

# MEMORY TYPE: ENHANCING STUDENTS' RETENTION OF LEARNED MATERIALS

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## **Abstract**

This paper highlighted types of memory and ways by which recall is enhanced. That is paying attention to the information to be learnt, arranging information appropriately to ensure that the subject matter is understood, over learning and rehearsals and the use of audio-visual aids as well as appropriate cues in the processing of information.

## **Introduction**

Man is at the peak of the evolutionary scale. This is so, because he is the most endowed creature with capacity to discern information from the external environment. Man is so able to function due to the development of devices capable of predicting changes before such can physically affect his body and so frequently manipulate the environment to suit his own needs (Eggen and Kauchak, 1990). This enormous knowledge of man is dependent upon information being led into the nervous system from the environment. Such influx of information is received and encoded for it to be understood and stored with appropriate cues.

The above is the main purpose of school instruction, towards the improvement of the learner's knowledge base. As a teacher, one has a duty to motivate the learner to acquire information taught and retain same for the improvement of the self and to pass required examinations. All the above, are geared towards meeting the future needs and the challenges of the individual learner. For the individual learner to remember the learnt materials (information) grasped in the process of learning, the learners must be involved in active rehearsal of the materials (information) (Chauhan, 2006).

While it may be impossible to have 100 percent recall of learning task, the teacher makes it a point of duty to reduce forgetting to the barest minimum, it is noteworthy that remembering is the other side of same motivational coin called forgetting. An individual with great recall will be capable of remembering learnt information hence little loss of information through forgetting.

However, for us to understand why we remember or otherwise it is necessary to take a look at the memory types. Psychologists opined that there are three major types of memory viz sensory memory, short term memory and long term memory.

At the entry point of information the consciousness, or perception hall is the sensory memory. According to psychological findings, information received is very small and can be retained (remembered) for only about 2seconds. It is only when such information is rehearsed several times that it moves into the short term memory.

According to Baron (2001), short-term memory is the work bench of consciousness otherwise called the working memory. The short-term memory is said to be involved in storage of information (temporarily) and the transformation (process) of information held in the memory system. This can also be called immediate memory because it is the place where the information utilized right now springs from. This memory is known by psychologists to hold information (bits of information) for about 20 seconds. It is when the information is rehearsed that the trace (impression) becomes registered in the memory. Therefore, children should understand what they want to learn before committing it to memory.

Psychological investigation on memory brought about the serial position curve. This was discovered in a study in which respondents were given several lists of unrelated words to memorize. It was discovered that the words at the beginning and at the end were remembered. Relatively, few words in the words at the beginning and at the end were remembered. The above goes to explain that the words remembered at the beginning is still within the working memory while the word remembered at the end were said to have entered the long-term memory. Thus the words lost in the

middle of the list could be hanging in between the two memory types.

According to Baron (2001), the short-term memory is capable of receiving only 7 units of information at a time (plus or minus 2). That is, as much as between 5 and 9 units of information can be held in the memory for a period of 20 seconds. Therefore, depending on the level of complexity and organization of the units of information. Each bit or unit of information is described as Chunk. The first consideration is that, if the individual reads the following letters IBFIMBWBMATWIAC once. By the above explanation only about 5 to 9 letters would be remembered. But supposes the letters are arranged and presented in groups of meaningful chunks such as FBI, IBM, BMW, TWA, CIA. With the new arrangement all of the letters can be remembered after one reading. Therefore, materials to be learnt should be presented in a meaningful way for easier remembrance.

Feldman (1997), therefore, suggested a multiple component model theory of the working memory. The theory goes to say that there are three major parts of the working memory.

