Jean Piaget’s Theory of Development

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Jean Piaget was born just before the turn of the century in Neuchâtel, Switzerland in 1896 and died in Geneva in 1980 at the age of 85. During high school, at the very young age of 11, Piaget completed his first important scientific work, a short paper about albino sparrows. This was the beginning of a brilliant scientific career made of more than 60 books and several hundred articles.

In 1923, Piaget and Valentine Châtenay were married. They had three children together: Jacqueline, Lucienne, and Laurent, whose intellectual development from infancy to language was studied by Piaget (http://www.piaget.org).

How does knowledge grow? Piaget spent his life searching for the answer to this very question. His research in developmental psychology and genetic epistemology was directed at elaborating upon a theory of knowledge about cognitive development in children also known as genetic epistemology (Driscoll, 1994). His answer is that the growth of knowledge is a progressive construction of logically embedded structures superseding one another by a process of inclusion of lower, less powerful logical means into higher and more powerful ones up to adulthood. Therefore, children’s logic and modes of thinking are initially entirely different from those of adults (http://www.piaget.org). Piaget referred to his view as "constructivism," because he believed that the acquisition of knowledge is a process of continuous self-construction. While the child is constructing this knowledge, Piaget assumed there to be an interaction between heredity and environment and also labeled his view "interactionism" (Driscoll, 1994).

Although major aspects of his theory were formed in the 1920s, Piaget’s impact was not felt in the United States until the 1960s, when sufficient English translations of his more important books first became available and American psychology was ripe for a change (http://www.piaget.org). To step back and look at research on children’s cognitive development, there have been three main waves (Flavell & Miller 1998). These waves of research are detailed below.

- **Piaget-influenced, 1950s to 1960s.** Beginning with Piaget, this era is characterized by studies that documented increases with age in various perspective-taking abilities. Piaget believed that children begin development by being cognitively egocentric, meaning that they do not know about conceptual, perceptual, or affective perspectives (Flavell, 1999).

- **Children’s metacognitive development, 1970s.** Beginning in the early 1970s, researchers were focused on metacognitive development or the nature of people as cognizers; about the nature of different cognitive tasks; and about possible strategies that can be applied to cognitive activities (Flavell, 1999).

- **Theory-of-mind development, 1980s to present.** Theory-of-mind development investigates children’s knowledge about an individual’s most basic mental states—desires, perceptions, beliefs, knowledge, thoughts, intentions, feelings, etc. This type of research continues to dominate the field of cognitive development research and shows no sign of diminishing (Flavell, 1999).

**Key Concepts of Piaget's Theory of Development**

Cognitive development refers to the changes that occur in an individual’s cognitive structures, abilities, and processes. Marcy Driscoll defines cognitive development as the transformation of the child’s undifferentiated, unspecialized cognitive abilities into the adult’s conceptual competence and problem-solving skill (Driscoll, 1994). However, what exactly changes with development? Piaget believed children’s schemes, or logical mental structures, change with age and are initially action-based (sensorimotor) and later move to a mental (operational) level (Driscoll, 1994).

Further, Piaget believed the cognitive performance in children is directly associated with the cognitive development stage they are in. So, if a child were in the preoperational stage (age 2 to 6/7), he would not successfully be able to master tasks of a concrete operational stage (ages 6/7 to 11/12) child.
Piaget proposed this theory of childhood cognitive development in 1969. Since that time, there have been many criticisms of Piaget’s theory. Most notably, developmental psychologists debate whether children actually go through these four stages in the way that Piaget proposed, and further that not all children reach the formal operation stage. Despite this criticism, Piaget has had a major influence on all modern developmental psychologists. In addition to his proposed idea that children’s cognitive performance is directly related to the stage they are in, he proposed four major stages of development.

The Sensorimotor Period (birth to 2 years)

During the sensorimotor stage, infants and toddlers "think" with their eyes, ears, hands, and other sensorimotor equipment (http://raven.cc.ukans.edu/~kupsych/dennisk/Cog_Inf.htm). Piaget said that a child’s cognitive system is limited to motor reflexes at birth, but the child builds on these reflexes to develop more sophisticated procedures. They learn to generalize their activities to a wider range of situations and coordinate them into increasingly lengthy chains of behavior.

