

## 6

# ABOUT LEARNING

### 6.1 Introduction

Have you seen a newly born child? Is he able to walk, talk, feed or dress himself? Or does his mother feed and dress him and gradually teaches him to walk and talk. You can do all of the above actions yourself. Have you ever thought how this happened? -through learning. Further, you have grown up to learn social habits & customs and as an adult deal with various situations in life. You would even have learnt various professional skills like typing, reading, riding a bicycle etc.

Since everything we do and think comes out of learning, it is the key to understanding how most individuals behave. No doubt, you have been learning through your life, without knowing how learning takes place. In this lesson we will learn how learning takes place, and about various concepts, methods and factors of learning.

### 6.2 Objectives

After studying this lesson you will be able to :

- describe the process of learning;
  - differentiate between learning, motivation, reflex and instinct;
  - describe the different types of learning;
  - identify the factors affecting learning;
  - explain transfer of learning and its importance.
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### 6.3 Nature of learning

#### (a) What is learning

If a child avoids touching burning firewood after being hurt, it can be understood that learning has taken place. Learning is a process by which a certain change or modification in behaviour occurs. 'Behaviour' refers to any action which may be muscular, glandular, mental or a combination of these.

*Learning can be defined as the process by which any relatively permanent change in behaviour occurs as a result of practice and/or experience.* This definition has three important elements

- (i) learning is a change in behaviour, for better or worse :
- (ii) it is a change that takes place through practice or experience; changes due to growth. Maturation, fatigue or injury are not included in learning;
- (iii) before it can be called learning, the change must be relatively permanent, that is it must last a fairly long time. For example, Once an individual learns to ride a cycle he does not forget it.

#### (b) Characteristics of Learning

- (i) Learning is a *continuous process*, which takes place at all stages in one's life.
- (ii) Learning is generally a *gradual process*, it is spread over a period of time.
- (iii) Learning brings about improvement in performance with practice and experience.

#### (c) Learning Process

The learning process has three major elements-the learner, stimulus and the response . It can be depicted as.

**STIMULUS - ORGANISM - RESPONSE**

**Stimulus** is any factor inside or outside the learner, which initiates activity of some kind. It could be an event, situation condition, signal or a clue, to which a response is made.

**Organism** is the learner.

**Response** is an action by an individual such as saying or doing something involving one's muscles or glands.

e.g. (i) Rain is a *stimulus*

*Organism* is the person who gets wet in the rain.

Opening of one's umbrella to protect oneself from rain is a *response* e.g.

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Responses can be of two types :

Overt that is which are observable like speaking, dancing, play acting,  
Covert which are not observable like listening to music, thinking,  
feeling etc.

***Try it yourself***

*You must be having a child at home or in your neighbourhood of the age of 6-8 months. Show him a small pup and when he touches it, make a pleasant sound. The child will have a pleasant experience and learn to like dogs. On another occasion while showing the pup to the child, make a frightening sound. The child will have an unpleasant experience and learn to avoid dogs. In the first case you have conditioned the child by positive reinforcement and in the second by negative reinforcement. This activity will enable you to understand the relationship between stimulus-organism-response.*

- \* Learning is any relatively permanent change in behavior which occurs due to practice and/or experience.
- \* It is a continuous and a gradual process that brings about improvement in performance.
- \* The process of learning consists of three elements viz. stimulus, organism and response.
- \* Responses can be of two types, overt and covert.

### Intext Questions 6.1

1. Fill in the blanks :

(a) Learning is any \_\_\_\_\_ change in \_\_\_\_\_ which occurs as a result of \_\_\_\_\_ or \_\_\_\_\_.

(b) What are the three major elements of the learning process?

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_

2. Write True or False against the characteristics of learning listed below

(a) Learning is not a continuous process. \_\_\_\_\_

(b) Improvement in performance is brought about by learning. \_\_\_\_\_

(c) Learning is a gradual process. \_\_\_\_\_

(d) Changes in behavior due to maturation or fatigue are called learning. \_\_\_\_\_

### 6.4 How learning differs from other concepts

Learning needs to be differentiated from other concepts, such as, maturation, reflex and instinctive behaviour.

**a. Learning and Maturation**

A child cannot learn to walk unless his leg muscles are strong enough to support his/her weight. This implies that Maturation provides the readiness to learn. Certain level of maturity is required to acquire skills or knowledge.

