Management | ☐ Communications |
| ☐ Education | ☐ Engineering | ☐ Geosciences | ☐ Humanities |
| ☐ Life Sciences | ☐ Math and Computer Sciences | ☐ Physical Sciences | ☐ Psychology |
| ☐ Social Sciences | ☐ Other Non-Science Fields | | |

Page 16 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**42. How relevant is your undergraduate major field(s) of study to your current career?**

○ Unrelated ○ Indirectly related ○ Directly related

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**43. What was the overall grade you received during your undergraduate career?**

○ A ○ A- ○ B+ ○ B ○ B-/C+ ○ C or Below

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**44. Did you receive any of the following undergraduate awards as a senior? (Choose all that apply.)**

☐ Latin honors (cum laude, etc)
☐ Phi Beta Kappa
☐ Sigma Xi
☐ Honors in major
☐ Other, please specify

**Page 17** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Voters who did answer to At the time that you graduated, what was... with No loans are redirected to page 19 (Delete rule)

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**45. Did you receive financial aid for your undergraduate education?**

○ Yes ○ No

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**46. If YES, mark all that you received.**

☐ Merit award ☐ Need-based grant ☐ Loan ☐ Work study

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**47. At the time that you graduated, what was the total amount borrowed to finance your undergraduate education which you were personally responsible for paying?**

○ No loans ○ less than $4,999 ○ $5,000 to $9,999 ○ $10,000 to $14,999
○ $15,000 to $19,999 ○ $20,000 or more ○ More than $0, but unable to estimate amount

**Page 18** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**48. To what extent have your UNDERGRADUATE educational loans caused the following? (Click a circle for each item.)**

| | Not at All | Somewhat | To a great extent | Not relevant |
|---|---|---|---|---|
| Allowed me to get a degree at an otherwise unaffordable institution | ○ | ○ | ○ | ○ |
| Focused job search on higher paying fields | ○ | ○ | ○ | ○ |
| Postponed or canceled post-baccalaureate education | ○ | ○ | ○ | ○ |

**Page 19** Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**49. What is your sex?**

○ Male ○ Female

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**50. What is your age?**

○ 25 or younger ○ 26 to 29 ○ 30 or older

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**51. What is your citizenship status?**

○ United States Citizen ○ US Permanent Resident ○ Non-US Citizen

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**52. Your race/ethnic background (Mark all that apply.)**

☐ Asian, Pacific Islander ☐ Native American
☐ Black, Non-Hispanic ☐ White, Non-Hispanic

☐ Hispanic ☐ Other

Page 20 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Voters who did answer to How many dependent children do you have? with None are redirected to page 22 (Delete rule)

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**53. What is your current personal status?**

- ○ Married or living with partner
- ○ Widowed
- ○ Separated or Divorced
- ○ Single

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**54. How many dependent children do you have?**

○ None ○ 1 or 2 ○ More than 2

Page 21 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**55. How old is your oldest child?**

○ 0 to 2 ○ 3 to 5 ○ 6 to 10
○ 11 to 15 ○ 16 to 20 ○ 21 or older

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**56. How old is your youngest child? (if more than one child.)**

○ 0 to 2 ○ 3 to 5 ○ 6 to 10
○ 11 to 15 ○ 16 to 20 ○ 21 or older

Page 22 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

# Part F. Supplemental Questions

Page 23 Delete | Insert question | Insert line break | Enable random | Edit branching | Enable submit

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

# Part G. Comments

Edit question | Edit answers | Delete | Clone | Insert question | Insert page break | Insert line break | Skip logic

**57. Please use this space to amplify on any of your responses on this questionnaire, or on any aspect of your undergraduate experience. Your comments will be welcomed, read, and considered.**

Comments

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**SENIOR CAPSTONE EXPERIENCES**

1. The primary academic discipline or major for your project _____

   If applicable, the secondary academic discipline or major for your project: _____

2. Please rate your overall capstone experience.

   3 Exceptionally good; 2 Very good; 1 Good; 0 Neutral; -1 Poor; -2 Very poor; -3 Exceptionally poor

3. What grade did you receive for your capstone? _____

4. Please indicate the degree to which your senior project contributed to your development in the following areas: (5:very much, 4:quite a bit, 3:somewhat , 2:very little, 1:not at all, Not applicable)

   Managing a large project
   Learning effectively on my own
   Ability to make an effective oral presentation
   Having confidence in my own abilities
   Ability to think critically and analytically
   Ability to think creatively
   Ability to write effectively
   Skill in the interpreting of data, evidence, texts, and/or works
   Integrating ideas from multiple disciplines

   Working collaboratively - Augustana only
   Seeing a connection between my intended career and its effect on society – Augustana only

5. Please indicate how strongly you agree with each of the following statements about your capstone experience. [5:Strongly agree, 4: Agree, 3: Neutral, 2: Disagree, 1: Strongly disagree]

   My capstone was more intellectually challenging than my regular coursework
   I developed more academically from my capstone than from a regular course
   My capstone led me to a better understanding of my skills, abilities and interests
   My capstone helped me clarify my career or graduate school objectives
   Because of my capstone, I feel I was better prepared for a job or graduate school than peers without a capstone experience
   My capstone had a positive influence on my intellectual growth and interest in ideas
   My capstone had a positive influence on my personal growth, attitudes, and values

6. As a contribution to your personal or professional life after graduation, how do you think your capstone course compares with alternative experiences you might have participated in instead?
   [More valuable than the capstone As valuable Less valuable than the capstone]

   Taking additional courses in my major
   Taking additional courses outside of my major
   Participating in additional co-curricular activities (sports, music, newspaper, leadership, etc.)

7. What about your capstone experience (good or bad) had the most impact on you?

# PART 8: FOCUS GROUP STUDY

Focus groups for students, faculty and capstone support staff were conducted at each campus in the spring of 2011. To promote candor the groups were lead by Teagle Scholars from the Center for Inquiry into the Liberal Arts who were not affiliated with any of the campuses. Each campus received a separate report on its own focus groups. The report included here is the comprehensive report for the four campuses written by Bruce Colwell, the lead Teagle Scholar who lead the focus groups at all four campuses.

## Comprehensive Summary Report of the Focus Group Sessions for the Teagle Assessment Project

## Appendices

Focus Group Methodology

Focus Group Questions

- Students
- Faculty
- Support Staff

## Comprehensive Summary Report

## Of the Focus Group Sessions for the Teagle Assessment Project

## *The Senior Capstone: Transformative Experiences in the Liberal Arts*

### I. Introduction

Two Teagle Assessment Scholars from the Center for Inquiry in the Liberal Arts conducted focus groups at Allegheny College, Augustana College, Washington College, and The College of Wooster as part of an assessment project of universally required senior capstone experience, *The Senior Capstone: Transformative Experiences in the Liberal Arts*. Each college has received an individual institutional summary (see Appendix) of their campus sessions. This comprehensive report is an aggregate summary of qualitative data from the four colleges, summarizing the focus group participant responses and using this qualitative data to address the primary research questions of the *Senior Capstone* study.

The *Senior Capstone* assessment project is designed to "explore how different constructions of a single concept (a capstone project required of all seniors) can lead to rich learning experiences for both students and faculty", and sought to examine "what works best in the capstones, within our colleges and across them, and how we could use that knowledge to improve them and create models of best practice." This study is especially interested in assessing the particular approach to the capstone that they share, noting their colleges "are distinctive in that they require all students to engage in a capstone experience built around a one-on-one mentoring relationship with a faculty member." Consequently this assessment project seeks to "shed light on the educational benefits of undergraduate capstone projects for *all* students."

The *Senior Capstone* assessment project has four over-all goals:

1. "To assess the degree to which a universal capstone contributes to outcomes that lead to life-long learning"; specifically a) "being able to plan and conduct an intellectually demanding project", b) "developing an understanding of one's self and one's interests and capabilities", and c) "understanding the nature of research and how knowledge is constructed".
2. To identify capstone program components and characteristics at each institution by refining the inventory developed during the planning grant."
3. "To identify features of the capstone … producing positive experiences."
4. "To distinguish variations in program characteristics, experiences, and outcomes across institutions and disciplines …"

From these four goals the project posits 8 research questions to be explored through multiple assessment methods – pre and post surveys of senior students, pre and post surveys of faculty mentors, institutional capstone inventories, student record data bases, a HEDS Alumni survey, and finally the campus focus group sessions. The focus group sessions were designed to collect qualitative data with questions addressing six of the research questions:

1. What is the impact of the capstone experience on outcomes leading to lifelong learning?
2. How does the capstone experience benefit the student and the faculty member?
3. What are the similarities and differences in how capstone programs are formulated?

4. What resources (programs, structures, and personnel) are provided to support capstone programs?
5. How do faculty and staff perceive and experience the capstone?
6. How do students experience the capstone? What is the range of student capstone experiences, and what are the conditions and practices that result in the most positive capstone experiences?

This report will summarize, interpret, and analyze the focus group participant responses to the six research question from the four institutions. The focus group process was nearly identical for each school: lead Teagle Scholar Bruce Colwell and an assistant followed a similar schedule (appendix 1) on a 3 day visit, meeting with each campus assessment project committee, academic administrators, taking a senior student led campus tour, and conducting six ninety-minute focus groups, two faculty (one tenured, one un-tenured), three student (humanities, social science, and natural science), and one staff. The same set of discussion questions (appendix 2) for each constituency was used on all four campuses.

Participants were selected in the following manner: the student group gendered balanced, with a range of GPA's, from a variety of departments ; faculty divided tenured and non-tenured from a variety of departments; and staff representing the administrative support departments working most directly with senior capstone students. Participants in each of the 24 sessions provided articulate, thoughtful and candid descriptions of their experience with the senior capstone, and we believe were heard a great variety of perspectives. The focus group format, with a small number of participants responding to broad open ended questions, provides detailed, rich, and nuanced descriptions of the capstone experience. However, it must be recognized that the small numbers are also a limitation of this assessment method, as it is difficult knowing how representative our participants were of their constituency.

The four institutions participating in this Teagle funded senior capstone experience assessment project are similar in many ways, beyond their universal requirement of a senior capstone project: all four are small, residential, liberal arts colleges with similar student body size and selectivity, and generally comparable faculty and curriculum. All four colleges are committed to providing a student centered learning environment, with low faculty/student ratios allowing personal high quality teaching and advising. The senior capstone, an individual student designed research project "built around the one-to-one mentoring relationship with a faculty member" is a natural extension of the kind of learning experiences these institutions provide so well.

Consequently, it is not surprising that the qualitative data from the focus group assessments show a basic similarity among the four capstone programs. The capstone programs and the capstone experiences of students, faculty, and staff at Allegheny, Augustana, Washington and Wooster are fundamentally more alike than different. The most notable similarities across all four institutions:

- **A commitment to the universal capstone requirement and program.** All faculty and most student focus group participants at all four institutions are committed to the universal capstone requirement, and believe that all students benefit significantly (though not equally) from the senior capstone project.
- **Educational rationale for the capstone project.** Again, all faculty and most student participants believe that a large, challenging, self-directed, independent original research project requiring students to integrate disciplinary knowledge and liberal arts skills (research, analysis, problem-solving, writing) is a unique culminating (and for some transformative) educational experience.
- **Importance of student ownership and personal investment in the project.** Both students and faculty identified the degree of student ownership and responsibility as the key to a positive, successful (and especially transformative) capstone experience.

- **The capstone experience is primarily a department/academic discipline (rather than institutional and general liberal arts) based educational experience.** Consequently, many focus group responses began with "in our department" rather than "at our institution". At all four campuses the central administration's (the academic Dean's Office) coordination of the capstone program is loose and diffuse, leaving the actual implementation and important issues (topic selection, adviser expectations, and workload) to departments. This department specific capstone experience seemed strongest at Washington and Augustana, less so at Allegheny, and the least at Wooster.
- **The student-faculty adviser relationship is important, and the faculty advising role is time intensive.** Consequently, faculty workload is an issue in departments with large number of majors.

Although the basic capstone program is similar at all four institutions, with greater variation within than among institutions, there are a few notable ways in which the four institutions programs are different:

- **The extent of variation of student experience within institutions.** Based on the focus group comments, Wooster and Allegheny students described the least internal variation, Washington students more and Augustana students the most. Variation in experiences seem to result from a) multiple types of capstones (original research, literature based research, case studies, internship study, comprehensive exam), b) different size and duration (from one ten week term to three semesters), and c) varying expectations from different disciplines and departments.
- **The capstone's presence in recruiting and admissions.** At two institutions (Wooster and Allegheny) many faculty and students talked about the presence of a universal capstone as a key factor in their selection of the college.
- **The importance of the capstone in the institutional identity and campus culture.** Again, at both Allegheny and Wooster the capstone project and experience was portrayed by students, faculty, and staff as a defining feature of the college; indeed, at Wooster the Independent Study program is described as the institutional brand and admissions market niche, proudly claiming that they have the premier senior capstone program among the nation's liberal arts colleges.

## II. Institutional context of the four Senior Capstone programs

The chart below summarizes the institutional context for the four capstone programs, outlining the "different constructions of a single concept" on the four campuses. (Source: Project Proposal)

| Institution: | Allegheny | Augustana | Washington | Wooster |
|---|---|---|---|---|
| **Capstone Title (Informal)** | Senior Comprehensive Project (Comps) | Senior Inquiry (SI) | Senior Capstone Experience (SCE) | Independent Study (IS) |
| **Description** | Independent project under faculty mentor | Culminating project of synthesis, analysis, and reflection | Project of active learning within the major | Junior year Independent Study plus a two-course senior year IS |

| Institution: | Allegheny | Augustana | Washington | Wooster |
|---|---|---|---|---|
| **Purpose/Objective** | Integrate disciplinary knowledge & liberal arts skills | Substantial in meaning, communicative of discoveries, reflective; with a meaningful mentor relationship | Integrate knowledge and skills to produce sense of mastery and intellectual accomplishment | Develop and demonstrate capacity for individual inquiry and expression: "invites students to come to their best in terms of their own talents" |
| **Prerequisites** | Junior seminar; approved proposal | Earlier department course(s) | Department approval; sometimes research methods course; college writing requirement | Most departments require a methods seminar or a one semester Junior IS course |
| **Project length** | One or two semesters: 4, 6, or 8 credits | No institutional requirement; most one term (10 weeks), some 2 or 3 terms | Varies by department; typically two semesters | Junior IS one semester; Senior Independent Study is two semesters |
| **Format (product)** | Bound manuscript 40-80 pages or presentation; oral defense | No institutional requirement; determined by needs of department curriculum | Varies by department. Includes: thesis, research experiment, public performance or show, comprehensive exam | Choice of content process and method varies; all students produce written theses or creative presentation; oral defense |
| **Supervision** | One faculty advisor and second reader. Advising compensation by department. | Ideally, one faculty advisor; some group advising in class seminar. Sometimes second readers. Advising comp. | Individually with faculty advisor Advising comp. ratio 11 to 1 | Individually with faculty advisor; typically one hour weekly meetings; most have second reader. Advising comp ratio 5 to 1 |
| **Evaluation** | Letter grade; passing required for graduation | Varies by department | Set by department. Some honors, pass, fail or pass and fail; others regular grades; passing required for graduation. | All IS graded by two faculty: No Credit, Satisfactory, Good, or Honors |
| **History** | Present SCP format since 1942; some kind of capstone since 1821 | SI designed in 2005-6, implemented 2008-11 | Previously thesis or comprehensive exam and called "senior obligation"; present SCE since 2004-5 | IS established by President Lowry (using the Princeton IS plan) in 1942 |

## III. Summary of Focus Group Conversations

Although there are many differences in the types of capstone projects both within and among the four institutions, the focus group discussions were remarkably similar among the four institutions. That is, student responses to the student questions and their descriptions of their capstone experiences generally matched those of students with similar projects at the other schools. Faculty advisors likewise described similar experiences as faculty (advising similar types of projects) at the other schools. Consequently, the focus group discussions are summarized by topic and question (and constituency), and not by institution. This descriptive summary will provide content and context for the narrative analysis of the six project research questions in the final section.

**Student responses**.

*Capstone topic selection*. At all institutions the topic selection process is designed to allow individual students latitude to choose a topic in which they have a significant personal interest; ideally, a subject about which they are passionate. For a majority of students, especially in the humanities and social sciences, this works very well. These students selected their topics and shaped their research question through one of the following means: from a long-held personal interest or passion, a study abroad experience, a summer employment or internship experience, a previous course, the junior seminar, or a conversation with a favorite faculty member. However, students in some departments, especially in the natural sciences, have less freedom in topic selection, choosing a project in a faculty's research area or choosing a topic from a prescribed capstone course theme (i.e., winter biology or Jane Austin novels). Regardless of the topic selection process, most students are able to sustain their interest and remain engaged. Even those with more prescribed choices found their enthusiasm grow as they made the specific topic their own, and as they moved deeper into the material.

*Capstone preparation*. Most students across all four campuses and all three academic divisions felt well prepared for their capstone project, citing 1) previous coursework in the major, 2) the capstone junior seminar or methods course, and 3) the research and writing intensive courses throughout the curriculum as particularly helpful. Some students recognized and appreciated the purposeful sequencing of courses ("backward design" at Augustana) and explicit references ("this assignment will help prepare you for your senior project") in the first three years. The few students who felt less or unprepared did not benefit from one or more of the three preparation sources, or admitted they lacked self-discipline and organizational and time management skills.

*Mentoring/Advising Relationship*. Students at all four institutions agreed that the one to one student/faculty advising relationship was an important component in the capstone experience. For most students the support, encouragement, guidance, and constructive critiquing from their advisor were critical for a successful project and a positive experience. Yet the capstone advisor role and relationship varied significantly at all four institutions, by department and by individual faculty. Many students reported regular weekly advisor meetings (some science students had daily contact) throughout the project, some more sporadic as needed or requested, and a few with little interaction. Relationships ranged from close friend/mentor to helpful advisor to distant critic to unavailable paper reader; fortunately most were helpful and supportive.

*Capstone contribution to education (What I learned or gained from my capstone …).* Students from all institutions and all disciplines noted they learned a) a significant amount about their topic ("I felt like an expert"); b) how to practice or do their discipline; c) how to pitch a proposal, shape a research

question, and execute a large project; d) self-discipline, organization, and time management; e) advanced writing and presentation skills; f) self-sufficiency and persistence; and g) confidence.

*Observations and Recommendations.* While many student observations and recommendations addressed issues specific to their school or department, the following were heard on all four campuses: a) the capstone is valuable and important, and should continue to be universally required; b) review the credits awarded for the capstone project, with general belief that students deserve more credits for the work they are doing; c) increase financial support for individual projects; d) more structure and clearer guidelines; e) better and earlier introduction to the project; and f) expand the public presentations and celebrations.

**Faculty responses**

*Capstone purpose and characteristic.* Although the capstone project formats vary from campus to campus, faculty described a common set of purposes for the senior capstone. All four faculties cited these purposes and characteristics for their capstone programs:

1. *The capstone experience is a four year process that culminates in a senior project*. The capstone program "is an academic journey, a four year process" that "provides a framework for thinking and inquiry, and brings cohesion to the curriculum." In the first three years both the general education and department curriculum intentionally prepares students for the senior year project, requiring "backward design" of the curriculum.
2. *To require students to "take ownership of the learning process" and practice active learning*. The capstone is a uniquely independent and self-directed learning experience.
3. *To move students from studying in a discipline to practicing a discipline.* To move students from studying philosophy to being a philosopher, from being students to being practitioners.
4. *To require students to complete a substantial sustained research project requiring organizational and time management skills.*
5. *To require students to demonstrate advanced research and analytical skills, and to integrate and synthesis previously material.*

Faculty at all four institutions also had similar descriptions of a "successful" capstone project as one in which the student a) is self-directed and takes full responsibility and ownership for their learning; b) communicates their interest and passion; c) demonstrates advanced analysis, research, and writing; d) provides evidence of growth and change; and e) develops an innovative, novel, or original research question.

