What is Learning? Pathways to Deeper Understanding

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CEP 800: Learning in School and Other Settings

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July 2, 2021

Learning is a multifaceted path that can lead to variable levels of understanding of the world around us. This can range from patterns of responses based on our most basic biological impulses as described by behaviorists like Skinner (Cherry, 2019a) to the ability to produce abstract thought around abstract ideas (Bransford et al., 2000, p. 33). The degree to which learning occurs depends largely on the path that an understanding took, as seen in Figure 1 (Russell 2021). While all learning has to do with pattern recognition and testing the rules for those patterns (Cherry, 2019a), learning journeys that are filtered through a mentor who can help to address misconceptions and scaffold methods of testing ideas often lead to the deepest and most well-developed understandings of the world.

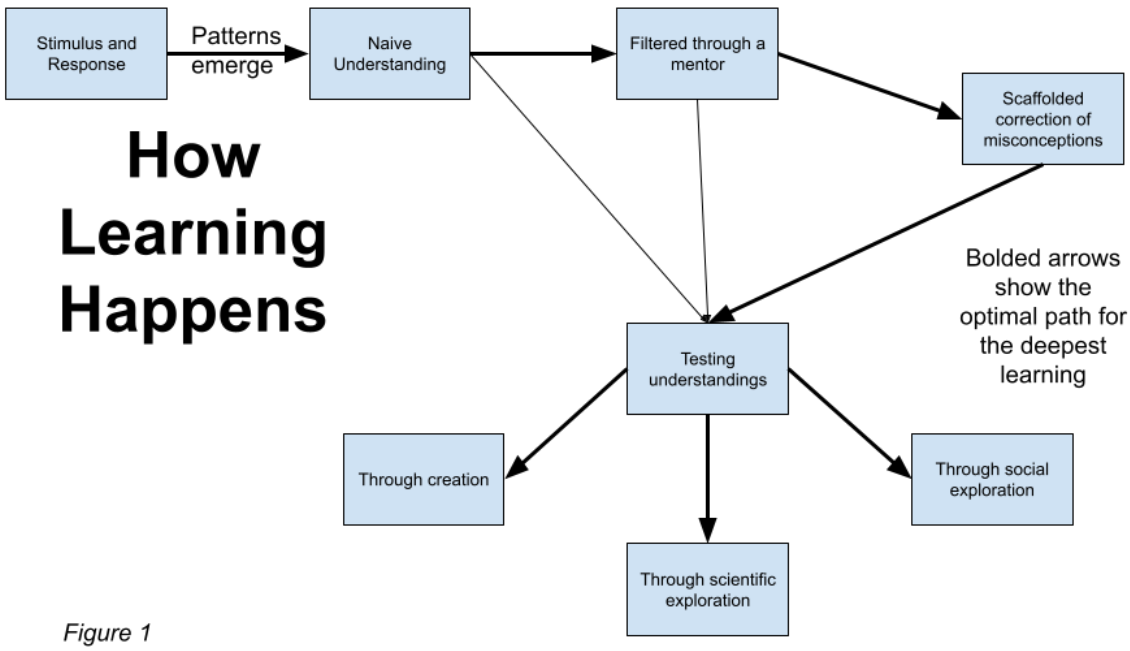

Figure 1

On a basic level, we learn and make sense of the world the same way that even the most simplistic of creatures do- we experience external stimuli and react to said stimuli (McLeod, 2018). However, true learning occurs when this happens over time, and we internalize the patterns of stimuli and reactions and begin to use them as a way to navigate our environment (Dunhigg, 2012). This must not happen in a vacuum. When left alone to interpret these patterns, we often come up with rules and regulations that are not actually accurate, and come from our own naive interpretation of a phenomenon (Bransford et al., 2000, p. 10). For example, a person might conclude that colder things float because ice floats. In order to guide people towards deeper understanding, it is vital to have a mentor to help to address misunderstandings and provide structure for making connections between concepts. When these misconceptions are addressed and corrected for, people are able to progress towards a more mature understanding of the phenomena around them.

Our learning is made deeper and “stickier” in our brains when we are given the opportunities to try out ideas and patterns in different contexts, promoting the transfer of information (Bransford et al. 12) and giving us a chance to either assimilate new information into our existing schema or to accommodate our schema to include new, disparate information (Cherry, 2019b). We can then test our scheme in various ways, ranging from social exploration to experimentation in new situations to creating things based on our understandings. In a social exploration context, a person might explore their own understanding by comparing it to the understanding of another person and trying to find ways to fit their points and examples into one's own schema (Cherry 2019b). For example, a student who is just starting to understand the idea of a mammal

might adjust their internal concept of it when another student points out that a dolphin is a mammal. Experimentation involves testing our current understanding within new contexts to see if our knowledge still holds true. For example, we might test our understanding of the conservation of matter in the context of the water cycle. When creating to understand, a person might find flaws within their own internal model of something when things don't come together in their creation, such as noticing more connections when creating artwork to represent something.

The process of learning is made better when a mentor is present to scaffold how understandings are tested and in what way (Bransford et al. 68). When left to their own devices, a person might test an understanding in a way that confirms an inaccurate theory of the world and further solidifies this incorrect thought in their mind (Erlwanger, 1971, p. 25). When a mentor is present, the testing process can help to funnel people towards certain understandings. For example, a student might be given an experiment to perform that is designed to show a certain phenomenon in a certain way. However, even with a mentor, if the testing process occurs without considering the understandings that a person already has, guided testing can confirm inaccurate theories of the world in the same way that unguided testing can. To ensure the opportunity for the deepest possible understanding, people must be provided with both a correction of misunderstandings and ample testing under the guide of an experienced mentor. In addition to the correction of misunderstandings, the experienced mentor can also ensure that the student is exposed to activities and opportunities to test ideas that fall within the student's zone of proximal development as described by Vygotsky (Cherry, 2020). By providing opportunities in this zone of proximal development, between what a

student can do alone and what a student can't accomplish alone, students are able to grow in their understanding of a topic (2020).

In addition to the learning activities being performed, the existence of a learning community is also crucial. As outlined by Putnam and Borko (2000), learning requires interaction with others in order to be effective, students should be given an opportunity to be doing learning activities with their peers and within an environment that mimics how an expert within a particular community would be learning. By providing this situated and authentic learning, students can learn with the tools of a particular discourse community (Brown et al., 1989), and eventually grow enough to take part in the discourse itself (Putnam & Borko, 2000). In addition to a learning community existing in the first place, learning is greatly enhanced when the learning community culturally sustaining, meaning that allows for learning and interacting with the world in ways that are compatible with and celebrate how you were brought up (Paris, 2011).

Learning is not necessarily straightforward or linear. It is a constantly changing and evolving process, and different routes and approaches can change the way that our understandings develop and how deep and/or accurate they are. By understanding learning pathways, teachers can better understand how the minds of their students (and their own minds) work, and thus can ensure that they are enabling as much learning as possible within their own classrooms.

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