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Piaget's theory of learning

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Introduction

► Jean Piaget (1896 – 1980) was a psychologist and epistemologist who focused on child development.

► He developed a theory of human cognitive development (known as 'genetic epistemology') based on his interest in biology and particularly the adaptation of species to their environment.
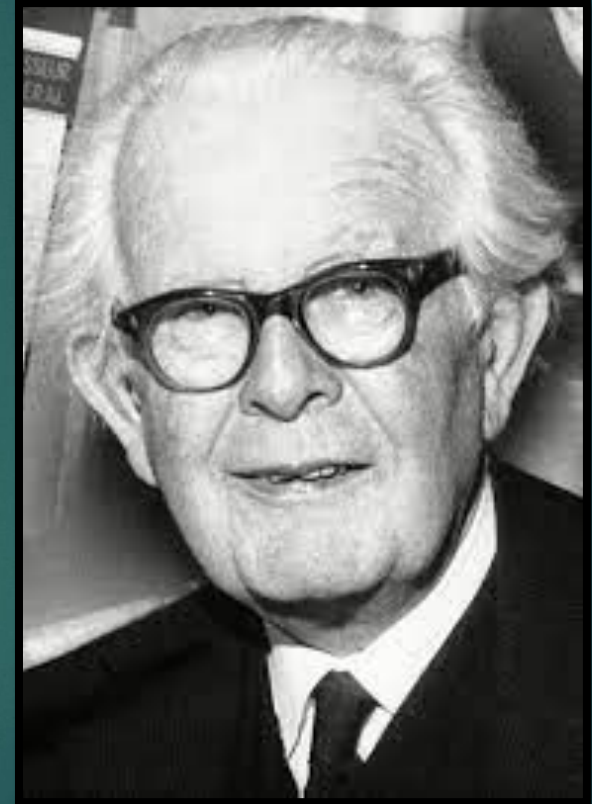
► His theory that on the fact that human intelligence was also an adaptive mechanism was controversial at the time.

► It challenged the dominant psychometric and behaviourist approaches to intelligence, which measured intelligence (IQ) as a fixed and inherited trait, or referred to external conditioning (behavourism) as the source of cognitive change.

► Piaget argued that humans were active meaning-makers who construct rather than receive knowledge, with much capacity to improve intelligence over a lifetime.
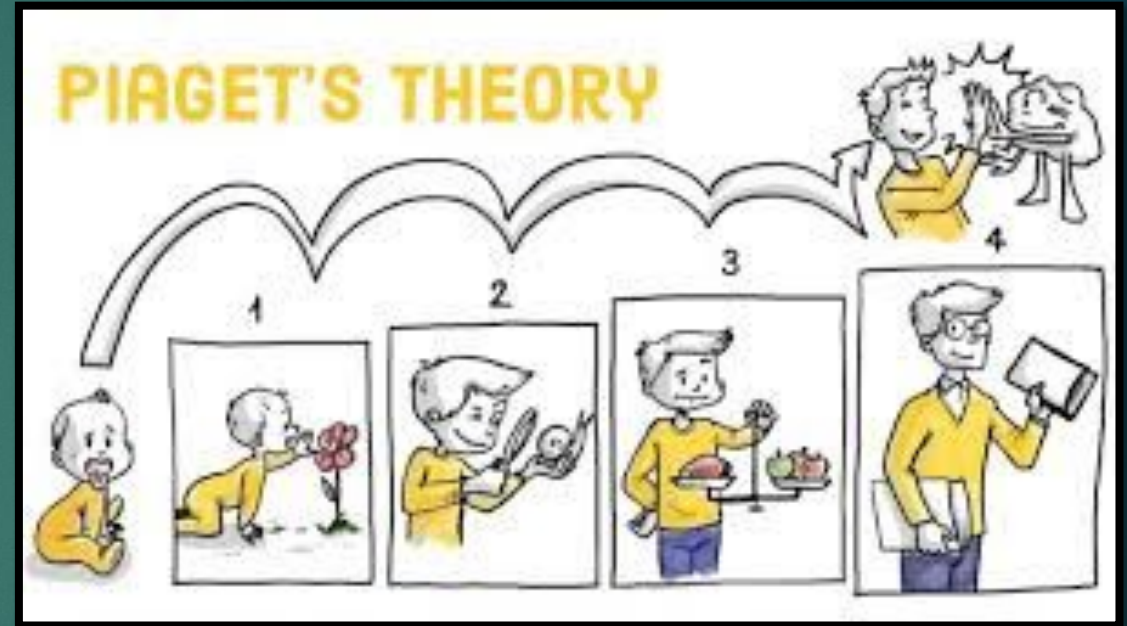
PIAGET'S THEORY

Piaget's 4 Stages of Cognitive Development

- Jean Piaget's theory of cognitive development suggests that children move through four different stages of learning.

