UNIT 2: MEMORY-RECALL-RECOGNITION, IMMEDIATE MEMORY SPAN

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2.1 LEARNING OBJECTIVES

After going through this unit you will be able to-

- define memory
- analyse different types of memories, its characteristics
- visualise how recall and recognition test can help in memorisation of a learner
- analyse how immediate memory is helpful for a learner in the process of remembering
- analyse how memory and forgetting take place in a human being

2.2 INTRODUCTION

This unit deals with the concept of memory, its different types, and how it can be improved. When you finish reading this unit you will be able to analyse that recall and recognition are important for memorisation on the part of the learner. This unit will also help you to understand how recall and recognition are the ways of mememorisation. Through the experimental findings of recall and recognition, you will be able to understand they are the important ways which help in the process of human learning.

2.3 CONCEPT AND DEFINITION OF MEMORY

Memory is a specific ability of the mind through which learning can be retained and reproduced if and when required. Old faculty group of Psychologists have described memory as a specific faculty or power of mind. It includes three fold mental functions- learning, retaining and remembering.

In the first step of memory, an individual needs to learn and derive sense experience of the environment in order to register its impression. It consists of sensing and perceiving the object of experience in mind. Without learning there can be no question of remembering.

In the next step the learning experience received is being retained in mind in the form of images. After learning there is always an effort to keep its image in mind intact. This retaining is a specific power of mind of an individual inherited by birth.

In the third step we try to revive or reproduce the past image in the present in its original form called remembering. It is an act of unchanged reproduction of what was retained in mind. This mental revival or remembering may again take the form of recall and recognition.

Thus, from the above analysis it may be deduced that memory is a mental activity of retaining and remembering the experiences that were learnt previously. It involves the relative steps of learning, retaining and remembering.

The concept of memory may be clarified with the following definitions:

According to Woodworth and Marquis, "Memory consists in remembering what has previously been learned."

According to Stout, "Memory is the ideal revival so far as ideal revival is merely reproductive. This productive aspect of ideal revival requires the object of past experiences to be reinstated as far as possible in the order and manner of their original occurrence."

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

2.3.1 Characteristics of Memory

The true nature of memory as mental activity may be identified with the following characteristics:

- Memory needs direct experience of senses. In the absence of this, the question of memory does not arise.
- It is an exact and unchanged reproduction of the past experiences in mind.
- Memory depends upon the power of retaining which is inherited by birth.
- Unconscious mind plays an important role in exercise of one's memory.
- Memory needs intellectual ability and better power of mental organisation of an individual.
- Repetition makes memory images more durable and lasting.
- It involves three fold activities of mind such as learning, retaining and remembering.

2.3.2 Types of Memory

Psychologists have tried to classify memory into certain types according to their nature and purposes served. The broad classification consists of habit memory, image memory or true

memory, rote memory, logical memory, immediate memory, long-term memory, associative memory. Let us see what we mean by these types:

Habit Memory

Bergson has maintained that the past survives under two distinct forms- through motor mechanism and independent recollection. Memory formed out of motor mechanism of physical repetition is called habit memory. This form of memory consists in mechanical repetition of the nervous system that constitutes physical habit. Type writing, piano playing etc involve memory of this kind. Here memory is an affair of the body rather than of the mind.

Image Memory

Bergson's concept of memory through independent recollection as against mechanical physical repetition may be known as image memory. It is also stated to be pure memory in the sense that a man's true ability of memory finds expression through his capacity of keeping and reviving the image purely on the basis of mental picture. Bergson has asserted that habit memory relates to body whereas pure memory relates to mind. Describing a memorable event of the past involves pure memory.

Rote Memory

This form of memory is described as verbal memory formed out of physical repetition in mouth. It does not require exercise of mental image out of one's own power of retaining. Verbal repetition of something in mouth may result in the formation of habit that enables to remember mechanically. In the absence of such repetition memory fades away. Here there is no question of intellect, learning and logical understanding of the facts and ideas in mind. This may be popularly known as memory out of cramming.

