

## Cognitive Learning Theory

Cognitive theory is concerned with the development of a person's thought processes. It also looks at how these thought processes influence how we understand and interact with the world. The foremost (leading) cognitive thinker was Child psychologist Jean Piaget, who proposed an idea that seems obvious now, but helped revolutionize how we think about child development: Children think differently than adults. Piaget then proposed a theory of cognitive development to account for the steps and sequence of children's intellectual development. In Piaget's view, early cognitive development involves processes based upon actions and later progresses into changes in mental operations

He described the mechanism by which the mind processes new information. He said that a person understands whatever information fits into his established view of the world. When information does not fit, the person must reexamine and adjust his thinking to accommodate the new information. Piaget described four stages of cognitive development and relates them to a person's ability to understand and assimilate new information.

### **Key Concepts**

**Schemas** - A schema describes both the mental and physical actions involved in understanding and knowing. Schemas are categories of knowledge that help us to interpret and understand the world.

In Piaget's view, a schema includes both a category of knowledge and the process of obtaining that knowledge. As experiences happen, this new information is used to modify, add to, or change previously existing schemas.

For example, a child may have a schema about a type of animal, such as a dog. If the child's sole experience has been with small dogs, a child might believe that all dogs are small, furry, and have four legs. Suppose then that the child encounters a very large dog. The child will take in this new information, modifying the previously existing schema to include this new information.

**Assimilation** - The process of taking in new information into our previously existing schema's is known as assimilation. The process is somewhat subjective, because we tend to modify experience or information somewhat to fit in with our preexisting beliefs. In the example above, seeing a dog and labeling it "dog" is an example of assimilating the animal into the child's dog schema.

**Accommodation** - Another part of adaptation involves changing or altering our existing schemas in light of new information, a process known as accommodation. Accommodation involves altering existing schemas, or ideas, as a result of new information or new experiences. New schemas may also be developed during this process.



**Equilibration** - Piaget believed that all children try to strike a balance between assimilation and accommodation, which is achieved through a mechanism Piaget called equilibration. As children progress through the stages of cognitive development, it is important to maintain a balance between applying previous knowledge (assimilation) and changing behavior to account for new knowledge (accommodation). Equilibration helps explain how children are able to move from one stage of thought into the next.

### Characteristics of the Sensorimotor Stage: (birth - 2)

The first stage of Piaget's theory lasts from birth to approximately age two and is centered on the infant trying to make sense of the world. During the sensorimotor stage, an infant's knowledge of the world is limited to their sensory perceptions and motor activities. Behaviors are limited to simple motor responses caused by sensory stimuli. Children utilize skills and abilities they were born with, such as looking, sucking, grasping, and listening, to learn more about the environment.

### Characteristics of the Preoperational Stage: (2 - 6)

The preoperational stage occurs between ages two and six. Language development is one of the hallmarks of this period. Piaget noted that children in this stage do not yet understand concrete logic, cannot mentally manipulate information, and are unable to take the point of view of other people, which he termed egocentrism.

During the preoperational stage, children also become increasingly adept at using symbols, as evidenced by the increase in playing and pretending. For example, a child is able to use an object to represent something else, such as pretending a broom is a horse. Role playing also becomes important during the preoperational stage. Children often play the roles of "mommy," "daddy," "doctor" and many others.

### Characteristics of Concrete Operations: (7 - 11)

The concrete operational stage begins around age seven and continues until approximately age eleven. During this time, children gain a better understanding of mental operations. Children begin thinking logically about concrete events, but have difficulty understanding abstract or hypothetical concepts.

### Characteristics of the Formal Operational Stage: (12 - onwards)

The formal operational stage begins at approximately age twelve to and lasts into adulthood. During this time, people develop the ability to think about abstract concepts. Skills such as logical thought, deductive reasoning, and systematic planning also emerge during this stage.

### Support for Piaget's Theory:

**Piaget's Impact on Education** Piaget's focus on qualitative development had an important impact on education. While Piaget did not specifically apply his theory to education, many educational programs are built upon the belief that children should be taught at the level for which they are developmentally prepared.



In addition to this, a number of instructional strategies have been derived from Piaget's work. These strategies include providing a supportive environment, utilizing social interactions and peer teaching, and helping children see fallacies and inconsistencies in their thinking (Driscoll, 1994).

### **Criticisms of Piaget:**

While Piaget's research contributions to our understanding of cognitive development are substantial, his work often focused exclusively on the use of logical patterns of reasoning and largely neglected other cognitive processes that are important (eg. creatively problem solving and "right hemisphere" processes - art, etc).

He also tended to underestimate the effects of other factors such as social, motivational and educational influences of cognitive development.

### **Problems with Research Methods**

Much of the criticism of Piaget's work is in regards to his research methods. A major source of inspiration for the theory was Piaget's observations of his own three children. In addition to this, the other children in Piaget's small research sample were all from well-educated professionals of high socio-economic status. Because of this unrepresentative sample, it is difficult to generalize his findings to a larger population.

### **Problems with Formal Operations**

Research has disputed Piaget's argument that all children will automatically move to the next stage of development as they mature. Some data suggests that environmental factors may play a role in the development of formal operations.

### **Underestimates Children's Abilities**

Most researchers agree that children possess many of the abilities at an earlier age than Piaget suspected. Recent research on theory of mind has found that children of 4- or 5-years old have a rather sophisticated understanding of their own mental processes as well as those of other people. For example, children of this age have some ability to take the perspective of another person, meaning they are far less egocentric than Piaget believed.

### **Piaget's Legacy:**

While there are few strict Piagetians, most can appreciate Piaget's influence and legacy. His work generated interest in child development and had an enormous impact on the future of education and developmental psychology