Preoperational Thought (2 to 6/7 years)

At this age, according to Piaget, children acquire representational skills in the area of mental imagery, and especially language. They are very self-oriented, and have an egocentric view; that is, preoperational children can use these representational skills only to view the world from their own perspective.

Concrete Operations (6/7 to 11/12 years)

As opposed to preoperational children, children in the concrete operations stage are able to take into account another person’s point of view and consider more than one perspective simultaneously, with their thought process being more logical, flexible, and organized than in early childhood. They can also represent transformations as well as static situations. Although they can understand concrete problems, Piaget would argue that they cannot yet contemplate or solve abstract problems, and that they are not yet able to consider all of the logically possible outcomes. Children at this stage would have the ability to pass conservation (numerical), classification, seriation, and spatial reasoning tasks.

Formal Operations (11/12 to adult)

Persons who reach the formal operation stage are capable of thinking logically and abstractly. They can also reason theoretically. Piaget considered this the ultimate stage of development, and stated that although the children would still have to revise their knowledge base, their way of thinking was as powerful as it would get.

How does cognitive change take place?

According to Piaget, development is driven by the process of equilibration. Equilibration encompasses assimilation (i.e., people transform incoming information so that it fits within their existing schemes or thought patterns) and accommodation (i.e., people adapt their schemes to include incoming information). Piaget suggested that equilibration takes place in three phases.

First, children are satisfied with their mode of thought and therefore are in a state of equilibrium. Then, they become aware of the shortcomings in their existing thinking and are dissatisfied (i.e., are in a state of disequilibrium and experience cognitive conflict). Last, they adopt a more sophisticated mode of thought that eliminates the shortcomings of the old one (i.e., reach a more stable equilibrium) (http://www.psych.ualberta.ca/~mike/Pearl_Street/Dictionary/contents/E/equilibration.html).

It is now thought that not every child reaches the formal operation stage. Developmental psychologists also debate whether children do go through the stages in the way that Piaget proposed. Whether Piaget was correct or not, however, it is safe to say that this theory of cognitive development has had a tremendous influence on all modern developmental psychologists.

More recent studies have cast some doubt on Piaget’s theory of homogeneous performance within a given stage. Instead, it is now believed that performance varies greatly within each stage and depends more on the acquisition and development of language, perception, decision rules, and real-world
knowledge for each individual child.

**Corresponding Instructional Strategies**

Piaget himself did not design instructional strategies, but educators have interpreted Piaget’s theory to suggest broad instructional principles. If an educator is using a specific method, it is one that depends on his or her unique understanding of children’s thinking (Driscoll, 1994). According to Marcy Driscoll, there are three basic instructional principles on which Piagetian theorists generally agree. (Driscoll, 1994).

- **Principle 1:** The learning environment should support the activity of the child (i.e., an active, discovery-oriented environment) (Driscoll, 1994).
- **Principle 2:** Children’s interactions with their peers are an important source of cognitive development (i.e., peer teaching and social negotiation) (Driscoll, 1994).
- **Principle 3:** Adopt instructional strategies that make children aware of conflicts and inconsistencies in their thinking (i.e., conflict teaching and Socratic dialog) (Driscoll, 1994).

Specific instructional strategies include: modeling, coaching, scaffolding, fading, problem-based learning, authentic learning, anchored instruction, cognitive flexibility hypertexts, and object-based learning. Scaffolding is an effective way for the teacher to present the information in such a way that the children can easily understand it and continue to build upon previously acquired knowledge.

**Learning Goals**

It is difficult for educators to apply Piaget’s theory because experiments at the elementary and secondary classroom levels are difficult and expensive. Also, instructors have a difficult time understanding how to implement and evaluate Piaget’s guidelines for education. However, the preschool level has allowed more room for experimentation, and wider acceptance due to less-defined curricular goals (Driscoll, 1994).

To have success with a constructivist classroom activity, it is important for the teacher to be a good facilitator. The teacher should encourage the students to make discoveries for themselves while conducting active dialog. For conceptual learning to occur, the teacher should seek to fuse the constructions of students and experts. By comparing and contrasting their constructions with experts’ constructions, the students gain insights into both and begin to reconceptualize their constructions in the direction of those of the experts (Zahorik, 1997).

**References**


http://raven.cc.ukans.edu/~kupsych/dennisk/Cog_Inf.htm

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