Logical Memory

This form of memory may be described as opposite to verbal learning and remembering. Here, the individual is required to exercise his power of reasoning, understanding and appreciation of the facts

and events in learning and remembering. Logical memory may be comparable to that of pure memory that depends upon the power of retaining. The intelligent students usually make use of this form of memory.

Immediate Memory or Sensory Memory

Immediate memory or sensory memory is that memory which helps an individual to recall something immediately after having perceived it. The time interval between learning and remembering here is very little. This form of memory needs alertness and keenness of the senses and the power of receptivity of the sensory motor nerve. To take example, writing while dictating involves exercise of immediate memory.

Long-term Memory

This type of memory is a matter of time that involves in between learning and remembering. As the name suggests, long-term memory has quite a durable or endless retention of the sensory impressions. That is why; it is also referred to as permanent memory. Remembering our identifying data like our name, father's name, date of birth, date of marriage etc is the simplest example of our long-term memory. With the help of our long term memory, we can store, retain and remember most of the things of our lives, and can thus make things in our life quite easy.

Associative Memory

A significant characteristic of memory is the associative factor involved. We remember something in association with other things. Associative factors like sameness, difference and newness are aids to remembering. There are three laws of association that operate in memory which may be called as law of similarity, law of contrast and law of contiguity. Accordingly, the daughter's face reminds one of the mother, the name of Rama reminds us of Ravana, and truth reminds us of justice. Associative factors also help the students in the exercise of memory more effectively in examination.

2.3.3 Measures and Techniques for Effective Memorisation

The following techniques and measures may be adopted for obtaining better results in the process of memorisation (learning, retention and its reproduction).

Will and determination

There must be firm determination or strong will to learn, retain and reproduce for achieving the desired success in memorisation. Materials read, heard or seen without intention or mood are difficult to remember at later times.

Interest and attention

Interests as well as attention are essential for effective learning and memorisation. We need to learn when our mind is interested. Things that have touched our mind can be easily remembered. In the absence of interest, learning may turn out to be a futile exercise. One who has no interest in what one learns, cannot give due attention to it, and consequently, one will not be able to learn it.

Adopting proper methods of memorisation

For memorisation it is very necessary to adopt proper method of memorisation. But all methods are not suitable for all occasions for all individuals. Therefore, a judicious selection should be made in choosing a particular method in a given situation.

Use of Image

Memory activity is nothing more than keeping the learning image in mind. An image is an aid to learning, retaining and remembering. Use of picture, diagrams and maps may therefore make our memory convenient to exercise.

Use of Rhythm

Rhythm in learning creates interest and easy attention to anybody. Rhythmic methods like songs, dances and poetry can easily stimulate the mind to keep its image or impression lively.

Utilising senses

We all know that senses are the gateways of knowledge, and it has been that a person learns better when it is presented through more

than one sense. Therefore, attempts should be made to take the help of audio-visual aid material and receive impressions through as many senses as possible.

Provision for rest

Rest is the essential psycho-physical condition of learning and remembering. Rest can remove fatigue and boredom, and revitalises the body and mind for fresh learning and remembering.

Repetition and practice

Last but not the least is the repetition and continuous practice that adds to effective memorisation. Repetition or practice strengthens the bond of learning to keep its impression for long. It revitalises the image for which forgetting cannot have its impact on memory. Therefore, due care should be taken for drill work, practice and review etc in the process of memorisation and learning.



CHECK YOUR PROGRESS

Q1. What do you mean by memory and what are three processes of memory?

.....

.....

Q2. Give an example of long term memory.

.....

.....

2.4 CONCEPT OF RECALL AND RECOGNITION

The act of remembering the past experience in mind may take the form of recall and recognition. These are the two ways of remembering the past image in the present. Their specific nature may be described below-

METHOD OF RECALL

It is a mental apprehension or reinstatement of experience perceived on the previous occassion.It is a form of remembering the past experience

in mind purely on the basis of image or mental picture of the past. Here, the individual needs better ability of keeping image in mind. If the power of retaining is more, the image may be kept alive and active in mind. Weakness of this power results in fading out of the image from mind. Recall is obviously a difficult form of remembering that involves in keeping and reviving the image or mental picture of the past in the present.

