

# RATIONAL LEARNING

## - STATEMENT OF THE PROBLEM :-

To study how effectively certain logical processes are employed in mental learning.

## - INTRODUCTION.

### 1) Definition of Learning :-

"Learning is any relatively permanent change in behaviour due to experience or practice." (Morgan and King, 1956).

"Learning is a process that leads to change, which occurs as a result of experience and increases the potential of improved performance and future learning."

"Learning can be defined as the transformative process of taking in information that when internalized and mixed with what we have experienced changes what we know and builds on what we do. It is based on input process and reflexion. It is what changes us."

### 2) Types of Learning :-

Almost any kind of behaviour can be modified by learning. Because of their very universality, experimental analysis is greatly aided by a classification of the various areas of behaviour in which responses are acquired and modified by learning.

There are 3 types of learning :-

#### A) Verbal Learning :-

Herman Ebbinghaus is the 1<sup>st</sup> experimenter in verbal learning, who attempted to overcome the problems of verbal learning by creating nonsense syllable. The nonsense syllable consists of a vowel between 1 consonants



and has no dictionary dichotomy meaning (WT, Wom). The nonsense syllable has been widely used in the hope that different learners would find the materials of equal difficulty and that different conditions of learning could be directly compared. When there are no associations due to experience and similarly to conventional words, the learner soon creates them. There have been attempts to quantify the degree of association processed by a given nonsense syllable. Experimentor presented nonsense syllable individually and asks subject to repeat. Whether or not syllable evoked any association. Depending on the percentage of reporting association, he classified the syllable in respect to association value.

### B) Motor Learning :-

There are certain kinds of activities where words play less important role. This is generally true for motor skills, eg. an individual who is learning to play football certainly. One will help him by the specification of some of the movements required for the mastery of the task. On the hand the execution of a smooth, expert movement does not depend on the proper verbal sequence. After sufficient practice, the verbal measurement of motor learning.

e.g. :- Great emphasis may be placed on the exact nature and speed of movements as well as on the results achieved by them. Thus, a football coach may evaluate the player in terms of handling the ball, striking the ball, skills used by the player or even his ability to complete successfully with other players.



### c) Mental Learning:-

In role of learning, all responses are individuals goal to reproduce them as he can. In problem solving on the other hand the subjects must discover and find the correct responses and as well as eliminate the errors usually the problem is not solved without a certain amount of trial and error. Much of this trial, consists of verbal responses, which may either be given overtly or their presence may be inferred from the behaviour of the subject. Certainly verbal processes play an important role in human problem solving.

### 8) Rational Learning As Mental Learning:-

The rational learning test set up a situation in the organisation of a rather complex learning, act and progress is made towards completion of a definite task. The test requires the formation of a new stimulus response relationship in which chance/random guessing is soon supplanted by an organised plan of approach that results in the most effective learning. In the rational learning the subject is required to associate the number 1-12, with 12 letters of alphabet. The task differs from the customary associate learning to the subject, at first has to give a series of responses which necessarily must be guesses. As the experiment continues the no. of guesses can be greatly curtailed by means of a rational organisation of situation, resulting from reward for correct responses. As each correct response occurs, the total situation changes slightly and the range of guess becomes some what more



restricted. Obviously in rational learning the mental aspect is strongly emphasized.

#### 4) Types Of Errors In Rational Learning :-

There are 3 types of errors in rational learning, they are as followed :-

##### A) Logical Errors :-

A logical error is when a rational mistake is made in this experiment. A logical error is known as a response given by subject which was already informed to be associated with another letter.

E.g:- If correct response for A-5, B-9 and C-8 are already informed and while responding to letter D, if subject says 5 again, this is called logical error.

##### B) Perservatory Errors :-

It means if same number is repeated under same letter, then it is perservatory error. e.g:- If subject is responding for letter A and responde with same no. as 4, it is called as perservatory error.

##### C) Unclassified Errors :-

All the errors that cannot be classified under logical errors and perservatory error are known as unclassified error.

#### 5) Logical Processes :-

The logical process involved in rational learning involves several logical learning types like :-

##### 1) Syllogism :-

This is kind of logical argument that applied deductive reasoning to arrive at a conclusion based



on two or more propositions that are assumed to be true. In this, there consists of a major premise that is the specific statement and a minor premise i.e. the statement and conclusion i.e. is deduced.