Faculty participants at all four schools also voiced nearly unanimous commitment to the universal requirement, and shared the belief that *all* students benefit significantly (though not equally) from the capstone experience. Many faculty cited examples of average or weak students who "caught fire" or "blossomed" and produced an outstanding paper; another shared a department study that concluded "there's no correlation between how our majors do in our courses and how well they do on their projects."

*Advising relationship and impact.* Faculty participants were universally positive about their experiences as capstone advisors, and described a common advising role that included a) guiding the shaping of a feasible well-defined topic and research question, b) meeting regularly and providing needed structure, direction, and deadlines, c) providing encouragement and emotional support (coach, advocate, cheerleader), d) reviewing, challenging and critiquing advisee's thinking and writing, and e) consulting as a "co-learner" and academic colleague. Many faculty advisors performed the additional roles of mentor, friend, life coach and career counselor. There was considerable

conversation about striking the right balance and degree of guidance and direction, taking care to honor the advisee's independence and autonomy.

Faculty seem to take their capstone advising responsibilities very seriously, many devoting significant time (some more than 2 hours per week) and energy to each student. Consequently most faculty are challenged to find adequate time for the capstone advising, and those with large advising loads (more than 5 advisees) often find it affecting their teaching or their own research and writing. Although most faculty appreciate the workload compensation (in course release) arrangement, many feel the allotment ratios (ranging from 5 to 1 to 12 to 1) are inadequate.

*Observations and recommendations.*

Although many faculty observations and recommendations for improvements were campus-specific, there were a number of common recommendations across all four institutions:

1. *Examine and address the workload issues affecting some faculty and some departments.* Capstone projects for every senior built around one to one advising require significant faculty time; when these work demands are inequitably distributed (as the majors are) by department, some faculty must advise large numbers of students, and other faculty have few or no advisees.
2. *Preparation and prerequisites*: *Review and revise department and college curriculum to ensure all students are prepared for a positive and successful capstone experience*. Most faculty focus group participants believed most students are well prepared, but suggested strengthening preparation strategies could have all students better prepared.
3. *Junior faculty recommended more formal orientation for new and visiting faculty serving as capstone advisors.*
4. *Increased opportunities for institution-wide (across departments) faculty conversations of capstone procedures and best practices.*
5. *Review the capstone experiences of students with two majors.* Each institution had a significant number of double majors, and some faculty expressed concern that neither a single interdisciplinary project nor two projects served some double majors well.

**Staff responses.**

Staff from the library, writing and academic support centers, and instructional and information technology at each institution described how they supported and served the senior capstone program. While each institution had some campus specific issues, the general support staff experience was quite similar across the four schools. At all four institutions staff reported

1. Students used their offices and resources effectively and appropriately.
2. That they generally feel valued and appreciated by both capstone students and faculty.
3. Much of their support for the capstone program is indirect, working with underclass students preparing for the capstone; the writing center working primarily with first-year and writing intensive classes, the library working on research skills with junior seminar or methods classes, etc.
4. There is significant direct support for seniors, although most offices did not keep statistics specifically on senior capstone. Consequently most support staff did not believe that their academic administration had full or accurate information about the capstone use or need of their services. Therefore, they suggest that some of their work constitutes a hidden cost of the capstone program.

5. Their offices can presently meet the needs and demand of the capstone students and faculty, but do not have the capacity to take on additional senior traffic.

## IV. Focus Group Findings and the Project Research Questions

### 1. What is the impact of the capstone experience on outcomes leading to life-long learning?

The project identified three specific outcomes to explore: 1) being able to plan and conduct an intellectually demanding project; 2) developing an understanding of one's self and one's interests and capabilities; and 3) understanding of the nature of research and how knowledge is constructed. Qualitative focus group data can begin to describe (though not measure) the impact of the capstone on outcomes leading to life-long learning. Most students, still in the midst of their capstone experience, cannot know how their capstone learning will benefit them in the future. Yet they can describe what they believe they are learning and gaining from the capstone project. Faculty advisors, evaluating the projects and closely observing the students, are able to assess and describe the impact of the capstone on specific outcomes.

All students and faculty participants identified planning and conducting a demanding project as a primary outcome of the capstone experience. Some student groups immediately understood that the capstone project was the largest and most difficult academic task, but struggled to articulate the specific skills and qualities they needed to "plan and conduct" their project. Yet each student focus group on all four campuses ultimately produced a similar response to the question "what have you learned from your capstone?", listing a) doing original research, b) designing one's own project, c) being self-sufficient and independent, c) thinking creatively and critically, solving problems and persevering, d) practicing effective time management and organization. Faculty identified a similar list, and both lists were very similar to the Project proposal's list of outcomes needed to plan and conduct a project. The unique nature of the capstone project – the complexity and scale, long duration, degree of independence and self management required – seems to produce outcomes that lead to lifelong learning.

Students talked less about the capstone's impact on their self-understanding outcomes, perhaps because they were more focused on completing the task than thinking about what it meant. This self-understanding may require some time and distance from the actual project. Nonetheless, the capstone was making an impact on many of the self understanding outcomes. For some students, particularly those going directly to graduate school, the project did clarify and confirm career path decisions, and further develop their interest in research and higher level cognition. Most students expressed a sense of accomplishment and a growth in their intellectual self confidence; none of the student participants seemed defeated or broken by the experience, hopefully more evidence that all students benefit (or at least none are harmed) from the universal requirement. There were two or three students at Allegheny and Washington who were more negative, who felt that the capstone was not relevant to their future, and was just another big paper and a requirement to complete.

The student focus groups shed even less light on the third set of self-understanding outcomes, "the nature of research and how knowledge is constructed." Most students did note the value of "practicing their discipline", that while their science courses "were fake science, while my SI (capstone) research was real science." Yet none of the students talked about increasing their

understanding of how things are known, the interrelationship of knowledge, or valuing different points of view.

It is not surprising that undergraduate students are less articulate about learning outcomes, and the nature of research and knowledge. But it was striking how little some students seemed to know about the purposes and educational rationale for the senior capstone, little understanding of the value, importance, and benefits of the capstone, and consequently why the college requires the capstone for all students. Faculty at all four institutions were quite articulate and clear about these matters.

**2. How does the capstone experience benefit the student and the faculty mentor?**

Students at the four institutions generated similar lists of benefits from the capstone experience. Although the extent or degree of the benefit varied by type of project, by department, and by student, all students seemed to have learned or gained from the capstone:

- how to choose, design, and independently complete a research project
- how to manage a large, complex, and long duration project
- self-sufficiency and perseverance; learning from problems and failures
- advanced research, analysis, writing and presentation skills
- practicing and doing (not just studying) their discipline
- increased confidence in their academic abilities, and a general feeling of accomplishment of a difficult task

Most students believed that the degree of independence, self-direction, ownership and personal responsibility required made the capstone a uniquely beneficial educational experience.

While all students believed that they benefited from the capstone, the benefits varied with the type of project and with student motivation levels. Consequently, the students who choose their own topic, designed a challenging project, and worked over a long period of time (a full year or more) typically felt they gained more than the students who took a course or faculty topic met the minimal requirements and completed the project in one semester or term.

Faculty participants on all four campuses were uniformly positive about serving students as capstone advisors, some claiming it is their “favorite” or “most enjoyable” part of their job. At two institutions, Allegheny and Wooster, three or four faculty stated the universal capstones presence and the opportunity to advise undergraduate research was a primary factor in choosing and remaining at their institution. Faculty on each campus identified similar benefits from capstone advising:

- the opportunity to know individual students well, as a fellow scholar (co-learners) and often as a lifelong friend and mentor
- the opportunity to observe student learning “up close and personal” and sharing in “aha” moments of discovery
- learning something new in their field, staying excited about research, and sometimes furthering one’s own research
- having collegial conversations and relationships with students

On each campus faculty stated some version of this sentiment: small liberal arts colleges with strong (and universal) undergraduate research capstones allow them to balance their dual passion

for research and teaching while working closely with students. This is why many faculty describe advising senior capstone projects as especially enjoyable and satisfying.

**3. What are the similarities and differences in how our capstone programs are formulated?**

The focus group sessions were not designed to address this question directly, as participants were asked to talk about their individual personal experiences and not about the program design and structures. Yet their experiences often made reference to how their programs were formulated, and consequently the set of six focus group sessions did provide a general sense of the similarities and differences among the four institutions.

*Similarities.* The program characteristics similar for all four campuses:

- The senior capstone is a graduation requirement for all students.
- There is a general institutional description of the purpose and outcomes for the capstone program, but each department establishes its own process and procedures.
- The capstone is a significant project and experience "built around a one-on-one mentoring relationship with a faculty member."
- The capstone expects students to take responsibility for the selection, design and execution of the project, an active learning experience that will engender in students a substantial sense of ownership.
- The capstone builds or draws on knowledge and skills from previous coursework in the discipline (major field of study) and the general education (liberal arts) curriculum.
- For most students the senior capstone is a substantial project requiring advanced research and writing.

These common formulations are sufficient to produce a similar experience for students and faculty across the four institutions. Thus the students and faculty across all institutions provided generally similar responses to the focus group questions.

*Differences.* Despite the similarity of the capstone experience described, there is not a single senior capstone experience within or among the four schools. This is due to the variability and differences of the program among academic departments and institutions. These differences include:

- *Types of projects*. Wooster had the least variation, as all students complete a two semester thesis or creative project requiring original research and advanced writing. Allegheny's capstone is almost as uniform, though research may be original or literature based. At Washington the capstone projects may be original research thesis, a literature based thesis, a public performance or creative work, student teaching portfolio, or a comprehensive exam. Augustana students write a traditional original research thesis, literature based research thesis, case studies, simulations, and internship studies.
- *Scale and size of projects*. None of the institutions prescribe a universal or standard size for the project, though at Wooster all projects are two semester courses. At the other three schools the duration and credits awarded are determined by individual departments and vary and consequently produce projects of varying size.
- *Duration of the capstone experience.* A full academic year (three semesters with the Junior Seminar) for all Wooster students; departments determine length at the other three

schools, though two semesters is typical at Allegheny and Washington, and one term (10 weeks) is most common at Augustana.

- *Reflection as a formal component of the capstone.* Only Augustana has a formal written reflection component in the capstone.
- *The presentation component.* Both Wooster and Allegheny requires all students to pass an oral defense to complete the capstone; at Washington and Augustana many departments also require a defense or some type of presentation.

**4. What resources are our colleges providing to support their capstone programs?**

The focus groups were more concerned with the student, faculty, and staff experience with the capstone, although institutional resources were always a part of the discussion. All four institutions understand that their capstone program, requiring *all* students to complete a large complex project, and "built around a one to one mentoring relationship" with faculty, is a labor-intensive venture, requiring extensive faculty and staff time.

Students believe that the regular individual meetings with the advisor were critical, and that the advisor/ student ratio should remain small. Students at all campuses also recommended that more money be available to support individual projects.

Faculty believe that their time is the most important institutional resource for a strong capstone program. Yet faculty work/course load is a problem for only a small number of faculty in the departments with large numbers of majors. The colleges are trying to solve this problem with course release compensation for advising (with advisors per course release rations running from 5/1 to 12/1), though this is a challenge to administer and is expensive. Some departments have consequently moved to seminar and group advising arrangements, reluctantly abandoning the pure on to one advising approach.

Capstone support staff (library, writing and academic support center, instructional and information technology) at each institution believe that their academic administration does not know or significantly underestimates the time they devote to supporting capstone students. Furthermore, all support areas are presently stretched and have little or no capacity to provide more assistance to the capstone program.

**5. How do faculty and staff perceive and experience the senior capstone?**

Faculty certainly perceive and experience the capstone in a variety of ways, yet the focus group conversations did describe a generally similar capstone advising experience among faculty across departments and across the four institutions. Faculty focus group participants described their capstone experience as

- positive, enjoyable and rewarding to work individually and closely with motivated engaged students, to observe "learning close up";
- a significant investment of time and energy, worth it when students succeed and grow (fortunately most students), frustrating when a student struggles or fails;
- consulting or co-teaching, working with students more as colleagues or peers;
- a meaningful research experience, a welcome balance to the teaching emphasis of the small liberal arts college.

While students and faculty advisors are at the center of an intense lengthy educational experience, staff in departments that support capstone students experience the capstone in a more limited and distant way: typically a single session to assist with using a database, or plan an organizational

strategy. Where faculty experience a few capstone projects as inside participants, staff get a outsider's glimpse or two of many projects. Yet support staff at each campus seemed well informed about the capstone program and acutely aware of the student capstone experience. They described the campus capstone cultures much like the students did. Serving more as consultants to the students, support staff had similar observations and recommendations: 1) they saw the variability (between departments) of capstone projects and processes, and therefore suggested better department capstone information and more uniformity among departments; 2) though they feel their work with the capstone program is generally appreciated and valued by students and faculty, much of what they do is less visible, especially to academic administrators; 3) they are presently able to satisfy the needs and demands of the capstone program, but are at their limit.

**6. How do students experience the capstone? What are the ranges of capstone experiences for our students, and what are the conditions and practices that result in the most positive capstone experiences?**

The student responses in each of the institutional reports (Appendix) and in section III above summarize student's description of their capstone experience. The basic components of the capstone experience seem to be similar and universal; all student participants, regardless of academic department or institution, talked about these common elements of the capstone experience:

- *It was indeed a capstone experience*. Most students described the capstone project as the largest, longest, most challenging, and most difficult academic task of their college career. Unique in all of those ways.
- *Personal investment and sense of ownership*. The capstone project was personal, and uniquely their own; more than one called it "my baby." The degree of independence, autonomy, self-direction and self-responsibility was unprecedented: I picked the topic, I shaped the research question, I designed the study, I collected the data, and I wrote the paper.
- *I practiced my discipline*. I did not study biology, I practiced biology, and I was a biologist. Students understood that this was a different kind of learning, unique among all of their other college courses.
- *Satisfaction and sense of accomplishment*. Because this was a large, long, challenging, personal, independent and active learning project, it brought students more satisfaction, confidence, and sense of accomplishment.

*Variability and range of experience.*
Although most students have some version of the common experience described above, students also described a variety and range of experiences. Some of the variability is attributable to the inevitable range of differences that students bring to the experience: differences in knowledge, skills and competencies, interest, motivation, and health. However, different capstone experiences seem to be related to the variety in the types of projects, as well as differences in project scale and duration. The focus group discussions described the following types of projects and the corresponding capstone experience:

1. *The standard and historically typical type of capstone project with five characteristics*: (a) student selected and designed (b) original research study or creative work (c) built around a one to one mentoring relationship with a faculty advisor, a project of (d) substantial size and (e) duration (two semesters or terms) that includes a proposal, data collection, a written report and a presentation or oral defense. Nearly all of the capstone projects at Allegheny and Wooster are of this type, with a smaller percentage at Washington and Augustana. The

experience for the student is the result of the cumulative effect of all five characteristics, which students describe as: intense, demanding (the most challenging work they will do in the major and at the college), sometimes frustrating (requiring problem-solving and persistence), requiring advanced research, writing and presentation skills, and ultimately satisfying and confidence building. Students further describe the capstone experience as a unique and singular academic experience of practicing (not just studying) their discipline requiring significant initiative, self-discipline, and organizational skills and challenging them to grow and change, and finally leaving them with a sense of accomplishment and pride. These were the students most likely to be describing a transformative experience.

2. *A literature based (rather than original) research project* with the other four characteristics. These students describe a similar experience, but with less sense of personal ownership and without practicing their discipline or being a researcher.
3. *Literature based research in a capstone course over a single semester or term.* Some of these students, without choice of topic or mentoring from an advisor in a shorter single semester, described their project as just a big paper in an upper level course that satisfied a graduation requirement.
4. *Case study or problem analysis in internship or student teaching setting.* These projects have few of the characteristics of the standard project, and while they may be positive (as they are often viewed as practical) experiences, they are also likely to be experienced as practical course rather than a capstone experience.
5. *Comprehensive exam.* Although the comps exam can satisfy the capstone requirement in some departments at Washington, it is not a capstone experience as defined in this study.

The different types of projects produce different experiences. At Washington and Augustana (with the variety of capstone types) students were aware and sometimes uncomfortable with the range of project types and experiences. Some felt it wasn't equitable and fair as they perceived some types to be more work or more difficult than others; others were disappointed that they could not have the "full experience" of the original research, mentored, large and long projects.

**What conditions and practices seem to result in the most positive capstone experiences**?

- *Student choice of topic.* The more choice the student felt over his capstone topic and research question, the more motivated and positive they felt about the project. This did not require, however, that the choice be entirely the student's: students who joined a faculty's research or were in a themed capstone seminar were able to take a prescribed topic area and choose a sub topic and research question and feel it was a meaningful choice.
- *Preparation.* Students felt writing intensive courses and methods courses in the first three years prepared them well with the research and writing skills needed for the capstone project. Students also strongly endorsed the junior seminar, particularly when it included choosing the topic, shaping the research question, and presenting a proposal. Students believed that getting started on the project can be particularly difficult to do independently. Faculty and departments can help with a proposal approval processes that assess student readiness and requires plans to address issues.
- *The student/advisor relationship.* Students suggested that they could have a successful project without a strong advisor relationship, but it was not likely to be a positive capstone experience. Students also suggested that structure and definition at the beginning of the relationship (regular scheduled meetings, explicit discussion of "how we will work together") is useful.
- *Perceptions of the relevancy and usefulness of the capstone.* Those students who believed that their project was relevant (it mattered and was important to them) and useful (would

help them in the future) were more motivated and positive. The few student participants on each campus who a) did not plan graduate study or employment in their field of study (academic discipline) and b) did not appreciate the broad liberal arts skills they were acquiring or strengthening viewed the project as "just another paper" or "just a graduation requirement", and were not having a positive experience. Focused only on the content of the project, they saw little value in "learning so much about something I will never use."

- *Motivated students, and advisors who expected and encouraged student initiative, responsibility, and ownership.* Faculty thought that although students needed to bring these qualities to the project, they could advise and support students in ways that engendered it.
- *Healthy (physically and emotionally) students.* The demands of the capstone project require healthy students. This is primarily the student's responsibility, but faculty and staff can provide support and structure for those at risk and in need.

## V. Summary Observations and Recommendations from Teagle Scholar Bruce Colwell

The focus group sessions were designed to gather qualitative data about the capstone experience for students, faculty and staff. The institutional sessions also gathered observations and recommendations for improving the capstone program. The lead Teagle Scholar also added a set of observations and recommendations for each institutional report, based on the focus group sessions and meetings with other campus administrators, the campus visit, reading of college web site and provided capstone materials, as well as my twenty-five years of experience as a Senior Associate Dean of Students and senior class dean at small residential liberal arts colleges. Reviewing my four campus visits and this comprehensive report, I offer the following observations and recommendations.

1. **Each institution reviews the purpose, principles, and goals of their capstone program.** This is undoubtedly happening with participation in this Teagle assessment project. As each campus capstone program has developed from the departmental rather than institutional level, some focus group participants were uncertain about the institutional description (if there is one) of the capstone. Produce a document for students, faculty, and staff so that all have a common understanding.

2. **Each institution reviews the implementation and administration of their capstone program.** It is a challenge to coordinate and manage an institution wide program that is designed and operates from many departments. The four college's Deans/Provosts meet or confer to discuss and share best practices.

3. **Each institution considers creating institutional structures and venues to ensure regular campus conversations about the senior capstone.** On all four campuses the focus group experience reminded faculty participants how little conversation they have outside of their department about the capstone program.

4. **Assess and address the variability of experience issue.** Examine the variability and range of student capstone experiences, and assess if each provides the capstone educational experience desired for every student.