In using the method of recall for using one's power of retention, we can ask an individual to reproduce the retained material in his memory through the process of recall (oral citation or written presentation). For example, a child may be asked to reproduce the retention of the spelling of ten words (remembered by him previously) by a way oral recitation or written presentation. This method of recall may take the following three shapes and designs designated as- (i) Free recall method, (ii) Probed recall method and (iii) Serial recall method.

(i) Free recall method

In this method, the learner is provided with a list of items. The items may contain meaningful words like RAT, HAT, PEN, HAND or digits like 22, 45, 32, 86 or even nonsense syllables like TAK, SOK, NAK, KAZ etc. In addition to the use of such lists, we may make use of other study material like a stanza of a prose or poetry composition, an incidence or a pictorial presentation.Here, the learner is asked to recall (orally or in written form) in any order as many items as possible from the list he has seen or been told about. Whatever the material may be, the objective remains to test the power of retention, i.e. what one is capable of recalling out of the total material presented to him for his learning.

(ii) Probed recall

In this method, the individual may be provided with a clue for helping him in the process of recalling. For example, in a paired associate list like CORN-MUSIC, BOX-CAT, FOOD-BOOK etc., he may be asked to tell, which word appeared with BOX in the list seen by him. For the items of a serial

list, this clue may be in the shape of the location of the item in the list e.g which item was there at the top/bottom/middle of the list seen by him?

(iii)Serial recall

In serial recall an individual is asked to recall the items in exactly the same order as presented to him previously for his learning or memorisation. The serial order reproduction of his retention is quite essential in such measurement. For example, if one is able to recall 12 words correctly out of 20, but out of this 12, he is wrong at four times in terming their serial recall, he may then be scored as 12-4=8 instead of 12.

METHOD OF RECOGNITION

It is comparatively an easier form of remembering than that of recall. Recognition is an act of identification or verification of the given experiences on the basis of the past image. For the exercise of recognition, the object of experience already remains present before the senses. We are here required to select or identify it from the given object. It is an associative form of remembering that works. The image of the past here is already given for its verification. One is not to depend entirely on the mental picture to retain. Generally, there are two types of recognition test that are employed for testing one's power of retention. These are named as simple recognition test and multiple-alternate recognition test.

Simple recognition type test

In this type of test, the individual is presented with a photograph, picture, scene of a film or a real item to decide whether or not he has seen it before. He may also be presented with an audio tape, smell or taste experience to decide whether he has listened, smelled or tasted it ever before, and if yes, he is asked to tell something about it, through its recognition.

Multiple-alternate recognition test

In this test, one has to recognise a particular person or item seen, heard or experienced before, out of the several pictures, voices or items presented to him. For example, he can be presented with 10 pictures or photographs. He may be asked to recognise a particular person, place or event out of the given alternatives. The words, letters, symbols etc. can

also be used for such recognition tests. In addition to this, some suitable multiple objective type questions may also be constructed for testing the powers of recognition like -

Which of the parties was established by Dr. B.R Ambedkar?

(a) The Peasants and Workers Party of India

(b) All India Schedule Caste Federation

(c) The Independent Labour Party

2.4.1 Application of Recall and Recognition in the field of Education

Recognition is easier than recall. Multiple choice tests are generally easier than fill in the blanks test or essays, because it is easier to recognise the correct answer out of a group of possibilities than it is to have to dredge up the answer out of one's own mind.

Still, in order to be able to recognise the correct multiple choice answer, it has to be "somewhere" in one's brain: otherwise there's nothing to recognise. And someone with mastery of a topic can fill in the blanks or can write an essay.

In this connection we can think of our brain like a file cabinet, with tons of information stored in it. When we recognise a piece of information, its like the tab on a file folder in our head; the whole file folder now gets pulled up. By writing down anything we know about a problem, getting started in any possible way, we are hopefully going to write something that we then recognise, and our brain is going to pull the tab and bring up the rest of the folder.

Our brain contains over four terabytes of information (which is a way too big a number to imagine), yet our working memory, the part of our brain that consciously works on a problem, can only hold about seven bits at any time.