E.g:- All men are mortal → Major premise.  
Socrates is a man → Minor premise.  
∴ Socrates is mortal → Conclusion.

ii) Euler Circles:-

Another method of solving syllogism using different modes was the method of Euler's circles. Each circles were drawn, each representing the properties denoted by the term in syllogism.

iii) Deductive Reasoning:-

Process of reasoning from more premises (statements) to reach a logically certain conclusion.

e.g:- Mathematical induction is a form of deductive reasoning also called top-down logic.

iv) Inductive Reasoning:-

This involves broader generalisation from specific observations. It is also called bottom up reasoning. The conclusion drawn from the kind of reasoning may not be accurate always. eg. Harold is a grandfather. Harold is bold. Therefore all grandfathers are bold, this is not valid conclusion.

6) How Rational Learning is different from Maze learning and Verbal learning:-

i) Rational Learning:-

Refers to acquiring meaningful knowledge. Its



the form of learning that is based on comprehension, including the clear understanding of learnt material along with the relationship among the components.

ii) Maze Learning :-

Unlike the R.L Maze learning is that process of learning a route through a maze in order to obtain reinforcement. This kind of learning, involves trial and error, so as to reach particular desired goal from the starting point. In R.L There is no fixed end point and learner obtains no additional reinforcement after material is learnt.

iii) Verbal Learning :-

This kind of learning involves a wide range of learning. Here, learning of new words takes place. It refers to acquisition of verbal skills.

- HYPOTHESIS :-

While forming new stimulus response relationship, random guessing is curtailed and rational organization will take place.

- VARIABLES :-

Independent Variable :- Random presentation of letters

Dependent Variable :- No. of errors and no. of trials.

- MATERIAL :-

Pre arranged record sheet.

12 letter cards and 1 to 12 letter chits.

Stopwatch, wooden screen, stationary.



## - PLAN OF THE EXPERIMENT :-

- 1) Experimenter should demonstrate the procedure and scoring by giving an abbreviated form of the experiment.
- 2) A to L letters are to be given in random order and this order has to be changed for each trial.
- 3) Record the responses on the record-sheet properly by noting down errors in prescribed format.

## - PRECAUTION :-

- 1) Make sure that subject understand the task before beginning.
- 2) Record each response given by your subject.
- 3) Record time for each trial.
- 4) After each trial take introspective from subject regarding the use of any plan or technique.
- 5) Observe the behaviour of your subject and record it properly.
- 6) Continue until two consecutive errorless trials.
- 7) Do not use A to L Letter for abbreviated version for demonstration.

## - PROCEDURE :-

The experimenter checked all the material required and cubical was arranged. Subject was called inside the cubical and seated comfortably. Rapport was established and instructions were given.

"The letter A to L are paired with number '1 to 12' in random order. I will call out letters one by one. When I will call the 1<sup>st</sup> letter, you have to guess



which no. is paired with that letter if your guess is wrong I will say 'No' and you have to continue guessing till you find the correct answer. When you guess right number I will say right and then I will present another letter to you. In this manner we will go through the 12 letters in random order. After you guess the answer for last letter we will again start with next trial. In this way we will continue until two back to back trials, without any error. Your task is to remember which number goes with each letter. Try to make use of each correct answer, so that errors will be eliminated in future responses."















Time	Trial 5	D	F	B	L	H	I	A	C	G	K	J	E	Observation	Introspection
574 sec	4	1	8	7	2	9	3	11	12	9	2	10	10	Subject used previous correct response for further responses.	'In this trial I tried to associate no and letter. I tried to find out the patterns in letter and then tried to remember it.'

Time	Trial 6	J	H	L	B	F	G	C	E	J	K	D	A	Observation	Introspection
226 sec	9	6	7	8	1	12	2	10	11	5	4	3	3	Subject remembered all the association. She used her previous knowledge.	'By using previous trial method I tried to remember letters and no associated with them?'

Time	Trial 7	B	A	J	E	C	G	F	D	K	L	H	I	Observation	Introspection
112 sec	8	3	11	10	2	12	1	4	5	7	6	9	9	Subject was very confident and remember all the associations.	'In this trial, I was confident. In this previous OR and method used by me helped me.'



