What Does the Equal Sign Mean?

Going into my senior year, I wasn't entirely sure what I wanted to do with my life, but the situations dealing with literacy that I experienced made it clear what I want to do. When I say literacy, I don't mean the common definition referring to having reading and writing skills. I mean the conceptual knowledge students should have for subjects that don't include any language, like math. Many teachers overlook the deeper meaning of teaching, and simply focus on the goal, for their students to correctly solve problems. They focus on the right answer so much that the procedures are taught in a "do this and this" method instead of the teaching the deeper part of the lesson that explain "why one does this and this." Unfortunately, because this happens so commonly they are many victims, like myself, who suffer from this on the surface teaching method, which results in a disadvantage to our literacy development.

I was frequently around kids my senior year, from cousins to the younger siblings of my friends. I would always be the one to volunteer to help them with their homework. My mom said this came easy to me because I was able to "speak kid" since I was able to get through to them, but I just really enjoyed it. It fascinated me to see the lightbulb go on in their head and to see their facial expression when they understood what they were learning. Most of the kids I tutored often needed help because their homework looked different than the examples the teacher would give them. I looked at their lesson plans and examples, and I noticed that their homework was the same concept but just more complex and figured that is why they couldn't do it, because it was too hard. As I look back with the knowledge I now I have, I can see the problem the kids had wasn't that the homework was too difficult, but that they weren't prepared or taught to think in a way to answer these questions. However, at that moment I just

figured that they were struggling and needed that extra boost to help them. This was my nudge towards the path of becoming a teacher.

Going to Davis, I decided to explore the education field and take a couple education classes that involved working with children in a classroom setting. This is where the idea of literacy, well in this case illiteracy, came up. We analyzed many cases on the literacy development that children possess and, in most cases, don't possess. This is the lesson that really opened my eyes into what I want to do for the rest of my life. In one of my assignments I had to interview a second-grade student. The question that really caught my attention was "What does the equal sign mean?" The response I got was "It means that you have to put a number after it, and it has to be the same number as the two numbers before it." I assumed it was a solid answer for a second grader, so I decided to test their knowledge with some practice questions.

"What's 5+6?"

"11."

I felt confident in their knowledge, this student was top of her class, and I would have never guessed that the rest of my interview would raise some concerns.

"Okay good, what about filling in the blank? What is the blank in 6+3=__+7?" The answer I got was a bit surprising.

"Oh, 9!"

I wasn't allowed to reveal if they were wrong or right, so I proceeded to the next question.

“What’s the blank in __=3+2?”

Now this response I really didn’t expect. My student said, “Well that’s not correctly written. There are supposed to be two numbers before the equal sign and one number after, so I can’t answer that.” Now I understood why the student got the first fill in the blank problem wrong, because she didn’t conceptually understand the meaning of the equal sign, just the procedural meaning of it. Students often don’t understand the conceptual meaning of lessons because teachers focus of making sure they can do the problems but not making sure they understand why they are getting that answer. The students then seem to be fixated on examples that teachers give them, and they cannot assess a problem and work it out because they don’t have the knowledge to do so.

After doing the interview, I applied what I learned in class and the interview to the second-grade classroom. I tweaked the lessons my mentor teacher gave me so that the students could really understand the lesson instead of memorizing steps. When we talked about regrouping, previously known as borrowing during my elementary years, I showed them why the ones placement answer is four and not six in 22-18. I used visuals and thoroughly explained the reasoning behind these procedures, and in the next week my mentor teacher showed me how much their understanding of the lesson improved compared to the first time they were taught this. When the student conceptually understands a topic, they are able to solve, using knowledge or an educated guess, for the answer by breaking apart the problem.

Looking at these students, I decided to reflect on my learning experiences. Everything I did was always for a grade. I was to read to find the answers or to write to please the teacher. It

was never about comprehension, but more about memorization. When I read Sound and the Fury, a very complicated book for me, I wasn't taught about why stream of consciousness was used. I was taught to memorize events and names because we were going to be tested on it. This resulted in me not being able to use this book in a discussion because I don't have a conceptual understanding of why techniques were used in certain ways, or why one character was so crucial to the story plot. Looking back, I can say I feel cheated on my education because I feel that I learned enough to get me through school, but not enough to get me through life.

The first class that genuinely emphasized conceptual learning over memorization was my college Molecular and Cellular Biology class. My professor didn't teach the class around terms and definitions, but instead around ideas. I had to make small learning and studying adjustments because they usually revolved around memorization. I used this method to study for my first exam and performed poorly. When it came to studying for the second exam I drew out diagrams, and read extra material which helped me understand why things worked. This resulted in me acing my second exam. I saw a difference in my learning for this class and I can say that after the class is over I won't simply forget everything I learned because I have a conceptual understanding of the material. This supports the idea that conceptual learning is something that plays a big role in literacy development and it is something that should be incorporated in to the education system.

Going to school, I was forced to do things the way teachers would do it, no room for flexibility. School had me learn things for a grade and never to conceptually understand them. Interviewing students and practicing new methods encouraged me to be a teacher, to change the way students learn a subject. Because of these past experiences I want to help the students

be literate in all subjects, to conceptually understand what they spend 12 years doing. Studying the range of literacy development that students have encouraged me to take matters into my own hand and try to change the way students learn, hopefully positively impacting their literacy development.