

Quadrant-I E-Text
Details of Module and its Structure

Module Details	
Subject Name	Education
Course Code	EDU502
Course Name	Understanding the Learners
Module Name/Title	<i>Memory: meaning, types and measurement of memory, techniques of effective memorization; Forgetting: meaning, types, curve of forgetting and theories of forgetting</i>
Module Code	UTL015
Pre-requisites
Learning Outcome	<p>After going through this lesson, the learners will be able to</p> <p>Meaning of Memory</p> <ol style="list-style-type: none"> 1. Types of Memory 2. Signs of Good Memory 3. Factors Affecting Memory 4. Measurement of Memory 5. Economical Methods of Memorization 6. Techniques of Effective Memorization 7. Meaning of Forgetting 8. Types of Forgetting 9. Causes/Theories of Forgetting
Keywords	Memory, Forgetting, Learner

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1. Introduction

Memory plays an important role in our daily life. We memorize our past experiences, it makes our living pleasant and enjoyable. Ability to remember or memorize plays an important part in learning. Our thinking process also depends upon ability to remember.

Loss of memory makes our life miserable. In our day to day activities, memory has an important place. If we do not have a good memory, we cannot live a healthy life. Good memory is a boon. Memory helps us in retaining various facts, information and the learnt material. We can recall and recognize if we have a good memory. Whenever we learn something, there is a need to retain it. It is to be retained in our mind. If we are able to recall the learnt material, it is a sign of good memory. On the other hand, if we are unable to recall the learnt information, it is a sign of bad memory.

A child during his/her nursery classes memorize the rhymes. He/she recalls the rhymes in front of grown-ups at home. After rote memorization of rhymes, the child starts to understand the meaning. As per Bloom's taxonomy of educational objectives, knowledge is the very first level in the cognitive domain. Knowledge includes recall and recognition. Until and unless, learner achieves the knowledge level objectives, he/she cannot move on to understanding level of cognitive domain. In other words, we can say that memory (recall and recognition) is the basis for all the other mental faculties of an individual. Thus, as per Benjamin S. Bloom, knowledge of memory provides basis for the development of understanding, application, analysis, evaluation and synthesis or creativity among the individuals.

2. Definition of Memory

Some definitions of memory are:

Woodworth and Marquis, "Memory consists in remembering what has previously been learnt".

Ryburn, "The power that we have to store our experiences, and to bring them into the field of consciousness sometime after experiences have occurred is termed as memory."

Memorization is a process. It consists in learning, retaining and remembering what has been learnt. Learning is also a process, which consists in registering impressions. Retention involves retaining those impressions. Remembering involves recognition, recalling and reconstruction of these impressions. There are several ways of remembering. These are recall and recognition. Recall is a process which consists in reproducing past experiences that are not present. Recognition is remembering something that is present.

Anything learnt is retained by the mind in the form of memory traces. It is an arrangement of brain cells on learning a thing. Whenever, we have to recall a thing, we activate our memory trace. Those individuals, who can recall the learnt material easily, are said to have sharp memory. If individual finds difficulty in recalling the learnt content, then he/she is said to have poor memory.

2.1. Types of Memory:

Individuals differ in the power of memorization. They are said to possess some or the other type of memory. Some of the types of memory are:

1. Immediate Memory: When we want to remember a thing for a short time and then forget it. We find a mobile or phone number from directory. Revise it until we dial it, after that we forget it. Another example, we book a seat in the bus, we remember the seat number. We usually forget it as soon as our journey is over. In such situations, immediate memory is of great help to us. We learn things immediately with speed and accuracy, remember it for short duration and forget it after use.

2. Permanent Memory: We never forget our name, house number, name of our mother, father etc. Permanent memory helps us memorizing things for longer duration.

3. Rote Memory: When we memorize the things without understanding their meaning, it is called as rote memory. Some students have good rote memory. They cram the content and reproduce it in written form on the answer sheet in the examination hall. It is true that rote memory gives short term benefits but it is unreliable and fails to bring enduring and lasting remembrance.

