Piaget's Developmental Stages

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INTRODUCTION

Jean Piaget (1896-1980) was a Swiss psychologist whose cognitive-developmental theory left a lasting impression on how child development is viewed. He felt that children are not simply empty vessels into which adults pour knowledge (Piaget, 1952). Piaget based much of his theory on his masterful observations of children, and demonstrated many experiments that study how children adapt and react to their world (Vidal, 2000).

One of the main points of his theory was that of adaptation (Piaget, 1971). The child's mind adapts from infancy to childhood to adulthood to achieve a better fit with external reality. Piaget sensed that children construct knowledge actively as they manipulate and interact with their environments. Many of his thoughts and ideas were influenced by his background in biology. This document will provide insight into Piaget's Stages of Development as well as look at technology that meets the needs of children at specific times during their life.

BACKGROUND

Piaget's Terminology

The framework that exists in a person's mind to organize and interpret information was termed "schema" by Piaget. Schema can be thought of as the mental file folders that we have in our minds for different topics.

"Adaptation" is equivalent to learning and happens in two ways: through assimilation and accommodation. For example, a baby girl knows how to take a pacifier and thrust it into her mouth. It is a schema that has been mastered. She will then try to assimilate this concept by taking the mother's necklace and thrusting it into her mouth. Piaget called this "assimilation" because the child is assimilating a new object into an old schema.

When this same infant comes across another object, she might accommodate an old schema into a new object. If that child is handed a soccer ball, she may realize that it will not fit into her mouth and simply just drool on it as she puts it to her lips because it w will not work the original way. Hence, she practiced what Piaget called "accommodation."

THE DEVELOPMENTAL STAGES

Piaget determined that there is a sequence of four major stages of a child's cognitive development. Each stage is age-related and involves distinct ways of thinking. He believed that adults could not force the training and teaching to accelerate a child through the developmental stages. Rather, children need to directly experience and initiate the transformation.

Sensorimotor Stage (Birth to Two Years of Age)

The first two years of a child's life are considered to be the sensorimotor stage (McCormick & Pressley, 1997). The word "sensorimotor" alludes to the use of senses (e.g., hearing and seeing) and motor skills (e.g., reaching and touching) to gain understanding about one's environment. Infants begin by reflecting and imitating what they experience.

If infants cannot see or touch an object, they tend to stop thinking about it. For example, if the mother puts a ball behind her back, the child believes that the ball is truly gone because the child cannot see it. The game of Peek-A-Boo helps the child to understand "object permanence" which is the idea that although the object or person is no longer seen by the child it still exists. The company Brainy Baby has a DVD on the market called Peek-A-Boo™ that incorporates music, rhymes, and visuals to teach important skills. Such tools for learning help to teach skills such as object permanence, communication skills, and cause-and-effect.

Preoperational Stage (Two to Seven Years of Age)

Children in the preoperational stage begin to use symbols such as language to represent objects. For example, the child understands the word "bird" although a real bird is not seen. During this stage, the child learns from concrete evidence whereas adults can learn in an abstract way. Children tend to be highly egocentric in their viewpoints and perspective during this stage. Children work on intuitive instead of logical thought and reasoning.

Drawings at this stage are often colorful and inventive scribbled designs without the need for a realistic portrayal of the subject matter. The symbolism is strong but very simple. Words and images begin to represent the world around them at this stage.

At this point in development, children lack understanding of conservation, which is the concept that a characteristic of an object stays the same even if it changes in appearance. For instance, if a child is in the preoperational stage, it may not occur to the child that a puddle of water is from the ice cube that was left on a plate in the sun.

Creating interactive storybooks online that incorporate visuals and sound such as *All About Me* (on http://www.starfall.com) can help children to learn to read while filling in information about themselves. This can satisfy the requirements of learning language while also focusing on self-awareness.

Concrete Operational Stage (Seven to Eleven Years of Age)

During this developmental stage, children can engage in hands-on (concrete) activities in a logical order such as classifying and sequencing objects. Children can then take this task a step further by considering their interrelationships. At this stage children can manipulate numbers (Boudourides, 2003). Questions for which they have no personal frame of reference and abstract thoughts are too difficult at this stage.

In the concrete operational stage children comprehend the law of conservation. Piaget demonstrated this task when he presented children with two beakers that were identical and filled each to the same height with a liquid. He asked a child if both contained an equal amount, to which the child answered in the affirmative. Piaget took the liquid from the first beaker and poured it into a thinner and taller third beaker. When asked if there was still the same amount of water in the new beaker, the children under eight years old said that there was not the same amount and justified their answers by pointing out the width or height. The children who were older than eight years of age, who were in the concrete operational stage, explained their response by correctly stating that pouring it back into the original container shows that it is the same amount (Santrock, 2004).

Since a child at this stage can manipulate numbers, a variety of software packages can be utilized for children to learn and demonstrate their knowledge in this area. For example, at *Education by Design* (http://www.edbydesign.com/maths/), children can use Java and Flash created games to visually categorize numbers using Base Ten Count, and practice their number skills in addition, multiplication, subtraction and division using Automaths, or test their skills using Number Cruncher.

Formal Operations Stage (Eleven Years of Age and Beyond)

This is Piaget's final stage in his theory of child developmental stages. It includes the early adolescent and follows them into their adult years. During this time, the person can solve abstract questions and problems in a logical and scientific manner. The person can recognize and identify a problem. The person can then brainstorm multiple solutions prior to solving it. Piaget called the concept of developing an educated guess about the best way to solve a problem "hypothetical-deductive reasoning."

During the formal operations stage a person's identity in relationship to social issues becomes a new focus (Tomei, 2005). People begin to determine qualities that they want to strive for in their lives. Formal operational thinkers can also plan ahead and set goals. Because individuals in the beginning of this stage have a need to establish their own identities, online blogs can give them a voice to express themselves.

Piaget acknowledged the importance of peer relationships in a child's development (Piaget, 1932). Today's technology offers a wealth of opportunities for this cognitive stage. Instant Messenger and chat rooms on the World Wide Web (De Lisi, 2002) can provide opportunities to engage in social relationships.

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