5. **Identify and address the major issues and challenges that emerge from the Teagle Senior Capstone project.** From the focus group discussions, the following issues were raised on two or more campuses:

    - *Preparation*. The universal requirement increases the importance of preparing all students to have a positive and successful capstone experience.
    - *The student-faculty advisor relationship, and related faculty workload issue*. Does every student have a quality mentor relationship, and how do faculty find the time for each student advisee?
    - *Institutional resources.* How can adequate resources (staff and financial support for projects) be devoted to the capstone program?

6. **Review the Capstone program and its relationship with a) admissions and b) career planning.**
   If the universal senior capstone project and experience is a defining feature of the college experience, it takes on particular importance for the selection process (admissions) for prospective students and career planning for graduating students.

7. **Consider incorporating this capstone assessment project report into a review of the larger Senior Year Experience.** At Wooster and Allegheny students, faculty and staff described a capstone culture that significantly affects the overall senior year experience, and can be problematic for some students. All institutions should design a senior program as thoughtfully and intentionally as they do with the other transition year, the first year. A universally required senior capstone is an important component, if not the centerpiece of the senior year experience.

Bruce W. Colwell

Teagle Assessment Scholar

June 2011

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# Part 8 APPENDICES

Focus Group Methodology

Focus Group Questions

- Students
- Faculty
- Support Staff

## Focus Group Study Methodology

The focus group questions and methodologies were derived by the campus steering committees in conjunction with conference calls, with answering our research questions as the main objective. The questions were uniform across campuses except that each campus had the option for one local question.

For purposes of uniformity in conducting the groups, consistency in reporting, candid discussions, and a comprehensive report based on knowledge of the groups of all campuses, it was decided to bring in outside experts to conduct the groups. Consequently, the groups were conducted by Teagle Scholars through arrangement with the Center for Inquiry into the Liberal Arts, housed at Wabash College. The lead scholar, Bruce Colwell, was the common denominator at all four campuses. At each campus he was assisted by Teagle Scholars that varied due to availability.

Our focus groups were targeted for about 7-10 participants each, and at each campus one support staff, three student, and two faculty focus groups were conducted. Student participants were invited through random sampling stratified by academic major and balanced by gender and across GPA levels. Separate student focus groups were held for students from the natural sciences, social sciences and humanities. All faculty were invited to participate, with volunteers selected to be representative by academic division. Because we felt junior and senior faculty might have different views and untenured faculty might be less likely to speak candidly in the presence of senior faculty, separate focus groups were held for tenured and untenured faculty. To induce participation, faculty focus groups were held in conjunction with lunch or with refreshments, and students were offered a monetary incentive along with pizza.

## Student Focus Group Questions

1. **Capstone Topic Selection.** We are looking for information on how students select the topic they pursue for their capstone project. Are there factors in topic selection that will help to engage the student through challenges in researching and writing, and is doable given the student's skills is an important factor in 'success' of the student's experience.
   - How was your capstone topic selected?
   - Now that you are approaching the end of your capstone, how do you feel about the subject of your capstone? Has it been what you expected? Has it continued to engage you?

2. **Capstone Preparation.** We are interested in knowing how prepared students feel they are for their capstone. There are at least two dimensions to this: academic preparation (do they have sufficient academic and disciplinary background to pursue their topic, do they understand the research process) and developmental (do they have the discipline, organization and time management skills to take on a large project).
   - How well prepared were you for your capstone project?
   - What prepared you for it or could have prepared you better for it?
     *Possible follow-up: If you weren't prepared, how did that affect your capstone? What adjustments did you have to make?*

3. **Capstone Mentoring.** The relationship between student and capstone mentor appears to be another important factor contributing to the quality of the student's capstone experience. We wish to know what aspects of that relationship contribute to a 'good' experience and to a 'bad' experience.
   - What do you see as the role of the faculty mentor?
   - What has your experience with your mentor been like so far?

4. **Capstone Contribution/Uniqueness.** The capstone is designed to be a quite different from what a student experiences in a typical course. The capstone structure emphasizes independent exploration of a topic resulting in a largish project. The hypothesis is that the kinds of gains a student makes, particularly developmental gains, through a capstone are quite different from those had through a normal course.
   - Has your capstone experience contributed to your academic or personal development? If so, how?
   - Is this different from what you have experienced in a regular course? How so?
   - How has your capstone experience affected your post-graduate plans?

5. **Capstone Evaluation.** Students can see the value of their capstone quite differently. We want to know more about what students feel are the markers of a 'successful' and 'unsuccessful' capstone. As all capstones are intended to contribute to lifelong learning, we also wish to know what students think the value of their capstone experience will be in their future for their personal or professional lives.
    - In what ways has your capstone been "successful"? "Unsuccessful"?
    - Do you feel you have ownership of your capstone project? To what extent do you feel this has been your project?
    - What do you anticipate will be the effect of your capstone on your postgraduate plans?
    - If you could change the capstone program at XX, what would you change and why?

## Faculty Focus Group Questions

1. **Capstone Purpose and Characteristics.** The capstone experience is a significant part of the culture at all four institutions. Three of the institutions have had their capstone in place for decades and the fourth is implementing theirs. For three institutions there has been time for 'drift' in thinking about the role of the capstone and what makes for a 'successful' capstone, while the fourth institution is still in the process of forming its thinking on these issues.
   a. What is the contribution of the capstone in an undergraduate's education at XX?
   b. What are the characteristics of a "successful" capstone experience for a student? What contributes to a successful experience? What are the characteristics of an "unsuccessful" experience? What contributes to an unsuccessful experience?
   c. What are the consequences of requiring all students to complete a capstone? Do all students benefit equally?

2. **Capstone Advising Impact.** We know anecdotally that capstone advising has emotional and intellectual benefits for faculty. We also know that there are tradeoffs to be made. We want to know what these benefits and tradeoffs are and how well prepared faculty members are to advise capstones.
   a. What is the role of the faculty mentor in advising a senior capstone project?
   b. What are the benefits to mentors of advising capstones? What are the challenges? What are the tradeoffs and/or disadvantages?
   c. Senior faculty version: What advice would you give new faculty about being an advisor?

      Junior faculty version: What advice do you wish you had received when you began to advise capstones?

3. **Capstone Future.** There are aspects of the capstone faculty cherish, but there are other aspects faculty might like to see changed. That the capstone is ingrained in the cultures of our institutions makes change difficult. A component of the proposal to the Teagle foundation was the promise to suggest improvements and to explore their development.
   a. What should the capstone program's future be? Would changes would you like to see? What are the obstacles to making any changes?
   b. Anything else you would like to tell us?

## Support Departments Focus Group Questions

1. **Capstone Support.** Seniors have available to them a wide variety of services to help them with their senior capstone. Of course, many of these services are available to them prior to the capstone. We want to know more about the nature of the services provided, whether they are sufficient, and the extent to which these departments are supported in their work.
    a. What is the contribution of the capstone in an undergraduate's education at XX?
    b. What services does your department provide to support the capstone (directly or indirectly)?
    c. At what stage of the capstone are you most likely to be asked for help? At what stage is your help likely to be the most effective?
    d. In what areas do you see seniors needing the most help? Where are they the strongest, generally?
    e. Have you seen changes over time in the kinds of needs students have?
    f. Do students bring you questions or issues for which you are not prepared? Do you have the resources you need to support the capstone?
    g. What are the workload consequences of supporting the capstone?
    h. How would you characterize your capstone-related interactions with students? Are these different from other kinds of interactions? How would you characterize your capstone-related interactions with faculty mentors?
    i. Is your contribution in support of capstones recognized and valued? If so, in what ways?

2. **Capstone Future.** The faculty has ideas about how to improve the capstone. Support faculty and staff have a different perspective on the capstone experience, which may lead to a different set of suggestions.
    a. What should the capstone program's future be? Would changes would you like to see? What are the obstacles to making changes?

    b. Anything else you would like to tell us?

## Part 9: Postscript - Thoughts on Conducting a Multi-Institution Assessment Project

## Thoughts on Conducting a Multi-Institution Assessment Project

### Project Goals

Provide a clear, written statement about what the project is to accomplish that is agreed upon by the participating institutions. Maintaining the level of effort needed to sustain the project can be a challenge; having goals that lead to objectives of real value to each participating campus will help sustain interest. A project must have broad institutional appeal to ensure robust participation and longevity when everyone is short on time and money. Seek senior faculty buy-in.

### Project Planning

A planning period, ideally funded by a planning grant, can be instrumental in clarifying positions and resolving differences. They require careful work beforehand so that the time together at a planning meeting is really productive. It is also very helpful to meet your counterparts from the other participating campuses.

Each campus should consult the relevant offices and committees about the project's goals and its implementation. In some cases approval may be needed; at a minimum it is useful to let campus representatives know about the project.

### Project Organization

It is critical to have project leaders who possess good leadership and organizational skills.

There are multiple benefits to having two directors instead of one. This allows for workload sharing, which is especially valuable when one or the other is busy with their regular responsibilities. This also provides a built-in mechanism for developing ideas and thinking through issues the project will face.

Include a project working group on each campus composed of personnel who can contribute directly to the project's goals and be champions for the project on their campus. Provide a stipend for faculty. Be clear about what each person will be asked to contribute and be realistic about the time required.

Having outside consultants provides needed expertise and experience, as well as an objective perspective on the project's goals, implementation and results. It is important to be clear about their responsibilities.

Consider the kinds of data that will be collected and what kinds of analysis will need to be done. Be sure that the project includes personnel who can do the necessary analysis. This can be very time consuming, so if the project will generate a fair bit of data, include a data analyst in the budget. Involving the institutional research offices in this project was critical for their knowledge of data elements and ability to obtain that data from institutional records, as well as to conduct the surveys and assemble the data for our databases.

**Personnel Turnover**

During a multi-year project, turnover in participants (faculty, chief academic officers, and institutional research / educational assessment directors) should be anticipated. This may make it more difficult to sustain interest and involvement in the project, but can be mitigated by clear goals and records, and the redundant involvement of multiple persons at each campus.

**Workload**

It can be difficult to get faculty participation for the amount of work required. This can be addressed in part by being clear about the project goals and the ways a successful project will benefit the institution.

Recognize that this type of assessment effort is complicated and time consuming and can be especially demanding of the institutional research and educational assessment personnel on each campus. Be realistic about how much time they will be able to devote to the project.

Consider how much assessment is enough. Don't collect any more data than the project needs to in order to answer its questions. As more questions are raised, the tendency is to keep adding to survey instruments, for example, and they expand to the presumed tolerance level of the responders.

**Communication**

Provide clear, concise and timely communication among project participants. It is important to keep everyone updated on what is happening and to remind everyone of deadlines. It is also very important to be clear about who is going to do what and by what date it is to be completed.

Communication between the project working group and the rest of campus is vital to sustaining involvement. This might be done through email, a newsletter, or announcements at faculty meetings.

Make use of technology to communicate and share. Tools we found particularly useful: Doodle, FreeConferenceCall, email and DropBox. Our use of a wiki was less useful.

Bringing the participants together to talk about what has been learned, what to do next, how to resolve problems, etc. worked well for our project. While participants found the conference calls to be productive, it was the face-to-face meetings with all the working groups that were the most productive.

Produce a Project Book containing the survey instruments, a directory of data elements, and the associated analysis, and any conference proceedings. This will be useful for each campus and can serve as a baseline for further assessment.

When sharing data, keep in mind that the working groups will contain specialists who are experienced at sifting through tables of data and non-specialists who will have difficulty understanding the meaning of the data. Provide data and analysis in a form that all can understand.

**Methodology**

Describe how the project will meet his goals. Be aware of the validity of the methods chosen; understand their limitations.

Online surveys tools such as SurveyMonkey can be very useful in collecting data, but this requires some expertise and, at peak times, can be very time-consuming. Useful

Using outside personnel to run focus groups is a helpful way to provide some measure of anonymity to participants, who can be more candid, and to provide consistency across campuses.

**Institutional Research Boards**

In a multi-institution study, meeting the requirements of the various IRBs can be a problem. Early contact with the IRB chairs can be helpful to review the overall project, and when preliminary versions of surveys and methods are available. Many problems can be avoided by constructing a master set of documents that address IRB issues, are uniform for all campuses, and that and can be appended to all IRB approval submissions. Particularly helpful is a statement of understanding about research methods and practices that affect confidentiality and anonymity of survey or focus group participants and the security of data. In addition to avoiding duplication of effort, this avoids later confusion as to what was approved.

**Helpful Uses of Technology**

Doodle. Doodle.com provides a web based tool that was excellent for finding a time for conference calls. Each participant can log in and indicate availability for each of a range of time slots displayed as a simple matrix. The best time slot is then easy to spot.

FreeConferenceCall. FreeConferenceCall.com provides a logistical tool for conducting conference calls. It provides a common phone number where each participant can dial in independently to join a conference, even leave and come back if necessary. It is free except that normal long distance phone charges may apply. This is much better than using the PBS service that many campuses have that allows conference calls by manually dialing and linking in each participant from a single phone.

DropBox. Dropbox is a cloud based directory service that allows multiple participants to share a common directory of files for reading and/or editing. Rights can be controlled and granted to as needed. The directory is web accessible so can be used from work, home, or when traveling. One problem is that there is no built in way to know if someone else is editing a file, so we developed a system of moving a file to a “checked-out” directory during editing. We used this for non-confidential documents only.

Survey Monkey. Survey Monkey is a well known, inexpensive on-line survey tool. It worked well for us but had some quirks, and a new user should do a thorough trial run, including translating the responses into SPSS or other analysis package. In particular, “all of the above” type questions and responses from pull-down lists need special processing before analysis. An

important feature we used, since we needed to link data from multiple surveys (student pre-capstone, student post-capstone, faculty mentor ….), was to assign each capstone a unique ID key that could be added to the URL of an email survey invitation and echoed back as part of the results data file.

Excel and SPSS. We used Microsoft Excel for preparing survey data for import to SPSS. Some very useful features are the filtering capability (occasionally in conjunction with the subtotal functions, which recomputes totals, counts, or averages based on the filtered dataset when using the "subtotal" function), and the vlookup and hloookup functions. For instance the vlookup function was used to link together the data from various surveys for a capstone using a capstone ID. SPSS was used for the analysis, and results exported to Excel for production of the final reports, where formatting and additional processing are easier. A general technique that was successfully used was to export the SPSS output to an Excel spreadsheet, paste this into a separate tab in an Excel workbook and extract data from it using the vlookup function. Once set up this allows rerunning the SPPS data after changes to the data or for different subsets of the data and simply replacing the SPSS output with a paste operation. The vlookup requires identifying the row of data to be extracted with a unique identifier, which we found could be done fairly simply using three columns added to the left of the SPSS output that cascaded concatenations to identify the SPSS output table (MEANS, ANOVA, CORRELATIONS, etc.) and the SPSS variable name. Extracting SPSS columns to Excel and back to use Excel's data manipulation functions and other capabilities works very well, except for open-ended text survey responses from Survey Monkey, where invisible text characters may mess things up. In general, be wary of including open-ended survey responses in SPSS files, at least if from Survey Monkey. In working with four schools, we found that working with different versions of Excel was a problem. We suggest establishing a single version to be used by all schools.

**General Benefits**

The project has had some tangible benefits already.

One campus has adapted the assessment instruments created for the project to create a common rubric for evaluating their capstones.

Working with three other similar schools has been valuable, not only for assessment generally and the capstone specifically, but for the general collaboration and informal time for sharing ideas, problems, and visions. As is always true, part of the benefit is simply the networking and sharing of ideas. It helped each campus better understand the work load issues related to capstone and how other institutions handled these complex issues.

Producing concrete action ideas to which each school will commit is valuable. These final steps each school will take on are crucial to the success of the grant. The grant will actually make a difference in each campus's capstone program.

Developing a better understanding of strengths and weakness of our programs compared to others. It is very useful to get out of the institutional bubble and to see things more holistically.

Identifying problems common to all institutions and potential solutions or the search of these solutions. We are all struggling with how to accommodate relatively weaker students to

successfully complete their capstone as this increases faculty workload tremendously. In addition programs that have a large number of majors create faculty workload issues as well, especially sustainability of the capstone.

The overall findings of the study emerged through a considerable amount of noise and variation among schools, disciplines, and practices. However, the project demonstrates that hypotheses about pedagogies in higher education can be empirically studied.

The characteristics of a successful capstone identified by the project provide a set of best practices that have utility for other institutions.

# PART 10: GENERAL APPENDICES

Grant Proposal: “Transformative Experiences in the Liberal Arts”

Wabash Visit Note (Notes from a review of the data with Charlie Blaich)

Fall 2011 Conference Proceeding Notes

Survey Instruments

- Pre-Capstone Student Survey
- Pre-Capstone Faculty Survey
- Post-Capstone Student Survey
- Post-Capstone Mentor Survey
- Departmental Policies and Administration Survey
- Capstone Description Survey

Statement of Understanding for Confidentiality

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# The Senior Capstone: Transformative Experiences in the Liberal Arts

A Proposal to The Teagle Foundation submitted by
Allegheny College, Augustana College, Washington College, and The College of Wooster

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## Prelude: Results from the Planning Grant

We began work on this project with the idea of constructing a single instrument to assess the learning outcomes of the capstones at the four institutions. However, as we worked through the initial proposal we saw other opportunities, which the planning grant process allowed us to explore in more depth. The interrelationship of two key insights that emerged from our discussions changed the direction of our proposal.

The first insight was that each institution regarded its capstone as a transformative experience whose full impact will not be realized until years after graduation. The second insight was that our four institutions provide different models for a capstone course (see Appendix A for a description of the four capstones). A consequence of these insights was the belief that a single capstone assessment instrument would be very difficult to create and would not capture the richness of the experiences of students and faculty mentors. We also saw that there were a host of experiential aspects of our capstones that were important to explore as key components of the learning for both students and faculty.

Rather than being dismayed or dejected by these insights, we realized that they suggested a different approach: to explore how the different constructions of a single concept can all lead to rich learning experiences for both students and faculty. We believe that this approach will complement other Teagle-supported studies (e.g., the Wabash National Study, the Five Colleges of Ohio Creative and Critical Thinking project, the Measuring Intellectual Development and Civic Engagement through Value-Added Assessment project led by Augustana College, and the Hampshire Senior Thesis project).

In exploring this idea, we were helped enormously by previous studies done by our two consultants. David Lopatto's work on undergraduate research (UR) has shown that students participating in UR opportunities not only develop highly valued skills, but also experience a changed sense of self and place within their disciplinary community. Charlie Blaich's preliminary findings from the Wabash Study provide evidence that there are greater learning differences within institutions than between institutions.

Our question thus became how could we learn what works best in the capstones, within our colleges and across them, and how could we use that knowledge to improve them and to create models of best practice others might adapt or adopt at a time when undergraduate research has become the most dynamic pedagogy in US higher education? Hence we shifted our efforts from pursuing the creation of a single instrument towards a "thicker" and more

holistic case-study approach that looks at learning outcomes, process, infrastructure, and opportunity costs.

## Proposal

Allegheny College, Augustana College, Washington College, and The College of Wooster are distinctive in that they require all students to engage in a capstone experience built around a one-on-one mentoring relationship with a faculty member.[1] For each of us, institutional culture is significantly shaped by this involvement, and strategic thinking and decision-making are fundamentally influenced by the existence of the universal capstone program.

Thus these programs are of singular importance to us, and we invest heavily in them because we believe them to be fundamental to the development of our students. At the same time, however, it is also true that we have an incomplete understanding of the nature, costs, and benefits of this investment.

