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Celebration of Learning 2010
Kindergarten “Number Sense” Program
I began working with Benny on November, 16, 2009. He was barely able to count to 12. The first activity we did with the kindergarteners was called “counting boxes.” This activity consisted of little boxes with marbles inside each of them. The boxes also contained little cards with the numbers 11 to 20 written on them. The goal of the lesson was for the students to pick out a yellow card, say the number, and be able to count out the number of marbles the card dictated. The fact that the numbers in the box began at 11 was a huge problem for Benny. He had no idea what these numbers were and constantly struggled with the counting. The next day I worked with him on counting the marbles in the box and this time around he was able to count to 15. However a problem began to develop. He was forgetting the number 16 and moved straight from 15 to 17.

A few class periods later I discovered that Benny could count to 39! Of course, when he counted to 39 he kept forgetting 16. I had no idea what to do about the number 16. I could not understand why he kept skipping that number. I tried having him jump up and down when he said the number 16 to see if he was a kinesthetic learner. We sang a song about counting that included 16 to help him remember the number. We even did an activity called “egg carton math” where each divot of the cartoon was marked with a different number. He had to put the correct number of counters into the divot as specified by the number written on the cartoon. I could tell this helped him with counting and number recognition because I saw him being able to make the connection between the number of counters he was placing in the indent and the number printed above the divot. At this time, Benny could not recognize numbers above 11. It was very difficult for him to recognize any number above 11. However, during the activity Benny would choose a divot and then I would choose one for him. After each number he chose I always chose the 16 divot for him to put the counters in. Therefore, he could see that the number 16 did indeed exist. After we counted with the egg carton I had him count to 20 for me to see if it worked. He skipped 16! I had no idea what to do.

My mom has been a first grade teacher for almost 40 years. I decided that I would call her and ask for advice about Benny. I wanted the invisible 16 dilemma to be solved. She told me to buy a cheap
toy car and explain to Benny that he had to be 16 in order to drive a car like this. Then the car is a physical representation and reminder of the number 16. Also, toy cars are something every kindergarten boy likes. I followed her advice and went out to buy a cool toy truck. I put a post-it note on the top that said 16. When I came to class on Monday I was armed with my toy truck. I called Benny over to work with me. He sat down and I explained to him this was a truck he could not drive until he was 16. I kept emphasizing the number 16 and the truck. Then I asked him to count to 20 for me. When he began counting and reached number 15 I began rolling the toy truck on the table. When Benny saw what I was doing his counting appeared like this: 15, 17…16, 17. From that instance onward he recognized that he was forgetting 16. I brought the toy car when I worked with him every time after that encounter. Each time he counted he paused at 15, looked at the car out of the corner of his eye, and slowly stated the number 16. It was interesting to see him slow down while counting when he knew he was approaching the number 16.

Benny’s still did not have number recognition above the number 12. We had to work hard on recognizing the teen numbers. I had numerous activities that I tried with him. One exercise he found most engaging was a ginger bread memory game. He loved this game because he could win against me and sometimes he was able to play the role of the teacher. Also, memory is a game where the player has to be constantly thinking and remembering where the cards are located. His teacher, Mrs. Nell, gave us gingerbread cut outs to make into memory cards. The students then could play number recognition memory with them. Through Benny’s struggle to recognize numbers, I have discovered that number recognition is not easy. There is not really a pattern or a formula for recognizing numbers. The teen numbers especially make no sense to the students. They do not understand why they are saying the 6 in six teen first even though the written number has a 1 before the 6. As a future teacher I have realized that number recognition must always be highly stressed and continually practiced because it is based on memorization. The children who have a superior visual memory are the ones who will succeed with number recognition. The other students cannot help that their visual memory is not up to the same level.
Every child is different and that is why number recognition should be continually practiced in kindergarten.

After numerous sessions of working on number recognition and the number 16, I sat down at my table in the kindergarten classroom and saw a toy phone. I thought it would be fun if I told Benny a number to dial into the phone and then he would “call” someone if he dialed the correct number. It would serve as a formative assessment to check his progress on number recognition. He dialed in all the numbers correctly, even the teens! Also, I asked him to count to 20 for me as usual. This time he remembered 16 without me prompting him in any form! I had not even brought the toy car to class that day. When he went back to his seat I could tell he knew he had accomplished something significant. I had seen the progress that Benny had been making. I also learned a good trick for helping students remember certain numbers. As the year progressed knowing that students who skip certain numbers when counting is not a rare phenomenon. Numbers and math are abstract concepts. For young children, thinking abstracting is extremely difficult. By using an object to represent a specified number, the teacher is removing a bit of the abstractness from the numbers. She is bringing it to a concrete level where the students are able to understand it. Now, the students have a concrete object to represent the concept they are trying to grasp. As a future educator I plan to implement this when teaching math. If students do not comprehend a certain concept, I can try to find a way to make it more concrete and tangible for them.

When Benny finally counted to 16 we could begin moving up to a level where I could implement the same activities with him as I did with the other students I worked with. Benny still needed moderate modifications, but he did not need a completely separate “curriculum” so to speak. At this time, he knew how to count to 40, recognize his numbers to 20, and he understood the concept of more and less. We began our domino unit during this time. Mrs. Nell gave each of us a box of dominoes that we were to use with the students. This would help them recognize patterns, count, and possibly primitively begin adding numbers together. Benny could quickly and easily recognize domino patterns. I would only need to hold the domino for a few seconds, and without counting, he could tell me what number was on the domino. In order to begin scaffolding addition I told him to take one side of the domino and then say the number.
without counting. Then he would remember that number and begin counting the other side. For example, if the number on one side was four, he would count the other side saying four, five, six, seven… He began looking at the domino as a whole rather than two separate parts. This was quite a gain for him!