Think about how impossible it is to multiply big numbers in our head, but it is very easy to do on paper. Our brain knows how to multiply, but it can't keep track of all those digits. This is why writing

was invented in the first place. People found themselves with way more knowledge that they could hold and work with in their heads, and so they invented a way to put information "out there". They scratched it in the dirt or into clay tablets or they inked it onto papyrus or paper. Once people invented writing they could work with far more than just seven bits of information at a time.

2.4.2 Experimental findings through Recall and Recognition

Title: Recall and Recognition

Objective: To determine the relative capacity of retentivity in recall and recognition of meaningful materials.

Hypothesis: (i) Recognition score exceeds recall score

(ii) Percentage of recognition of figures is higher than the percentage of recognition of words.

Materials: (i) A set of 40 meaningful figures

(ii) A set of 40 meaningful words

(iii) A stopwatch

(iv) Screen

(v) Record Sheets

(vi) Stationery

Subject: Name:

Age:

Sex:

Educational Status:

Date:

Time:

Place:

Procedure: To conduct the experiment, at first the experimenter prepared two sets of cards. One set consisting of 40 meaningful figures pasted on equal sized (5cm x5cm) cards (coloured figures against white background) and another set of cards (6cm x 2cm) of meaningful words (written in block letters against white background)

for the purpose of the experiment. The sets were of equal difficulty. Record sheets were also maintained and the subject on whom the experiment was to be conducted was selected.

The experiment was conducted in two phases. In the first phase of the experiment, to test the capacity of retentivity in recall, the experimenter systematically set twenty cards depicting figures on the experimental table and there was a wooden screen between the experimenter and the subject. The stop watch was kept ready to record the time alloted to the subject. Keeping the screen in between, the experimenter instructed the subject as to what was to be done. The subject was given the following instructions- “You will be shown 20 cards depicting figure, which will be exposed for 2 minutes only. Please be alert and attentive. After two minutes you will have to write down on this sheet of paper the figures you can recall and remember. Are you clear?”

After the subject had reproduced the figures exposed, the experimenter mixed up the originally presented 20 cards with 20 new cards. After mixing the cards the subject was then given the following instructions- “I have mixed the previously presented cards depicting figures with 20 new cards. Please try to recall and recognise the cards previously shown by picknig them up from the whole set of 40 cards. Do you understand?”

After giving 5 minutes interval the experimenter started the second phase of the experiment. In the second phase of the experiment it was to determine the relative capacity of retentivity in recall and recognition of meaningful words. Accordingly the experiment was conducted with the same procedure by which the former experiment on recall and recognition of figures was performed.

After the experiment was over, the experimenter took the introspective report from the subject and thanked the subject for co-operating.

Introspective Report: It was a very interesting experiment to me and I enjoyed it very much. I did not find much difficulty in recognising the figures and words. I could easily recall the easier and known words but found little difficulty in recalling the unknown words.

RECORD SHEET- IX

RECALL AND RECOGNITION OF FIGURES

SERIAL NUMBER	FIGURES	RECALLED	RECOGNITION
1	BUS		
2	SHIP	√	√
3	DEAR	√	√
4	FOX	√	√
5	RHINO	√	√
6	ZEBRA	√	√
7	CAR	√	√
8	BOAT	√	√
9	LION		√
10	DOLL	√	√
11	WOLF	√	√
12	BEAR	√	√
13	GIRAFFE	√	√
14	OX		
15	KITE		
16	BALL	√	√
17	HORSE	√	√
18	ELEPHANT	√	√
19	CAT	√	√
20	DONKEY		
21	BUFFALO		√

22	DOG		
23	CAMEL		
24	PIG		
25	RABBIT		
26	INKPOT		
27	CROW		
28	PARROT		
29	HOUSE		
30	BANANA		√
31	PENGUIN		
32	FROG		
33	HAND		
34	SUNFLOWER		
35	WATCH		
36	ICE-CREAM		
37	CYCLE		
38	ROCKET		
39	TRAIN	√	√
40	TREE		
	TOTAL	15	20
Percentage 15/20 x 100= 75%			20/20 x100= 100%