4. Logical Memory: This type of memory is based on logical thinking. It considers the meaningful, purposeful and insightful learning. The learner tries to understand what he learns and why he learns.

5. Passive Memory: We can recall our past experiences spontaneously without any serious attempt or will.

6. Active Memory: In active memory, one has to be active to recall the things already learnt. In other words, we need to make deliberate efforts for recollecting the learnt experiences. For example, in the examination hall, we are required to make use of active memory.

7. Associated Memory: If the learner is able to associate previously learnt things with many related things, he is said to have associated memory. Learning of a thing should not be done in isolation. Learner should try to connect or associate it with as many other things as he/she can. It will help our memory to maintain multiple relationships.

2.2. Laws of Memory: Memory follows certain laws like

1. Law of Contiguity
2. Law of Similarity
3. Law of Contrast

2.3. Signs/Conditions of a Good Memory:

a. **Rapidity** with which thing is learnt. It depends upon the concentration or attention and consequently on the keenness of interest.

b. **The length of time** during which the remembered material lasts. A person retains longer.

c. **The rapidity or accuracy of recall or recognition.** Some persons can learn quickly and easily but soon forget and cannot recall rapidly and accurately. Such people have a bad memory. Others may take long time to learn, also retain for long time.

d. A good memory is **serviceable**. We should recollect right things at the right time. The serviceableness of memory depends upon the methods of learning. When we read and think over what we read, form connections and relations between different parts of knowledge, we have a well-organized knowledge. When knowledge is well-organized, it is serviceable.

2.4. Individual Differences and Memory

An intelligent person retains more than a less intelligent person. A rapid learner is more likely to be a good retainer. Methods of memorization also differ. Children learn mechanically i.e. through rote memory. Adults learn intelligently i.e. by insight. Children have better general memory, being interested in general environment and adults have better specific memory.

2.5. Factors Affecting memory

- I. **The Learner:** Age, intelligence, mental state, physical state and other personality characteristics.
- II. **Retention of Different Types of Materials:** (a) Meaningful materials are better retained than meaningless materials. (b) When materials of varying lengths are learnt to the same level of performance, longer series are better retained. (c) Materials having pleasant emotional tone tend to be better recalled than those which are unpleasant. We tend to recall our victories more than defeats. (d) There is tendency to recall in-completed tasks better than completed
- III. **Retention as Affected by Original Learning:** (a) Will to remember, mental set and the motivation to learn. When we are motivated to learn, it results in better attention and better retention. (b) Recitation increases the amount retained. (c) Material learnt through distributed practice are better retained than those learnt by massed practice. (d) Associations help to retain better. In order to remember trigonometry ratios, Pandit Badri Prasad, Har Har Bol. i.e. P/H as sin theta, B/H as cos theta and P/B as tan theta. (e) Material learnt by whole method is better retained than that learnt by part method. (f) Over-learnt material is better retained. (g) Retention is also affected by experience following learning. A period of rest or sleep after learning increases retention.

2.6. Measurement of Memory

Whenever we talk of measuring memory, we mean measuring retention. Methods of measuring retention are:

- i. **Method of Recognition:** Show 10 photographs to the subject. Let the subject have a look at these photographs for about five minutes or so. Then mix the photographs with another 20 photographs. After some time-say another 10 minutes, ask him to recognize the original ten photos from these 30. It is to be done quickly. Recognition score of the subject can be calculated as-

$$\text{Recognition Score} = (R - W) \times 100 / N$$

R=Right; W=Wrong; N= Original number of photos i.e. 10

- ii. **Methods of Recall-Saving and Scoring methods:** Let the subject remember a list of 10 non-sense syllables. Note the time and trials taken by him to remember the list. Then after some time, half hour, ask him to recall the list in the same order. He may fail to do so. Let him again relearn the list. The time taken and trials will be less. You can calculate the saving score.

3. Economical methods of Memorization

1. Recitation Method: In this method, learner reads the matter once or twice and then recites and recalls without looking at the material. Learner evaluates himself from time to time and notes the points which he has been unable to

recall. This method helps the learner in detecting errors earlier and avoid them by close attention.