Human behaviour generally occurs as a result of growth and development. For example, the earliest smiling behaviour in an infant is not learning. When the child is mature in muscular and neural development he/she smiles. Later as the child grows up he/she learns to smile in response to certain pleasure giving stimulus. These acts of smiling represent learning. The ability to walk, run and talk develop in human beings to a large extent due to maturation. Practice and experience are necessary to develop such skills properly. The term 'practice' refers to formal training and the term 'experience' includes all types of happenings in life. Some other examples of unlearnt behaviour that simply occur due to maturation are, flying of birds and swimming of tadpoles in water.

Learning and Maturation both result in change of behaviour. Sometimes, it is difficult to differentiate as to which has influenced the behaviour more. Maturation may be considered as the development brought about by growth of the neural and muscular system, while learning is an outcome of stimulating situations.

**b. Learning, Reflex Action and Instinctive Behaviour**

Other types of behaviour which, do not represent learning, are those, which arise from instinctive and reflex actions. Instincts are complex patterns of behaviour. e.g. building of nests by birds. Each animal type has some instinctive patterns of behaviour which are necessary for their survival.

Reflex behaviour is direct automatic and immediate response of a muscle or a gland to the stimulation of a sense organ. e.g. blinking of eyes in response to a sudden movement of an object in front of a person's eyes. These are innate tendencies and are not acquired through practice. However, instinctive behaviour can be modified by learning.

- Learning differs from other concepts such as Maturation, Reflex actions and instinctive Behavior.
- Learning is a result of environmental stimulus, whereas Maturation is biological in nature.
- Maturation provides the readiness to learn and occurs due to neural and muscular development, while learning takes place through practice and experience.
- Learning and Maturation both result in modification of behavior.

- \* Certain complex patterns of behaviour, which occur innately, are called instinct.
- \* Reflex is a direct and immediate response of a muscle or a gland to the stimulation of a sense organ.

### ***Try it yourself***

*Try to teach a 3 month old infant to walk-can he walk? No, because his legs have not developed and matured enough. Try to teach a one year old to walk. Can he walk? Yes, because his legs have developed and matured enough to support his weight. This shows the relationship between learning and maturation.*

## **Intext Questions 6.2**

1. Fill in the blanks :

- (a) Maturation provides the \_\_\_\_\_ to learn.
- (b) Learning \_\_\_\_\_ take place without maturation (can/cannot).
- (c) \_\_\_\_\_ and experience are necessary for learning to take place.
- (d) \_\_\_\_\_ is said to be biological in nature whereas \_\_\_\_\_ is a result of environmental stimulus.
- (e) Reflex behaviour is \_\_\_\_\_ and \_\_\_\_\_ response of a muscle or a gland to the \_\_\_\_\_ of a sense organ.

## **6.5 Basic Experiments in Learning**

There are different types of learning investigated. Here we will read about 'classical conditioning', 'operant conditioning', 'insight', 'trial and error' learning, 'motor learning', 'verbal learning' and 'social learning'.

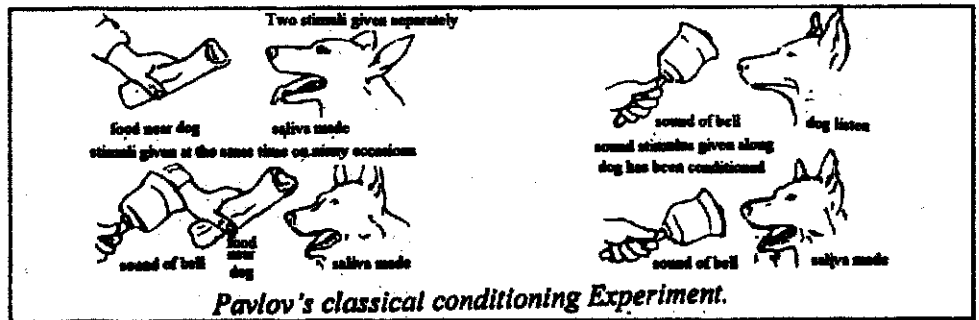
### **(a) Classical Conditioning**

Conditioning is a form of associative learning. In classical conditioning a connection between a stimulus and a response is established, e.g. the behavior of a child who avoids burning match sticks after being hurt by it once. This is conditioning due to a fear association.

Classical conditioning gets its name from the learning situation that existed in the early "classical" experiments of Ivan P Pavlov (1849-1936). It is also sometimes called respondent conditioning or Pavlovian conditioning. He observed that just prior to being fed, his laboratory dogs secreted saliva from their mouths. In his first experiments, Dr. Pavlov served the dogs food at the same time or little after a bell was rung. After twenty to forty joint presentations of bell and food, the dogs salivated at the sound of the bell alone. The sound of the bell had come to substitute for the originally

*Ivan P Pavlov was a Russian physiologist who conducted pioneering work on the digestive system for which he was awarded the Nobel Prize for physiology and medicine.*

effective stimulus of food, so that the bell alone was able to make the dogs' saliva flow. Thus, the salivation response had become conditioned to the new bell-ringing stimulus.



