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Celebration of Learning 2010
Kindergarten “Number Sense” Program
Focus Student: Brian

I began working with Brian at the beginning of this school year. He started off the year at age four, and turned five at the end of August. Because, cognitively, he is a year behind his peers, Brian tends to be behind in his academics compared to his classmates. However, even with this “delay” he has shown great progress in his math skills throughout the school year.

In my first encounter with Brian, I was very frustrated because he just did not want anything to do with math. He wanted to play with blocks and run around the classroom rather than do the math activities that I had planned. After I found out that he was still four years old during this encounter, I knew that I needed to plan my future lessons accordingly. I made sure the new lessons allowed Brian to use the blocks, but with math incorporated. I also tried to include activities into the lessons that would allow Brian to move around, such as a Simon Says game. My hopes were that Brian would be able to learn with these methods since he showed me that he was a very active boy. When Brian finally decided to take a little time to do some math, he was unable to count to ten correctly. He would frequently skip numbers, add numbers, and/or mix up the order of the numbers. When he was given a pile of objects to count, he had no sense of one-to-one counting. In other words, he would count the objects in the pile over and over again until he decided to stop, rather than organizing the objects to make sure that he only counted each object once. Brian also lacked cardinality, or the ability to remember how many objects he just counted. He would count five objects correctly, but if you asked him how many objects he just counted he would guess and say two, or he would count them all.

\(^1\) Name has been changed for confidentiality.
over again. Once Brian learned how to organize objects while he was counting, he began to understand the concept of one-to-one counting as well as cardinality.

By the end of October, Brian had made many improvements, but he was still behind most of his classmates when it came to math. He started off unable to count to ten accurately, but by the end of October he was able to count to twelve. However, he was still not able to write or recognize numbers. Luckily, I was able to continue tracking Brian’s progress throughout his year in kindergarten by being a part of the Number Sense project.

The Number Sense project began in mid-November. At this time, I began working with Brian every Monday, Wednesday, and Friday and will continue to work with him until May. I have been keeping records of the math activities that I do with Brian and how well he does with each concept. The first time I met with Brian for the Number Sense project, we were working on number recognition. He was given a card that had a number written on it, and he needed to make a pile with the same number of objects that was written on the card. The next time we met, we continued with the same activity. He was able to recognize more numbers, but this time he did not understand that he needed to make a pile that had the same number of objects as the number written on the card. On the Friday of this same week, Brian just decided that he was not interested in math so he went to blow his nose and sent another student out in the hallway to work with me instead.

The following week I continued to work on number recognition with Brian since that is an essential concept that he needed to grasp in order to move on. We played a game of memory where he needed to flip over one card and then another card and
determine if they had the same number written on them. This was done with numbers eleven through twenty-one because he had previously shown that he was able to do this with numbers one through ten. He showed improvement with his number recognition, but he was saying “five-teen” rather than “fifteen” and he was not recognizing the numbers eleven, twelve, or thirteen for some reason. The next day I brought a dry-erase book that allowed Brian to practice writing numbers one through twenty as well as recognize those numbers. There were connect-the-dot activities at the back of the book that he was able to do as well. He understood that he needed to connect the dots according to which number came next. This day he was able to count to twenty with little error, which was a big accomplishment for him considering he started off a few months earlier unable to count to ten. The next time we met I decided to try a new game to see how well he really understood the order of the numbers one through twenty. We played a “guess the missing number” game where I would show him a few numbers with one missing in between them that he would have to figure out. He was able to do this with numbers one through fifteen, but anything higher than that he was struggling with.

Brian made great improvements the next week and he was able to recognize numbers from one through twenty-nine. It was an exciting day for both of us, so it was disappointing that I did not get a chance to work with him for the rest of the week. However, the next time that I worked with Brian he was still showing signs of improvement. He was able to determine which numbers were greater or less than five. He was also able to write and recognize numbers one through twenty.