## - Treatment Of the Result :-

Total Trial	Perserva- tor Error	Logical Error	Unclassified Error	Total Error	Time (sec)
1	30	30	43	103	896
2	11	11	33	55	646
3	1	7	42	50	222
4	4	16	41	61	888
5	0	7	6	13	574
6	0	0	0	0	226
7	0	0	0	0	112

## - INTROSPECTION :-

"Overall the experiment was very challenging and good, interesting. In starting there is lots of confusion but afterwards when I am able to associate and remember all responses it was fun"



Class: MA-I Roll No.: 1865120

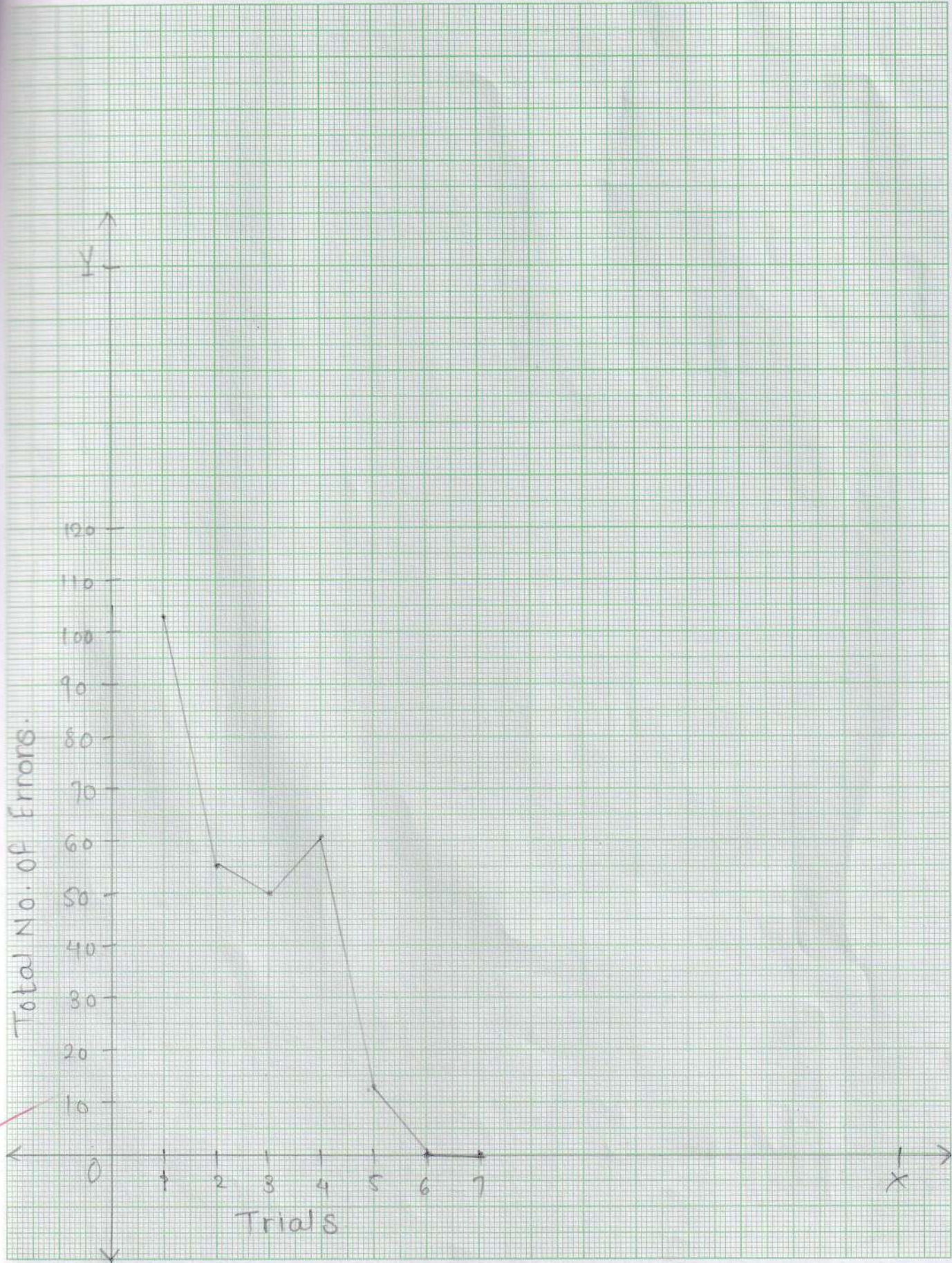
Title of the Graph: Graph Showing Total No. of Errors per trial.

Origin = ( )

Slope = \_\_\_\_\_

Scale  
on x - axis, 1 cm = 1 trial  
on y - axis, 1 cm = 10 Errors.

Intercept  
on x - axis =  
on y - axis =





Class: MA-J. Roll No.: 1865120

Title of the Graph: Graph Showing Time taken Per trial.

Origin = ( )

Slope = \_\_\_\_\_

Scale  
on x - axis, 1 cm = 1 trial  
on y - axis, 1 cm = 100 sec

Intercept  
on x - axis =  
on y - axis =