The essential requirement for conditioning is that the two stimuli shall occur together. In laboratory practice, the two stimuli are presented either simultaneously or with the new stimulus slightly prior to the old one. No learning or very little learning occurs if the old stimulus is presented before the new one. This would be like the ineffective procedure of giving a child a reward before he had performed a task.

The classical conditioning paradigm can be depicted as follows :

UCS → UCR (Food → Saliva)

CS + UCS → UCR (Bell + Food → Saliva)

CS → CR → Reinforcement (Bell → Saliva → Food)

UCR—unconditioned Response  
 UCS—unconditioned Stimulus  
 CS—Condition Stimulus  
 CR—Conditioned Response.

**Generalization and Differentiation** - A newly learned conditioned response is rather generalized, in both stimulus and response. If the same response occurs to two different stimuli which are somewhat similar it is a generalized response for example, a dog taught to salivate when a bell is rung will also salivate when a buzzer is rung. By further practice, animals can be trained to differentiate between stimuli. If food is given only with a bell tone and not with the buzzer the animal will stop reacting to the buzzer and learn to differentiate.

**Extinction and Spontaneous Recovery** - Since some conditioned reactions are undesirable, as we have seen, it is fortunate that they can be forgotten. One way to make the organism forget a conditioned response is to repeat the substitute stimulus without reinforcement. In the case of the dog, this would mean ringing the bell without giving food. After a while, the dog will not salivate at the sound of the bell. The response has become extinct. Like forgetting, extinction seems to be temporary rather than a permanent loss of response. An extinct response is much more quickly relearned when the reinforcement is given than an altogether new response.

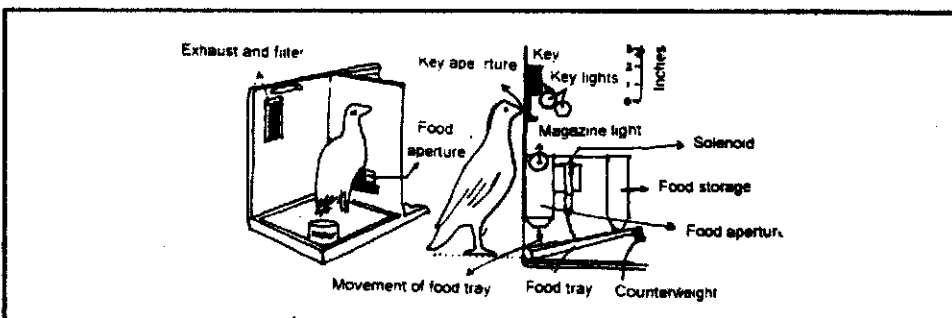
Spontaneous recovery is a tendency of responses to recover spontaneously. Pavlov noticed that a day or so after he gave his dogs a series of extinction trials, salivary responses came back, stronger than they had been at the end of extinction. It is a kind of forgetting in reverse, a tendency to forget the extinction that has occurred.

In human beings we see that the responses learnt to ride a bicycle like balancing, braking etc. are generalized to riding a scooter. However, while riding a normal bicycle one does not use gears. While driving the scooter one differentiates and further learns to use gears. If the human being stops riding a bicycle or scooter for a long time he may temporarily forget the balance, this is extinction. However, on trying, relearning occurs very fast, faster than the initial time to learn. This is spontaneous recovery.

### (b) Operant Conditioning

Another important type of conditioning is operant conditioning. B.F. Skinner, speaks of operant behaviour as being simplified by the organism rather than simplified by stimuli. Emitted behaviour is voluntary behaviour on the part of the organism, whereas elicited behaviour is such which is seen in response to certain stimuli. In Operant conditioning the reinforcement is dependent on the response of the organism. The response being instrumental in getting the reinforcement, it is known also as instrumental conditioning.