> We believe that the senior capstone experience is transformative and lays a foundation for lifelong creativity, learning, and reflection in a way that no other curricular experience provides. However, we have only limited indirect evidence[2] and a history of anecdotal information to support these beliefs.
>
> We know that there is variation in the way students experience the capstone, but we do not know the reasons for that variation. We need to identify what contributes to a positive capstone experience.
>
> We believe the experience is transactional and that the faculty mentor can gain from the interaction just as the student does, and we want to learn about the impact capstone supervision has on the mentors.
>
> Clearly, each institution devotes substantial resources to support its capstone. We would like to have a better understanding of what those costs are, including the opportunity cost.
>
> We recognize that there is more than one way to implement a successful capstone program, as the four institutions in this study demonstrate. It would be valuable to identify elemental commonalities that contribute to successful outcomes.

There has been a growing belief in American higher education that undergraduate research is an especially valuable form of learning because it provides an authentic context for the development of a broad range of skills associated with common educational goals (e.g., communication,

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[1] Allegheny College recently polled more than 100 nationally-ranked liberal arts colleges and found that only 16 institutions require all students to engage in a capstone experience.

[2] The College of Wooster surveyed seniors at Wooster and three other colleges in 2008 and found that Wooster students responded favorably and significantly differently from the other colleges. It also found that Independent Study allowed them to think critically and to be creative in ways that they would otherwise not be able. See *The Five Colleges of Ohio Creative and Critical Thinking: Assessing the Foundations of a Liberal Arts Education,* 2008, report to the Teagle Foundation prepared by Nancy Grace and Sarah Murnen.

critical and creative thinking, technology fluency and information fluency). This belief has been supported by an emerging body of research on the impact of UR experiences upon learning and attitudes (Lopatto, D., 2004; Seymour, E., et al, 2004; Bauer, K.W., et al, 2003; Kardash, C.M., 2000). What these studies show is that students make gains both in the development of skills *and* in areas that contribute to lifelong learning (Lopatto, D., 2006). These "dispositional" lifelong learning outcomes point to habits of mind that students are more inclined to use following a high quality UR experience.

These studies, however, are based mainly in the natural and life sciences, mathematics, and engineering fields, and they concentrate primarily on summer research programs, honors research programs, or research programs for a limited number of undergraduates. By contrast, little formal research[3] has been conducted on capstone experiences, and even less has been done on capstones required of *all* students. This study will help to fill that gap and add to the emerging literature on undergraduate research.

Studying the practices and measuring selected outcomes of our capstone programs will have multiple benefits both for our institutions and for the wider understanding of capstone experiences. We will benefit from being more informed about the value of programs in which we invest an enormous amount of resources and significant cultural capital, and from learning how best to develop the capstone experience in response to assessment data. Most importantly, our project will shed light on the educational benefits of undergraduate capstone projects for all students and provide four case studies of the implementation of a required capstone that will enrich the national conversation about the experience and its significance in undergraduate education.

A four-year research project is thus proposed with the following overall goals:

- To assess the degree to which a universal capstone contributes to outcomes that lead to lifelong learning. We have identified the following outcomes as possibilities to investigate:

  Being able to plan and conduct an intellectually demanding project
  - Creative and critical thinking/problem solving skills
  - Independence in thought, action and initiative
  - Tolerance for obstacles, ambiguities; perseverance
  - Information fluency skills
  - Time management skills
  - Leadership/teamwork
  - Acceptance of responsibility

[3] Some proprietary studies have been conducted (e.g. Robert E. Shoenberg conducted an assessment of the Senior Thesis Program at Bates College in June, 2000, and as part of Allegheny College's self-study in 2004 during its re-accreditation process it devoted a full chapter to its Senior Project) and less formal research (e.g. Bonthius, Robert E., Davis, F. James, and Drushal, J. Garber, 1957, *The Independent Study Program in the United States,* New York: Columbia University Press.)

Developing an understanding of one's self and one's interests and capabilities
- Career path clarification and commitment
- Development of an interest in research
- Development of an interest in higher level cognition
- Growth of intellectual self-confidence
- Critical reflection on one's own perspective

Understanding of the nature of research and how knowledge is constructed
- More sophisticated understanding of research practice in a discipline
- More sophisticated epistemological understanding of how things are known
- Awareness of the interrelationship of knowledge
- Valuing different points of view

- To identify capstone program components and characteristics at each institution by refining the inventory developed during the planning grant. This inventory will include institutional resources and program elements that create the institutional infrastructure for the program. Data gathered through the completed inventories will provide a framework (costs, benefits, and opportunity cost) for potential change for each of the four institutions.

- To identify features of the capstone – from a combination of the program components and the experiences and characteristics of students and faculty mentors – producing positive experiences. This information will be used to describe best practices, and to inform program planning, and can be used as models for the development of capstone programs at other institutions.

- To distinguish variations in program characteristics, experiences, and outcomes across institutions and disciplines, and for specific segments of students (e.g., by academic profile, discipline, gender) and to gather enough information so that we can identify a range of experiences more likely to create consistently successful outcomes.

***Research and Analytic Questions***

Each research is question will be explored through multiple assessment instruments, which are described in the methodology section that follows.

1. What is the impact of the capstone experience on outcomes leading to lifelong learning? What is the perceived impact one, five and five-plus years after graduation?

2. How does the capstone experience benefit the student and the faculty mentor?

3. What are the similarities and the differences in how our capstone programs are formulated?

4. What resources (programs, structures, and personnel) are our colleges providing to support their capstone programs? What is the opportunity cost of our capstones?

5. How do faculty, students, and other college constituencies perceive and experience the capstone?

6. How do students experience the capstone? What is the range of capstone experiences for our students, and what are the conditions and practices that result in the most positive capstone experiences?

7. How do we modify our programs to implement best practices?

8. How can our history of universal capstones and what we learn through this study produce models for the development of similar programs at other institutions?

***Methodology***
This project will apply quantitative and qualitative methods in three phases. In the first phase we will gather mostly quantitative summary measures. These findings will be used to guide the second phase, which will involve a more in-depth qualitative study consisting of interviews with alumni and focus groups with students, faculty and others involved with our institutions' capstone programs. The third phase will the work of "closing the loop" by making recommendations for enhancing our capstone programs based on the findings from the analyses of the first two phases of the study, and pursuing implementation of projects based on these recommendations.

**Preparation (spring 2009)**

During the spring of the 2008-09 academic year we will develop or adapt several basic instruments designed to answer the research questions. These instruments will be administered to students and faculty mentors in the first full year (2009-10) and repeated with a new cohort of students and faculty mentors in the second full year (2010-11). An important part of this development process will be to identify the sub-areas within our three main outcomes listed above that we are best able to assess within our methodological framework and to design an appropriate approach for each instrument. Approval from each institution's Human Subjects Review Committee will be received before applying any instruments.

The following is the list of assessment resources to be developed during the preparation period:

- *Institutional capstone inventory:* We will refine the inventory checklist developed during the planning grant to explore the structures and resources at the institutional and departmental levels. Our initial inventory done during the planning grant revealed a great variety of capstone approaches taken between and within institutions and, consequently, the need for a revised capstone inventory. The survey will have a section on institutional information to be completed by the relevant administrators, and a section to be completed by all participating academic departments to identify similarities and differences across departments. The instrument will also capture similarities and differences across and within the institutions. A component of the survey will ask administrators and departments to comment on the opportunity cost in their areas to support a required capstone.

  This instrument addresses research questions: 3 and 4

- *Student record database:* We will identify data elements from our institutional student records that are relevant to our research questions and design a database for analysis. The obvious candidates are student background items such as SAT/ACT scores, GPAs, gender, parental education levels, etc.

  This instrument addresses research questions: 1, 2, 4 and 6

- *Pre-capstone student survey*: This survey instrument will capture basic background and other pre-capstone information about each (rising) senior. Suggested items to be included are the students' self assessment of their academic and personal abilities or skills, their level of interest/motivation for doing the capstone, their post-graduate career or graduate school interest, their major life objectives, and their level of enjoyment of the higher level cognitive activities generally associated with capstone projects, as measured by the Need for Cognition Scale. We intend to adapt survey items from existing sources such as the CIRP, CSS, NSSE, SURE-II and the Wabash National Study to provide national comparative data.

  This instrument addresses research questions: 1, 2, 5 and 6

- *Post-capstone student survey*: The post-capstone student survey will be designed as a repeat of the pre-capstone survey, but with the addition of a section focusing on the capstone-related experiences of students, including basic items such as the discipline of the capstone, degree of integration across disciplines, hours per week devoted to the capstone, contact hours with the faculty mentor, selection of the capstone topic (student selected or faculty assigned), selection of the faculty mentor (student selected or departmentally assigned), as well as other experiences to be determined. Additionally, we will ask for the students' self-assessment of their growth in a number of general knowledge, skill, and ability areas, and the contribution of the capstone to their growth.

  This instrument addresses research questions: 1, 2, 5, and 6

- *Pre-capstone faculty report:* We will design an instrument for the faculty mentor, or other faculty member familiar with the student's most recent work in his/her major, to provide an assessment of the student's cognitive engagement as demonstrated in work done prior to beginning the senior capstone. The instrument will be based on the Mentored Advanced Project (MAP) Form developed by David Lopatto, Grinnell College, and grounded in the reflective judgment development theories of Marcia Baxter Magolda.

  This instrument addresses research questions: 1, 2, 5 and 6

- *Post-capstone faculty report*: The post-capstone faculty report will be completed by the faculty mentors and will include the pre-capstone items based on the MAP. It will also ask faculty mentors to report the student's grade on the capstone along with a small number of general evaluation questions relating to the capstone as a product and the processes used by the student.

  This instrument addresses research questions: 1, 2, 5 and 6

- *HEDS Alumni survey:* We will design a module of questions to be added to the Higher Education Data Sharing (HEDS) consortium's Alumni Survey focusing on the retrospective judgments of alumni (five years out and beyond) concerning the value and impact of the capstone experience. The main alumni survey will be used to gather additional information about alumni evaluations of their undergraduate experiences and details of their career and graduate school histories. Data from peer liberal arts colleges also using the HEDS Alumni Survey will provide the opportunity for comparative data from alumni without a capstone experience, or with alternative types of experiences such as honors programs.

  This instrument addresses research questions: 1, 2, 4, 5 and 6

- *Alumni phone interview protocol:* We will design the protocol for conducting brief phone interviews with samples of seniors from the 2009-10 graduating class about nine months after graduation. The questions and protocol for the interviews will focus on the short term impacts of the capstone experience on graduate school or career choices and preparation.

  This instrument addresses research questions: 1, 2, 4, 5 and 6

All instruments contribute directly or indirectly to answering Research Questions 7 and 8.

Reviewing and finalizing the project instruments and resolution of implementation issues will be done electronically in spring 2009. The project co-directors will each visit two of the participating campuses to discuss the project and its instruments, and to answer questions.

An additional activity is the development of a project Web site where our procedures and results will be posted. This site will serve as a clearinghouse for information, models, best practices, assessment tools, and advice for other institutions that are considering creating their own programs of capstone undergraduate research and creative projects.

**Phase 1: Quantitative Investigation (2009-10)**

In 2009-10 we will administer the pre-capstone faculty report and the pre-capstone student survey early in the fall term. The post-capstone student and faculty post-capstone report will be administered near the end of the academic year. The capstone inventory and HEDS Alumni Survey will be administered in the fall and spring, respectively. The resulting data will be analyzed during the summer and fall of 2010; the analysis will focus on a basic summary of the results of the various instruments, including pre- and post-change measures based on the pre- and post-capstone student surveys and pre- and post-capstone faculty reports. The analysis, which will likely continue throughout the entire project, will be designed to explore our research questions using a merged multi-institutional unit-record database for the students participating in the study.

**Phase 2: Qualitative Investigation (2010-11)**

Building on the data gathered in the first phase, in 2010-11 the focus will shift toward the qualitative analysis and the construction of case studies exploring the capstone programs at our four institutions. Activities will include:

- Ongoing analyses of the data collected in 2009-10.

- A repeat of the student and faculty surveys/reports with the 2010-11 senior capstone students and faculty mentors.

- Preliminary findings of the initial analyses of the data collected in 2009-10 will be presented at a workshop of representatives from the four institutions to be held in the late summer or early fall of 2010. Findings also will be posted to the project's Web site. An additional objective of the workshop will be to formulate the protocol guidelines for a series of interviews and/or focus group meetings to explore the capstone experiences of students, faculty mentors, and others (librarians, information technology personnel, department chairs, and faculty development administrators who provide support for capstone programs).

- Capstone Focus Group Visits. We will send a four-person team to each institution during the spring of 2010-11 to conduct the interviews and/or focus groups using the protocols and questions developed in the summer / fall 2010 workshop. The interviews/focus groups will be recorded for future reference, but each team will have at least one scribe whose notes will form the basis of a written report that will be completed by the last day of the focused visit at each institution. The report will be discussed in an exit interview with the Campus Steering Committee representatives of the visited institution.

  This instrument addresses research questions: 1, 2, 3, 4, 5 and 6

- A follow-up phone survey of a sample of the graduating seniors from 2009-10 will be conducted to explore early capstone impacts relating to career and graduate school choices and preparation. Current students will be trained to interview the sample of recently graduated students.

  This instrument addresses research questions: 1, 2, 3, 4, 5 and 6

**Phase 3: Closing the Loop (2011-12)**

The focus in 2011-12 will be on using the results to gain a comprehensive understanding of our capstones, to recommend improvements to the programs, and to explore how those improvements might be implemented. The resulting case studies will be summarized and distributed via a clearinghouse Web site and/or as a monograph. Final-year project activities and deliverables will include the following:

- During the summer of 2011, a comprehensive review of the collected data will be conducted, including the analysis of the pre-/post capstone instruments just completed in the spring and the focus group reports.

- A written summary of the four case studies with our general findings will be distributed to the four campuses for further dissemination and discussion. Each institution will explore ways to integrate this capstone assessment into its regular assessment cycle to promote continuous improvement.

- In the fall of 2011, the project co-directors, the campus steering committees, the project consultants, and representatives from the Teagle-funded Hampshire project will be invited to attend a workshop to review and discuss the project findings. In addition to providing a venue for discussing the results and sharing with the Hampshire project, the workshop will provide an avenue for each college to identify one or more capstone improvement projects.

- Building on the project findings and workshop discussion, each institution will develop a plan to implement one or more of the improvements suggested by the study. Because these capstones are such an important part of our cultures, changes come slowly and only after careful consideration and extensive consultation. Consequently, planning for improvements will occur in the final year of the project, with the implementation and assessment to begin in the first year following the project. We may pursue proposals for additional external funding to further explore aspects of our capstones revealed by the study and/or to implement additional improvements to our capstones.

- The project Web site will be updated with the case studies and other new material.

- Materials will be developed for use in internal and external professional presentations.

**Interesting Findings / Observations from the Year 1 Data – June 30 Wabash Meeting**

These notes are from a review of the campus visit focus group reports and comment analysis from the 2009/10 post-capstone surveys of students and faculty. Participating in the review were Charlie Blaich, Teresa Ford, Simon Gray, and Tim Schermer. The notes here have been annotated (material in italics) following a conversation with David Lopatto.

1. There is relatively little difference between outcomes by institution given what appear to be large differences in the structures of the programs. Benefits may be inelastic relative to costs/efforts.

   Caution: We should look at our NSSE data to see if there is a big difference that we have not accounted for in the senior year experience.

   *We could substitute 'robust' for 'inelastic'. We don't have a robust project design, but despite all the differences between the institutions, it is a good result that we see relatively little difference across the institutions. This goes to the central construct and can allow us to say that there is a learning experience called "the capstone" without having to talk about "the capstone at X institution".*

2. A halo effect is apparent in the faculty scales of student performance. The ratings that faculty members provide are highly correlated and show little differentiation. The faculty ratings are lower than the student body, but faculty largely like what they see and their ratings are undifferentiated – they pretty much like everything the students have done.

   *I found something like this in my work on undergraduate research. Students who liked their experience were generous in the evaluation across a series of items and students who did not have a good experience were less generous. But, we can still look at smaller differences. For example, when women evaluated their summer experience they were more liberal in their evaluation than men. I flipped the data set and created a data set of z-scores (it was a lot of work). When I did this, the gender effect was 0 and a different picture emerged. This also revealed a genuine difference in men and women; that women came out with greater self-confidence.*

3. There are differences in the perceptions of the experiences given by students and faculty. For example, faculty said that writing skills improved, but students felt there was no improvement. There are some between institution differences here, more so in the student data than the faculty data.

   *My first impression is that this is counter-intuitive. According to Tim this may not hold up in the two year data; he will check this more closely. It is a good outcome if they agree. If they disagree, this is interesting because typically the student over-rates his/her ability.*

4. Even over a four year experience the changes that can be observed in some areas are minimal and it is unrealistic to expect significant changes in scales such as "need for cognition", "independent voice", "persistence", and "rating striver" resulting from a relatively short capstone experience. Although a capstone is a high impact activity, we must remember that it is part of a larger college experience.

   *No surprises here. There are some developmental changes that happen over an extended period and aren't likely to appear immediately after a capstone experience. However, see comment with Note 6.*

5. There is a misperception that the development of academic skills in a disciplinary context will transfer in the short term to other contexts: habits of minds, personality, extra-disciplinary contexts.

*I call this transfer of training. There is some discouraging research that suggests this kind of transfer occurs less often than we think.*

6. However, it may be that the capstone serves as an essential foundation for future learning. This is the 'boot camp' effect.

   *I think of this as the precursor effect. As an example, people who are sad are encouraged to eat chocolate. Now, chocolate does not contain any serotonin, the chemical that will help with the sadness. But what eating chocolate will do is help to produce serotonin; it is a precursor that leads to the desired result. We hope that what students get through a capstone experience is a precursor that will lead to longer term benefits.*

7. Self-reported gains reflect general satisfaction with the capstone experience and don't necessarily correlate with direct measures of gains in scholarly skills. This is not a bad outcome and is certainly better than students indicating they had bad experiences!

   *We can relate this back to Note 2. There are results on psychological literature that describe the main personality traits people display indicate that having an openness to new experiences and challenges is affected by mood. Happy people are more likely to take on something new. So, maybe we are getting generous measure in the post-surveys because the students are happy; they had a good capstone experience. Looking for the after-effect of the capstone experience, a really good experience sets the student up to take on a new challenge, whereas they are less willing to try something else if they had a terrible experience.*

8. There were big gains in Research Orientation, Scholarly Skills, Project Management, and Academic Ability. There was a loss for Multiple Perspectives. For other scales there were gains and losses among individual factors that negated each other, resulting in the overall scale suggesting little evidence of change. This happened for Civic Orientation, Need for Cognition, and Higher Order Cognition.

   *I think of this as similar to the difference between low and high fidelity training. If asked to learn how to do a complex task, I am less likely to try to pick up other abilities along the way; all my mental energy is concentrated on mastering something new and complex. Tim thinks we might get a better picture of this if we look at the results for double majors.*

   *Simon: We hypothesize that the drop in Multiple Perspectives, which is seen uniformly across campuses, divisions, gender, and gpa ranges, might be because most capstones are really a narrowing experience - the student is encouraged to ask a very specific question and then try to answer it. Couple this with the student's inexperience with large, unstructured (independent!) projects, and the student has enough on his/her hands trying to get a satisfactory answer to the question that there isn't the time to investigate broadly. If you also consider that the project is high stakes (you must pass to graduate), then a risk-averse student may be very reluctant to introduce material not directly and clearly relevant to the question. See the comment on uncertainty with Note 9.*

9. We could rank the institutions by intensity of the experience (FTE load for faculty and credit load for students) and relate that to our outcomes / measures. We anticipate that this would show institutional differences. We can envision several notions of 'intensity'. The intensity for students ("I was so nervous! I was so worried!") might not correlate with workload; that is, emotional responses may be out of proportion to actual hours spent.

