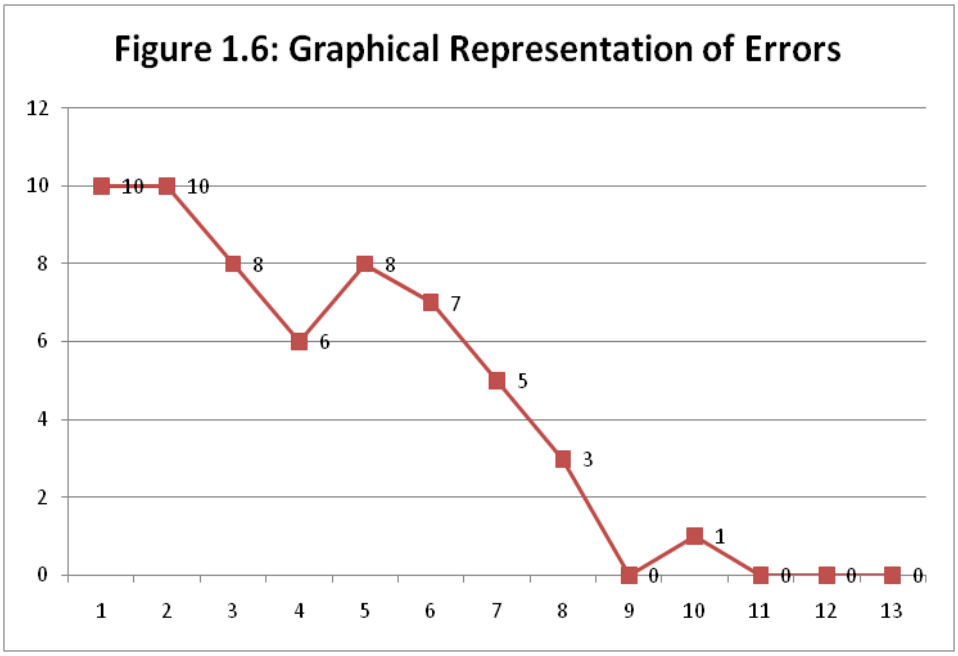
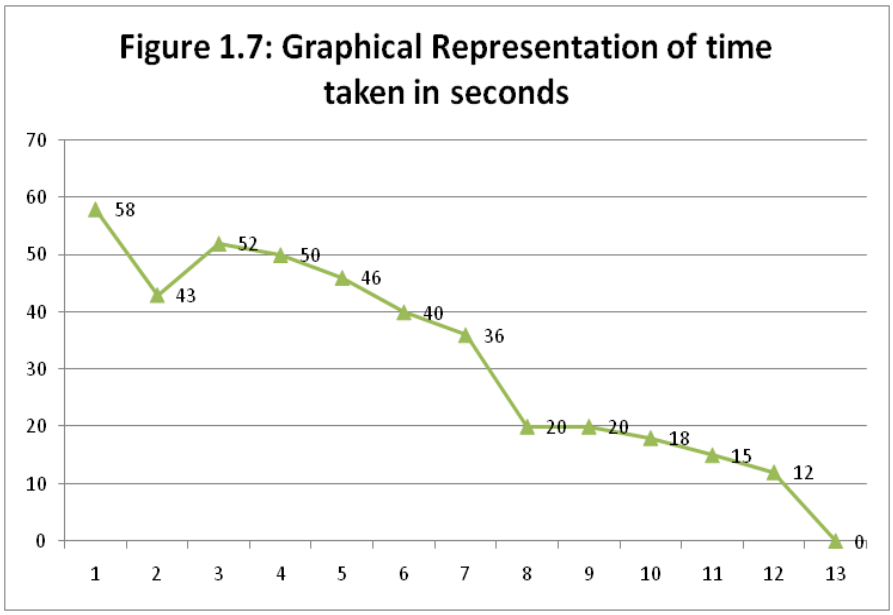
INTROSPECTIVE REPORT

"I found the experiment very interesting. At first I made number of errors but as with number of trials I tried to remember carefully where I marked earlier and with the passage of time I became successful in the subsequent attempts."