RECORDSHEET- X

RECALL AND RECOGNITION OF WORDS

SERIAL NUMBER	FIGURES	RECALLED	RECOGNITION
1	BOOK	√	√
2	SECURITY	√	√
3	SEEDS		
4	TABLE	√	√
5	UNIFORM		
6	FISHERY		
7	STAR	√	√

8	POPPY		
9	WORLD	√	√
10	HISTORY		
11	OCEAN		
12	TOMATO		√
13	WINGS		
14	VEGETABLE	√	√
15	WEST		
16	CLOUD		
17	HANDBAGS	√	√
18	DOVE		
19	BLOOD	√	√
20	WOOD		
21	KITTEN	√	√
22	STONE	√	√
23	HEART	√	√
24	ORANGE	√	√
25	WATCH		
26	GLASS		
27	SHIP	√	√
28	PENCIL	√	√
29	PROFIT		
30	PRIZE		
31	ICE-CREAM	√	√
32	EYES		
33	MASTER		
34	MOTHER	√	√
35	EARTH	√	√
36	UTENSILS		
37	MUSHROOM		
38	PARK	√	√
39	SNAKE		
40	DOLPHIN		
	TOTAL	18	19
Percentage= 18/20 x 100= 90%			19/20x 100= 95%

Table- XI

	Recall	Recognition
Figures	75%	100%
Words	90%	95%

Table No. XI Showing the percentage of recall and recognition for figures and words

Results: The results of the experiment are shown in record sheet no IX, depicting the percentage of recall and recognition of meaningful figures, and record sheet no X depicting the percentage of recall and recognition of meaningful words. Table XI shows the percentage of both recall and recognition of figures and words.

Observation and Discussion: It is observed from the experiment that the subject's percentage of recall and recognition of figures is 75% and 90%, and the percentage of recall and recognition of words is 90% and 95% respectively. Thus, from the result of the experiment, it is evident that percentage of recognition of figures is higher than the percentage of recognition of words. The recognition scores also exceed the recall scores. This indicates that the nature of the material which is presented, are retained and recognised due to the presence of conditions as intensity, similarity, distinctness, meaning, vividness-which play an important role.



ACTIVITY 4.1

Prepare a list of 40 figures and 40 words by yourself to conduct an experiment of recall and recognition.

2.5 CONCEPT OF IMMEDIATE MEMORY

We all know that immediate memory is the ability to remember a small amount of information over a few seconds. It is an important type of memory for making sense of what is going on around you. For Example, immediate memory is used when reading to recall what happens sentence by sentence, or when recalling a phone number just looked up in the phone book. There is a limit to how much can be stored in immediate memory. Unlike other forms of memory, information in immediate memory fades very quickly (lasts only for a few seconds). Immediate memory is not affected much by age. At any age people can usually store 5 to 7 pieces of information in immediate memory.

There are certain rules to be followed to improve immediate memory. Such as:

- To keep one's mind active. Participate in activities that require to think and learn, such as playing bridge or attending a lecture.
- To exercise. There is some evidence to suggest that physical exercise contributes to memory retention.



CHECK YOUR PROGRESS

Q3. What do you understand by the term immediate memory? Discuss in your own words.

.....

.....

Q4. Give some examples of immediate memory.

.....

.....

Q5. How can immediate memory be improved?

.....

.....

2.5.1 Experimental Finding through Immediate Memory Span

Title: Immediate Memory Span

Objectives : To determine the immediate span of the subject for digits (Forward and Backward)

Hypothesis: Forward memory span exceeds backward memory span.

Materials: (i) Two lists of numbers consisting of 4 to 12 digits
(ii) Screen
(iii) Stationery

Subject: Name:
Age:
Sex:
Educational Status:
Date:
Place:
Time:

Procedure: In this experiment the immediate memory span of the subject for digits- Forward and Backward is to be determined. Two lists of numbers were prepared consisting of 4 to 12 digits. In preparation of the lists, care was taken to avoid repetition. The subject was requested to take his seat. The experimenter placed a wooden screen in between the experimenter, and the subject so that the subject cannot see the list. The experiment was conducted in two phases. In the first phase the experimenter is to determine the forward memory span. Here, the experimenter said out the digits and the subject repeated it. The subject was given the following instructions-

"Please be seated comfortably. This is a very simple experiment which I am going to conduct now. I will say some numbers, and your task is to memorise these numbers and repeat them in the same way and order as soon as I finish. Do you follow?"