*Is this doable? Can we operationalize this for faculty or students? What is the relationship of learning gains to level of stress?*

*Simon wondered if uncertainty plays a role here. From a student's perspective there is a fair bit of certainty in a regular course; the structure is provided and you can gauge how you are doing by keeping track of your grades as the term progresses. With a capstone, the structure is not all laid out for you at the start, you lack experience knowing how much time each component will take, and you don't know if the approach you are taking to each component will pan out. Combining this uncertainty with the fact that the capstone is high stakes (you need to pass to graduate) can produce for some students a more intense and stressful experience. Dave: this is touching on metacognition. Students often underestimate how much time a task takes; but students who have become experienced at reflecting on their work are better at estimating time and result.*

10. Program effects versus good practices effects. How much of the favorable effects that we see are due to the capstone program structures themselves versus the internal good practices of instruction that is experienced in different kinds of programs? What is it about the capstone that leads to favorable outcomes?

    *This is what Charlie is seeing in the WNS. The thought is that maybe the capstone is just the vehicle for good practices to occur. Good teachers have hit on good practices within each capstone model. We should look for good practices within each campus; that is, those that are particularly effective for each model.*

11. Surprises: Multiple Perspectives declined and Grad Schools Plans declined. Diminished interest seen in the StatusCareerOrientation scale – for example, the item "Becoming accomplished in my field of expertise." Is this necessarily a bad thing? Negative finding for support services. Anomalies in Washington data generally. We should look closely at the Augie data with respect to reflection component. Is the emphasis on reflection at Augustana seen in the student and mentor responses?

    *Tim: I'm going to question this. There may be a data problem in differentiating the pool of respondents. We need to look at this more carefully.*

    *Not sure what this really means. What is the benchmark? Consider the experience of asking first year students how many think they will be pre-med and then how many abandon the idea; there is a benchmark decline. Don't know where to point you for the benchmark data for our students in this respect.*

    *The Big Question: The hardest part is to merge coded qualitative data with quantitative data. It would be useful to group all students who scored a 5 on some interesting item from the surveys (say, "Satisfaction with capstone experience") and collect their qualitative comments to see if there is something in common. Do that for the 4's, then the 3's and so on.*

    *If we can tie together the student and mentor results, we have an opportunity to capture the interaction between the mentor and the student. Usually a study has one or the other, not both. This could be very cool.*

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**TEAGLE SENIOR CAPSTONE PROJECT WORKSHOP**

# College of Wooster

**OCTOBER 20 – 22, 2011**

**Summary Notes on Sessions**

*You are invited to edit in your own recollections of our conference conversations or to insert directly into the body of the text comments that occur to you as you review these notes. When use a blue font when inserting comments to distinguish them from the original notes.*

## Thursday Afternoon – Getting our Bearings

After a welcome by Carolyn Newton, Provost of College of Wooster, Simon reviewed the meeting goals and agenda. We have an obligation to Teagle to use this data on our campuses. The final report is due in June or July. We will be discussing the contributions of each campus to that report.

A quick orientation to the binder data was given by Tim.

- Corrections to binder documents: The DropBox electronic version of the materials in Tab 3 have been corrected for the labeling of the GPA groups and the means for Tab C, page 10, lines 437 to 443.
- The labels assigned to the scales are intended to capture the presumed latent variable behind the associated factor, which may be hard to identify. A question was raised as to whether "RatingCollaborativeSkills" was the best label for that scale. (Any suggestions? Interpersonal skills? Team skills? Social Skills?)
- The non-representativeness of the survey respondents was noted. They tend to be disproportionately our better students and female. Particularly the data for difference scores, for which students responded to both a pre- and post-capstone survey, may be subject to a concern about non-representativeness. (A note on this has been added to DropBox). We will need to address this in the report.
- In Tab 3, A 8, the negative correlations of the faculty post scales with student's reporting more of a status career orientation was remarked on. In particular, the -.345 correlation with mentor rapport. Does this reflect a disenchantment of faculty with those students more interested in status careers? (Will investigate further by major, gpa.) Update: The correlations in Tab 2, A,8 were computed on a subset of the capstone data that was unnecessarily restricted trying to look at only records with both faculty and student pre and post reports. Looking at all records and letting SPSS handle missing data, the Ns are considerably larger and the correlations with status career orientation are either small or not statistically significant. A new page 8 has been posted in the conference directory and distributed.
- GLM results looking at student ratings of a successful capstone and the capstone's contribution to development were discussed. (The handout materials are now in DropBox.) Expecting a good capstone, having the capstone contribute to development and finding the capstone engaging seemed to be three conditions positively associated with the student perceiving they had a successful capstone. More enigmatic was the

association of a higher score for civic orientation. These outcomes are not strongly associated with the pre-capstone GPA (correlation with success and development, 0.057 and 0.035, respectively), an indication that students at all GPA levels can benefit from the capstone experience. Similarly, the correlations with the grade on the capstone were only modest, 0.227 for success and 0.149 for development (see note added to DropBox).

**Friday Morning**

- We need to be cautious about over-reading the results. How valid is the data? In response, David asked "Does it pass the 'smell' test?" If the responses we have are consistent and point in the same direction, then we can assume the data mean something.
- The decline in the MultiplePerspectives scale was discussed. Is the capstone an in-depth experience in the major? Is there not enough time or are students not directly asked to integrate knowledge or address other points of view? Are the results different for double majors? (Yes. MultiplePersepectives goes down for double majors, but not as much, and they start higher on this scale – see note added to DropBox.) Do we talk explicitly about this and what the capstone should be doing? Would a handbook help? Theresa will share matrix of division goals.
- The substantial gap between the number of hours per week that students report they interacted with the mentor, mean=2.86, and that faculty report, mean= 1.72, was noted. Why? How well do faculty and student reports generally correspond?
- In discussing the responses to "How helpful were each of the following for completion of your capstone?, the high rating for "non-academic experiences" , which was significantly higher than "courses outside my majors(s) and minor(s)", was noted. (Maybe break this down by division?) [Following up: The ranking of "courses outside by major(s) and minor(s)" was consistently lower than "non-academic experiences" for students of both genders and in all divisions, GPA groups, and schools. See the note on preparation questions by subgroup that has been added to DropBox.]
- Allegheny is developing a shorter version of our surveys for ongoing assessment purposes. It will combine general questions with an option to include some that are discipline-specific. They will share this.
- In using the capstone as a departmental assessment opportunity there are at least two lenses: one focuses on learning in the discipline and the other on personal development.
- Collaboration of students was discussed. Does individual study lead to isolation? Should we structure our capstone programs to encourage interactions of students during the capstone experience – seminars, sharing problems/solutions, successes? Some of our survey results might have been tainted by mentors thinking of collaboration as cheating, which was not intended.
- Time management is one of the difficulties many students struggle with during the capstone. Can we do more to prepare them? How much *can* we prepare students for their senior experience? How much must be *part of* the experience itself?

- Our research finding is not that the value is in the particular subject matter as much as it is in what the subject matter requires the student to do, which leads to persistence, time management, project management, confidence, etc.
- Writing is another area where some students are not sufficiently prepared and mentors spend a lot of time on thesis drafts. Yet students resist going to their writing center, thinking they are for 1st and 2nd year students. Perhaps developing separate general support services for capstone students would be a good follow-up project to take some of this burden off mentors – writing in the discipline, literature searches, time management and project organization, etc.
- David: Tab 3, Section F, p. 10, Table 3 – some topics are more diagnostic than others; so almost all students will be required to use communication skills (top row of the table), while fewer will be required to use quantitative reasoning.
- Faculty should do a better job of explaining the "why" & "the benefits" of the senior experience to help students understand why they are required to participate. Might this help with intrinsic motivation? We need to be more explicit in explaining the "why" and "benefits" of the capstone to motivate students. Sometimes our philosophies are "in the ether" and just disappear. This can also lead to "drift". How do we create intrinsically motivated students?
- As a point of information, it was reported that students at Washington can opt to meet the capstone requirement through a comprehensive exam, which is frequently used in Economics and English. Indeed, only honors students in English are permitted to do IS.
- Some students blossom during the capstone – this occurred on all campuses (Bruce).
- May not see dramatic change in short term pre/post, but the capstone may be foundational in building future confidence in abilities and a willingness to take risks due to belief in one's ability. This is a successful capstone. Perhaps faculty should focus more on the process and less on the product.
- In general, the capstone works for all students.
- But what about the special needs of weaker students? Perhaps part of the answer is topic selection and tailoring to make it fit the abilities of the student. It could be a responsibility of the mentor to scale the topic to make it the optimal stretch for the individual student – "zone of proximal development". The mentor should be able to ramp the project up or down mid-term. (Could we write some guidance on this?) Topic selection should be seen as an important outcome of the early stages of the discussion between senior and mentor.
- Topic selection that results in student ownership of the project is also significant in contributing to a successful capstone. Data suggest student input in shaping the topic is important, more so than originating the idea, which might come at the suggestion of the mentor.
- The mentor relationship is crucial. Generally students give mentors high marks. Practices that give the student some choice in selection of the mentor may be valuable. One school has a "speed dating" session where students meet briefly with potential mentors as part of the matching process. In some cases, the mentor follows from the topic selected, while in other cases the mentor is assigned based on mentor workload

considerations. In the natural sciences the mentor and topic may be influenced by students "helping" science faculty with their own research. This doesn't happen as often in the humanities, and may be a point of jealousy, since humanities faculty don't get as much help with their own projects and are more likely to find themselves working on a project outside their area of expertise and/or interest.

- Science students report greater satisfaction with their mentors and higher satisfaction with their capstone experience. Is this due to the way science undergraduate research is done? There is a lot of hand-on work and lots of time together in the lab.
- We should look at the GPA/SAT/ACT differences between students in the sciences and non-sciences. Are the sciences getting the 'better' students?
- Is there a tradeoff being made in the sciences? It appears that science students have the least breadth of preparation and the best depth of preparation within the discipline.
- Another mentor issue is encouraging student independence while providing enough structure to avoid failure. (What do we mean by independence? In our surveys we may not have been clear on this. Actively encouraging self-authorship and an independent voice is different from letting the student work on their own to develop time management skills, for instance. Both may be valuable new experiences in a capstone. In our survey data, there was only a small correlation, 0.09, between faculty reports that they encouraged the student to "work independently", and student reports that the mentor "encouraged my independence". )
- Drift might be countered by doing systematic review under some institutional control rather than departmental control.
- A college's generous leave policy may cause dissatisfaction if a student's desired mentor is "gone".
- The nature of IS at COW has changed in the sciences; capstones are less independent & more aligned with faculty research.
- Can we narrow the gap between the good and bad experiences? How can we raise the lower level? Perhaps we should contrast the comments for those at high and low end.
- Junior faculty report it is a heavy stressor to advise students outside of their discipline.
- At some institutions, 1st year faculty cannot be a first reader; but, should be 2nd reader to gain experience.
- Some institutions have an IS Handbook. Is it read, followed, ignored?
- Public celebrations of capstone outcomes may be a good practice. For example, CoW "Day of Celebration" symposium where classes are cancelled so that seniors can share their IS projects with the underclass students, which excites and educates them. Juniors should be included.
- Faculty workload issues emerged in the focus groups at all campuses, accentuated by the advising role. Could we back off on expectations in the content role and develop more skills in the advising role. Although comments on our survey commented less on expertise, it was noted in contrast that Wooster's geology students frequently comment on expertise in their capstone evaluations.
- It would be of interest to break down the capstone description and department policies data by school. (This is available in the Excel spreadsheets in the IR directory of

DropBox.)

- It would be of interest to break down success and development by capstone type. (Will be added to the to-do list.) [Follow-up: We don't have a list of capstone "types", but in looking at the list of capstone characteristics from our capstone description survey , CapType5 to Captype39, showed very little in the way of significant differences in these success ratings according to the importance of various elements of a capstone. Items that may contribute to higher ratings include generating original data (Captype8) and student participation in determining the capstone topic.]
- At Wooster every department has an IS handbook. (Could we get some samples for the DropBox?)
- Does anyone do evaluation of capstone advising?
- A suggestion was made to hold an assembly about SI for seniors at the beginning of the year. Perhaps include alumni testimonials? Present rationale, expected benefits, support services….
- No school has a central capstone oversight committee or an identified administrator. We might centralize the conversation, not necessarily control.
- Should we do more to structure a senior year experience, as some do a first-year experience?

**Friday Afternoon**

- Each campus needs to create a report for Teagle with these 3 components:
    1. A generic, historical description of your Capstone program
    2. Your "take" on the data and what it means to your campus
    3. Your plan to use this information to implement changes to improve student learning
- The outline for the Capstone Structure report, Tab 5, is intended to keep all four reports consistent. (See timeline below.) Each campus has already provided a statement, Tab 5, B-1-7, which was included in the proposal to Teagle, and that can be used as the basis for the descriptive section of their report. This descriptive report will be helpful as background on our individual programs that will help us in interpreting our results and will be of use to other institutions considering instituting capstone requirements. Ellen Hay has created a draft sample report for Augustana, Tab 5, E-1-3, to facilitate discussion.
- For the second report, identify data that is meaningful for your capstone and campus and will lead into your development of one or more plans that you intend to proceed with on your own campus
- Closing the loop, our obligation to Teagle: each campus has committed $ 7,500 to implementing a plan, using the data generated by this study, to improve their student learning.
- Some portions of our report materials will be posted on Website, as indicated in our proposal. The intent will be to provide schools contemplating instituting a capstone program with advice based on our experience and findings.

Break-out Groups

- We split into 3 groups with each group given 2 questions out of our 8 research questions, Tab 6 A page 1, to examine and to determine if the data provides evidence to answer them.
- Group 1 took on questions 3 and 5, and has provided the following discussion notes provided by David Lopatto:
    - Our group selected two questions from the list on Tab 6, A Page 1:
    - 3. What are the similarities and differences in how our capstone programs are formulated?
    - 5. How do faculty, students, and other college constituencies perceive and experience the capstone?
    - Our initial attempt to describe similarities and differences was uninspired. In fact, the task had already been completed in the data (Tab 4, Page 11). Instead, we probed the differences among the four institutions' approach to general education in the context of preparation for the senior capstone, using the table on Tab 3, F-page 10 as a guide to discussion. The table includes faculty comments on student preparation. Each institutional representative describes the college's general education requirements. It became evident that each institution emphasizes the teaching of writing, some emphasize oral communication, and critical thinking was described as in the ether. Colleges differed in their approach to teaching research skills, with some institutions using a junior seminar while others did not. The curriculum of the junior seminars varied among departments, thus it was not clear how explicitly research skills were taught to provide a scaffold to the senior capstone. Discussion of the general education program led to a discussion of the moderating effect of student to faculty ratios in various general education classes.
    - The discussion continued on the topic of institutional differences in faculty workload and rewards. Institutional differences were apparent. One institution (Augustana) has seniors register for a course to account for their senior capstone. The faculty members then re-direct their time to the capstone by counting the course in their course load. Allegheny and Wooster have systems in place to give faculty teaching credit for mentoring capstones that lead to course release; these differ in operation. In both cases the dean regulates the deployment of course load reductions. These reductions do not accumulate but are used soon after they are earned. Washington College offers faculty an optional cash stipend that is comparable to the cost of hiring part-time faculty to replace faculty using their teaching load reduction. The discussion uncovered differences in the use of one reader (mentor, grader) versus multiple readers for each senior capstone. Allegheny uses multiple readers and awards teaching credit on a point system. The presence of multiple readers was hypothesized to insure the quality of the projects.
    - In answering Question 5, the group quickly passed by discussing students and faculty as these effects are covered in the data. We discussed the effects of the senior capstone on other constituencies, including staff, parents, and prospective students. The data indicate that staff involvement with senior capstones is under-recognized. Parents sometimes are invited to witness presentations of student projects and

react positively. The four institutions vary in their attitude toward senior capstones as a marketing tool for prospective students. College of Wooster has incorporated senior capstones a positive feature of their brand, while Augustana avoids discussing "research" in their recruitment efforts.

Group 2 considered questions 2 and 6, how does the capstone experience benefit the student and the faculty mentor, and how do students experience the capstone.

1. Data will come from these sources:
    a. Student, faculty, alumni survey data
    b. Student, faculty, staff focus groups
        i. Pre-post data (quantitative/qualitative data), focus groups, alumni survey

**Benefit to student**

2. Student pre/post –
    a. ability to manage a project
    b. exhibiting scholarly skills
    c. creative and written expression
    d. time management √
    e. academic ability – writing particularly √
    f. speaking leadership and social self-confidence √
    g. research enjoyment and skills increased
3. Student decreases
    a. Becoming accomplished in my field
    b. Higher order cognition (driven by Allegheny)
        i. Applying theory to practical problems or novel situations
        ii. Synthesizing - no change
    c. Multiple perspectives
    d. Satisfaction with support services (driven by Wooster)
4. Focus groups
    a. Disciplinary knowledge (T.pg5) *in agreement with absolute value*
    b. Disciplinary skill *in agreement with absolute value*
    c. Project management x2√
    d. Advanced writing and presentation skills√
    e. Self sufficiency and persistence – not in conflict
    f. Confidence√
5. Open ended question
    a. Mostly corroborates (Tab 3 D3) (Tab 3 D6)
    b. One new one - graduate or professional preparation – not in conflict but modifies interpretation
    c. Overall potential to achieve,
    d. clarified career interests - repeatedly

**Benefit to Faculty**

6. Open ended question (Q1)

a. Tab 3 F2/3 look for corroboration.
b. Tab 4 pg6 – T4pg9

**Alumni**

7. Survey Tab 3 K6; Tab 3 L2 summary quadrangulate from alumni data.
    a. Learning effectively on my own – new one – tops the list

Group 3 considered questions 3 and 7: Similarities and differences in how our capstone programs are formulated and how do we modify our programs to implement best practices.

- Best practices - reducing workloads / increasing faculty satisfaction:
    - Capstone mentoring requires twice as much time as other advising
    - Released time vs. stipend payment vs. point banking system
- Resources rated low (i.e. library system)
- Funding for travel to conferences
- Costs ~ how to implement
- Double-Majors ~ restraint on IS project:
    - 2 separate Capstone projects
    - 1 Capstone project combining majors (i.e. Computer Science & Biology works well)
    - Choosing 1 major for Capstone (with the other dept's permission)
    - CoW's EPC form for student and faculty from both dept's
- FYI: option at Kalamazoo ~ student could choose any discipline with permission of department
- Explicitness; intentionality; articulation of outcomes
- Mentor development - development by departments; new faculty orientation; teaching/learning center; brown bags; 2nd reading (Allegheny) as a way to train new faculty in IS mentoring
- Learning goals: forming a Capstone Committee or core experience committee?
- Advice: think explicitly about overall structure parameters; list core experiences; have support structures; have realistic understanding of costs
- If you are doing best practices, the faculty workload should be reduced (theoretically). Can we quantify the relationship between workload and mentor satisfaction? The data suggests that satisfaction is pretty much the same across the four campuses, but the workloads are very different.
- Adding Capstone questions to Senior Exit Surveys?
- Research on ability to "Transfer" learning is disappointing (e.g. Solving the problem of storming a castle by dividing up troops did not imply ability to solve analogous problem of attaching a tumor with lasers).
- Low fidelity vs. high fidelity training to be considered in topics and requirements. E.g. Specific plane flight training vs. generic flight instruction. Training too specific on one plane may actually make it more difficult to adapt to another. Low fidelity may be better for transfer. What other factors influence transfer?
- Lack of creative thinking ~ too well trained for specific problem solving?
- Charlie – we have "multiple paths to success"

TIMELINE for campus components

- NOVEMBER 15th, 2011 ~ PART 1: DESCRIPTIVE SUMMARY
    - Tab 5, A-1-2: For the sake of consistency, please use the campus report structure suggested ~ check Drop Box for edited version (slight rearrangement)
    - See Ellen's sample report (Tab 5, E-1-3)
    - Please place into Capstone Drop Box (by campus) in IR folder
    - Summaries can be edited / revised once received
- MARCH 1st, PART 2: CAMPUS DATA REPORT
    - Campus specific data:
        - Good news
        - Bad news
    - List 3-5 priorities for your campus
    - Again, please place into Capstone Drop Box
- MARCH 1st, 2012 ~ PART 3: CAMPUS PLAN of ACTION
    - At least 1 project to implement (as a starting point) with a timeline
    - Remedial or aspirational projects? We doing well be sure to consider aspirational.
    - Don't let your eyes go to the deficiencies you see in the data; also look at the positive data.
    - It is tempting to look at interactions across the data of the four campuses, but you should resist this. All effects are nested in your institutions; you have four parallel stories. Where we see congruence is in success of the capstones – talk about this!
    - Focus on the practices and challenges we give our students, rather than taking a more purely disciplinary view.