Record sheet III

Number of trials	Number of errors	Time taken in seconds
1	10	58
2	10	43
3	8	52
4	6	50
5	8	46
6	7	40
7	5	36
8	3	20
9	0	20
10	1	18
11	0	15
12	0	12
		Total= 410 seconds





RESULTS:

The results of the experiment are shown in record sheet III The error curve and time curve are also graphically represented in Figure 1.6 and Figure 1.7

OBSERVATION

Maze learning is a sensory motor type of learning. From the experiment it is evident that the subject made 3 errorless trials in the 9th, 11th and 12th trials. The maze was learned in 410 seconds. Almost every subsequent trial required less time and every subsequent trial involved fewer errors by the subject. Therefore it is evident that practice is helpful in maze learning and learning time and error decrease with the increase in the number of trials. Hence, we can retain our hypothesis.

Experiment IV

Title: Human Maze Learning

Objective: To examine whether practice improves human learning

Hypothesis: Practice makes human learning more effective.

Apparatus and Materials Used: The apparatus and materials used include-

- Punch board maze
- Stop watch

- Screen
- Newspapers
- Graph paper

Subject: Name:

Age:

Sex:

Educational Status:

Date:

Time:

Place:

DESCRIPTION OF THE APPARATUS USED

The apparatus used in this experiment is known as "Punch Board Maze". It consists of two pieces of wooden boards, upper and lower of identical size. Ten to twelve rows of holes are drilled into the upper piece, each row consisting of three holes. There is also one single hole at the top and another at the bottom. For one hole of each row in the upper piece, there is a hole in the corresponding position in the lower piece which is randomly distributed over its surface. One of the top and bottom holes too has a hole in the corresponding position in the lower piece. For each trial a newspaper is placed under the upper piece and the subject is required to insert a pencil, starting with the top hole, in that hole of each row that has a corresponding hole in the lower piece.

PROCEDURE

After making all the arrangement the experimenter invited the subject and asked to sit and gave the following instructions-

"This is a punch board maze. It consists of two pieces of wooden board which consists of 10 rows of holes, each consisting of 3 holes. There is a starting hole and an exit hole. Your task is to insert your pencil starting with the top hole. In each row there is only one correct point. You will never be given opportunity of looking at the lower piece. If you hit the pencil at the correct hole, your pencil

will pierce through the paper and pass into the lower piece; otherwise the pencil would only make a mark in the newspaper. For each trial I will give you a start signal and then you are to move your pencil. Do you understand?"

The experiment included 20 trials, 10 order trials and 10 reverse trials which were taken alternatively. After getting a positive reply from the subject, the experimenter started the experiment. Twenty trials were taken in the same procedure, order and reverse. Time taken for each trial was recorded with the help of the stop watch by the experimenter. On completion of the experiment, the experimenter thanked the subject for co-operating. To make the experiment more clear the experimenter presented the data with the help of graphical representation.

INTROSPECTIVE REPORT

"I found the experiment very interesting. At first I made number of errors, but with the number of trials, I tried to remember carefully the marks I made earlier and with the passage of time, I became successful in the subsequent attempts."

Record sheet- IV

No of trials	No of errors		Time taken in seconds	
	ORDER	REVERSE	ORDER	REVERSE
1	5	6	50	40
2	5	5	45	48
3	4	5	42	28
4	3	3	35	30
5	6	2	30	35
6	5	3	32	28
7	2	2	25	25
8	5	2	20	20
9	3	2	15	18
10	2	1	15	15

Figure 1.8: Graphical Representation of errors in order and reverse trial

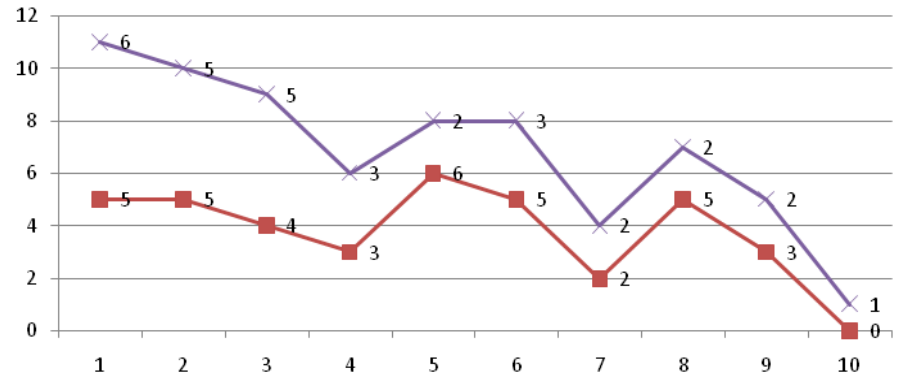
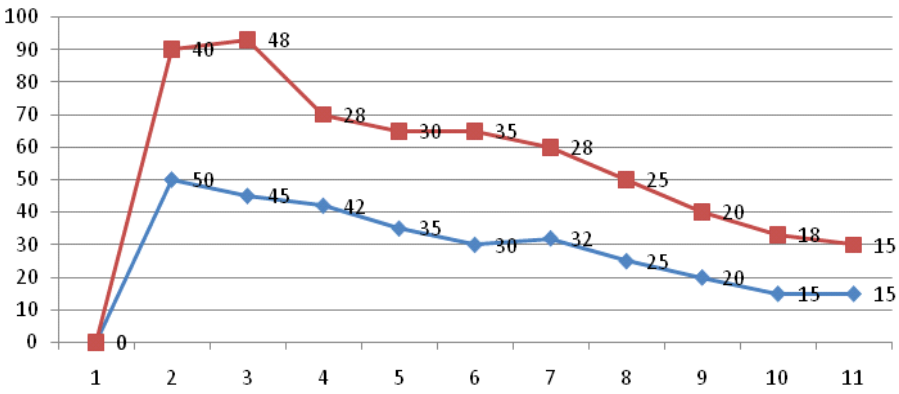