(The experimenter started with a short list and proceeds to longer ones to test the subject's limit. The experimenter should continue the experiment till the subject is unable to reproduce perfectly.)

After an interval of 10 minutes, the experimenter commenced the second phase of the experiment. In the second phase, the experimenter is to test the backward memory span of the subject. Here the subject is to recite the numbers said by the experimenter in the reverse order.

The subject was given the following instructions- "I have already tested your forward memory span, now I shall determine your backward memory span. The only thing you have to do is to recite the numbers in a reverse manner which I will say you. For example, if I say, 1234, you are to say in the manner 4321. Have you understood? Can I start now?

Introspective Report: "I had a lot of difficulty in reproducing the correct numbers. It was quite easier for me to reproduce the numbers in forward manner but upto 6 numbers but it was very much difficult for me to reproduce the numbers in the backward manner. But overall the experiment is very interesting to me."

Result: The results of the experiment are recorded in worksheet no.XII depicting the forward memory span and worksheet no. XIII depicting the backward memory span. The true average span was obtained by giving three lists of each length a credit of 1/3 for every perfectly recited list.

Observation and discussion: It was observed from the experiment that the forward memory span exceeded the backward memory span. The forward memory was found to be 7 and backward memory span 5. It was also observed that the subject got all the lists correct upto and including 6 digits in the forward memory span. So the subject was credited with 6 as a basal value. The subject succeeded twice with 7 digits, and once in 8 digits, not at all in 9, 10,

WORKSHEET- XII

FORWARD MEMORY SPAN		
Digit Span	List of digits 4 to 12	Subject's reproduction
4	1 2 3 4 2 4 6 8 3 6 9 0	1 2 3 4 √ 2 4 6 8 √ 3 6 9 0 √
5	2 4 6 7 8 2 3 4 6 8 8 7 6 5 3	2 4 6 7 8 √ 2 3 4 6 8 √ 8 7 6 5 3 √
6	1 2 3 4 5 6 0 9 8 7 6 5 2 4 6 8 9 0	1 2 3 4 5 6 √ 0 9 8 7 6 5 √ 2 4 6 8 9 0 √
7	1 3 5 7 9 0 2 8 5 6 9 7 3 2 2 0 3 6 7 5 4	1 3 5 7 9 0 2 √ 8 5 6 9 7 3 2 √ 2 0 3 6 7 x
8	9 3 2 4 6 7 9 0 6 2 3 4 8 9 1 0 1 2 3 4 5 6 7 8	9 3 2..... x 6 2 4..... x 1 2 3 4 5 6 7 8 √
9	8 5 6 9 7 3 2 1 0 5 7 8 6 5 7 2 1 4 1 2 3 9 8 7 5 6 4	8 5 6 .....x 5 7 6 8.....x 1 2 3 4.....x
10	6 7 5 4 3 2 8 9 0 1 5 3 2 3 9 7 6 4 2 3 7 9 2 4 5 6 7 9 2 3	6 7 5 4 .....x 5 2 3 4.....x 7 9 3 4 6.....x
11	4 5 7 8 9 2 3 6 4 7 1 5 6 8 1 2 3 4 5 6 9 0 4 5 2 3 6 7 8 9 1 0 3	3 2 4 2.....x 1 2 3 4 0 5 6.....x 8 3 2 4 5 6 1 0 5 7....x
12	3 2 3 4 5 6 7 8 9 7 2 7 1 2 3 4 0 9 8 7 6 4 5 6 8 3 2 4 5 6 1 0 9 3 7 6	3 2 4 2.....x 1 2 3 4 0 5 6.....x 8 3 2 4 5 6 1 0 5 7....x
Result of forward memory Span = 6 x 3/3 = 18 /3 = 18/3 = 6		

