

Have you ever been so sure you know all the ins and outs about a topic and then when it's "game time" you freeze and have no idea how to answer a question? For most students this is "normal." Children have been fed to memorize facts and information that when it comes down to "game time" or the test, they are completely stumped and have no idea what is even being asked of them. I believe this is because students used to be taught to memorize facts. They might have been learning to an extent, but they were not understanding. "One of the hallmarks of the new science of learning is its emphasis on learning with understanding (Bransford, Donovan, Pellegrino, 2000, pg 8)."

Based on the readings and lectures I have read in my undergraduate and graduate work, I believe that learning is taking in new information. You may have some background knowledge or none at all. If you do, sometimes it can lead to false assumptions about a topic and can completely change your perception about something (Bransford, Donovan, Pellegrino, 2000, pg 10 ). As a learner and as a teacher you have to be cautious about any background knowledge. Understanding is when you are able to learn the process, the why, or have enough confidence and knowledge to explain the topic to someone else. Conceptual change is when you put the two together, but maybe what you have learned is perceived differently due to the understanding aspect, or it is more concrete.

One example to show conceptual change is thinking about math. Imagine you have an elementary child learning about even and odd numbers. They could just learn simply that 2, 4, 6, 8, 10, 12, etc. are even numbers because you count by two and that is that. This would be the learning part or if they just knew that you can count by twos from an older sibling to get the even numbers, this would be preexisting knowledge. Then let's say as a teacher you present a chart that shows the numbers from 1-20 with columns labeled: can cut into equal groups, cannot cut into equal groups, even, odd. You tell the child nothing, but that you want to walk through the chart with them. You start at one and ask can you cut this into two equal groups? You continue with the entire chart knowing which numbers are odd and which are even, so you use a different color to fill in the chart. Then when it is done you ask them: What do you notice? What do you wonder? Do you see any patterns? This allows the child to start digging on their own and explore the topic of even and odd numbers. As they start telling you what they notice you do not give them any information but might restate what they say. You have them do the exploring and figuring out. Once a child understands the pattern that the even numbers are all numbers you can split into two equal groups, they won't just know that 2, 4, 6, 8, 10, etc. are even numbers, but they will know why. At this point the child has experienced conceptual change.

Another example of conceptual change is thinking about science. I received this information from a YouTube video titled: "Good thinking! – Conceptual Change: How New Ideas Take Root." If you ask a child, "If I drop a tennis ball and a basketball at the same time, which would hit the ground first?" They might say that the basketball will because they have thrown water balloons out of a window before and they know that heavier things fall fast. Their background knowledge and experiences are giving them ideas that are not fully true. This is called a misconception. As a teacher it is our job to help scholars figure out and explore the answer on their own. A child needs to be able to make sense of these types of things on their own. A teacher should not just tell them, "Nope that is wrong they actually hit the ground at the same time." This again would be a way for them to just memorize a new fact and they would not actually understand the why. Teachers that understand conceptual change know to give children the resources and tools to explore the phenomena. Once the child has a tennis ball and basketball in their hand, can test this idea, and make their own findings, the conceptual change will happen.

From my personal experience as a child, I was never good at memorizing anything. I loved hands-on activities, and I thrived when teachers gave us projects to do the exploring or findings. I can remember times when teachers would give us facts to memorize and then when it came to a test that asked us beyond the memorized fact I would fail because I did not fully understand the topic. Now as a teacher I know the difference between learning and understanding. I know the tools to use when a child has a misconception. I also know how to guide, and support children through their learning. As a teacher I plan to use these concepts and tools to be the best teacher I can be.