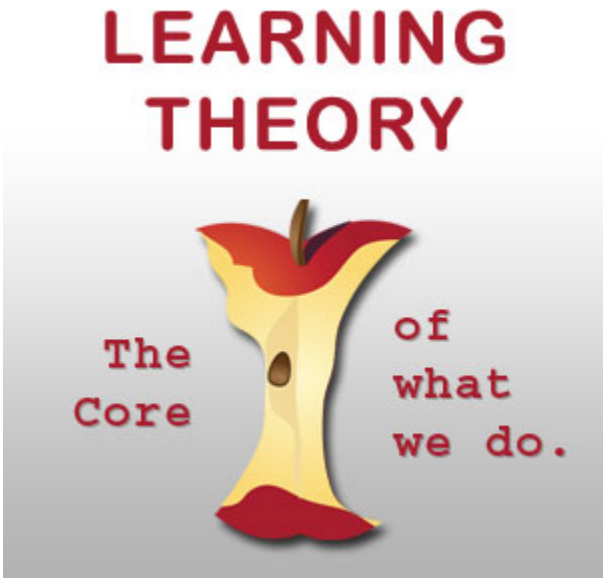

The Learning Theory Podcast

Episode 5

Piaget's Genetic Epistemology

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Introduction

Welcome to episode 5 of the Learning Theory Podcast. This episode will focus on Jean Piaget's Genetic Epistemology. You may also know of this theory by the name of Piaget's Theory of Cognitive Development. It is not clear which of these terms is the most correct name for the Theory. My personal impression from reading some of Piaget's works is that Piaget was using a mythology which he called Genetic Epistemology to study cognitive development (Piaget, 1968). Regardless of the term used, Piaget's work has had a significant influence on the way we have educated our children during the last 50 years.

Background

Before discussing the theory itself, some background on Piaget may be helpful. In the early part of his career, while focused on the standardization of intelligence test, Piaget observed that a child's incorrect answers on standardized tests provided more information than correct answers. He also observed that children of approximately the same age made the same types of mistakes, and that there was a qualitative difference between the types of mistakes made by children of different age groups (Hergenhahn & Olson, 2001). Piaget felt that this phenomenon could not be explored in a standardized testing environment, and instead established a clinical method of open and informal questioning in which a child's answer to a question would determine how the questioning would proceed (Hergenhahn & Olson). Using his own three children as subjects, Piaget and his wife carefully observed their children during their childhood and summarized their findings in several books published from the 1930s to the 1960s.

The Theory

Piaget proposed that a child's cognitive development progressed through a series of four stages:

- The Sensorimotor stage from birth to age 2
- The Preoperational stage from ages 2-7
- The Concrete Operational stage from ages 7-11
- And the Formal Operational stage from ages 11 to adult (Schunk, 2004).

Sensorimotor Stage

Most researchers agree that the sensorimotor stage occurs in approximately the first 2 years of life (Lin, 2002 citing McCormick, 1997). In this stage almost all learning is done by sensory interaction with the environment. Children at this stage are not capable of abstract thought and only relate to the here and now. If an object cannot be seen, touched, or tasted; the child has no conceptualization that the object exists.

Preoperational Stage

In the preoperational stage, ages two to seven, children have developed the conceptualization of past and future, but remain heavily oriented in the present (Schunk, 2004). There is a transition that occurs during the middle of the preoperational stage. Early in this stage (from about two to four), Piaget theorized preconception thinking where children will be able to classify similar things but would make a number of mistakes in the classification; such as "all men are 'Daddy,' all women are 'Mommy,' and all toys are 'mine'" (Hergenhahn & Olson, 2001, p. 281).

In the later part of the preoperational stage, ages four to seven, Piaget theorized that children start to develop intuitive thought (Hergenhahn & Olson), meaning that children will solve a problem based on some rule of logic. Once again, the child's logic contains a number of mistakes which according to Piaget is the inability of the child to develop conservation. Conservation is simply described as the child's ability to spatially recognize scale. For example a preoperational child will perceive a tall, narrow glass of water that is full as containing more water then a very wide glass of water of the same height that is only ¾ full.

Concrete Operational Stage

In the concrete operational stage, ages seven to 11, children gain the ability to classify in more than one dimension (such as color and size), but this capability is limited. They also grasp the concept of conversion. The primary barrier to learning in this stage is that cognitive development is mostly on concrete objects (Lin, 2002), and though some abstract thinking starts to occur (Schunk, 2004) in general it is limited. At this stage, a child can solve complex problems as long as the problems are concrete (Hergenhahn & Olson, 2001).

Formal Operational

In the final stage, formal operational ages 11 to adult, children are no longer solely focused on the concrete and are capable of abstract and hypothetical thinking (Schunk, 2004). Children display increased reasoning and are capable of thinking in multiple dimensions. The child at this stage has developed a mental schema that is as sophisticated and logical as it is ever going to become (Hergenhahn & Olson, 2001), and is ready to take some of their learning into their own hands. I don't know about you, but I find the concept of teenagers being at the peek of mental sophistication and logic rather disturbing. This concept places me in a state of cognitive dissonance, which is a theory we will discuss in another episode.

Criticisms of Piaget's Theory.

Though educators and researchers agree that Piaget's theory is generally correct, researchers have been critical of his methodology (Hergenhahn & Olson, 2001). The clinical method that Piaget developed, with its informal one-ended questions leading to follow-on questions developed from responses, is not easily replicated. Additionally, the very small subject group, Piaget's own three children, has also been criticized.

Piaget held that cognition was mainly a biological construct and that cognitive development could not be taught. This sharply contrasts with the cognitive constructivism philosophy of Bruner who believed that anything could be taught to anyone of any age (Shunk, 2004). Additionally, Piaget's theory does not address the social aspects of learning put forth by researchers such as Vygotsky. If we take Piaget's theory as an absolute, we would have to conclude that environment has no impact on cognitive development, and we know this is not true.

Though Piaget's stages of development are presented within the context of chronological age, the actual timing of the stages will vary between individuals, and that variability will be influenced by biological, environmental, and social factors. What is important for the educator to keep in mind when applying Piaget's theory is to provide learning activities that are appropriate for the motor and mental operations of the learner, regardless of age, and to avoid assigning tasks that are beyond the learner's cognitive capabilities (Kearsley 2008). In this respect, the application is really not that much different than Vygotsky's Zone of Proximal Development.

Wrap up

I hope you have found this episode useful and enlightening. If you would like to provide feedback please visit me at www.dancampbell.us. Thank you for listening! I'll be back in two weeks. Until then, go out and learn something new everyday.

References

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