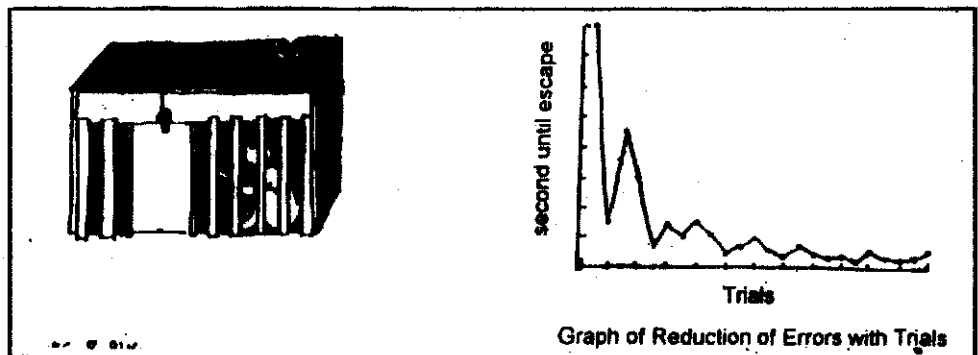
A central concept of operant learning is reinforcement. Behaviour which is reinforced is likely to be repeated. For example, a hungry pigeon is placed in a box which has a lighted button on the wall. The pigeon moves around the box pecking here and there. Finally, it will peck at the button and immediately a mechanism in the box feeds the bird with a little grain. The pigeon eats and then continues its movement in the box. Once again it accidentally pecks the button and is reinforced with food. Finally, the pigeon will stop the random behaviour and will simply peck the button to get food as required. The pigeon has learned to peck the button to obtain food.



Operant learning is by no means confined to the animal kingdom and the principles of learning new behaviour through reinforcement have been applied by Skinner to human beings. e.g. (i) teaching new material in schools by means of programmed learning (a method by which in each correct step the learner is reinforced by immediately being given the information that he has made a correct response) (ii) behaviour therapy techniques for treating behaviorally disturbed children and adults.

### (c) Trial and Error Learning

E.L. Thorndike, made important early contributions to the field of educational psychology. In his early experiments, with cats, Thorndike put a hungry cat in a puzzle box- a box that would open only if the cat pulled a certain string or stepped on a certain pedal, to open the latch during the particular experiment. Then he put food outside the box, in plain view of the hungry cat. In the beginning the cat would scratch, leap, try to squeeze through the bars of the box, and generally show various vigorous responses. Sometimes, during this random activity, the cat may happen to work the particular escape device, the latch would open, the cat would be freed and it would get the food.



From Thorndike's experiment, we can draw a general description of trial and error learning. A subject motivated towards satisfaction or achievement of a certain goal, meets an obstacle. He shows varied and excess activity, until at last his responses constitute the one that leads to the solution. The subject must have the desire to solve the problem. For example the cat was hungry and not too lazy, or too tired to try to get out.

Thorndike further deduced laws of learning based on the above experiment.

- (i) Law of exercise refers to the strengthening of stimulus response connections with practice (law of use) and weakening if practice is discontinued (law of disuse).
- (ii) Law of effect refers to the strengthening of a connection as a result of reward which may be pleasant or unpleasant.

### (d) Insight Learning

An experiment by Wolfgang Kohler given below illustrates learning by insight, which occurs by observation and exploration :

Nueva, a chimpanzee, showed learning by insight. Some bananas were kept outside the cage beyond her reach and a little stick was introduced into the cage. She grasped at them but was not able to

get them. Sometime of after the fruit had been exhibited to her-she suddenly looked at the stick, seized it, stretched it out of the cage, and succeeded, in drawing the bananas at arm's length.

The above instance expresses the force with which sudden understanding develops in a person. This is insight into the structure of a problem. It is therefore often called the 'Aha' experience.

### **(a) Motor Learning**

Motor learning is, also called psychomotor learning or skill learning. It takes place in three stages. For example while learning to ride a bicycle the individual learns what is required in the task and certain specific components of the task, this is the cognitive stage. In the second stage called 'association stage' the skill is perfected with accuracy and precision. Finally, the individual need not even think about the various aspects of the task to be performed. The skill becomes automatic. Everyday life is full of activity that demands motor learning: eating with spoon, talking, handwriting, typewriting, driving a car, playing a musical instrument etc. In all these, practice is required to make responses with speed and accuracy. Motor skills required coordination between environmental and internal bodily stimuli and the act to be performed.

### **(b) Verbal Learning**

The child begins to acquire verbal skills as he/she grows. Initially, a child has a limited understanding of what certain words and gestures mean. Verbal learning involves learning to respond to words or with words. As the child grows up he/she develops improved verbal skills such as naming objects, pronouncing words, combining words to form sentences, writing sentences to convey an idea and so on. He/she acquires a new vocabulary to communicate properly.

Verbal skills are generally acquired through memorising, by repeating, recalling and recognising the material. Speaking is a complex skill involving both motor as well as symbolic or verbal skills. It is acquired partly on the basis of reflex vocalisation which appears during infancy and also through imitation and modeling.