A few weeks after the domino unit, we celebrated 100s day in the kindergarten classroom. Mrs. Nell created an activity that would help the students count to 100 by tens. She had them create necklaces made out of fruit loops. Students needed ten groups of ten on the necklace and each group of ten needed to be a different color. Mrs. Nell explained to us so the students could visually understand how to count by tens. This is another instance where the teacher worked to make a math concept more concrete so the younger children would be able to comprehend. They could use the visual stimuli to see what they needed to accomplish. During this activity the Augustana teachers asked students to count by tens when they finished their necklaces. They then could use their necklaces as a tool to help them count up to 100 by tens. I tested many students and then I came to Benny. He had finished his necklace and I brought him to the table to count by tens for me. To my surprise he counted to 100 by tens perfectly! At that moment I could see the progress he had made over the past three months.

I also discovered that Benny had the necessary fine-motor movement to form the numbers correctly and he wrote most of them the correct way. I had him write his numbers on a white board and then we talked about how to write the numbers correctly. Later in the year the other Augustana teachers and I realized that we needed to utilize the computer more often. Dr. Hengst had specifically created software for us to use with the students. We need to start using this technology so we could gather data on how it was working and how it affected the progress of our students. We created a schedule where we each had a day to use the computer. Benny was able to work on the computer every Friday. The first time we worked on the computer, we played a game called “count sort.” This game entails the student clicking on the dots to count them. Then they have to click on the number that corresponds with the number they just counted. It is an assessment of counting and number recognition. Benny recognized all the numbers and he counted correctly every time. During this game I asked him his favorite number. What did he say? 16 of course!
Now that Benny had mastered many of the simple skills he was ready to move to the activities the other students were doing in math. I was now using the regular math curriculum of *Trailblazers* rather than creating activities more specifically tailored to his needs. He was ready to move into more difficult math concepts. We were beginning to move into very basic addition and subtraction with learning one more/one less. I used the ten in the bed song and actually put manipulatives in a bed provided by *Trailblazers*. He understands the concept of a total number or a sum. We did this with cubes on a bed and even though some were on the bed and some were on the floor, he knew that altogether there were 10 cubes. Since he didn’t quite understand one more/one less I decided to use an activity that I had used with many other kindergarteners. This was the activity of “Ten Little Monkeys Jumping on the Bed.” Many students have read this book or at least heard the song. This activity has the students engaged because they are singing, moving, and learning math at the same time. I had used this with my kindergarten group in the fall and it had worked extremely well. I thought Benny was ready to receive a dose of the monkey magic.

I asked Benny if he knew the song of *Ten Little Monkeys Jumping on the Bed*. Since he did, we began singing the song. When we got to the end I told him there were ten monkeys jumping on the bed and one fell off. How many monkeys are there on the bed now? He thought for a while and then I decided to give him a hint. I asked him what number came before ten. He told me nine and then he realized this was the correct answer. We began to sing the song again with nine little monkeys jumping on the bed. Throughout the song he was beginning to realize what one less meant. It is the number that comes before the number we are currently singing about. When we got down to five, he no longer needed any prompting from me. He was able to supply the correct number without my help.

The next activities in *Trailblazers* dealt with understanding what combinations of numbers make ten. This is scaffolding basic addition. Benny did better with these activities than I thought he would. During one game we played a thumbs up/thumbs down game. I would tell him two numbers and if he thought they made ten he would give me thumbs up. If the two numbers would not make ten he would give me thumbs down. Benny excelled at this game! He only missed a few of the questions I asked him
because I believe he could not yet apply one more/one less without manipulatives or a song. When I asked him if 1 and 9 make 10 he gave me thumbs down. He could not yet make the connection that one more than 9 is 10. Other than this issue, Benny was really beginning to understand basic addition. It was amazing to think about that fact that in the beginning he could not even count properly. Now he is adding and subtracting! What a remarkable progression in his math skills!

Throughout my experience with Benny I learned numerous insights about teaching in general and specifically about teaching kindergarten. I have realized that I enjoy kindergarten a great deal. I am not positive that I could be a kindergarten teacher, but I feel as though it is an option for me. Kindergarteners need to be pushed; many adults assume their learning processes and skills are primitive. The opposite is true. Kindergarteners have a large amount of knowledge that they should continually be encouraged to use. Teachers should never assume young students are not capable. In my experience, I have seen vast learning differences between every student in the kindergarten room. However, it is a mistake when teachers only focus on the students who are struggling. In Mrs. Nell’s room there are many students who are highly advanced for their age. These students need to be pushed so that they can grow rather than remain stagnant. Otherwise, they will learn to detest school because they are bored with the work. It is too easy for them.

The solution to this problem is differentiating instruction. Differentiating instruction is the key in all classrooms. The teacher can have Benny working on counting, while Ryan is practicing making combinations that equal ten. It is possible and all students will benefit from this type of teaching strategy. This “number sense” experience has given me the necessary confidence to move from a teacher candidate to a certified educator. I have become comfortable in a classroom setting and no longer feel like an outsider. I am ready for student teaching and to have my own classroom in the future.