- His theory focuses not only on understanding how children acquire knowledge, but also on understanding the nature of intelligence.

- Piaget's stages are:

1. **Sensorimotor stage**: Birth to 2 years

2. **Preoperational stage**: Ages 2 to 7

3. **Concrete operational stage**: Ages 7 to 11

4. **Formal operational stage**: Ages 12 and up

COGNITIVE DEVELOPMENT

SENSORIMOTOR — BIRTH - 2 YEARS
PREOPERATIONAL — 2 - 7 YEARS
CONCRETE OPERATIONAL — 7 - 12 YEARS
FORMAL OPERATIONAL — 12 YEARS ONWARD
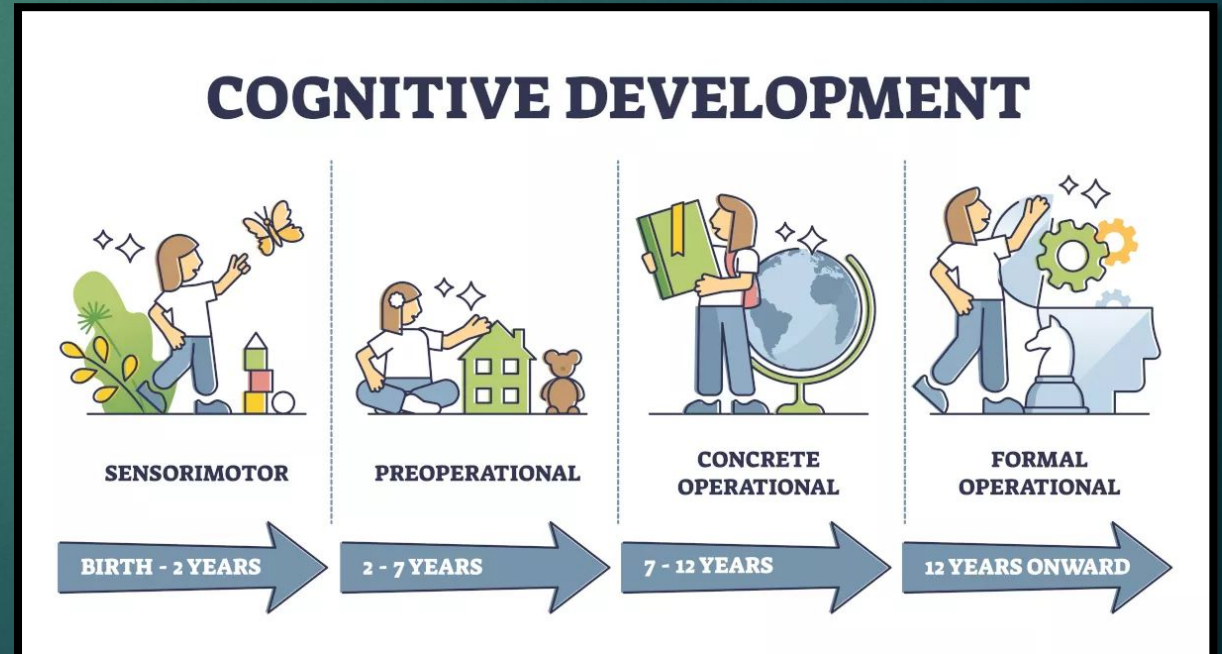
► Piaget believed that children take an active role in the learning process, acting much like little scientists as they perform experiments, make observations, and learn about the world.

