Constructivism vs. Constructivism vs. Constructionism

Notes by Mark Guzdial

I'd like to offer my take on the meaning of these words. I hear them used in so many ways that I often get confused what others mean by them.

Constructivism, the cognitive theory, was invented by Jean Piaget. His idea was that knowledge is constructed by the learner. There was a prevalent idea at the time (and perhaps today as well) that knowledge is transmitted, that the learner was copying ideas read or heard in lecture directly into his or her mind. Piaget theorized that that's not true. Instead, learning is the compilation of complex knowledge structures. The learner must consciously think about trying to derive meaning, and through that effort, meaning is constructed through the knowledge structures. Piaget liked to emphasize learning through play, but the basic cognitive theory of constructivism certainly supports learning through lecture -- as long as that basic construction of meaning takes place.

I don't know who invented the notion of Constructivism, the educational philosophy, but it says that each students constructs their own, unique meaning for everything that is learned. This isn't the same as what Piaget said. Piaget's theory does not rule out the possibility that you and I may construct exactly the same meaning (i.e., exactly the same knowledge constructions) for some concept or domain. The philosophy of constructivism say that learners will construct their own unique meanings for concepts, so it is not at all reasonable to evaluate students as to how well they have all met some normative goal. (Radical constructivists go so far as to say that the whole concept of a *curriculum* makes no sense since we cannot teach anyone anything -- students will always simply create their own meaning, regardless of what teachers do.) Philosophical constructivists emphasize having students take control of their own learning, and they de-emphasize lecture and other transmissive forms of instruction. This philosophical approach gets complicated by varying concepts of reality: If we all interpret things differently, is there any correct reality?

From my perspective, the assumption of constructivists is currently an untestable hypothesis. We know of no way to peer into someone's mental constructions. Until we can, we do not know if you and I think about the concept of velocity differently or the same.

Constructionism is more of an educational method which is based on the constructivist learning theory. Constructionism, invented by Seymour Papert who was a student of Piaget's, says that learning occurs "most felicitously" when constructing a public artifact "whether a sand castle on the beach or a theory of the universe." (Quotes from his chapter "Situating Constructionism" in the book "*Constructionism*" edited by Papert and Idit Harel.) Seymour does lean toward the constructivist learning philosophy in his writings, where he talks about the difficulty of conveying a complex concept when the reader is going to construct their own meaning. In general, though, his claim is more about method. He believes that students will be more deeply involved in their learning if they are constructing something that others will see, critique, and perhaps use. Through that construction, students will face complex issues, and they will make the effort to problem-solve and learn because they are motivated by the construction.

The confusion that I and others have about these terms stems from (a) similar looking words and (b) meaning at different levels of the word **construct**. Piaget was talking about how mental constructions get *formed*, philosophical constructivists talk about how these constructions are *unique* (noun construction), and Papert is simply saying that constructing is a good way to get mental constructions built. Levels here are shifting from the physical (constructionism) to the mental (constructivism), from theory to philosophy to method, from science to approach to practice.

Thanks to Jennifer Turns in helping tune some of these definitions. However, this isn't to say that she agrees with them...

Further "Comments from Colleen Kehoe"

Last modified at 6/16/97; 4:55:04 PM
Other Links of Interest
College of Computing | EduTech Institute | GVU Center
Mark Guzdial | Papers
Rendered with Frontier

Opinions expressed here are my own and do not necessarily reflect the opinions of Georgia Tech or the College of Computing. Notwithstanding any language to the contrary, nothing contained herein constitutes nor is intended to constitute an offer, inducement, promise, or contract of any kind. The data contained herein is for informational purposes only and is not represented to be error free. Any links to non-Georgia Tech information are provided as a courtesy. They are not intended to nor do they constitute an endorsement by the Georgia Institute of Technology of the linked materials.