WORKSHEET- XIII

BACKWARD MEMORY SPAN		
Digit Span	List of digits 4 to 12	Subject's reproduction
4	1 2 3 4 2 4 6 8 6 7 8 9	1 2 3 4 √ 2 4 6 8 √ 9 8 7 6 √
5	2 4 6 8 0 5 2 1 3 4 5 7 8 9 0	0 8 6 4 2 √ 4 3 1 2 5 √ 0 9 8 7 5 √
6	2 6 7 9 3 4 1 2 3 6 9 0 2 3 5 8 9 1	4 9 7 6.....x 0 6 9.....x 1 9 8 6.....x
7	1 2 3 7 8 9 5 3 4 6 7 8 6 4 6 3 4 7 8 9 2	4 9 6 5.....x 3 4 8 9.....x 2 9 8 7.....x
8	1 2 3 4 9 8 7 6 3 2 1 3 4 6 7 5 7 3 2 4 6 9 0 1	6 7 9 4.....x 4 7 9 4.....x 1 9 0 3.....x
9	3 4 2 5 6 9 8 0 7 5 6 4 2 3 7 8 2 1 4 5 6 7 2 4 8 9 5	7 0 8 9 2.....x 1 2 6 7.....x 5 9 8 4 3.....x
10	6 2 3 4 5 8 9 0 1 2 5 3 8 6 2 0 1 7 4 1 7 9 2 8 7 6 5 2 4 0	2 0 1 4.....x 1 7 1 4 9.....x 0 4 2 8.....x
11	4 5 9 7 3 4 6 8 7 1 0 1 2 3 4 0 9 8 5 6 4 7 8 4 7 5 3 6 2 1 9 4 8	
12	9 2 4 5 3 8 7 6 9 2 4 3 8 5 6 7 4 2 6 8 7 9 0 2 4 5 5 3 9 7 8 5 6 7 8 0	
Result of Backward memory span= 5		

11 and 12 digits, so the subject's total score was found to be 6x3/3= 6.

The backward memory span was less than the forward memory span. As in case of backward memory span, more mental alertness and concentration was needed. It is observed from the experiment, that it is a simple and quick method of ascertaining an individual's memory span. Such experiment furnishes an answer to the question- How large a quantity of a given sort of material can be reproduced perfectly after one single presentation. Thus we can conclude that our results support our hypothesis.

ACYIVITY 2.2



Prepare a list of alphabets ranging from 4 to 12 alphabets as shown in the experiment with numbers to test the immediate memory span of your subject.



2.6 LET US SUM UP

- The memory is nothing but remembering what we have already learned. Memory involves three steps learning, retaining and remembering.
- There are different types of memory- Habit memory, Rote memory, Image memory, Logical memory, Sensory or Immediate memory, Long term memory, and Associative memory.
- There are different measures and techniques of effective memorisation such as will and determination, attention and interest,

proper methods of memorisation, use of image, rhythm, senses, rest, repetition and practice.

- Recall and recognition are two ways of remembering. We know that recall takes place in three forms such as Free recall, Probed recall and Serial recall. In Free recall a person is to recall what one is capable of recalling out of the total material presented to him. In Probed recall an individual is presented with some cue in the process of recalling. And, in the Serial recall the individual is asked to recall the items in exactly the same order as presented to him previously for his learning or memorisation.
- The method of recognition is an easier form of remembering than that of recall. Generally, there are two types of recognition test that are employed for testing one's power of retention. These are simple recognition type test and multiple-alternate recognition test.
- From the experiment of recall and recognition, we can view that recognition score exceeds recall score. Hence, we can say that recognition is much easier than recall. We can also see that in both the phases of the experiment, it is found that the percentage more than that of recall.
- We know that immediate memory is the ability to remember a small amount of information over a few seconds. This memory is not affected much by age. At any age, people can usually store 5 to 7 pieces of information in immediate memory. To keep one's mind active and through exercising, one can improve immediate memory to a great extent.
- From the experimental finding through immediate memory we can clearly understand that forward memory span exceeds backward memory span. It is easier to memorise and reproduce easily in forward manner but it is difficult to reproduce in reverse manner. In