2. Whole and Part Method: There are two methods of memorizing a thing. For example, if we want to learn a poem, we can read the poem again and again from beginning to end till the end as a whole. This is called whole method of memorization. Another method is part method-the poem is divided into parts and each part is memorized separately.

3. Spaced and Un-Spaced Methods: In the spaced or distributed practice method, the subject takes some rest after memorizing. Principle of work and rest is followed in this method. On the other hand, in un-spaced or massed practice method of memorization, the subject has to memorize the assigned material at one sitting without any interval or rest. In this method, memorization work is done continuously without interruption till it is mastered.

4. Techniques of Effective Memorization

Efficient techniques of study may produce marked improvement in retention. Suggestions for memory training are:

- i. **Will to Learn:** Have the intention to learn. We should read or observe something with a definite intention of recalling it later on, our memory of it will be strong. Where there is a will, there is way. Materials read, heard or seen without an intention or mood are difficult to be remembered at later times.
- ii. **Interest and Attention:** Interest and close attention are essential for effective learning and memorization. Give close attention to the things to be learnt. We cannot understand unless we attend closely to what is presented. According to Mr. Bhatia, "Interest is the mother of attention and attention is the mother of memory; if you would secure memory, you must first catch the mother and the grandmother."
- iii. **Picturing the Situation:** Make a picture of the situation to be remembered. Visual aids facilitate acquisition of visual images.
- iv. **Follow Principle of Association:** Learners should not learn things in water tight compartments. Attempt should be made to connect it with one's previous learning and so many related things. We can use chunking to remember the large information in the form of small chunks. VIBGYOR is an example of chunking to remember seven colors. 'Pandit Badri Prasad Har Har Bole' is a good chunking to remember all the trigonometric ratios in mathematics. We should form diverse and multiple associations with every fact we want to retain.
- v. **Grouping and Rhythms:** Grouping and rhymes also facilitate learning and help in remembering. For example, a mobile number 9878742491 can be easily memorized and recalled if we try to group it as 98787-42491. Similarly, rhythms also prove as aid in learning and memorizing. Children learn multiplication tables in the sing song fashion. Following example is of worth-
Thirty days has September,
April, June and November,
All the rest have thirty-one,
Excepting February alone,
To which they twenty-eight assign,
Till leap year gives it twenty-nine.
- vi. **Distribute Learning as much as Possible:** We should not cram. We should distribute learning over days or weeks. It will help us to retain better.
- vii. **Utilize as Many Senses as Possible:** Senses are the gateways of knowledge. Things are better learnt and remembered when presented through more than one senses. Take the help of A-V aids.

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- viii. **Arranging Better Learning Situations:** Environmental factors affect the learning process. Care should be taken to arrange better learning situations and congenial environment. A quiet and calm atmosphere and stimulating environment proves an effective aid to learning.
 - ix. **Repetition and Practice:** An intelligent repetition with full understanding, always helps in making the learning effective and enduring. The things repeated and practiced frequently are remembered for a long time. Due care should be taken for drill work, practice and review etc.
 - x. **Role of Recitation:** It ensures active participation on the part of the learner.
 - xi. **Provision of Change and Rest:** There should be a proper provision of rest and change of work. It helps in removing fatigue and monotony. Have rest or sleep after study. After learning, there should be a pause. Rest consolidates the learnt subject matter. A fresh mind is necessarily able to learn more and retain for a long time than a tired and dull one.
 - xii. **Learn as a Whole:** To learn a long chapter, we should view it as a whole before beginning intensive study of its parts.
 - xiii. **Internal Factors within the Learner:** Physical, mental health of the learner, his state of mind at the time of learning as well as reproduction counts a lot to memory. Due attention should be given to the improvement of students' health-physical and mental. Their emotions should be trained and emotional tensions should be removed as far as possible.