► As kids interact with the world around them, they continually add new knowledge, build upon existing knowledge, and adapt previously held ideas to accommodate new information.
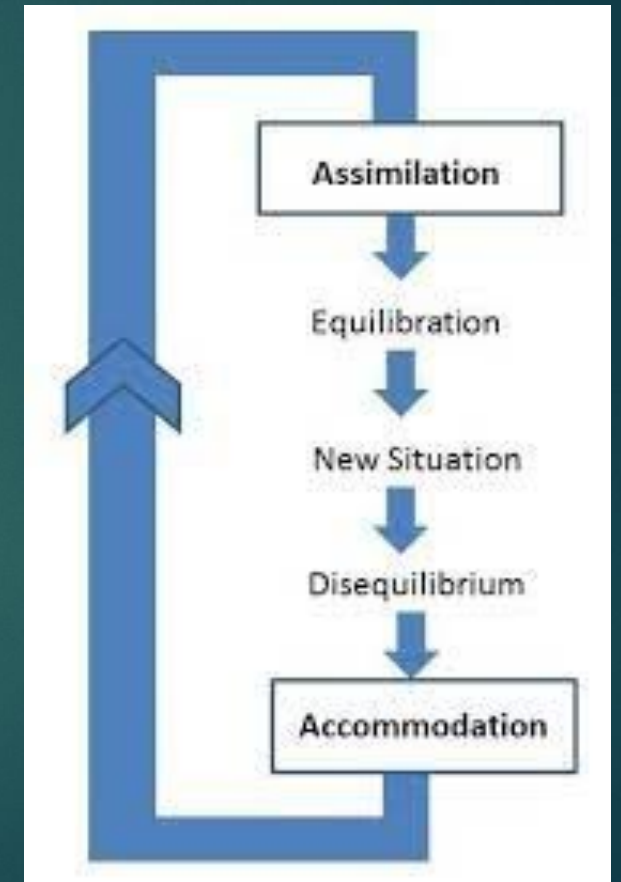
The Sensorimotor Stage (Birth to 2 Years)

► During this earliest stage of cognitive development, infants and toddlers acquire knowledge through sensory experiences and manipulating objects.

► Major characteristics and developmental changes during this stage:

• Know the world through movements and sensations

• Learn about the world through basic actions such as sucking, grasping, looking, and listening

• Learn that things continue to exist even when they cannot be seen (object permanence)

• Realize that they are separate beings from the people and objects around them

• Realize that their actions can cause things to happen in the world around them

► During the sensorimotor stage, children go through a period of dramatic growth and learning.

► As kids interact with their environment, they continually make new discoveries about how the world works.

► The cognitive development that occurs during this period takes place over a relatively short time and involves a great deal of growth.

► Children not only learn how to perform physical actions such as crawling and walking; they also learn a great deal about language from the people with whom they interact.

► By learning that objects are separate and distinct entities and that they have an existence of their own outside of individual perception, children are then able to begin to attach names and words to objects.

► Piaget believed that developing object permanence or object constancy, the understanding that objects continue to exist even when they cannot be seen, was an important element at this point of development.

The Preoperational Stage

- ► The foundations of language development may have been laid during the previous stage, but the emergence of language is one of the major hallmarks of the preoperational stage of development.

- ► **2 to 7 Years**

- ► Major characteristics and developmental changes during this stage:

- Begin to think symbolically and learn to use words and pictures to represent objects

- Tend to be egocentric and struggle to see things from the perspective of others

- Getting better with language and thinking, but still tend to think in very concrete terms

► At this stage, kids learn through pretend play but still struggle with logic and taking the point of view of other people. They also often struggle with understanding the idea of constancy.

► Children become much more skilled at pretend play during this stage of development, yet they continue to think very concretely about the world around them.

For example;

 A researcher might take a lump of clay, divide it into two equal pieces, and then give a child the choice between two pieces of clay to play with. One piece of clay is rolled into a compact ball while the other is smashed into a flat pancake shape. Because the flat shape *looks* larger, the preoperational child will likely choose that piece, even though the two pieces are exactly the same size.

The Concrete Operational Stage

- While children are still very concrete and literal in their thinking at this point in development, they become much more adept at using logic.

- The egocentrism of the previous stage begins to disappear as kids become better at thinking about how other people might view a situation.

7 to 11 Years

- Major characteristics and developmental changes during this stage:

- Begin to think logically about concrete events

- Begin to understand the concept of conservation; that the amount of liquid in a short, wide cup is equal to that in a tall, skinny glass, for example

- Thinking becomes more logical and organized, but still very concrete

- Begin using inductive logic, or reasoning from specific information to a general principle

Concrete Thinking

- ➤ While thinking becomes much more logical during the concrete operational state, it can also be very rigid.