### **(c) Concept Learning**

Concept is a category name. In concept learning there is both generalization and differentiation. An individual learns to distinguish between two or more stimuli which differ in some detail. For example the child learns what is an animal, later he differentiates between a dog and a cat etc. Thus, an individual learns to make different responses to different stimuli.

The individual learns to respond to objects in terms of their differing characteristics like colour, shapes, position, number and so on. He/she tries to find certain common properties in a group of objects and attach some category names to them. Various words which

are normally used to denote an object such as house, car, school, animal, doll and so on are all examples of concepts. Learning concepts is useful in understanding the world and in solving problems.

#### **(d) Social Learning**

As you grow up, your environment widens to include people, objects and events, you learn new habits, as well as modify your perception of objects, events, persons and attitudes. Much of the learning of an individual involves change in one's attitudes. *"An attitude is a learnt pattern of behaviour which predisposes the individual to act in consistent way towards an object, person, situation or an idea"*. An attitude determines favourable or unfavourable responses to various objects, persons, situations or ideas. For example one learns to respect and disrespect various people in his environment due to habit formation and attitudes.

Three concepts which are very important to social learning are :

- (i) 'habit' which is a learnt association between a stimulus and a response;
- (ii) 'imitation' of role models which is a process by which individuals learn new behavior by observing others, also called modelling or observational learning;
- (iii) certain social responses are reinforced by the society if they are acceptable as per the norms of the society and certain responses are unacceptable. The learned behaviour of a person is 'shaped' accordingly.

- Conditioning is a form of associative learning.
- In classical conditioning a neutral conditioning stimulus (CS) is paired with an unconditioned stimulus (US) that evokes an unconditioned response (UR). After repeated pairing of the two stimuli, the conditioned stimulus will elicit a response similar to the unconditioned response. This elicited response is called the conditioned response (CR).
- Generalization, Differentiation, Extinction and Spontaneous Recovery are some of the concepts related to conditioning.
- In Operant Conditioning the response is instrumental in getting reward or escaping punishment.
- In Trial and Error learning, a motivated subject meets an obstacle in the course of attaining his goal. He shows varied and excess activity until his responses come to include the solution to the problem.
- Insight learning is also known as the "Aha !" experience. It involves a sudden or abrupt realisation of the solution to a problem.

- \* Motor learning also known as psychomotor or skill learning, requires a coordination between environmental and internal bodily stimuli to produce a muscular response involving movement. It occurs in three stages viz. cognition, association and automation.
- \* Verbal learning involves understanding of words such that a child can pronounce words, combine them to form sentences and convey ideas through words.
- \* Concept learning develops the abilities in an individual to classify objects in terms of their characteristics or common properties.
- \* Social learning involves the learning of new attitudes, social norms and to be able to live and behave according to the socially acceptable patterns of the society.

### Intext Questions 6.3

1. Fill in the blanks :

- (a) Conditioning is a form of \_\_\_\_\_ learning.
- (b) The two types of conditioning are \_\_\_\_\_ and \_\_\_\_\_.
- (c) In \_\_\_\_\_ learning the subject engages in varied responses to arrive at the solution.
- (d) Aha! experience is a part of \_\_\_\_\_ learning.
- (e) Another name for observational learning is \_\_\_\_\_.
- (f) \_\_\_\_\_ later leads to problem solving.
- (g) \_\_\_\_\_ is a learnt association between a stimulus and a response.
- (h) Learning to ride a bicycle is \_\_\_\_\_ learning.
- (i) Verbal learning involves being able to convey one's \_\_\_\_\_ through words.

2. Match the following :

- |                              |                                    |
|------------------------------|------------------------------------|
| (a) Insight learning         | (a) BF Skinner                     |
| (b) Classical conditioning   | (b) EL Thorndike                   |
| (c) Trial and Error learning | (c) Experiment of Chimpanzee       |
| (d) Operant conditioning     | (d) Ivan Pavlov                    |
| (e) Motor learning           | (e) Words, sentences to form ideas |

- |                      |  |
|----------------------|--|
| (f) Verbal learning  | (f) Shaping of behaviour as per social norms                       |
| (g) Concept learning | (g) Muscular movements   |
| (h) Social learning  | (h) Classification of objects in terms of their common properties. |

### 6.6 Learning Curve

Learning can be measured in the performance of an individual on a given task. The performance is seen through the rate of learning. The rate of learning as normally measured by performance which can be represented graphically by placing the 'units of practice' on the X-axis and 'degree of learning' on the Y-axis. The horizontal axis of the graph represents the amount or units of practice. The vertical axis shows the degree of learning as measured by some measure of performance such as percentage of correct responses, amount of time to achieve a goal etc.