Figure 1.9: Graphical Representation of time taken in order and reverse trial



RESULT: The results of the experiment are shown in record sheet-1.4, Fig 1.8, and fig 1.9 that depict the error and time taken in order and reverse trials.

OBSERVATION:

It is observed from the results of the experiment that the subject committed 5 errors and took 50 seconds in the first order of trial. But gradually the errors were eliminated. In the 10th trial, the error was only 2. Similarly, in the reverse trial also, the subject made 6 errors and took 40 seconds in the first trial which gradually decreased to only 1 error in the 10th trial. It proves that practice helped the subject to find out the right path. We retain our hypothesis that practice improves human learning more effectively.



ACTIVITY: 1. 2

Conduct an experiment by your own with the help of the maze box apparatus to show how trial and error method of learning helps an individual to learn effectively.

1.6 CONCEPT OF PART AND WHOLE LEARNING

A great deal of work has been done in psychology of learning to decide whether learning a whole job is superior to breaking the job into parts and learning the parts. In parts learning the individual is not only required to learn each individual in parts but must be able to combine the separate parts so that the whole performance can be accomplished. No overall conclusion, however, has been reached in this field.

The idea behind the Whole-Part method is that the student will be able to piece the different small parts of the skill together and then perform it as whole. It's very useful in everything we learn because certain things can be very difficult to understand as a whole. By breaking the process into small steps, we can more easily follow the process and understand what is going on.

1.6.1 Application of Part and Whole method in the Field of Education

The Whole-Part method of learning is when a teacher performs a whole demonstration of the skill and then breaks the skill into little parts. For example, a tennis serve is deconstructed into a toss phase, and a swing phase. Another example could be when a teacher of mathematics is teaching a new equation. They are to demonstrate how the skill is used and then guide the students through each step separately.

We can use the whole-part method in two ways. First we characterize the whole lesson and the parts and at the end we summarize what we have learned. Secondly, we portray a clear

progression of the skills-from those already mastered to those still to be learned. This will enable them to make much progress as students.

In this context, we can cite the example of the coach or an instructor who can immediately determine what parts or aspects of the athlete's skills are lacking, and can focus on improving them first. Part instruction would then be used to improve those skills, and then the whole instruction would be used so that the coach could determine how much the athlete's skills have improved. Further, he will find out while improving those skills, if another skill has suffered because of the increased knowledge.

1.6.2 Experimental finding through Part and Whole Learning

Experiment V

Title: Part and Whole Method of Learning

Objective: To examine whether the part method of learning is more effective or whole method is more effective in learning a piece of verbal materials.

Hypothesis: Part method of learning is more effective than the whole method of learning.

Materials: The materials used here are as follows:

- Two sets of verbal materials each set consisting of four stanzas from the same poem.
- Record sheets
- Stationery articles
- Stop watch

Subject: Name:

Age:

Sex:

Educational Status:

Date:

Time:

Place:

Procedure

This experiment was done to test which method of learning- part learning or whole learning is an easier or effective method to memorize something. For this experiment, the experimenter prepared two sets of verbal materials. Each set consisted of 16 sentences from the same poem. Each set of 16 lines were subdivided into four sections so that each section contained 4 lines. Lines within each section were than written on separate cards. Then the subject was given the following instructions-

"In this experiment, while mastering a verbal material, we either learn it as a whole or learn it part by part. Now, in this experiment, I want to see which method is easier for you. I will show you some sentences for 30 seconds only. You will be required to memorize it until you can reproduce all the 4 lines correctly. After the first set another three sets will be given in which the same procedure will be followed. After you have learned all the four sections separately you will be required to reproduce from memory all the 16 lines in the order in which they were presented on four separate sheets. You will be shown all the four stanzas at a time for 120 seconds and I shall test your reproduction for the entire set of sixteen sentences. Are you clear about my instructions?"