- Reminder from Charlie: Teagle-funded $ 300,000 for this 4-year Senior Capstone Project & they want to see action. "Don't hedge too much ~ you designed the survey instrument, you need to tease out significant results.

**SATURDAY MORNING SESSION**

- Double-Majors, revisited:
    - CoW had the highest number of combined IS's
    - Multi-perspective ~ scored higher on both Pre- & Post surveys; both dropped significantly!
    - Students may need an extra semester for 2 IS projects? Workload too heavy?
    - Augustana (trimesters) only 1 Capstone project, other dept. waives (major) requirement
    - Should double majors do an integrated capstone? Do we want them to do two capstones? The primary benefits are general, not in the subject matter per se. Hence it may not make sense to require doing two capstones. Allegheny sees

integration as an aspirational good and will push this; Augustana doesn't see this as a goal.

- IS Mentor Development / Mentoring the IS Mentor, revisited:
    - Divisional differences in mentoring need to be acknowledged & examined (T3, B-9, L157)
        - Science alumni felt like a "peer". Related to team approach & hands-on work
        - Perhaps Humanities faculty could do a better job of "guiding" students into their areas of research interest to both cultivate that community-based approach & also to lessen faculty dissatisfaction (jealousy) with lack of project assistance / mentoring distraction
        - Do students in different Divisions experience "time" uniquely? (i.e., football coach vs. baseball coach). Science students = totally aware of time like football coach / Humanities students = oblivious)
        - Do natural sciences benefit from a more natural association with research, or a general approach that fits individual results into a broader picture and can rely more on teamwork, while humanities research is more individualistic? Could a more team-like approach be used in the humanities?
        - Suggestion – summarize divisional and other subgroup differences on a graph of pre means vs. pre/post differences
    - Does the GPA range play a part in the "blossoming" effect?
        - It would be interesting to explore that further with an X,Y chart (pre-score, difference)
    - Understanding the individual student's characteristics / needs to "Set them up for Success"
        - Deliberate & intentional profile / a structured initial meeting to determine the student's skill sets and personal characteristics, as well as his/her IS project ideas
        - Is student intrinsically or extrinsically motivated? Which trigger should the mentor use?
        - Perhaps a little more stress in the beginning (meeting deadlines) could lessen the amount of stress towards the end of the project?
        - How does the student react to stress? Is it motivating? Overwhelming? Paralyzing? Is there any data to help predict this reaction? Any suggestions to help solve this problem?
        - Where do students "get stuck"? How do mentors help get them "unstuck"? (Data on this would be useful to developing mentors.)
        - Some students, even exceptionally bright ones, bomb so thoroughly that they "don't show up" ~ mechanisms are needed to help mentors avoid this situation.
        - Perhaps the students should be intentionally "weaned" in their Sophomore / Junior classes into scholarly independence?
    - Will "No Child Left Behind" leave a legacy for the colleges to address? They may

have different motivations. The 'Facebook" generation may work better in a team based mode.

- The costs of IS for Mentors:
  - Overall, the impact on mentoring is generally positive.
  - Faculty have the stress of having the project reflect on them. Having a 2nd reader is good for training and uniformity of expectations, but adds to this stress.
  - Can we relate workload to stress? Hypothesis – more advisees implies a less positive experience. Compare for high volume department vs. low?
  - Banked released time for advising isn't as helpful in providing time to advise capstones if it is used only later (unless equilibrium is achieved). Paying a stipend for advising doesn't help at all with providing time.
  - Our report should give context in terms of student:faculty ratios and student load to faculty load.
  - Charlie – very weak relationship of loads to outcomes (Wabash National Study).
  - Junior faculty struggle with the workload & lack of enthusiasm for mentoring (why?)
  - Recognizing their efforts & giving them credit for it in their Tenure Review will help
  - For example, CoW has 5 areas for Tenure: Intro Classes, Advanced Classes, Academic Advising, IS Advising, & FYS Instruction (Dean of Faculty Development)
  - Who keeps track of Point Systems? The Registrars.

**CLOSING THOUGHTS:**

DAVID:

- Would not recommend emphasizing the comparisons between the campuses; but would keep the Capstone results nested in 4 parallel stories.
- Would publicize well & quickly ~ be prepared for inquiries
- Validate students opinions & assessments; drill down into data
- Focus on practices in different Divisions. Science uses a more apprenticeship model. Maybe models could be mixed for individual capstones. Sciences want stuff to fit into standard models, humanities want something totally new. Focusing on the challenges faced by students may be more profitable than looking at divisions.
- Cultivate IS Mentors as well as Student Project Managers. Training of mentors in management techniques may be a very good outcome.
- * Mentors should prepare students, "By the way, you are going to get stuck; it's not YOU, it happens to everyone." *

CHARLIE:

- Stress different pathways to Capstone success on four campuses; does not have to be a cookie-cutter way
- Pull out small, bulleted findings for faculty, e.g. 5 things students say ….. Things that could

encourage conversation.

- Deans / Provosts should look for surprise data & examine it, articulate Capstone goals, & monitor work loads
- Important to articulate goals
- "Exhibit Scholarly Skills" scale is that, but might be changed to "Problem Solving" to put it in a more general context
- Look at mentor relationships and differences between high/low capstones
- Before building any new structures based on the multperspectives decline, explore this more. What were students thinking as they responded?

BRUCE:

- Good things are happening on each campus.
- Should it be universal – yes. This is the uniform opinion.
- You are all busy. Make your projects doable.
- Look at any new projects in an institutional context. Include support people.
- Consider looking at your "senior experience", and putting the capstone into that context.

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Thanks to all participants for a productive, insightful, and thought provoking conference!

# Senior Pre-capstone Survey

## 1. Welcome and instructions

Welcome to the Senior Pre-capstone Survey. This 10-minute survey is part of a study on senior 'capstone' courses being conducted at Allegheny College (Senior Project), Augustana College (Senior Inquiry), Washington College (Senior Capstone Experience), and The College of Wooster (Senior Independent Study).

The survey is organized into several pages with questions on each page. Complete the questions on the page and then click the [Next] button. If you need to return to a previous page, click the [Prev] button. It is NOT possible to save and resume the survey, so it will need to be completed in a single sitting.

The next page provides additional information about your participation in this study and asks your consent to participate.

## 2. Consent to participate

# CONSENT TO PARTICIPATE IN A RESEARCH STUDY

## Allegheny College, Augustana College, Washington College, The College of Wooster

## The Senior Capstone: Transformative Experiences in the Liberal Arts

**Purpose of the Study**

You are being asked to participate in a research study being done on the campuses of Allegheny College, Augustana College, Washington College, and The College of Wooster. We hope to learn about the kinds of experiences that seniors and their faculty mentors have during the capstone. The data gathered will be used to better understand student learning and development through the senior capstone course and the impact of the capstone on faculty mentors. This information may provide insights that will help each institution improve its capstone. Your decision to participate or not to participate will not affect your relationship with your college nor your grades.

**Procedures**

If you volunteer to participate in this study, we will ask you to complete a survey at the start and another at the end of your senior capstone. Your survey data will be analyzed in conjunction with academic record information made available by your institution. You may also be asked to participate in a short interview or focus group session.

**Confidentiality**

Please note that your responses will be used for research purposes only. All responses will be strictly confidential. Any information that is obtained in connection with this study and that can be identified with you will remain confidential. The only reporting of data will be at an aggregate level. Further, all colleges receiving such information are required to certify in advance that the data will only be used for research purposes and will not be used to investigate specific individuals. For confidentiality purposes, study ids will be randomly assigned to all project participants.

**Potential Benefits**

You will have the opportunity to reflect on your prior academic experiences and your expectations for college and your capstone as you complete the surveys. This reflection may enhance self-understanding. Results of your participation also will be beneficial to your college, and may benefit other colleges with capstones and future college students.

**Potential Risks**

There are no anticipated risks to you for your participation in this study.

**Costs/Compensation**

There is no cost to you, excluding your time, to complete the procedure described above. There will be no compensation for your participation; however, participants may be eligible to win a prize.

**Voluntary Participation**

Your participation in this study is strictly voluntary. You may choose not to answer any specific questions you do not want to answer and still remain in the study. You may refuse to participate in the study. If you decide to participate, you may change your mind about being in the study and leave at any point.

**Contact Information for Questions**

| | | |
|---|---|---|
| Allegheny College | Ben Slote | bslote@allegheny.edu |
| Augustana College | Tim Schermer | TimothySchermer@augustana.edu |
| Washington College | Kevin McKillop | kmckillop2@washcoll.edu |
| The College of Wooster | Simon Gray | sgray@wooster.edu |

# Senior Pre-capstone Survey

*** 1. By selecting "Agree" I consent to participate in this study.**

- ◯ Agree
- ◯ Disagree

## 3. Personal Attitudes, Objectives, and Abilities

### 2. How important to you personally is each of the following?

| | Essential | Very Important | Somewhat Important | Not Important |
|---|---|---|---|---|
| Becoming accomplished in my field of expertise | ◯ | ◯ | ◯ | ◯ |
| Influencing social values | ◯ | ◯ | ◯ | ◯ |
| Raising a family | ◯ | ◯ | ◯ | ◯ |
| Helping others who are in difficulty | ◯ | ◯ | ◯ | ◯ |
| Creating original works | ◯ | ◯ | ◯ | ◯ |
| Developing a meaningful philosophy of life | ◯ | ◯ | ◯ | ◯ |
| Becoming a community leader | ◯ | ◯ | ◯ | ◯ |
| Integrating spirituality into my life | ◯ | ◯ | ◯ | ◯ |
| Volunteering in my community | ◯ | ◯ | ◯ | ◯ |
| Making a lot of money | ◯ | ◯ | ◯ | ◯ |
| Working in a prestigious occupation | ◯ | ◯ | ◯ | ◯ |
| Becoming passionate about or committed to my occupation | ◯ | ◯ | ◯ | ◯ |
| Obtaining recognition from my colleagues for contributions to my special field | ◯ | ◯ | ◯ | ◯ |

### 3. Indicate the extent to which you agree/disagree with each of the following statements about your views or perspectives in general.

| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| I enjoy expressing my ideas in writing | ◯ | ◯ | ◯ | ◯ | ◯ |
| I have confidence in my opinions, even if they are contrary to the general consensus | ◯ | ◯ | ◯ | ◯ | ◯ |
| I really enjoy a task that involves coming up with new solutions to problems | ◯ | ◯ | ◯ | ◯ | ◯ |
| The notion of thinking abstractly is appealing to me | ◯ | ◯ | ◯ | ◯ | ◯ |
| I enjoy doing research | ◯ | ◯ | ◯ | ◯ | ◯ |

**4. Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself.**

| | Highest 10% | Above Average | Average | Below Average | Lowest 10% |
|---|---|---|---|---|---|
| Academic ability | ◯ | ◯ | ◯ | ◯ | ◯ |
| Creativity | ◯ | ◯ | ◯ | ◯ | ◯ |
| Drive to achieve | ◯ | ◯ | ◯ | ◯ | ◯ |
| Leadership ability | ◯ | ◯ | ◯ | ◯ | ◯ |
| Mathematical ability | ◯ | ◯ | ◯ | ◯ | ◯ |
| Persistence | ◯ | ◯ | ◯ | ◯ | ◯ |
| Public speaking ability | ◯ | ◯ | ◯ | ◯ | ◯ |
| Self-confidence (intellectual) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Self-confidence (social) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Understanding of others | ◯ | ◯ | ◯ | ◯ | ◯ |
| Self-understanding | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to think critically | ◯ | ◯ | ◯ | ◯ | ◯ |
| Research skills | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to think and act on my own | ◯ | ◯ | ◯ | ◯ | ◯ |
| Writing ability | ◯ | ◯ | ◯ | ◯ | ◯ |

**5. In evaluating your typical academic work over the past year, please indicate the extent to which you agree/disagree with each of the following statements.**

| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Not applicable |
|---|---|---|---|---|---|---|
| I identified manageable sets of goals for my projects | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I properly planned tasks to achieve project goals | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I showed evidence of independent thinking | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I persisted when faced with conceptual and practical difficulties | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I showed originality | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I used feedback to assess my performance | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I located appropriate source material | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I used disciplinary knowledge and methods appropriately | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I synthesized information to produce insights that expanded my understanding | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I supported my arguments with appropriate evidence | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I demonstrated good communication skills | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I demonstrated effective time management in completing tasks | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I showed skill with quantitative reasoning | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

## 4. College Experiences

### 6. Please rate your satisfaction with your college in the following areas.

| | Very satisfied | Satisfied | Neutral | Dissatisfied | Very dissatisfied |
|---|---|---|---|---|---|
| Library facilities and services | ◯ | ◯ | ◯ | ◯ | ◯ |
| Computer facilities and services | ◯ | ◯ | ◯ | ◯ | ◯ |
| Facilities/equipment in my major field | ◯ | ◯ | ◯ | ◯ | ◯ |
| Overall quality of instruction | ◯ | ◯ | ◯ | ◯ | ◯ |
| Quality of instruction in my major field | ◯ | ◯ | ◯ | ◯ | ◯ |
| Overall college experience | ◯ | ◯ | ◯ | ◯ | ◯ |

### 7. During the past year, how much has your coursework emphasized the following mental activities?

| | Very much | Quite a bit | Some | Very little |
|---|---|---|---|---|
| Memorizing facts, ideas, or methods so you can repeat them in pretty much the same form | ◯ | ◯ | ◯ | ◯ |
| Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | ◯ | ◯ | ◯ | ◯ |
| Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | ◯ | ◯ | ◯ | ◯ |
| Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | ◯ | ◯ | ◯ | ◯ |
| Applying theories or concepts to practical problems or in new situations | ◯ | ◯ | ◯ | ◯ |

### 8. During the past school year, about how often have you done each of the following?

| | Very often | Often | Sometimes | Never |
|---|---|---|---|---|
| Integrated ideas or information from various sources | ◯ | ◯ | ◯ | ◯ |
| Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | ◯ | ◯ | ◯ | ◯ |
| Put together ideas or concepts from different courses | ◯ | ◯ | ◯ | ◯ |
| Discussed ideas from your readings or classes with faculty members outside of class | ◯ | ◯ | ◯ | ◯ |
| Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.) | ◯ | ◯ | ◯ | ◯ |
| Examined the strengths and weaknesses of your own views on a topic or issue | ◯ | ◯ | ◯ | ◯ |
| Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | ◯ | ◯ | ◯ | ◯ |
| Learned something that changed the way you understand an issue or concept | ◯ | ◯ | ◯ | ◯ |

**9. Please indicate how strongly you agree with each of the following statements about your expectations for your planned capstone.**

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| My capstone will be intellectually challenging | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone will be more engaging than my regular course work | ◯ | ◯ | ◯ | ◯ | ◯ |
| My writing skills will improve | ◯ | ◯ | ◯ | ◯ | ◯ |
| My oral presentation skills will improve | ◯ | ◯ | ◯ | ◯ | ◯ |
| My ability to think critically and analytically will improve | ◯ | ◯ | ◯ | ◯ | ◯ |
| My understanding of my discipline will improve | ◯ | ◯ | ◯ | ◯ | ◯ |
| I expect to create new knowledge in my discipline | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone will lead to a better understanding of my skills, abilities and interests | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone will help me clarify my career or graduate school objectives | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone will better prepare me for a job or graduate school | ◯ | ◯ | ◯ | ◯ | ◯ |
| I expect to be comfortable working with my faculty mentor(s) | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone will be very stressful | ◯ | ◯ | ◯ | ◯ | ◯ |

**10. On average, how many *hours* per week do you expect you will work on your capstone? [Please provide a single decimal answer in the range 0.0 to 50.0]**

Acknowledgment: Items 7 and 8 used with permission from The College Student Report, National Survey of Student Engagement, Copyright 2001-10 The Trustees of Indiana University.

## 5. Post-graduate Plans

### 11. What is the highest academic degree you intend to earn in your lifetime?

- ◯ Bachelor's degree (B.A., B.S., etc.)
- ◯ Master's degree (M.A., M.S., M.B.A., etc.)
- ◯ Law (J.D.)
- ◯ Doctorate (Ph.D., Ed.D., M.D.)

### 12. Within a year after graduation I plan to (check all that apply):

- ☐ attend graduate/professional school
- ☐ work full-time
- ☐ work part-time
- ☐ work in a job related to my major discipline
- ☐ participate in a community service organization
- ☐ do volunteer work
- ☐ travel
- ☐ serve in the military
- ☐ stay at home to be with or start a family

Other (please specify)

# Senior Pre-capstone Survey

## 6. Survey is completed

This completes your participation in the survey.

# Senior Post-Capstone Survey

## 1. Welcome and instructions

Welcome to the Senior Post-capstone Survey. This 10-minute survey is part of a study on senior 'capstone' courses being conducted at Allegheny College (Senior Project), Augustana College (Senior Inquiry), Washington College (Senior Capstone Experience), and The College of Wooster (Senior Independent Study).

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## 2. Consent to participate

# CONSENT TO PARTICIPATE IN A RESEARCH STUDY

## Allegheny College, Augustana College, Washington College, The College of Wooster

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**Purpose of the Study**

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**Procedures**

If you volunteer to participate in this study, we will ask you to complete a survey at the start and another at the end of your senior capstone. Your survey data will be analyzed in conjunction with academic record information made available by your institution. You may also be asked to participate in a short interview or focus group session.

**Confidentiality**

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**Potential Benefits**

You will have the opportunity to reflect on your prior academic experiences and your expectations for college and your capstone as you complete the surveys. This reflection may enhance self-understanding. Results of your participation also will be beneficial to your college, and may benefit other colleges with capstones and future college students.

**Potential Risks**

There are no anticipated risks to you for your participation in this study.

**Costs/Compensation**

There is no cost to you, excluding your time, to complete the procedure described above. There will be no compensation for your participation; however, participants may be eligible to win a prize.