- ➤ Kids at this point in development tend to struggle with abstract and hypothetical concepts.

- ➤ During this stage, children also become less egocentric and begin to think about how other people might think and feel.

- ➤ Kids in the concrete operational stage also begin to understand that their thoughts are unique to them and that not everyone else necessarily shares their thoughts, feelings, and opinions.

The Formal Operational Stage

► The final stage of Piaget's theory involves an increase in logic, the ability to use deductive reasoning, and an understanding of abstract ideas.

► At this point, adolescents and young adults become capable of seeing multiple potential solutions to problems and think more scientifically about the world around them.

► The ability to thinking about abstract ideas and situations is the key hallmark of the formal operational stage of cognitive development.

► The ability to systematically plan for the future and reason about hypothetical situations are also critical abilities that emerge during this stage.

Age 12 and up

Major characteristics and developmental changes during this time:

- Begins to think abstractly and reason about hypothetical problems

- Begins to think more about moral, philosophical, ethical, social, and political issues that require theoretical and abstract reasoning

- Begins to use deductive logic, or reasoning from a general principle to specific information

being able to manipulate the world in your mind
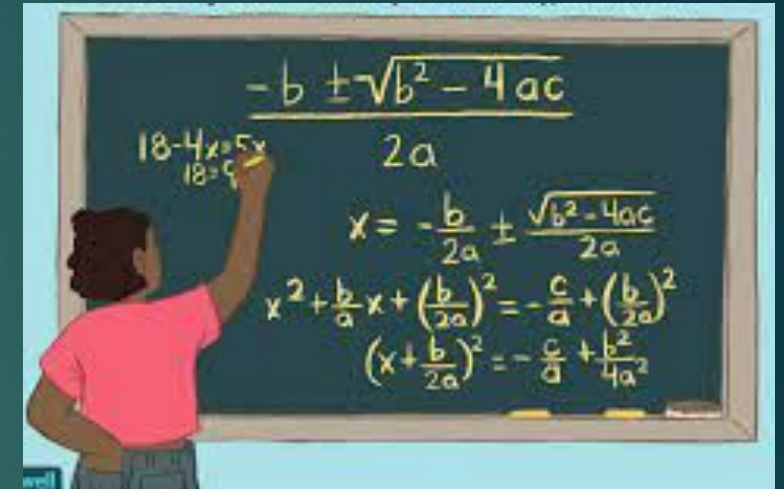
Important Concepts

- It is important to note that Piaget did not view children's intellectual development as a quantitative process. That is, kids do not just add more information and knowledge to their existing knowledge as they get older.

- Instead, Piaget suggested that there is a qualitative change in *how* children think as they gradually process through these four stages. At age 7, children don't just have more information about the world than they did at age 2; there is a fundamental change in *how* they think about the world.

- Piaget suggested several factors that influence how children learn and grow.

Schema

- 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 an enormous dog. The child will take in this new information, modifying the previously existing schema to include these new observations.
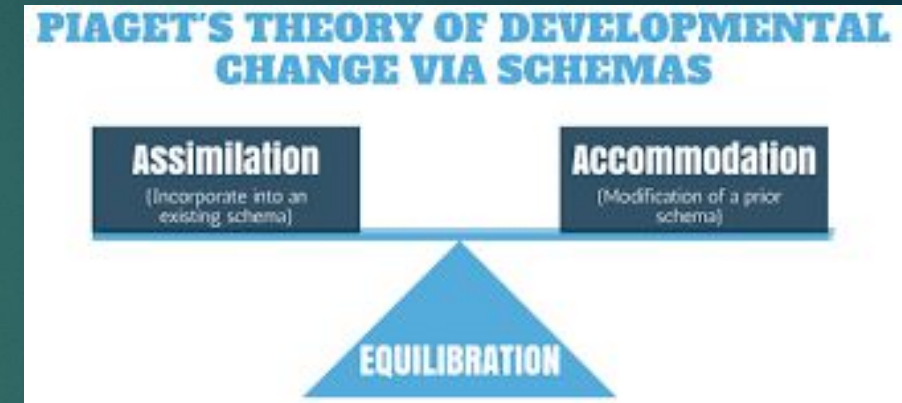
Accommodation

► Another part of adaptation is the ability to change existing schemas in light of new information; this process is known as accommodation.