There are (i) a *Phonological loop* which possess information consisting of sounds of words; (ii) a *Visuospatial sketch pad* which processes information about visual appearance of objects, such as colour and shape and where the items can be found and (iii) a *Central executive* that supervises and coordinates the other components. The scan of people's brains while they perform different tasks (neuro imaging) shows evidences that spatial and phonological information are processes at different regions (parts) of the brain (Gleitman, 1997, Eggen and Kauchak 1999). In the work of Smith and Jonides (1997), cited in Baron (2001), evidences abound that there is distinction between the phonological loop and the visuospatial sketchpad. And that visual and spatial information may be processed in different parts of the brain. The work of Gleitman (1997), identified specific region of the brain in which spatial information is rehc.a.sjj in the working memory. That is, a location of target stimuli within a visual field. A very good pronunciation of words helps in the retention of materials learnt. In the teaching of subjects like geography and physics, the teacher should endeavour to use instructional materials to make recall faster and easier.

### **The Central Executive Components of the Working Memory**

It is coordinating functions was studied by the use of concurrent task paradigm. Participants in the test worked on two tasks at the same time such that the first tasks involves adding some numbers and a second task that the same time to serve as a distracting task for instance pushing buttons in a particulars sequence. The general idea is that the more similar the stimuli presented in the two sets of tasks, the more the disruption of the planning and control function of the central executive of course, this will lead to a poor performance on the primary task.

Individual who suffer severe injury of the frontal lobe which is the seat of the central executive becomes incapable of the regulation and coordination of the functions involved in the working memory. The above seems conclusive but it is not as Carlson (1994), puts it the brain contains probably thousands of network which are responsible for performing different functions. The network probably exists in a sort of hierarchy with some controlling the functions of others and regulating the exchanges of information between the different networks. It is therefore, important to mention other types of memory with their specific functions. They include semantic memory, episodic memory, explicit and implicit memories.

Semantic memory is the register for storing general abstract information about the world. Emphasis is on information whose time and place of acquisition is known (Baron 2001). For instance, one may never be able to remember when and the circumstance leading to the acquisition is unknown. For instance one may never be able to remember when the circumstance leading to the acquisition of the fact that "the sunsets in the west" or the mountaintops are cooler that the surrounding valleys. Conversely, episodic memory holds information of events acquired in a specific time and place.

Declarative memories are otherwise known as explicit memories. They are consciously available facts, events or-specific stimuli, Carlson (1994).

According to Squire, Shimamura and Amaral (1989), cited in Carlson (1994), declarative memory is a form of perceptual memory that we can think and talk about without mincing words.

Questions requiring declarative responses evokes mental images or taking 'mental tour' of your house, office or city to generate the answers explicitly. Conversely, non-declarative memories are implicit memories. They are stimulus response and motor learning experiences which people may not be able to answer questions about the specificity (Carlson 1994). For instance, most of us cannot describe the rules that govern our behaviour.

According to Olasehinde-Williams (2002), many memories we imbibe in the process of learning to ride a bicycle are difficult to describe though we remember for us to maintain our center of gravity.

Another type of memory worth mentioning here is the memory for skills such as typing, driving, cycling and cooking. This type of memory is called procedural memory. Many experiences and information in this memory are implicit as it may be almost impossible to put what we know and do remember in concise words (Feldman 1997). Therefore, there is need to develop interest and proper attention in the use of this skill to make learning more enjoyable.

Autobiographical memory is the recall of the events of our lives as seen or experienced and recorded by the self. This type of memory tends to be constructed in a positive light. The information remembered are generally presented in a positive perspective. An example of autobiographical memory is the *flash bulb memory*. This memory type is an emotion laden event that leaves a photographic impression on the person such that the individual would remember most significant details of what happened during the event. Autobiographical memory is generally affected by retrieval cue and emotional state of the individual reporting. From psychological studies on memory state of the individual tend to remember recent events of our lives that events that occurred long time ago. The proper use of autobiographical memory is that students should take notes during lectures and rehearse it since this will enable them to recall easily.

Craik and Lockhart (1972) cited in Baron (2001), postulated the theory of memory known as the levels of processing view. They were of the view that the deeper the information is processed the higher the chances of it being remembered. More importantly, the more the chances of the information entering the long-term memory.