5. Meaning of Forgetting

Forgetting and remembering are just two sides of the same coin. Both have equal importance in one's life. Usually, we are worried about remembering but do not give any importance to forgetting. But forgetting is of no less value. It is an essential aspect of the learning process. One must be able to forget the incorrect responses in order to acquire correct ones.

Forgetting is very important in life. If we do not forget, life will be miserable. The painful experiences will continue to come to our mind and disturb us.

Munn defines forgetting as "failing to retain whatever has been acquired."

Forgetting means failure to recall and recognize an idea. Forgetting is opposite to memorizing. Ebbinghaus, a German psychologist has done a lot of work on forgetting.

5.1. Types of Forgetting

1. **Active Forgetting**- We deliberately try to forget pleasant and unpleasant experiences of life.
2. **Passive Forgetting**-We forget certain things over a passage of time.
3. **Normal Forgetting**-It is natural forgetting. We cannot remember all the experiences.
4. **Abnormal Forgetting**-When the head is hurt or when there is an injury to the head, there is a such a thing known as fugue. Old age forgetting is known as amnesia.

5.2. Causes/Theories of Forgetting

- i. **Passive Decay** through Disuse. Forgetting is due to the fading or decay of memory traces in the brain through disuse with the average passage of time. As the time marches on, forgetting also marches with it.
- ii. **Interference Theory of Forgetting** due to Retro-active Inhibition. As learning is the active process, so is the forgetting also. It involves the interaction of new experiences with the old. When this interaction results in interference, either the old experiences hinder retention of the new or the new obliterate the old. The interference of later learning with earlier learning is called retroactive inhibition. 'Retro-active' means 'acting back upon' and inhibition indicates that action tends to inhibit learning. Thus, one reason why we forget something is that we learn other things.
- iii. **Alteration of Stimulating Conditions.** Forgetting will occur because some of the stimuli present during the original learning are missing during recall. Recall may be reduced merely because the learning has taken place in one classroom, whereas the testing of retention is conducted in a different room.
- iv. **Repression.** It is a process of exclusion of painful ideas, associations and memories from the conscious to the unconscious mind. Thus, forgetting is wishful. We forget because we want to forget. This is called motivated forgetting because this is the active process of forgetting an experience. We remember the pleasant experiences better than unpleasant experiences.
- v. **Deliberate Forgetting.** We intentionally forget things. When we are not in a mood to do a job assigned by friends, we say, "I forgot".
- vi. **Forgetting and Socio-Economic Status.** Rich people always forget and poor people never forget. May be because of being rich, they take things leisurely.
- vii. **Abnormal Forgetting.** Amnesia is loss of memory because of old age. Fugue is abnormal forgetting when the brain suffers a shock or is injured. Film makers exploit this. One is alright-meets an accident-forgets old life-again meets an accident, old memories are revived. This is Fugue.
- viii. **Nature of Task.** If task is boring, difficult, does not concern the learner, it will be forgotten.
- ix. **Emotional Causes of Forgetting.** When the individual is under emotional stress-say fear or anger, there is every possibility that he is more likely to forget the things than the emotionally mature person. Even when we are in an emotional excitement, we are not able to recall things.
- x. **Fatigue.** Mental fatigue means formation of certain toxins in the body and inability to recall.
- xi. **Degree of Learning.** The task learnt below the required limit will be forgotten soon as compared to a task is learnt above the required limit.

6. Summary

In our day to day activities, memory has an important place. Good memory is a boon. Memorization is a process. It consists in learning, retaining and remembering what has been learnt. Individuals differ in the power of memorization. Different types of memory are: immediate memory, permanent memory, rote memory, logical memory, active memory, passive memory and associated memory. Rapidity, length of time, accuracy of recall or recognition and serviceableness are the signs of good memory. Have the intention to learn. Interest and close attention are essential for effective learning and memorization. Make a picture of the situation to be remembered. We should form diverse and multiple associations with every fact we want to retain. Grouping and rhymes also facilitate learning. We should not cram. We should distribute learning over days or weeks. We should take the help of A-V aids.