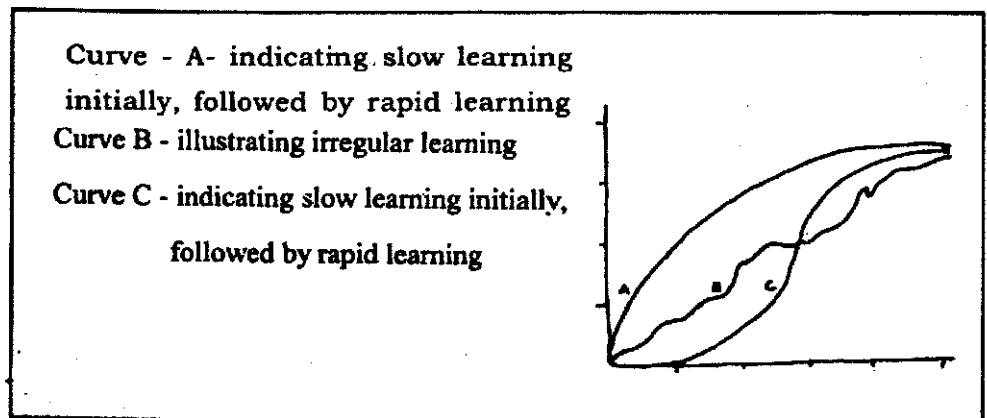


Fig 6.4- Learning Curve

In the illustration of the learning curve above; Curve A shows very little or no improvement initially followed by a period of rapid improvement after which there is a period of least improvement or no improvement, indicating a plateau (flatness).

The rate of learning during practice in acquiring skills varies from person to person and time to time for any given individual for any given task. For example in learning to typewrite, in the beginning one student may show rapid improvement while another may need to practice for a long time before his/her performance improves. Sometimes a person may reach a certain level of performance in type writing and may remain at that level for a few days after which he/she may show improvement. Learning curves can be prepared for any skill such as reading, writing, riding a bicycle etc.

- The learning curve is a graph drawn to show the units of practice on the X-axis, and the degree of learning on the Y-axis.
- The measure of learning is the performance of an individual on a given task.
- The learning curve indicates how performance varies from time to time during learning.

### Intext Questions 6.4

1. Fill in the blanks :
  - (a) Learning curve indicates how \_\_\_\_\_ varies from time to time during \_\_\_\_\_.
  - (b) The learning curve is a \_\_\_\_\_ drawn to show \_\_\_\_\_ and \_\_\_\_\_.
2. Indicate True/False for the following :
  - (a) In the learning curve units of practice are placed on the X-axis. T/F
  - (b) The rate of learning varies with practice. T/F
  - (c) Performance on a task is not an indication of learning. T/F

### 6.7 Factors affecting learning

There are certain factors that affect learning. Some of the important ones have been discussed below. The factors are related to the stimulus, task or the learner.

#### (a) Reward and punishment

We have talked about "reward" and "punishment". Modern psychologists, however, use a more general term to cover both cases : "reinforcement". A reinforcement is anything that strengthens a response—anything that promotes learning. A reward is a positive reinforcement; a punishment is a negative reinforcement. Reinforcement is the key to learning. If it is not present and if it is not applied in the right way at the right time, there is no observable learning. The concept of reinforcement can be broken down into primary and secondary reinforcement.

A primary reinforcement is an unlearned reinforcement. Shock or any unpleasant stimulus is a natural, primary (negative) reinforcer. Food is a primary (positive) reinforcer for a hungry animal.

A secondary reinforcement, on the other hand, is a learned reinforcement. The rule for learning a secondary reinforcement is that it should be paired with a primary reinforcement. e.g. in classical conditioning the food is paired with the bell, thus the bell becomes a secondary reinforcement.

**(b) Feedback or Knowledge of results**

If you are provided with knowledge of results or feedback, the efficiency of your learning is increased. For example while learning to type, knowledge of performance in each trial will help you to know where you made mistakes and to correct accordingly. It also helps you to eliminate errors and increase the precision in your performance in the next trial. Knowledge of results especially when favourable, reinforces learning and maintains interest and motivation.

**(c) Distribution of practice**

The length of the practice session and distribution of rest periods affect the learning process to a great extent. It has been found for a wide variety of motor skills, that practice is more effective when it includes brief and judiciously distributed rest periods. This leads to rapid learning as compared to continuous practice. However, practice periods should not be too long. The acquisition of skill in playing badminton may improve more, after three one-hour practice sessions with intervals than after one continuous three-hour session. The practice periods should also not be too small and frequent either. This would tend to break the task into small and meaningless parts.

