

Learning Theories

Lesson 3 Cognitivism



Overview

- Cognitivists believe that learning occurs when a learner processes information. The input, processing, storage, and retrieval of information are the processes that are at the heart of learning.
- The instructor/teacher remains the manager of the information-input process; but the learner is more active in planning and carrying out his/her own learning
- Instruction is not simply something that is done to a learner but rather involves the learner and empowers their internal mental processes.



Stage Theory Information Processing Model

- According to Huitt, (2003) the most widely accepted Information processing Model is the “Stage Theory” of Atkinson and Shiffrin (1968). This model proposes that information is processed in 3 stages:

1. Sensory Memory

2. Short Term Memory (STM)

3. Long Term Memory (LTM)

Sensory Memory

- **Sensory Memory** changes all varieties of information from the environment (sound, light, heat etc) into electrical energy as this is the only source of information the brain can understand.
- Information must be attended to immediately to transfer it to the next stage
- Suggested that individuals pay more attention to the information if it has an interesting feature or if the information connects to an already known pattern.

Short Term Memory (STM)

- **Short Term Memory (STM)**, also called working memory is created by the individual paying attention to an external stimulus or an internal thought.
- STM can last from 15-20 seconds to 20 minutes if the information is rehearsed.
- The amount of information any individual can process in the STM is variable (3-7 units)
- May be improved through the organisation of the information into components, by relevance, through chronological sequencing or through connections with previously known data. (Chunking)



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Chunking

- **Chunking:** A method of reorganising information into smaller pieces that are more easily remembered e.g. when memorising a 10 digit password or telephone number (4589354870) it is easier to to break it up into 2 segments of 3 numbers and 1 of 4 e.g. 458.....935.....4870.
- Chunking is individualised, some people use colours, places, shapes etc, whatever works!



Long Term Memory (LTM)

- There are two processes involved in moving the information into the LTM:
 1. **Elaboration**
 - There are two prominent examples of elaboration:
 - **1. Imaging:** where the individual creates a mental picture of what needs to be transferred
 - **2. Method of Loci:** in which information to be transferred is linked to a location or rhyming phrases and songs and using the first letter of each word in a list to make a mnemonic, etc.

Long Term Memory (LTM)

2. Distributed practice:

- involves using shorter periods with breaks to study or memorise information, rather than long sessions.
- This is because individuals tend to remember more about the beginning and the end of a list than they do about the middle.

Storage in LTM

- Once the information is in the LTM it is stored and categorised using 3 structures called declarative, procedural and imagery memory.
 - **Declarative memory** includes networks of connected ideas or concepts
 - **Procedural memory** stores information on how to do certain activities, cycle a bicycle, build a wall, etc.
 - **Imagery memory** contains references to pictures.

Application of the Cognitive Approach

- Keep the amount of information or bullet points on a slide to 4 or 5, this helps in information processing.
- Group similar topics together and don't chop and change between unrelated subjects
- Link new information to previously learned material and build on it from there
- Keep sessions short (distributed practice) with small breaks between them even for 1-2 minutes just to stand up and stretch out.



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