The next time that I worked with Brian, I gave him number cards one through ten and asked him to put them in order and he did that with ease. However, when I tried
having him add some of the teens to that, he was unable to put them in order. Fortunately he was still able to recognize his numbers from one through twenty with no help. The next day we practiced writing his numbers from one through ten. He knew what they each looked like, but because of a common developmental issue he was writing them backwards. It was still a good sign that he could write them regardless of them being backwards. The last day of this week was dedicated to seeing which students could count to one hundred. When I asked Brian to try and count to one hundred he laughed at me and told me that he could not count that high. I finally talked him into trying to count as high as he could, so he counted to twenty-nine and then went straight to one hundred. He had never counted to twenty-nine before, and since he did not know which number came next, it probably seemed logical to him that it must be one hundred. Even more impressive though, he was able to count to one hundred by tens. If only he understood that if he knows that pattern of counting by tens, he should be able to count by ones as well.

We began working with dominoes next. Brian was able to look at the dominoes and recognize the number patterns of each of the numbers. He knew that if there were four in a square with one more in the middle then there were five dots on that side of the domino. When I asked him to count how many dots total there were on both sides of the domino, he was having trouble because he would count the one side and start over with his counting on the other side. Not long after this encounter, we played “war” with the dominoes. We each would flip over a domino and count how many dots we had total, and whoever had more total dots would get to collect both of those dominoes. Brian was able to count correctly without starting over for each side, but he had trouble determining who
had more dots. This probably had to do with the fact that he just always wanted to “win” each time and would take both of our dominoes as if he had won even if he did not have the most dots.

By the middle of February, Brian was no longer writing his numbers backwards which showed a change in his development. He was even able to look at two dominoes and determine which one had more dots on it without having to count. This was a sign that he was thinking in terms of comparison and noticing that there were a greater number of dots on one domino in comparison to the other domino. In the beginning of March I started introducing Brian to the computer games that were created for the Number Sense project. We played a game where Brian was shown a ten-frame with a select amount of spaces filled with dots, and he was supposed to determine how many dots were missing from the ten-frame. He did great with this concept, and later that week Brian successfully counted to thirty without any mistakes. By the end of March he was able to tell me what one more was for numbers two through thirteen. For example, I would ask him to tell me what one more than three was, and he knew that it was four without having to count all over again.

Brian continued to demonstrate progress in the month of April. He determined many different ways to make ten. In other words, he could show me that 1+9=10, and 4+6=10, and so on. That was definitely a huge development since I first began working with him. On top of that, he was able to count to thirty-nine. To build on his knowledge of how to make ten, I started introducing the concept of simple addition to see if he could apply his knowledge. With the help of some manipulatives he was able to perform some simple addition. He knew that if the problem was 2+3, he needed to put two blocks in a
pile and three blocks in a different pile, and then count how many blocks he had total in those piles. I continued with the concept of basic addition when we worked on the computer next. We played a game called Number Line Math. He was given an addition problem and there was a number line at the top of the screen to help him visualize the problem as well. Brian did not even want to use the number line, so he used his fingers instead. If the problem was 3+3, he would put up three fingers on one hand and three fingers on his other hand and count how many fingers he had up total to figure out the answer. This seemed to be very effective for him.

Recently, when Brian counts he gets mixed up in the teens. He tends to go from twelve to fifteen, but if he is reminded that thirteen is after twelve then he knows that fourteen and fifteen follow thirteen and can finish counting all the way to thirty. Brian has also learned how to count backwards from ten as well. After he was able to write his numbers so well after some practice previously in the year, he has fallen into the habit of writing some of his numbers backwards again. This goes to show that he can be very inconsistent from day to day. Overall, he has showed that he is capable of improvement starting the year off unable to count to ten, and ending the year able to count to thirty-nine. He has matured as a person as well as maturing in his math abilities. If he continues at this rate, he should catch up to the majority of his classmates in no time.

I hope that Brian will continue to show progress as he finishes out the year. He has a lot of potential, and considering he started off at a lower academic level than I had expected, he has now proven that he has the ability to perform at the same level as the rest of the students in his classroom.