**(d) Whole and Part Learning**

If you have to learn this entire lesson, it is easier to learn it in parts than as a whole. This factor is related to the method of learning the content. Whole learning is often considered an efficient method to learn the task particularly for fast learners and for short or meaningful material which is easily memorized as a whole. In part learning, continuity and meaning of the material often get lost, but if the content is very long it may first be learnt in parts and then as a whole.

**(e) Meaningfulness**

Try to learn words like CAT, DOG, BAT, DOLL which have meaning, and NAD, BAB, COL, PEM which are nonsense syllables. The meaningfulness of the material to be learnt contributes to your learning efficiency. If the material to be learnt is meaningful, the rate of learning becomes rapid. The more meaningful the material; the fewer the trials or practice sessions necessary to learn it.

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## (f) Interest and Attitude

You will learn faster if you are interested in the material or skill to be learnt. One of the important determinants of effective learning is the learner's attitude towards the material to be learnt. For example if you are interested in learning to learn and recognise so that it will help you in achievement of your goals, you develop a favourable attitude towards the unit on learning and you make more efforts to learn and remember it. If one feels that nothing worthwhile will result from learning something, one's rate of learning will be poor.

## (g) Motivation

Motivation refers to the state within a person that drives the learner towards some goal. A learner with a high motivation, tends to make more responses than a learner with a weak motivation. For instance, in the experiment with the pigeon in the Skinner box, a hungry pigeon will be more active in exploring and giving responses, which may lead to learning. Reinforcement also acts as a motivation factor. There are two types of motivation, intrinsic and extrinsic. Motivation is intrinsic when the learner recognises an activity as self-rewarding and does it because he/she derives satisfaction from it.

As extrinsic motivation, the reward is external and lies outside the person and outside the activity. A child who studies for gaining knowledge is intrinsically motivated while a child who studies for the sake of earning a scholarship is extrinsically motivated.

- Certain factors affect learning and bring about improved performance.
- These factors are Reward and Punishment, Feedback or Knowledge of results, Distribution of practice, Whole vs. part learning, Meaningfulness, Interest and Attitude and Motivation.
- Reinforcement is the modern psychological term for reward and punishment. It is the key to learning.
- Reinforcements are of two types : Primary reinforcers are natural & unlearned while secondary reinforcers are learned.
- Feedback or knowledge of results particularly when favourable, reinforces learning and maintains interest.
- The length of practice sessions and distribution of rest periods in between affect the learning process.
- The length of material to be learnt determines whether whole learning is more useful or part learning.

- \* The more meaningful the material, the better the learning.
- \* An individual's interest and positive attitude towards learning material make learning more effective.
- \* An individual's motivation or the urge to learn brings about better learning.

### Intext Questions 6.5

1. List the factors that affect learning

- (a) \_\_\_\_\_
- (b) \_\_\_\_\_
- (c) \_\_\_\_\_
- (e) \_\_\_\_\_

2. Match the following :

- |                              |   |
|------------------------------|---|
| (a) Feedback                 | (i) Length of practice sessions                       |
| (b) Distribution of practice | (ii) Length of learning material                      |
| (c) Whole vs. part learning  | (iii) Knowledge of results                            |
| (d) Meaningfulness of        | (iv) Better and faster learning material to be learnt |

3. Write True/False for the statements give below :

- (a) If an individual is interested in the learning material, the learning may take longer time \_\_\_\_\_
- (b) Motivation on the part of an individual brings about better learning. \_\_\_\_\_
- (c) Motivation is only intrinsic, it cannot be extrinsic. \_\_\_\_\_
- (d) Reward and punishment are called reinforcements. \_\_\_\_\_
- (e) Role of reward and punishment in learning is not important \_\_\_\_\_
- (f) Primary reinforcers are learned. \_\_\_\_\_
- (g) Punishment is a positive reinforcement. \_\_\_\_\_
- (h) Reward and punishment are used in conditioning. \_\_\_\_\_

## 6.8 Transfer of Learning

Transfer of learning is the process of applying or carrying over the knowledge, skills, habits, attitudes or other responses from one learning situation, in which they were initially acquired to another learning situation. For example a person who has learnt to ride a bicycle finds it easier to learn to ride a scooter. It means that experience or performance on one task influences performance on subsequent tasks. A person's ability to recognise objects, perceive relationships and conceptualise the experiences of daily life are facilitated by transfer of learning. The influence of transfer is found, not only in intellectual tasks and in complex motor skills but also in emotional reactions and attitudes of individuals. If transfer of learning did not take place, each task would have to be learnt afresh and it would be difficult to do so.