Forgetting is very important in life. If we do not forget, life will be miserable. The painful experiences will continue to come to our mind and disturb us. Different types of forgetting are: active forgetting, passive forgetting, normal forgetting, abnormal forgetting. Causes of forgetting are: passive decay, retro-active inhibition, alteration of stimulating conditions, repression, deliberate forgetting, forgetting and socio-economic status, abnormal forgetting, fatigue etc.

Books, articles, research papers, journals, case studies etc.:

- Hoy, A. W., Hughes, M., & Walkup, V. (2008). *Psychology in education*. Pearson Education.
- Mangal, S. K. (2007). *Essentials of educational psychology*. PHI Learning Pvt. Ltd..
- Mathur, S. S. (2005). Development of Learner and Teaching learning process. *Vinod Pustak Mandir. Agra*.
- Sharma, R. A. (2004). Development of Learner and Teaching Learning Process. *R. Lall Book Depot, Meerut (UP) pp, 222*.
- Shaughnessy, M. F. (2004). An interview with Anita Woolfolk: The educational psychology of teacher efficacy. *Educational Psychology Review, 16(2)*, 153-176.
- Woolfolk, A. (2010). *Educational psychology: Modular Active Learning Edition*. Prentice Hall.

Links to web sites giving additional readings, Wikipedia, blogs, open source content etc.:

- <https://en.wikipedia.org/wiki/Memory>
- https://en.wikipedia.org/wiki/Repressed_memory
- <https://en.wikipedia.org/wiki/Forgetting>

Glossary:

- Forgetting: failure to recall and recognize an idea
- Memory: learning, retaining and remembering what has been learnt
- Recall: a process which consists in reproducing past experiences that are not present.
- Recognition: remembering something that is present.

Quadrant: IV**Self-Assessment**

Description: In self-assessment Question No. 1 to 09 consist of multiple choice questions in which learners are required to select the correct one out of the four alternatives and Question No. 10 has Two statements in which learner has to identify about true/false statements

Q1. Which of the following statement is TRUE?

- a. Memory plays an important role in our life
- b. Forgetting is equally important in our life
- c. Both A & C
- d. None of these

Q2. “Memory consists in remembering what has previously been learnt”. Who gave this definition of memory?

- a. Woodworth and Marquis
- b. Ryburn
- c. Ebbinghaus
- d. Dewey

Q3. We find a mobile or phone number from directory. Revise it until we dial it, after that we forget it. Which type of memory is illustrated in this example?

- a. Immediate Memory
- b. Permanent Memory
- c. Active memory
- d. Passive memory

Q4. We can recall our past experiences spontaneously without any serious attempt or will. Which type of memory is illustrated in this example?

- a. Immediate Memory
- b. Permanent Memory
- c. Active memory
- d. Passive memory

Q5. Memory is said to be serviceable, when-

- a. We recollect right things at the right time
- b. When knowledge is well-organized
- c. None of these
- d. Option A & B

Q6. Which of the following is TRUE about forgetting?

- a. Forgetting is very important in life
- b. If we do not forget, life will be miserable

-
- c. If we do not forget, the painful experiences will continue to come to our mind and disturb us.
 - d. All of these

Q7. If we deliberately try to forget pleasant and unpleasant experiences of life then it is-

- a. Passive Forgetting
- b. Active Forgetting
- c. Normal Forgetting
- d. Abnormal Forgetting

Q8. Amnesia and fugue are the kinds of _____ forgetting.

- a. Passive Forgetting
- b. Active Forgetting
- c. Abnormal Forgetting
- d. Normal Forgetting

Q9. Forgetting will occur because some of the stimuli present during the original learning are missing during recall. Which of the following causes is relevant here?

- a. Passive Decay
- b. Alteration of Stimulating Conditions
- c. Repression
- d. Deliberate Forgetting

Q10. Meaningful materials are better retained than meaningless materials

- a. TRUE
- b. FALSE

Answers: -

1.a, 2.a, 3.a, 4.d, 5.d, 6.d, 7.b, 8.c, 9.b, 10.True,