Context dependent memory refers to the facts that the setting under which information is stored (entered into memory) is important for it to be recalled. This does not mean that the individual must be within the physical setting in which the information was processed but the brain can conjure the setting under the information was stored. When the brain can conjure the setting or context the memory would be enhanced to have great recall. The above is also similar to the physical state in which the information was stored. When individuals are within the state in which information was received, materials learnt are easily recalled.

It is also noteworthy that the mood of the learners affects their perception and what information is remembered. That is to say that the individuals perceive events in a positive light when they are in a good mood the reverse is equally true. The experience stored when the learner is in a bad mood is construed in a negative light. Therefore, when it is remembered it will be coloured by the mood.

The researcher wishes to examine many ways which are known to enhance retention of learnt information. They include:

- i. Over learning.
- ii. Meaningfulness and organization of subject matter.
- iii. Use of mnemonic devices.
- iv. Self-recitation.
- v. Use of the principle of learning by doing.

For the learner to have great ability to remember, the subject matter must be well learnt. Over learning is imperative, if the learner is to be able to demonstrate able record. If the saying practice makes perfect is anything to go by, then I would say here that over learning is a pre-requisite of having great recall. The extent to which students are able to compute information into his memory, the more the learners' ability to learn, the attending motivational structure, interest and the subject

matter (Chauhan 2006). In addition if students understand the materials to be learnt this will help them to associate the ideas in them with one another, for example, ideas in geographical would be used to study some .topic in Economics. •

For information to be retained and remembered such subject matter must be held as important at the point of reception. It must be meaningful to the learner for such information to be organized and be integrated into the learner's memory. It is the meaningfulness and associative value of a subject matter that would make room for its accommodation in the memory with appropriate cues which will chances recall. Without such retrieval cues to sensitize the memory to recall information, remembering will be impossible. In the selection of materials from the syllabus to be taught the teacher must relate and organize the materials in a fluid manner of cohesion and consolidation to be established. The more meaningful a material studied is, the easier the individual learner will be able to put such into the cluster in the learner's schemata (Chauhan 2006). To this end, teachers should make use of illustrations, dramatization, pictures, maps and concrete objects during teaching to enhance retention.

For learners to show great recall of learnt materials, the use of mnemonic devices can be a major advantage. This is especially so when the materials to be learnt are numerous and meaningless. Eggen and Kauchak (1999). Without the above devices, information is fed into the brain in a deliberately transformed manner to make such information meaningfully organized to enhance the memory. The use of mnemonic in the process of encoding and storage of information brings about spontaneity of recall. For instance, the sentence "my every eye may just see our new Pluto' was used to teach some students to recall the nine planets in our solar system. Once they recall the first letter of each word in the sentence they automatically remember the name of the planets with regards to their names to the sun.

According to Gleitman (1997), psychologists are of the opinion that recitation is an important process of enhancing retention of information in the memory. He demonstrated the above with the result of an experiment which shows the greater effectiveness of self recalled much better when they used 20% of their time for reading the nonsense syllabus and 80 percent of the time for self-recitation (rehearsal). Another method of improving the memory of students by teachers is to develop clear concepts with the use of audio-visual materials to enhance the delivery of their lessons. The teacher needs to employ the principles of learning by doing. They should encourage the learner to participate actively in the learning situation. When the learner finds the learning task worthwhile, he will retain the information for a long period of time.

### **Recommendations**

1. Students should be taught to find out the meanings of the materials before committing it to memory.
2. Students should avoid cramming lessons or syllabus and teachers should make the lesson very interesting to the students by the use of instructional materials.
3. For easier recall, students make use of mnemonics that is by using the initial letters of variable to be learnt.
4. There should be regular revision so that the subject matter can be remembered.
5. Students should use whole method in revision instead of part method. That is the whole passage is read from the beginning to the end and every re-reading is followed by an attempt to recall the passage until we can repeat the whole.

### **Conclusion**

Psychologists interested in memory have also come up with discoveries that what the individual remembers may not necessarily be true. The mind is capable of memory construction. That is, the memory is capable of constructing and remembering experiences that never really took place. Therefore, that which is remembered need not be true in the real sense.

However, students should organize their learning materials in a way to facilitate easy retention.

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