After giving the above instruction, first of all the subject was given the first stanza of a selected poem to test his memory by using part and whole method. After two faultless reproductions, the subject was given another three stanza one after another. Thirty seconds were given for each stanza to memorize. After the subject has been able to reproduce all the stanzas, the subject was then asked to reproduce all the 16 lines in four cards at a time for the whole method. The procedure was continued until he reproduced all the stanzas. After the experiment was over the subject was thanked for co-operation and was requested to leave the room.

INTROSPECTIVE REPORT: "The experiment is very interesting. I felt from my experience that I can remember and reproduce the stanzas more easily by the part method rather than the whole method."

Record sheet V Subjects reproduction of individual stanza in part method

No of trials	Stanzas reproduced correctly/incorrectly				
	1	2	3	4	5
1st stanza	x	x	x	✓	✓
2nd stanza	x	x	x	✓	✓
3rd stanza	x	✓	x	✓	✓
4th stanza	x	x	x	✓	✓

Total trial taken =16

Average trial =16/4 =4

Total time taken = 4x120

=480 seconds

Record sheet VI Subjects reproduced the entire stanza in part

Stanzas produced correctly/ incorrectly				
No of trials	1st stanza	2nd stanza	3rd stanza	4th stanza
1	✓	x	X	X
2	✓	x	X	✓
3	✓	✓	✓	✓
4	✓	✓	✓	✓

Total number of trial taken =12

Average trial =12/4= 3

Total time taken = 3x120 = 360 seconds

Total time taken in learning the entire set in part method =480+360 = 840 seconds

Record sheet VII Subjects reproduction of the entire stanza in whole method

No of trials	Stanzas reproduced correctly/ incorrectly			
	1st stanza	2nd stanza	3rd stanza	4th stanza
1	x	x	X	X
2	x	x	X	X
3	x	✓	X	X
4	x	x	✓	X
5	✓	x	✓	✓
6	✓	✓	X	X
7	✓	x	✓	X
8	✓	✓	✓	✓
9	✓	✓	✓	✓

Total trial taken = 32

Average trial = 32/4 =8

Total time taken =8x120

=960 seconds

Table- VIII Number of trials and total time taken in learning stanzas to the criteria of mastery both in part and whole method of learning and percentage of gain and loss

	TRIALS	TIME TAKEN
Part method	4+3 =7	7x120= 840 seconds
Whole method	8	8x120= 960 seconds
Difference	1	120 seconds
Of gain	1/7x100= 14.28%	120/840x100 = 14.28%
Of loss		

RESULT: The result of the experiment was recorded in record sheet VI,VII and VIII.

OBSERVATION

By the whole or part method, the poem or passage is read through and through until it is mastered. In this experiment, it has been observed

that part method of learning is more effective than the whole method. In learning through the whole method, the subject has taken more time than learning through the part method. The average time taken in part method of learning is 840 seconds and 960 seconds in whole method. Thus, it can be observed from the experiment that the subject took much time in whole learning. Hence, we can accept our hypothesis that part learning is more effective than whole learning.



ACTIVITY: 1.3

Prove with the help of an experiment, which method is more effective for a learner to learn easily i.e., whether part method or whole method is easy for the learner to learn faster and helps the learner to memorize quickly.



1.7 LET US SUM UP

- Learning in its simplified form may be described as the process of modification of behaviour in the environment.
- There are different theories of learning. They are: theory of connectionism, theory of classical conditioning, operant conditioning theory, gestalt theory, field theory of learning, Hall's theory of reinforcement, and Tolman's theory of purposivism.
- Learning can also takes place through mirror drawing apparatus. It has been found from the experiment that the procedure of trial and error helps in the improvement of human learning. Besides, the second experiment which has been conducted through the apparatus proves that practice makes human learning more effective.
- By the experiment of human maze learning we can also understand that human learning can be more effective through practice. Both the experiment conducted by the apparatus like punch board maze, it has been very clearly proved.