**Voluntary Participation**

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**Contact Information for Questions**

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| Augustana College | Tim Schermer | TimothySchermer@augustana.edu |
| Washington College | Kevin McKillop | kmckillop2@washcoll.edu |
| The College of Wooster | Simon Gray | sgray@wooster.edu |

# Senior Post-Capstone Survey

*** 1. By selecting 'Agree' I consent to participating in this study under the terms given in the consent form.**

- ◯ Agree
- ◯ Disagree

## 3. Personal Attitudes, Objectives, and Abilities

### 2. How important to you personally is each of the following?

| | Essential | Very Important | Somewhat Important | Not Important |
|---|---|---|---|---|
| Becoming accomplished in my field of expertise | ◯ | ◯ | ◯ | ◯ |
| Influencing social values | ◯ | ◯ | ◯ | ◯ |
| Raising a family | ◯ | ◯ | ◯ | ◯ |
| Helping others who are in difficulty | ◯ | ◯ | ◯ | ◯ |
| Creating original works | ◯ | ◯ | ◯ | ◯ |
| Developing a meaningful philosophy of life | ◯ | ◯ | ◯ | ◯ |
| Becoming a community leader | ◯ | ◯ | ◯ | ◯ |
| Integrating spirituality into my life | ◯ | ◯ | ◯ | ◯ |
| Volunteering in my community | ◯ | ◯ | ◯ | ◯ |
| Making a lot of money | ◯ | ◯ | ◯ | ◯ |
| Working in a prestigious occupation | ◯ | ◯ | ◯ | ◯ |
| Becoming passionate about or committed to my occupation | ◯ | ◯ | ◯ | ◯ |
| Obtaining recognition from my colleagues for contributions to my special field | ◯ | ◯ | ◯ | ◯ |

### 3. Indicate the extent to which you agree/disagree with each of the following statements about your views or perspectives in general.

| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree |
|---|---|---|---|---|---|
| I enjoy expressing my ideas in writing | ◯ | ◯ | ◯ | ◯ | ◯ |
| I have confidence in my opinions, even if they are contrary to the general consensus | ◯ | ◯ | ◯ | ◯ | ◯ |
| I really enjoy a task that involves coming up with new solutions to problems | ◯ | ◯ | ◯ | ◯ | ◯ |
| The notion of thinking abstractly is appealing to me | ◯ | ◯ | ◯ | ◯ | ◯ |
| I enjoy doing research | ◯ | ◯ | ◯ | ◯ | ◯ |

**4. Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself.**

| | Highest 10% | Above Average | Average | Below Average | Lowest 10% |
|---|---|---|---|---|---|
| Academic ability | ◯ | ◯ | ◯ | ◯ | ◯ |
| Creativity | ◯ | ◯ | ◯ | ◯ | ◯ |
| Drive to achieve | ◯ | ◯ | ◯ | ◯ | ◯ |
| Leadership ability | ◯ | ◯ | ◯ | ◯ | ◯ |
| Mathematical ability | ◯ | ◯ | ◯ | ◯ | ◯ |
| Persistence | ◯ | ◯ | ◯ | ◯ | ◯ |
| Public speaking ability | ◯ | ◯ | ◯ | ◯ | ◯ |
| Self-confidence (intellectual) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Self-confidence (social) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Understanding of others | ◯ | ◯ | ◯ | ◯ | ◯ |
| Self-understanding | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to think critically | ◯ | ◯ | ◯ | ◯ | ◯ |
| Research skills | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to think and act on my own | ◯ | ◯ | ◯ | ◯ | ◯ |
| Writing ability | ◯ | ◯ | ◯ | ◯ | ◯ |

## 4. College Experiences

### 5. How helpful were each of the following for completion of your capstone?

| | Essential | Very Important | Somewhat Important | Not Important | Not Applicable |
|---|---|---|---|---|---|
| Courses outside my major(s) and minor(s) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Courses in my major(s) or minors(s) | ◯ | ◯ | ◯ | ◯ | ◯ |
| A research methods or skills course | ◯ | ◯ | ◯ | ◯ | ◯ |
| A junior or senior seminar | ◯ | ◯ | ◯ | ◯ | ◯ |
| Assistance from librarians or use of library services | ◯ | ◯ | ◯ | ◯ | ◯ |
| Training in quantitative methods (statistics, tables, graphs, mathematical modeling,…) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Training or experience with computer techniques (spreadsheets, Internet, programming, presentation software…) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Study abroad experiences | ◯ | ◯ | ◯ | ◯ | ◯ |
| My job or internship experiences | ◯ | ◯ | ◯ | ◯ | ◯ |
| Volunteer experiences | ◯ | ◯ | ◯ | ◯ | ◯ |
| My non-academic interests/experiences | ◯ | ◯ | ◯ | ◯ | ◯ |

Other interest/experiences (please specify)

### 6. Please rate your satisfaction with your college in the following areas.

| | Very satisfied | Satisfied | Neutral | Dissatisfied | Very dissatisfied |
|---|---|---|---|---|---|
| Library facilities and services | ◯ | ◯ | ◯ | ◯ | ◯ |
| Computer facilities and services | ◯ | ◯ | ◯ | ◯ | ◯ |
| Facilities/equipment in my major field | ◯ | ◯ | ◯ | ◯ | ◯ |
| Overall quality of instruction | ◯ | ◯ | ◯ | ◯ | ◯ |
| Quality of instruction in my major field | ◯ | ◯ | ◯ | ◯ | ◯ |
| Overall college experience | ◯ | ◯ | ◯ | ◯ | ◯ |

## 5. Capstone Experiences

**7. On average, how many *hours* per week did you spend interacting with your capstone mentor in individual or group meetings relating to the capstone? [Please provide a single decimal answer in the range 0.0 to 50.0]**

**8. On average, how many *hours* per week did you spend working on *any* aspect of your capstone? [Please provide a single decimal answer in the range 0.o to 50.0]**

**9. How much has your capstone work emphasized the following mental activities?**

| | Very much | Quite a bit | Some | Very little |
|---|---|---|---|---|
| Memorizing facts, ideas, or methods so you can repeat them in pretty much the same form | ○ | ○ | ○ | ○ |
| Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components | ○ | ○ | ○ | ○ |
| Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships | ○ | ○ | ○ | ○ |
| Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions | ○ | ○ | ○ | ○ |
| Applying theories or concepts to practical problems or in new situations | ○ | ○ | ○ | ○ |

**10. During your capstone, about how often have you done each of the following?**

| | Very often | Often | Sometimes | Never |
|---|---|---|---|---|
| Integrated ideas or information from various sources | ○ | ○ | ○ | ○ |
| Included diverse perspectives (different races, religions, gender, political beliefs, etc.) | ○ | ○ | ○ | ○ |
| Put together ideas or concepts from different courses | ○ | ○ | ○ | ○ |
| Discussed ideas from your capstone with faculty members other than your capstone advisor | ○ | ○ | ○ | ○ |
| Discussed ideas from your capstone with others (students, family members, co-workers, etc.) | ○ | ○ | ○ | ○ |
| Examined the strengths and weaknesses of your own views on a topic or issue | ○ | ○ | ○ | ○ |
| Tried to better understand someone else's views by imagining how an issue looks from his or her perspective | ○ | ○ | ○ | ○ |
| Learned something that changed the way you understand an issue or concept | ○ | ○ | ○ | ○ |

**11. In evaluating your capstone work specifically, please indicate the extent to which you agree/disagree with each of the following statements.**

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree | Not applicable |
|---|---|---|---|---|---|---|
| I identified a manageable set of project goals | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I properly planned tasks to achieve project goals | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I showed evidence of independent thinking | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I persisted when faced with conceptual and practical difficulties | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I showed originality | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I used feedback to assess my performance | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I located appropriate source material | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I used disciplinary knowledge and methods appropriately | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I synthesized information to produce insights that expanded my understanding | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I supported my arguments with appropriate evidence | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I demonstrated good communication skills | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I demonstrated effective time management in completing tasks | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| I showed skill with quantitative reasoning | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

**12. Indicate the extent to which you agree/disagree with each of the following statements about your experiences with your capstone mentor.**

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| My mentor was genuinely interested in my project | ◯ | ◯ | ◯ | ◯ | ◯ |
| I had access to my mentor when I needed it | ◯ | ◯ | ◯ | ◯ | ◯ |
| My mentor gave me helpful advice | ◯ | ◯ | ◯ | ◯ | ◯ |
| I was comfortable working with my faculty mentor | ◯ | ◯ | ◯ | ◯ | ◯ |

## 13. Please indicate to what extent your capstone experience contributed to your development in the following areas.

| | Very much | Quite a bit | Somewhat | Very little | Not at all |
|---|---|---|---|---|---|
| Seeing the connection between my intended career and how it affects society | ◯ | ◯ | ◯ | ◯ | ◯ |
| Learning effectively on my own | ◯ | ◯ | ◯ | ◯ | ◯ |
| Acquiring research related skills | ◯ | ◯ | ◯ | ◯ | ◯ |
| Managing a large project | ◯ | ◯ | ◯ | ◯ | ◯ |
| Having confidence in my own abilities | ◯ | ◯ | ◯ | ◯ | ◯ |
| Skill in the interpreting of data, evidence, texts, and/or works | ◯ | ◯ | ◯ | ◯ | ◯ |
| Learning ethical conduct in my field | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to interpret primary literature | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to make an effective oral presentation | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to write effectively | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to think critically and analytically | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to think creatively | ◯ | ◯ | ◯ | ◯ | ◯ |
| Ability to reason quantitatively | ◯ | ◯ | ◯ | ◯ | ◯ |

## 14. Please indicate how strongly you agree with each of the following statements about your capstone experience.

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree |
|---|---|---|---|---|---|
| My capstone was more engaging than my regular coursework | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone was more stressful than my regular coursework | ◯ | ◯ | ◯ | ◯ | ◯ |
| I worked harder on my capstone than on my regular coursework | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone was more intellectually challenging than my regular coursework | ◯ | ◯ | ◯ | ◯ | ◯ |
| I developed more academically from my capstone than from a regular course | ◯ | ◯ | ◯ | ◯ | ◯ |
| Understanding of my discipline improved | ◯ | ◯ | ◯ | ◯ | ◯ |
| I created new knowledge in my discipline | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone has led me to a better understanding of my skills, abilities and interests | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone has helped me clarify my career or graduate school objectives | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone has better prepared me for a job or graduate school | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone had a positive influence on my intellectual growth and interest in ideas | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone had a positive influence on my personal growth, attitudes, and values | ◯ | ◯ | ◯ | ◯ | ◯ |
| My capstone product (e.g. thesis, paper, art work) was of high quality | ◯ | ◯ | ◯ | ◯ | ◯ |
| Overall, I had a good capstone experience | ◯ | ◯ | ◯ | ◯ | ◯ |

Acknowledgment: Items 9 and 10 used with permission from The College Student Report, National Survey of Student Engagement, Copyright 2001-10 The Trustees of Indiana University.

## 6. Post-graduate Plans

### 15. What is the highest academic degree you intend to earn in your lifetime?

- ◯ Bachelor's degree (B.A., B.S., etc.)
- ◯ Master's degree (M.A., M.S., M.B.A., etc.)
- ◯ Law (J.D.)
- ◯ Doctorate (Ph.D., Ed.D., M.D.)

### 16. Within a year after graduation I plan to (check all that apply):

- ☐ attend graduate/professional school
- ☐ work full-time
- ☐ work part-time
- ☐ work in a job related to my major discipline
- ☐ participate in a community service organization
- ☐ do volunteer work
- ☐ travel
- ☐ serve in the military
- ☐ stay at home to be with or start a family

Other (please specify)

# Senior Post-Capstone Survey

## 7. Comments

**17. Please describe any particularly positive or negative aspects of your capstone experience.**

5

6

**18. What did you learn about yourself as a result of your capstone experience?**

5

6

**19. What aspects of your capstone experience do you think will be of most value to you after you graduate?**

5

6

**20. Please tell us about any other aspects of your capstone experience that might be helpful to our study of the benefits of capstones.**

5

6

# Senior Post-Capstone Survey

## 8. Survey is completed

This completes your participation in the survey.

# Faculty Pre-capstone Report

## 1. Welcome!

This report is part of a study on senior 'capstone' courses being conducted at Allegheny College (Senior Project), Augustana College (Senior Inquiry), Washington College (Senior Capstone Experience), and The College of Wooster (Senior Independent Study).

Please complete the questions on each page, clicking the [Next] button to get to the next page. If you need to return to a previous page, click the [Prev] button.

It is **NOT** possible to save and resume the survey, so it will need to be completed in a single sitting. The next page asks your consent to participate.

## 2. Consent to participate

# CONSENT TO PARTICIPATE IN A RESEARCH STUDY

## Allegheny College, Augustana College, Washington College, The College of Wooster

## The Senior Capstone: Transformative Experiences in the Liberal Arts

**Purpose of the Study**

You are being asked to participate in a research study being done on the campuses of Allegheny College, Augustana College, Washington College, and The College of Wooster. We hope to learn about the kinds of experiences that seniors and their faculty mentors have during the capstone. The data gathered will be used to better understand student learning and development through the senior capstone course and the impact of the capstone on faculty mentors. This information may provide insights that will help each institution improve its capstone. Your decision to participate or not to participate will not affect your relationship with your college.

**Procedures**

If you volunteer to participate in this study, we will ask you to complete a report at the end of the capstone for each senior you mentored. Your survey data will be analyzed in conjunction with survey data collected from the seniors, with student academic record information made available by your institution and with basic demographic data for faculty participants (rank, discipline, tenure status, full-time/part-time status, and gender). Departments will also be asked to complete a short survey to describe the characteristics of different types of capstones at your college. You may also be asked to participate in a short interview or focus group session.

**Confidentiality**

Your responses will be used for research purposes only. All responses will be strictly confidential. Any information that is obtained in connection with this study and that can be identified with you will remain confidential. The only reporting of data will be at an aggregate level. Further, all colleges receiving such information are required to certify in advance that the data will only be used for research purposes and will not be used to investigate specific individuals. For confidentiality purposes, study ids will be randomly assigned to all project participants.

**Potential Benefits**

You will have the opportunity to reflect on your prior mentoring experiences as you complete the surveys. This reflection may enhance self-understanding. Results of your participation also will be beneficial to your college, colleagues, future college students, and may benefit other colleges with capstones.

**Potential Risks**

There are no anticipated risks to you for your participation in this study.

**Costs/Compensation**

There is no cost to you, excluding your time, to complete the procedure described above. There will be no compensation for your participation.

**Voluntary Participation**

Your participation in this study is strictly voluntary. You may choose not to answer any specific questions you do not want to answer and still remain in the study. You may refuse to participate in the study. If you decide to participate, you may change your mind about being in the study and leave at any point.

**Contact Information for Questions**

| | | |
|---|---|---|
| Allegheny College | Ben Slote | bslote@allegheny.edu |
| Augustana College | Tim Schermer | TimothySchermer@augustana.edu |
| Washington College | Kevin McKillop | kmckillop2@washcoll.edu |
| The College of Wooster | Simon Gray | sgray@wooster.edu |

# Faculty Pre-capstone Report

*** By selecting 'Agree' you consent to participating in this study.**

- ◯ Agree
- ◯ Disagree

# Faculty Pre-capstone Report

## 3. Student's Pre-capstone Performance (page 1 of 2)

The questions in the remainder of this section ask you to indicate your level of agreement with each statement based on your perception of the student's academic ability, practice, and performance prior to beginning the capstone.

### Project Behavior: Conceiving and managing a project

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree | Unable to rate |
|---|---|---|---|---|---|---|
| Identifies a manageable set of project goals | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Properly plans tasks to achieve project goals | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Demonstrates effective time management in completing tasks | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Persists when faced with conceptual and practical difficulties | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Shows evidence of independent thinking | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Asks probing questions | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Actively pursues learning opportunities | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Demonstrates intellectual curiosity | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Shows originality | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Uses feedback to assess performance | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Demonstrates accurate awareness of own abilities and limitations | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Demonstrates appropriate confidence in own intellectual ability | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

# Faculty Pre-capstone Report

## 4. Student's Pre-capstone Performance (page 2 of 2)

### Research: Investigating in a manner appropriate to the discipline

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree | Unable to rate |
|---|---|---|---|---|---|---|
| Locates appropriate source material | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Logically interprets and evaluates main points of source material | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Uses disciplinary knowledge and methods appropriately | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Synthesizes information to produce insights that expand the student's understanding | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

### Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree | Unable to rate |
|---|---|---|---|---|---|---|
| Supports arguments with appropriate evidence | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Addresses opposing arguments or alternative explanations | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Develops convincing arguments to support conclusions | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Makes connections to other contexts (across courses, disciplines, experiences, etc.) | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Shows skill in quantitative reasoning | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

### Communication: Presenting ideas effectively in written, oral, or other forms

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree | Unable to rate |
|---|---|---|---|---|---|---|
| Writes without distracting errors in spelling grammar, punctuation, usage, etc. | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Writes in a well-organized manner | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Writes in a clear, articulate manner | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Delivers an effective oral presentation | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Delivers an effective poster presentation | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

## 5. Thank you! - Press "Done" to Submit

Thank you! This completes your participation in the survey.

# Faculty Post-capstone Report

## 1. Introduction

This report is part of a study on senior 'capstone' courses being conducted at Allegheny College (Senior Project), Augustana College (Senior Inquiry), Washington College (Senior Capstone Experience), and The College of Wooster (Senior Independent Study).

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The next page provides additional information about your participation in this study and asks your consent to participate.

## 2. Consent to Participate

# CONSENT TO PARTICIPATE IN A RESEARCH STUDY

## Allegheny College, Augustana College, Washington College, The College of Wooster

## The Senior Capstone: Transformative Experiences in the Liberal Arts

**Purpose of the Study**

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**Procedures**

If you volunteer to participate in this study, we will ask you to complete a report at the end of the capstone for each senior you mentored. Your survey data will be analyzed in conjunction with survey data collected from the seniors, with student academic record information made available by your institution and with basic demographic data for faculty participants (rank, discipline, tenure status, full-time/part-time status, and gender). Departments will also be asked to complete a short survey to describe the characteristics of different types of capstones at your college. You may also be asked to participate in a short interview or focus group session.

**Confidentiality**

Your responses will be used for research purposes only. All responses will be strictly confidential. Any information that is obtained in connection with this study and that can be identified with you will remain confidential. The only reporting of data will be at an aggregate level. Further, all colleges receiving such information are required to certify in advance that the data will only be used for research purposes and will not be used to investigate specific individuals. For confidentiality purposes, study ids will be randomly assigned to all project participants.

**Potential Benefits**

You will have the opportunity to reflect on your prior mentoring experiences as you complete the surveys. This reflection may enhance self-understanding. Results of your participation also will be beneficial to your college, colleagues, future college students, and may benefit other colleges with capstones.

**Potential Risks**

There are no anticipated risks to you for your participation in this study.

**Costs/Compensation**

There is no cost to you, excluding your time, to complete the procedure described above. There will be no compensation for your participation.

**Voluntary Participation**

Your participation in this study is strictly voluntary. You may choose not to answer any specific questions you do not want to answer and still remain in the study. You may refuse to participate in the study. If you decide to participate, you may change your mind about being in the study and leave at any point.

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|---|---|---|
| Allegheny College | Ben Slote | bslote@allegheny.edu |
| Augustana College | Tim Schermer | TimothySchermer@augustana.edu |
| Washington College | Kevin McKillop | kmckillop2@washcoll.edu |
| The College of Wooster | Simon Gray | sgray@wooster.edu |

# Faculty Post-capstone Report

*** By selecting "Agree" I consent to participate in this study.**

- ◯ Agree
- ◯ Disagree

# Faculty Post-capstone Report

## 3. Student's Level of Performance

The questions in this section ask you to indicate your level of agreement with each statement based on your perception of the student's academic ability, practice, and performance *as demonstrated through their capstone work*.

