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## **Cognitivism**

Behaviourism got heavily criticized by Chomsky claiming:

“ if all language is learnt behaviour, how come children and adults frequently say things they have never heard before?How on earth would it be possible to create whole new sentences in conversation and poetry, for example if all language behaviour has been conditioned into us? The fact that we can do these things is the result of having a mental ability to process what we hear, channelling it through the language-processing parts of our brain where rules in some way reside...”

Cognitivism then, is defined as a learning theory that advocates that learning is a set of internal mental processes rather than a set of observable behaviours. It is concerned with how information is received, stored, organized and retrieved in the human mind .i.e. how people perceive, think, remember, learn and solve problems. Just like or a computer, the human mind is seen by cognitivists as a machine responsible for information processing.

As opposed to behaviourism which visualizes learners as passive receivers of knowledge, cognitivism sees learners as being actively involved in the way they process information. In other words, cognitivists are concerned with what learners know and how they come to know it.

### **Famous cognitivists**

Vygotsky

Bruner and

Piaget

Jean Piaget denied the idea that learners are passive and simply reply to stimuli in the environment. He assumed that cognitivism is based on the idea of how the mind functions in order to do the learning process. i.e. learning is an internal mental process rather than an external phenomenon based on observable behaviour. The mind is similar to a computer.

It takes information (absorbs). Then, it processes (organization and storage) that information. Later on it uses that information as learning outcomes.

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processing

Input → output

Cognitivism involves thoughts and feelings (two things that a behaviourist cannot identify or measure overtly).

In cognitivism, learning happens when the learner reorganises information either by finding new explanations or adapting old ones. This is viewed as a change in knowledge and is stored in the memory rather than just being viewed as a change in behaviour. In classroom settings, teachers relate concepts together through linking concepts to real-life examples, discussions and problem-solving situations.

According to Piaget there are four developmental stages

- 1- Sensory-motor stage (0-2 years): child learns basic schemas and object permanence. The idea that something still exists when you can't see it.
- 2- Pre-operational stage (2-7 years): the child develops more schemas and the ability to think more symbolically, egocentrism.
- 3- Concrete-operational stage (7-11 years) working things out in their head. They develop the ability to conserve (something stays the same even if it looks different.)
- 4- Formal-operational stage: (11- to adulthood): this is when abstract thinking is developed in addition to logic and hypothesis testing.

### **Principles and Classroom Application of Cognitivism:**

1. Learning is a process of organizing information into conceptualized models.
2. Instructions should be organized, sequenced, and presented in a manner that is understandable and meaningful to the learner.
3. Retention and recall are important to build schemas in the brain.
4. The learner is an active builder of his own knowledge.
5. Memory is supported by organizing learning material.
6. Teachers must provide tools that help the learner's brain to process information.

### **Key words**

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**Memory** is the ability to recall or retrieve previously acquired knowledge. It might also refer to the process of retaining information.

**Perception: the ability to see, feel and become aware of something**

Here are a few key principles of cognitivism:

1. **Active Learning**: Learners are not passive recipients of information. They actively process and organize information, often using strategies like rehearsal, elaboration, and organization to make sense of new knowledge.
2. **Mental Representations**: Cognitivists believe that learning involves the creation of mental models or representations of the world. These mental structures help individuals make sense of new information by connecting it to prior knowledge.
3. **Schema Theory**: According to this theory, people organize knowledge into schemas (mental frameworks). When new information is encountered, it is either assimilated into existing schemas or used to modify them.
4. **Information Processing**: Cognitivism compares the mind to a computer, emphasizing how information is received, processed, stored, and retrieved. This involves attention, encoding, storage, and retrieval processes.
5. **Constructivism**: Some cognitive theorists (like Piaget) argue that learners actively **construct** their own understanding through interaction with the environment, building on their previous knowledge.

In education, cognitivism has influenced instructional strategies that support critical thinking, problem-solving, and the development of higher-order thinking skills, like concept mapping and scaffolding.

**Assimilation**: Assimilation is the process of incorporating new information into an existing schema without changing the schema itself. For example, if a child already knows what a dog is and then sees a new breed of dog, they assimilate this new breed into their existing concept of "dog."

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**Accommodation:** Accommodation happens when new information doesn't fit into an existing schema, so the schema must be adjusted or changed to accommodate the new information. For instance, if a child sees a cat and calls it a dog, they must adjust their schema of "animals" to distinguish between dogs and cats.

**Lev Vygotsky:**

Vygotsky emphasized the social nature of learning. He argued that cognitive development is deeply influenced by social interactions and culture. He introduced the idea of the “Zone of Proximal Development (ZPD)”, which refers to the range of tasks a learner can perform with help but cannot yet do independently. He believed that guided interaction with more knowledgeable others (e.g., teachers or peers) plays a Vital role in learning.

Vygotsky also emphasized the role of language in shaping thinking, proposing that thought and language are interconnected, with language serving as a tool for cognitive development.

**Jerome Bruner:**

*Key Concept: Discovery Learning and the role of scaffolding.*

Bruner built on Piaget's ideas but emphasized the idea that learners engage in discovery learning where they tend to actively construct their new knowledge based on background knowledge, interaction with others which involve continuous questioning. He believed that learners should engage with problems and explore concepts on their own, with guidance from instructors.

Bruner introduced the concept of scaffolding, which involves providing temporary support to learners as they tackle tasks just beyond their current ability, gradually removing the support as the learner becomes more competent.

Both Vygotsky and Bruner highlighted the active, social, and dynamic nature of learning, focusing on the importance of interaction, context, and guidance.

While cognitivism has been highly influential in the field of education and psychology, it has been criticized for the following reasons:

- 1- Overemphasis on internal mental processes

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- 2- No importance was given to emotion and motivation
- 3- It overlooks the existence of individual differences which influence how learning happens in learners
- 4- Comparing the brain to a computer by cognitivists led to the oversimplification of the learning process in humans. The latter is characterised by its complex nature taking into consideration creativity specific to humans not to machines.
- 5- Cognitive over-load
- 6- Lack of focus on observable behavior (they neglect the influence of external factors such as reinforcement on the learning process and learning outcome)