

Behaviorism cognitivism and constructivism: educational technology



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Many scholars have commented on how behaviorism, cognitivism, and constructivism have influenced the research in the field of educational technology. At this point in your student career, you have had an opportunity to read material on each of these learning theories or approaches. How would you describe your beliefs about learning in relation to these theories? How will this choice of beliefs affect your future dissertation work? You may select one or more of the theories listed or provide another that is scholarly and recognized in the literature. Regardless of how you approach your answer, it must define key terms and theorists, provide detailed concrete examples, and must be scholarly in tone. [Important - although this is an open book question, it asks you to state your current beliefs and relate them to works and theorists YOU HAVE ALREADY READ. You may cite them informally. Avoid the temptation to “ Google” or “ Wikipedia” a theory or theorist and review their works in the limited time that you have. Think about your beliefs, outline your thoughts, and use your resources to further support your argument]

Introduction

In my first year as a doctoral student at the University of Northern Colorado, I asked Dr. Ku and Dr. Lohr if they thought I was a behaviorist or a constructivist. At the time, I was just beginning to learn about learning theory in a Psychology class, and all the theories in the textbook seemed to make sense when I read about them individually. Throughout my career as a doctoral student I have continually altered my position through various theories. My current understanding and application of learning and its relationship to theories is more pragmatic. I believe that the proper use and

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application of learning theories depends on the context to which it is applied. What follows is a brief discussion regarding my beliefs about learning in relations to each of these theories.

Theories

Behaviorism

Behaviorism, popularized in the 1950s and 1960s, is based on an objectivist ontology and empiricist epistemology. Behaviorism draws many of its principles through experimental research in psychology (i. e., Pavlov's experiment with his dogs). Proponents of behaviorism consider the mind to be tabula rasa, or a blank slate. These include people like John B. Watson, Edward Tolman, Clark Hull, and B. F. Skinner. Skinner, in particular, is famous for introducing operant conditioning, which is where behavior is altered through reinforcement. Programmed instruction is an example of a strategy that uses behaviorist theory.

I believe that the stimulus-response type learning is ineffective, particularly in helping students gain higher order skills. However, I do believe that behaviorist learning principles can be applied to certain disciplines for specific purposes. For example, acquiring typing skills is an example that is often brought up by those in favor of direct instruction. Also, in secondary language learning, rote memorization of vocabulary is necessary in becoming a proficient communicator in a different language. In such cases, direct instruction and rote memorization are good strategies of teaching and learning.

Cognitivism

Information processing theory is often tied to cognitivist learning theory. The Atkinson-Shiffrin Memory Model from the late 1960s introduces the various stages of information processing from sensory input to long-term memory. According to their model, there are three types of memory: sensory memory, working memory, and long-term memory. Sensory memory holds information only for a brief amount of time. When processed, information goes to working memory. Working memory, which consists of short-term memory and short-term store, is the stage where more processing occurs. George A. Miller introduced the magic number seven plus or minus two to indicate the bits of information that can be processed through working memory. Paivio's dual-coding theory suggests that there are two channels from which information becomes processed: visual and auditory. Cognitive capacity can be maximized by using both of the channels.

Using strategies such as rehearsal and chunking, information becomes transferred to long-term memory. Long-term memory is where knowledge is permanently stored. It is believed that once information is stored in long-term memory, it is never lost. However, information from long-term memory must be stored efficiently to enable easy retrieval. Endel Tulving's discovery of episodic and semantic memory suggested that there were two information processing systems in long-term memory. Episodic memory was for specific events and semantic memory is general information. In education, the focus is on semantic memory.

My personal belief about cognitivism is that it strengthens our understanding of learning from where behaviorist left off, and that its concepts can be applied to constructivist methodology. Behaviorists believed that the mind was a blank box and, thus, minimized its importance as a function of learning. However, when cognitivists opened the box, it revealed cognitive processes that could better describe human learning and engagement.

I think about the education system in Japan where there was a nationalized policy to reduce the number of information that students would have to learn. At the time, everyone believed it was a reasonable solution to the problem that Japanese students were only memorizing a large load of information without being able to apply it effectively. The idea was to lower the number of facts, rules and principles to study, and spend more time connecting larger ideas. Unfortunately summative evaluation revealed that students were not learning any better than they were before. One observation can be made from this failed policy. The Japanese policymakers failed to understand that the number of information bits was far less important than finding ways to chunk information. This illustrates that, whether the learning environment is a lecture or a dynamic debate, teachers have the power to transmit knowledge or facilitate an environment that reduces cognitive load.

Constructivism

Constructivism is a theory with the fundamental belief that knowledge is constructed by the individual and that it is a continuous process. There are a number of types of constructivism. Trivial constructivism is a combination of

information processing and knowledge construction by the individual. Radical constructivism is attributed to von Glasersfeld and the idea that knowledge is constructed based on individual experiences. Social constructivism is attributed to Vygotsky, emphasizing the idea that knowledge is a shared experience between people. Situativity theory, which is associated to the works of Lave and Wenger, can be argued as another type of constructivism where the emphasis is on social and physical context.

Constructivist learning theory should not be confused with constructivist methods of instruction. Generally, constructivist methods assume a) students are naturally motivated; b) students actively construct method, rather than have it transmitted by someone else; c) meaning is created through connecting new information with prior knowledge; d) knowledge can be personally or socially constructed; and e) knowledge is best constructed in authentic learning contexts where ill structured problems parallel real life issues and problems.

Problem-based learning (PBL), which has been extensively studied by Jonassen is an example of constructivism. PBL focuses on a specific problem to be solved. Inquiry-based learning (IBL) is another type of constructivist learning strategy. IBL, which is similar to PBL, focuses on questioning and defending an answer to a problem based on evidence. Discovery learning promotes deep learning through student engagement.

I believe that constructivism is appropriate for the changing nature of learners in a society that is changing rapidly. When I was in high school, plagiarism in an English class meant that a student had copied off of another

student or had copied off of Cliff notes. However, with the prevalent use of the Internet, not only are book notes available, but also, discourse and feedback to those books, mp3 and YouTube videos that helps describe or create mental models, among many other ways in which information is delivered. Thus, it seems as though finding the correct answer is less important than finding a good answer supported by good evidence. Acquisition and transfer of such skills will be fundamental for a student's life-long process of learning.

Conclusion

My current topic of interest for my dissertation is researching a constructivist charter school and better understanding how inquiry-based learning is being used as a method of instruction. In particular, I am interested in the different experiences of the administrators, teachers, and students, and how the interactions among them create a community of learning. I believe that my pragmatic belief and approach to understanding learning theory can be applied in two ways.

First, understanding constructivist principles will help me better understand my position as a researcher using a constructivist methodology to analyze whether or not inquiry-based learning is indeed being effectively and efficiently utilized in the classrooms. Also, I will be interested in seeing whether or not direct instruction-type methods are being utilized for lower-level or rudimentary skills. Many constructivists do not deny the fact that direct instruction could be useful in certain learning environments. I would

like to see how and when different learning methods to instruction are used to maximize learning.

In conclusion, I was reading the Handbook of Research on Educational Communications and Technology, I was surprised to find that in the glossary of terms, there was no definition for the word learning. My understanding is that learning varies, based on context and purpose. I believe that we no longer live in a world where there is only one solution to a problem. Perhaps my current research in constructivism has affected the way I perceive the educational experience. Nonetheless, I firmly believe that it is important to be able to understand and apply the different theories based on the fundamental goal of helping students become successful not only during their studies, but also, after their studies as well.