### Project Behavior: Conceiving and managing a project

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree | Unable to rate |
|---|---|---|---|---|---|---|
| Identifies a manageable set of project goals | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Properly plans tasks to achieve project goals | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Demonstrates effective time management in completing tasks | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Persists when faced with conceptual and practical difficulties | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Shows evidence of independent thinking | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Asks probing questions | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Actively pursues learning opportunities | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Displays intellectual curiosity | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Shows originality | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Uses feedback to assess performance | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Demonstrates accurate awareness of own abilities and limitations | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Demonstrates appropriate confidence in own intellectual ability | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

### Research: Investigating in a manner appropriate to the discipline

| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Unable to rate |
|---|---|---|---|---|---|---|
| Locates appropriate source material | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Logically interprets and evaluates main points of source material | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Uses disciplinary knowledge and methods appropriately | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Synthesizes information to produce insights that expand the student's understanding | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

### Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence

| | Strongly Agree | Agree | Neutral | Disagree | Strongly Disagree | Unable to rate |
|---|---|---|---|---|---|---|
| Supports arguments with appropriate evidence | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Addresses opposing arguments or alternative explanations | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Develops convincing arguments to support conclusions | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Makes connections to other contexts (across courses, disciplines, experiences, etc.) | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Shows skill in quantitative reasoning | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

# Faculty Post-capstone Report

## Communication: Presenting ideas effectively in written, oral, or other forms

| | Strongly agree | Agree | Neutral | Disagree | Strongly disagree | Unable to rate |
|---|---|---|---|---|---|---|
| Writes without distracting errors in spelling grammar, punctuation, usage, etc. | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Writes in a well-organized manner | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Writes in a clear, articulate manner | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Delivers an effective oral presentation | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Delivers an effective poster presentation | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

# Faculty Post-capstone Report

## 4. Capstone's Contribution to Student Development

**Please estimate how much you think the capstone experience contributed to the development of the student in each of the areas below**

| | Very much | Quite a bit | Some | Very little | Not at all | Unable to rate |
|---|---|---|---|---|---|---|
| Independence: Showing autonomy and initiative in thought and actions | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Intellectual Engagement: Demonstrating an interest in learning | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Self-understanding: Developing an awareness of self (skills, abilities, interests) | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Project Management: Conceiving and managing a project | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Research: Investigating in a manner appropriate to the discipline | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Critical Thinking and Reasoning: Evaluating and constructing arguments with evidence | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |
| Communication: Presenting ideas effectively (written, oral, and other forms) | ◯ | ◯ | ◯ | ◯ | ◯ | ◯ |

# Faculty Post-capstone Report

## 5. Capstone Information

Please provide the following descriptive information about this student's capstone. The questions refer to the period the student was registered for the capstone, excluding planning or preparatory activities prior to the capstone's start.

**Estimate the average *hours* per week you spent meeting (individually or in a group setting) with this student as mentor [Please provide an answer as a decimal number in the range 0.0 to 50.0]:**

**Estimate the average total hours per week you spent working on this student's capstone (meetings, email, reading drafts, etc.) [Please provide an answer as a decimal number in the range 0.0 to 50.0]:**

**Please provide information on the origin and development of the capstone topic.**

**Did the core idea for the student's capstone originate with the student?**

- Yes
- No

**To what extent did you participate in developing/refining the topic for his / her capstone?**

- Very much
- Quite a bit
- Some
- Very little
- Not at all

**To what extent did the student participate in developing / refining his /her capstone topic?**

- Very much
- Quite a bit
- Some
- Very little
- Not at all

**When the project started, how enthusiastic was the student about the topic?**

- Very much
- Quite a bit
- Some
- Very little
- Not at all

**When the project ended, how enthusiastic was the student about the topic?**

- Very much
- Quite a bit
- Some
- Very little
- Not at all

# Faculty Post-capstone Report

## 6. Comments

In response to the questions below, please make any comments that would help us better understand the costs and benefits of this capstone experience for this student and for you as the mentor. Feel free to skip items that don't apply.

**Please describe any notable positive or negative aspects of this capstone experience for you as the mentor.**

**Please note any particularly significant benefits you think the student gained from this capstone.**

**Please describe areas where the student should have been better prepared for this capstone.**

**Please describe areas where the student was exceptionally well prepared.**

**Please share any other observations you have about this capstone you think may be of interest to the study.**

# Faculty Post-capstone Report

## 7. Thank you! - Press "Done" to Submit

This completes the report. Thank you very much for your time.

# Department Capstone Policies and Administration

## 1. DEPARTMENT CAPSTONE POLICIES AND ADMINISTRATION SURVEY

This survey is part of a research project being conducted under a grant from the Teagle Foundation by Allegheny College, Augustana College, The College of Wooster, and Washington College to investigate the structure and impact on students of senior capstone experiences. This survey is about the policies and procedures used by your department for conducting senior capstone courses. The results will be reported in aggregated fashion to give descriptive information about current practices, and combined with other project information to investigate the effectiveness of various capstone features. If you have questions or problems with the survey please contact Simon Gray, Project Co-director, sgray@wooster.edu.

This survey is to be filled out only one time for your department.

*** 1. Your college:**

- ◯ Allegheny College
- ◯ Augustana College
- ◯ College of Wooster
- ◯ Washington College

*** 2. Your department:**

**3. In case we need to contact you to clarify any responses, please provide your name:**

# Department Capstone Policies and Administration

## 2. CAPSTONE CHARACTERISTICS

**1. Does your department have a pre-capstone course that is specifically preparatory for the senior capstone (e.g. a junior seminar or junior capstone)?**

- ◯ yes, continue to next question
- ◯ no, skip to question 3

**2. Please describe to what extent the following items are covered in this preparatory course:**

| | not at all | very little | somewhat | to a great extent |
|---|---|---|---|---|
| Learning methods useful for the senior capstone | ◯ | ◯ | ◯ | ◯ |
| Determining the topic of the senior capstone | ◯ | ◯ | ◯ | ◯ |
| Creating a senior capstone proposal | ◯ | ◯ | ◯ | ◯ |
| Starting work on the senior capstone | ◯ | ◯ | ◯ | ◯ |
| Refining discipline-specific communication skills | ◯ | ◯ | ◯ | ◯ |
| Assigning students to senior capstone advisors | ◯ | ◯ | ◯ | ◯ |
| Preparation for a comprehensive exam | ◯ | ◯ | ◯ | ◯ |

Other (please specify)

**3. Please enter the *minimum* number of credit hours a student can receive for your department's capstone(s):**

**4. Please enter the *maximum* number of credit hours a student can receive for your department's capstone(s):**

**5. Please enter the *maximum* number of weeks a student will work on your department's capstone(s). This may include summer work.**

**6. Please enter the *minimum* number of weeks a student will work on your department's capstone(s). This may include summer work.**

# Department Capstone Policies and Administration

**7. How is the mentoring workload distributed among department faculty?**

- ◯ By student requests for individual faculty
- ◯ By assignment of faculty to a scheduled capstone seminar or course
- ◯ By a department policy that balances loads
- ◯ Other (please specify)

**8. How often does a student in your department who is a double major do a single combined capstone?**

◯ Always ◯ Usually ◯ About half the time ◯ Occasionally ◯ Rarely/never

**9. Please add any comments that might be needed to explain any of your responses for this section about capstone administration:**

## 3. CAPSTONE GRADING

### 1. What grading system is used for the capstone? Check all that apply.

- [ ] Pass/Fail
- [ ] Pass/Fail/Honors
- [ ] Honors/Good/Satisfactory/No Credit
- [ ] Traditional letter grades
- [ ] Traditional letter grades/honors
- [ ] Other (please specify)

### 2. If honors can be awarded in the capstone, what are the requirements? Check all that apply.

- [ ] Exceptional project work, e.g. A-level or above
- [ ] Passing an exam at a high level
- [ ] A public presentation or publication
- [ ] Other (please specify)

### 3. Who reviews the capstone for grading? Check all that apply.

- [ ] Mentor only
- [ ] Mentor and second reader
- [ ] Committee of department faculty
- [ ] Committee of department and external faculty
- [ ] The entire department
- [ ] Other (please specify)

**4. If reviewers other than the mentor are used for grading, who has input in the selection? Check all that apply.**

- ☐ The department
- ☐ The mentor
- ☐ The student
- ☐ Other (please specify)

**5. Does your department use a rubric to determine capstone grades?**

- ○ yes
- ○ no

**6. Please add any comments that might be needed to explain any of your responses for this section on capstone grading:**

## 4. CAPSTONE SUPPORT

**1. Please indicate any notable DEPARTMENTAL facilities or other resources that are primarily for the support of your department's capstones.**

**2. Please indicate any notable INSTITUTIONAL facilities or resources that are primarily for the support of your department's capstones.**

**3. What funding is available to seniors completing a capstone in your department?**

**4. Roughly what percentage of students in your department receive funding to support their capstone? [Please provide a number as your answer.]**

**5. Please indicate any areas where you think support for your department's capstones is strong or inadequate.**

**6. Please add any comments that might be needed to explain any of your responses above for this section about capstone support.**

# Department Capstone Policies and Administration

## 5. OTHER

**1. Roughly what percentage of students who attempt your department's capstone either do not complete it or complete it, but do not receive a passing grade? [Please provide a number as your answer.]**

**2. Roughly what percentage of majors in your department fail to graduate because they were unable to complete a capstone? [Please provide a number as your answer.]**

**3. Before beginning their capstone, roughly what percentage of your majors had one or more undergraduate research experiences? [Please provide a number as your answer.]**

**4. Before beginning their capstone, roughly what percentage of your majors had one or more performances, exhibits or presentations given beyond the context of a course classroom? [Please provide a number as your answer.]**

**5. Roughly what percentage of your majors present their capstone work at a professional or undergraduate conference? [Please provide a number as your answer.]**

**6. Roughly what percentage of your majors exhibit / perform /present their capstone projects in professional venues outside of the college? [Please provide a number as your answer.]**

**7. Roughly what percentage of your majors publish their capstone work in professional journals? [Please provide a number as your answer.]**

**8. Does your department have stated learning outcomes for the capstone?**

◯ Yes ◯ No

If yes, what are those outcomes?

# Department Capstone Policies and Administration

**9. Does your department assess the effectiveness of its capstone?**

☐ yes

☐ no

If yes, what methods are used to assess the effectiveness of your capstone course(s)?

**10. Please add any comments that might be needed to explain any of your responses for this section or make comments on any aspects of your department's administration of capstones:**

# Capstone Course Description

## 1. CAPSTONE COURSE DESCRIPTION

This survey is part of a research project being conducted under a grant from the Teagle Foundation by Allegheny College, Augustana College, College of Wooster, and Washington College to investigate the structure and impact on students of senior capstone experiences. This survey is about the academic structure of a capstone course offered by your department. The results will be reported in aggregated fashion to give descriptive information about current practices, and combined with other project information to investigate the effectiveness of various capstone features. If you have questions or problems with the survey please contact Simon Gray, Project Co-director, sgray@wooster.edu.

*** 1. Please identify your institution.**

- ◯ Allegheny College
- ◯ Augustana College
- ◯ College of Wooster
- ◯ Washington College

*** 2. Please identify your department or program.**

Students in some departments can complete capstones that are regarded as different in kind in some important way (in English, for example, the capstone might be a journalistic project, a creative work, a literary criticism, a nonfiction project, and so on). We are interested in identifying the essential features of each of these types of capstone. Please complete a separate copy of this form for each distinct type of capstone your department offers.

*** 3. Please supply course code and/or short description for this type of capstone that will identify it and, if applicable, differentiate it from other types of capstone offered in your department:**

**4. In case we need to contact you to clarify responses, who is completing this survey?**

# Capstone Course Description

## 2. ACADEMIC STRUCTURE

### 1. Please indicate the degree of importance each of the following has as part of capstones of this type:

| | essential | very important | somewhat important | not important | not applicable |
|---|---|---|---|---|---|
| Collaboration with other students | ◯ | ◯ | ◯ | ◯ | ◯ |
| A literature search and review | ◯ | ◯ | ◯ | ◯ | ◯ |
| Use of other library services (e.g. library instruction, reference librarian assistance, special collections) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Generation of data through direct measurement (e.g. through experiments, observation, questionnaires, interviews, etc.) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Laboratory experimentation | ◯ | ◯ | ◯ | ◯ | ◯ |
| Statistical analysis of data | ◯ | ◯ | ◯ | ◯ | ◯ |
| Questionnaire construction and analysis | ◯ | ◯ | ◯ | ◯ | ◯ |
| Field study (e.g. research or projects carried out on location) | ◯ | ◯ | ◯ | ◯ | ◯ |
| Clinical or practicum experiences | ◯ | ◯ | ◯ | ◯ | ◯ |
| Civic engagement or service learning experiences | ◯ | ◯ | ◯ | ◯ | ◯ |
| Internship experiences | ◯ | ◯ | ◯ | ◯ | ◯ |
| Production of a written thesis or substantial paper | ◯ | ◯ | ◯ | ◯ | ◯ |
| A written examination | ◯ | ◯ | ◯ | ◯ | ◯ |
| Creation of or contribution to an artistic performance or product (music, art, theater, literary work ...) | ◯ | ◯ | ◯ | ◯ | ◯ |
| An oral presentation of project progress or results | ◯ | ◯ | ◯ | ◯ | ◯ |
| An oral examination of the project | ◯ | ◯ | ◯ | ◯ | ◯ |
| A poster presentation of project results | ◯ | ◯ | ◯ | ◯ | ◯ |
| A reflective analysis concerning the project (e.g., its value, lessons learned, contribution to the discipline or to self-knowledge, etc.) | ◯ | ◯ | ◯ | ◯ | ◯ |

### 2. If additional context is needed to understand the responses in this section, please provide it here.

## 3. CAPSTONE COURSE ADMINISTRATION

### 1. When is the faculty mentor typically chosen/assigned?

- ◯ Prior to the beginning of the senior capstone course
- ◯ After the senior capstone course has begun
- ◯ Other (please specify)

### 2. How is a student typically paired with a mentor for the capstone?

- ◯ By enrollment in a course (e.g. capstone seminar) with a departmentally assigned instructor (skip next two questions)
- ◯ Negotiated between student and mentor
- ◯ Assigned by the department using student preferences
- ◯ Assigned by the department not using student preferences
- ◯ Other (please specify)

### 3. How often are students assigned to the mentor of their first choice?

◯ Always ◯ Usually ◯ About half the time ◯ Occasionally ◯ Rarely/never

### 4. When the mentor paired is NOT the student's first choice, how often is the reason:

| | Always | Usually | About half the time | Occasionally | Rarely/never |
|---|---|---|---|---|---|
| To distribute the mentoring workload more evenly? | ◯ | ◯ | ◯ | ◯ | ◯ |
| To better match faculty interests or expertise | ◯ | ◯ | ◯ | ◯ | ◯ |
| The first choice is on leave or otherwise temporarily unavailable | ◯ | ◯ | ◯ | ◯ | ◯ |
| The faculty member would prefer not work with the student | ◯ | ◯ | ◯ | ◯ | ◯ |

Other (please specify)

**5. If mentors supervise multiple students at one time, how is the mentoring typically structured (select the best option):**

- ◯ Using one-on-one mentoring only
- ◯ Primarily using one-on-one mentoring, with less frequent group meetings
- ◯ Primarily using group meetings (e.g. a seminar), with incidental individual mentoring
- ◯ Primarily using group meetings (e.g. a seminar), but with significant structured individual mentoring
- ◯ Varies by faculty member

**6. If additional context is needed to understand the responses in this section, please provide it here.**

# Capstone Course Description

## 4. PROJECT SELECTION

**1. Typically, how is the capstone topic determined?**

- ◯ Student selection
- ◯ Mentor selection
- ◯ Negotiated between student and mentor
- ◯ Other (please specify)

**2. How often are students' projects allied with faculty mentors' creative, scholarly, or research projects?**

◯ Always ◯ Usually ◯ About half the time ◯ Occasionally ◯ Rarely/never

**3. How often are student's projects allied with faculty mentors' interests or expertise?**

◯ Always ◯ Usually ◯ About half the time ◯ Occasionally ◯ Rarely/never

**4. If additional context is needed to understand the responses in this section, please provide it here.**

**Teagle Capstone Project: Statement of Understanding for Confidentiality and Use of Data**

The four institutions in the Teagle Capstone project recognize that data generated by this project about individual students, faculty or alumni or about the four institutions may be sensitive and that appropriate steps need to be taken to protect the confidentiality of both individual and institutional data, while at the same time allowing for meaningful analysis and the dissemination of results internally and to the broader public. This statement of understanding is intended to spell out our intentions as to how data and results will be handled. The Project Steering Committee, in conjunction with the Deans, will decide on significant issues of interpretation, handle exceptions, and approve amendments.

**Institutional Review Boards**

Each institution will obtain appropriate IRB approval for project components that involve research on human participants.

**Institutional Aliases**

For purposes of the study, each institution will have a permanently assigned alias (such as north, west, east or south) that will be used in place of the institution name on reports, publications (including conference presentations), in databases, during campus presentations and discussions, etc. The purpose is to provide a modest layer of security. The alias assigned to each institution should be shared internally with faculty and staff involved with the study only on a need to know basis.

**Common Databases: Senior, Faculty, and Alumni Survey Data**

A common individual unit record database for the student capstones included in the study will be constructed that includes the results of pre- and post-capstone surveys of students, the pre-capstone faculty survey, the post-capstone mentor's survey, individual student data from college records (such as majors, college GPA, SAT/ACT scores, etc.), capstone description information about the nature of each type of capstone, as supplied by the department, and demographic data about individual faculty mentors (e.g. department, rank, tenure status, gender). A second unit record database for the study will consist of alumni responses to the HEDS Alumni Survey. We agree that:

- Each institution will collect the unit record data described above in a single Institutional Capstone Database and that these institutional databases will be sent to the Institutional Research office at Augustana College for assembly into a single, common database.
- All unit record data coming from or about human participants will be held confidentially, at the unit record level, within the confines of the institutions' Institutional Research/Assessment offices with security as normally required for student academic records. The common database will be available only to the project co-directors and each IR/EA office for analysis within the office except as noted elsewhere in this statement. In the case of Washington College, the use of the

database for general analysis is extended to include use by Kevin McKillop, Steering Committee Chair, acting as an adjunct to the institutional research office.

- Institutions may use their own unit record data for internal purposes at their own discretion. Access to and use of unit record data from another institution beyond the IR/EA staff, however, requires submission of a proposal for approval by the Project Steering Committee (IR/EA directors, steering committee chairs, and co-directors) and the college deans. The proposal must also be approved by the proposing institution's IRB.
- For security purposes, no personal identifiers (name, college ID) will be included in the records sent off campus. Instead, each campus will utilize study and survey IDs generated for the study and its components that are meaningless outside the study, and can only be linked to individuals by the IR/EA Office at the home institution.
- Data items that could reasonably be used to uniquely identify individuals will be transcribed to a higher level of aggregation if doing so will retain their usefulness for the project. This is particularly required when reporting. For instance, we will use age instead of birth date, and assign unique contract majors to the closest department or "Other". Similarly, reports must avoid reporting any sensitive data for any groups of five or fewer individuals. (Note that this may be particularly of concern when reporting about departmental results for departments that may have a small number of faculty.)
- Unit record data will be transmitted via email using attached Excel or Access files. Those files must be password protected.
- The common databases will be available to each institution's IR/EA director in the form of periodic updates sent from Augustana in the form of Excel, Access, or SPSS files. Further, the common databases will be structured to facilitate three levels of anonymity. The actual level used will be determined later, and may depend on whether the database is being used by an IR/EA office or under an approved proposal from a faculty member or other researcher:

    - Level 3 Anonymity (source institutions masked): The records will as far as possible obscure the source institution. That is, no institutional name or identifier will be included, and study ids and survey ids that are in numeric ranges unique to each institution will not be included.

    - Level 2 Anonymity (source institutions partially unmasked): The records will include an institutional pseudonym (such as A, B, C, D) that differentiates the institutions, but the pseudonym associated with each institution *will be unknown* to the researcher. Study ids and survey ids will not be included.

    - Level 1 Anonymity (source institutions totally unmasked): The records will include the institutional alias for each institution so that the actual institution *will be known* to the researcher.

## Publication and Dissemination of Findings

We endorse the HEDS "Understanding Regarding the Use of Information Gathered for HEDS" as basic principles regarding the use of data generated by this project.

For internal use, we explicitly recognize that departments and divisions may benefit for assessment purposes from data broken out at those levels. In that case, data must not violate the minimum of five per cell rule specified above, and may compare the home institution's data *only* to the aggregated data for the other institutions.

Public presentations or published findings by individual institutions or by their faculty or administrators must not identify results for other institutions by name without their permission.

## Maintenance and Destruction of Data

In case of personnel changes, the obligation to maintain the physical security and confidentiality of the unit record data will remain with the Institutional Research/ Assessment directors and offices, unless the college dean makes a different determination and notifies the co-directors. All confidential unit record data will be destroyed within five years of the end of the grant period. This may be extended by mutual agreement of the college deans if active research and publication using the data extends beyond the grant period.