► New schemas may also be developed during this process.

Assimilation
(Incorporate into an Existing schema)

Accommodation
(modification of a Period schema)

ACCOMMODATION

Saw this four-legged animal for the first time

Child calls her four-legged pet "doggy"

The child called the new animal a "doggy" and the mommy told her it is a cow

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).

► Piaget believed that all children try to strike a balance between assimilation and accommodation using a mechanism he called equilibration.

► Equilibration helps explain how children can move from one stage of thought to the next.

PIAGET'S THEORY OF DEVELOPMENTAL CHANGE VIA SCHEMAS

Assimilation
(Incorporate into an existing schema)

Accommodation
(Modification of a prior schema)

EQUILIBRATION

Assimilation

► The process of taking in new information into our already existing schemas is known as assimilation.

► The process is somewhat subjective because we tend to modify experiences and information slightly to fit in with our preexisting beliefs.

► In the example above, seeing a dog and labeling it "dog" is a case of assimilating the animal into the child's dog schema.

How We Add New Information to Existing Knowledge

Summary of Piaget's Theory

- Piaget's theory of cognitive development helped add to our understanding of children's intellectual growth.

- It also stressed that children were not merely passive recipients of knowledge.

- Instead, kids are constantly investigating and experimenting as they build their understanding of how the world works.
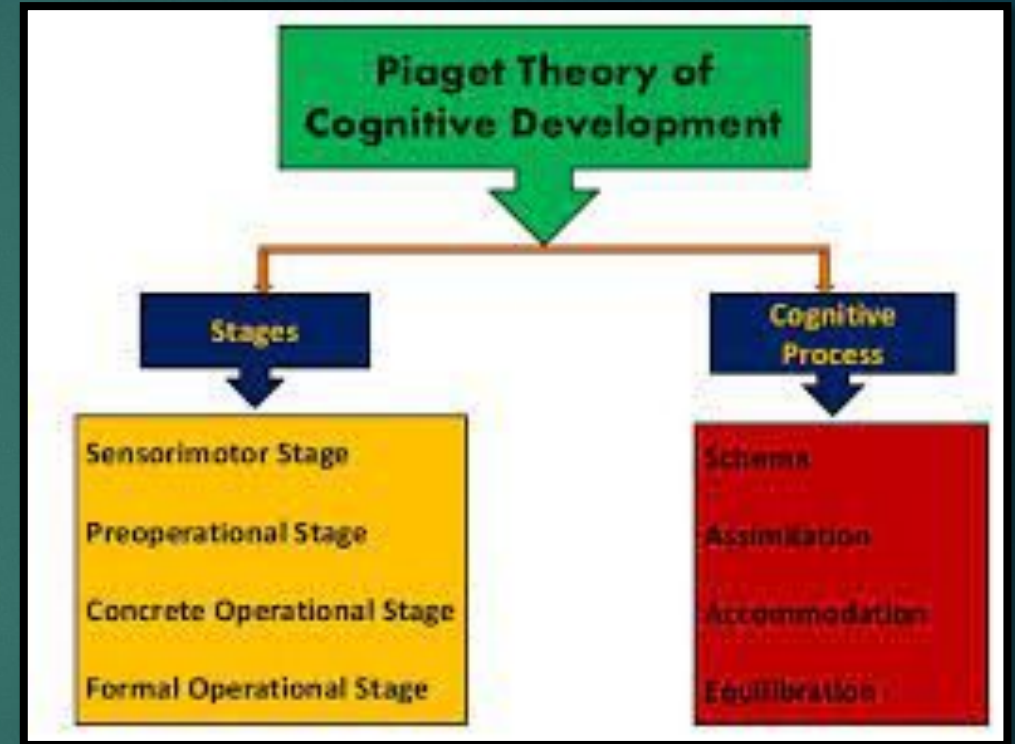
Differences between Piaget and Vygotsky

Stage Theory

- Piaget emphasised universal cognitive change.

- Vygotsky's theory can be applied to all ages (not a stage theory) and emphasised individual development.

Discovery Learning (Education)

- Piaget advocated for discovery learning with little teacher intervention.

- Vygotsky promoted guided discovery in the classroom with the help of a MKO.