Colleen Mooney

Celebration of Learning

Augustana/Longfellow Number Sense Project

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The Number Sense Journey with Mary Night

Working with the kindergarteners on the Number Sense project in Mrs. Carmack’s classroom has been an experience of a lifetime. I have been able to see the kindergarteners grow as I worked with each of them on various math concepts. The students I taught have been at a variety of ability levels. One student who I have worked with since my Math Methods Course in the fall of 2009 was Mary Night. From the first assessment video I watched of Mary, which was the Kathy Richardson C1 assessment, it was evident through her excited disposition and precision while counting that she was a very bright little girl who was eager to learn. This proved true as I worked with her during the ten weeks of class. During each lesson Mary was eager to learn and please me as the teacher. As will be discussed in this paper, Mary has demonstrated a firm mastery of many mathematical concepts but has also shown that she needs some work in other areas. It is evident that Mary is continuing to grow as I have been working with her throughout the entire school year. She absorbs information like a sponge.

Starting out on the second lesson day, which was in the end of August, Mary was able to count 40 objects accurately. She was given a tree cut-out and counting chips and was able to count 45 chips, which we called apples because we were simulating apple picking. Mary then compared the amount of chips that were on the tree cut out to the chips that were in her bucket. On her own, Mary determined that she had more
“apples” on her tree than she had in her bucket. She continued to compare which amount was greater or less than as I moved the chips from the tree to the bucket. Sometimes I would move just one, but I moved up to five chips at a time and Mary was able to add on to the number of chips that were in her bucket. I moved the chips from the tree to her bucket until the amount in each was the same, which Mary then noted as having equal amounts. This is when I first saw Mary’s strong math understanding and abilities. She continued to make connections that I had not anticipated and it was always pleasing when these discoveries were made without any specific instruction from me, only encouragement and enthusiasm.

We have been fortunate to work with computer games that were created specifically for the needs of the kindergarten students. These computer games range from ordering numbers on a number line and recognizing dot patterns to solving story problems. Mary has worked on the computer using these games, which had demonstrated both her math strengths as well as some areas that she needs additional practice. In January Mary played the word problem computer game that works on addition. She used her fingers to add the numbers together and completed all the problems accurately and quickly, which was an indicator that she did not have many problems with this game. The next game she played this day was the pattern set game. This game flashes a dot pattern on the screen between half a second and two and a half seconds, depending on the setting, and then the pattern disappears and the child needs to click on the correct number of dots that was shown on the screen. Mary did a good job with numbers one through six; however, she did struggle with the dot patterns for the numbers above six. The third computer game Mary played during this instructional session was called Ah
Chute. This game works on grouping sets of chips by fives. The object of this game is to get the most of your colored chips at the top of the five rows of five. Each time the player spins and is given between one and five chips. The player then needs to decide where to place these chips, in any of the five rows that will get them the most of their colored chips in the top slot. This game is similar to Connect Four in appearance. Once Mary understood the directions she would put her chip on top of her opponent's chip to win the game. This demonstrated her ability to group the chips into groups of five.

Mary also demonstrated a strong understanding of the ordinal properties of numbers during the year. She demonstrated this through her performance on two computer games I played with her in the spring. The first one called “Line ‘Em Up” is a game where there are various spots on the number line missing and the student needs to use the given number tiles to fill in the blank spots on the number line. The number line is from one to 20 and Mary did an excellent job with this game. She made sure that she knew exactly where the number tile should be placed before moving it. She often scanned the line with her eyes, rather than using her fingers to count each blank spot.

Mary also played the game “Thinking of a Number” where the computer has a mystery number between one and 20 and the student needs to use process of elimination to determine what the number is. The student is given a clue that indicates that the mystery number is between one number and another number. Then the student clicks on the number chart to eliminate the numbers. For example, the mystery number is 11; therefore the computer would show that the number is between three and 19. The student would select the number eight, and the computer would inform the student that it is greater than eight, so all the numbers eight and below would be eliminated from the
number chart. When playing this game Mary understood that the best way to figure out the mystery number the fastest is by using the middle numbers that would eliminate a lot of the numbers before or after it.

During my instructional time with Mary we have also worked on writing numbers. In September I documented that Mary wrote numbers up to 20 accurately, but needed some guidance with some numbers and sometimes had to trace numbers that I had dotted out for her because she was unsure how to write these numbers. One particular thing I noted was that she did not correctly write the number five, even with guidance. This was at the end of October and when I was working with Mary at the end of April, she wrote each five, when filling in the blanks on a worksheet, backwards. There were also fives throughout the worksheet, however, she consistently wrote the number incorrectly. Once instructed to fix this, she went back to each five and wrote it correctly, but she did not initially see anything wrong with the number. This is an area where she needs assistance. At one point during a number writing activity, Mary indicated that this is like what she does with her mom at home. Since it is clear that Mary receives instruction at home, I am sure she will develop the ability to write the number five correctly with this additional practice she is receiving.

Although Mary is a very strong math student, she has had trouble with certain concepts. During the C1 assessment her performance in determining adding one more, or taking away one counter chip was at the “needs instruction” level. However, it is apparent that she has progressed with this task. During an activity where Mary and her partner played store, I selected a piece of plastic food that was labeled as a specific amount of money, which were all priced between a penny and 12 cents. The two
students were to find items that were less money, the same price, and more money. Mary did this very well with determining which items were less, more and equal to the selected priced item. To make this activity more challenging I had Mary and her partner use two items that together would add up to less, more, and equal to the target price. She completed this task very well and accurately. This activity was done at the end of January, which indicates that she progressed in this concept that she was not able to do in August.

Most recently Mary has worked with me on two-digit adding and filling in the missing numbers on a number line to 60. The two digit adding worksheet had three columns. The first column was the start at section. Mary had a 100s chart and she was supposed to start at the particular number in that section. The next column was the move forward column, where Mary was instructed to move forward that many spaces from where she started. The final column was the sum column where Mary wrote down the number she landed on. One of these problems instructed Mary to start at eight and move forward three and the sum of eight plus three is 11. Mary primarily relied on the 100s chart to count forward, however, I did guide her in adding on in her head. Another one of the problems had Mary start at 18 and move forward five. I had Mary say 18 out loud and then we used our fingers to count from 18 forward five to 23. This method was faster for Mary to use and she did appear comfortable with the chart and the adding on with her fingers, but I believe the visual of the chart was easier for her to use. Mary then went on to filling in the missing numbers in each row. The first row looked like: 1 _ 3 _ 5 _ _ 8 _ 10. The blank spaces continued all the way to 60. Mary filled in these numbers accurately, however, as I stated above, this was the activity where she wrote all of her
fives backwards. Overall Mary did a good job with this activity and demonstrated confidence and excitement for the math activities.

Not only has this experience helped Mary grow in her math abilities, it has helped me grow as a teacher. When I first started working with Mary in the fall during the Math Methods Course, I was incredibly nervous and unsure of myself as a teacher because I had never had to create my own lesson for actual students before. However, as time progressed I got into the swing of things and became more confident in my teaching abilities. I was able to find a variety of methods for teaching each math concept and develop alternate explanations on the spot. I have been pleased with my growth as a teacher and the way I am able to implement lessons. Growing with these kindergarten students has been an opportunity that I am eternally grateful for. I feel that I have become a better teacher because of it and I know the kindergarten students have been impacted positively because of this Augustana/Longfellow partnership with the Number Sense Program.