### Kinds of Transfer of Learning

Transfer of training affects learning of a new task in three ways :

(a) positive, (b) negative and (c) zero.

#### (a) Positive Transfer effect of Learning :

When learning one task makes the second task easier to learn, positive transfer effect is seen. What one has learnt in one subject or a task may facilitate learning in another. In positive transfer, the carry-over of knowledge or skill is beneficial to future learning.

For example after learning to spell the word 'house' a child may be able to apply the appropriate phonetic rule and spell the word 'mouse' correctly even without being taught the word 'mouse'. Similarly, skill in riding a bicycle facilitates learning to ride a motor cycle. Learning the rules of addition and subtraction, make it easier to count one's change and check the balance when one makes purchases from the market. Learning to drive a car, makes it easier to learn to drive a truck or a bus. In all these cases, the previous learning experience facilitates subsequent learning.

Positive transfer occurs when the responses expected from two tasks or learning situations are similar. However, the maximum amount of positive transfer is obtained, when the stimulus and the response elements in the previous and the new learning situations are similar. e.g. learning of a stimulus response relationship like that of  $5 \times 8 = 40$  and  $8 \times 5 = 40$ . In this case, there is similarity between the elements in the stimulus response relationship.

#### (b) Negative Transfer effect of Learning :

There are cases in which the previous learning interferes with subsequent learning. In such cases, the carryover of knowledge or experience in one task interferes with further learning. As a

result of negative transfer, performance on one task may block performance on the subsequent task. e.g. a child's experience in learning the plural of 'houses' may inhibit his/her learning the plural of a word 'mouse'. He/She may spell the plural of the word 'mouse' as 'mouse', instead of 'mice'.

Negative transfer usually occurs when the stimuli in the previously learnt task and the new task are the same or comparable, but the responses are dissimilar, thus similar stimuli require different responses.

**(c) Zero Transfer effect of Learning :**

These are instances, where the learning of one task, does not have any effect on the ability of a person to perform another task due to dissimilarity between stimuli and responses in the two situations. In zero transfer, the performance in the new situation is neither aided nor hindered by the past learning. Learning history may make a contribution to understanding one's own culture but it has hardly any effect on learning mathematics. Similarly, improving one's skill in playing football will have no effect on the improvement of one's skill in writing an essay. Learning to typewrite, will not affect the learning of painting.

- Transfer of learning is the process by which previously learned skills are carried over from one learning situation to another.
- Most of our learning in life is facilitated by transfer of learning.
- There are three kinds of transfer of learning viz. positive, negative and zero.
- In positive transfer, learning in one situation facilitates or brings about improvement in another learning situation.
- In negative transfer, learning in one situation hinders the learning in another situation.
- In zero transfer the learning in one situation does not affect the learning in another situation due to no relationship between the stimuli and responses of the two situations.

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**Intext Questions 6.6**

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1. What is Transfer of Learning ?

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2. Fill in the blanks :

(a) There are three kinds of transfer of learning

(i) \_\_\_\_\_ (ii) \_\_\_\_\_ (iii) \_\_\_\_\_

3. Give one example each of Positive transfer, Negative transfer and Zero transfer.

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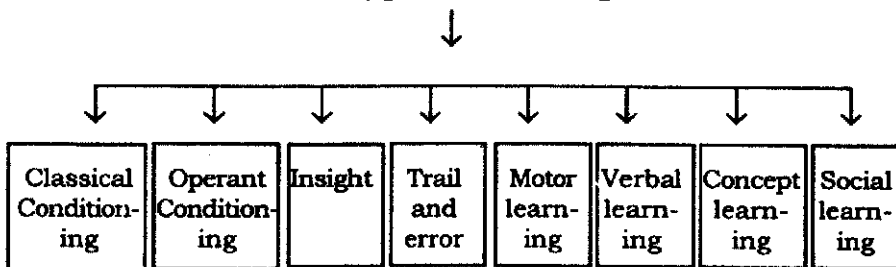
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**What you have learnt**

Learning can be defined as the process by which any relatively permanent change in behaviour occurs as a result of practice or experience.

**Types of learning**



### **Factors affecting Learning**

- (a) Reward and Punishment →
- (b) Feedback or Knowledge or results →
- (c) Distribution of practice →
- (d) Whole and Part Learning →
- (e) Meaningfulness →
- (f) Interest and Attitude →
- (g) Motivation →

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Transfer of learning is the process of applying or carrying over the knowledge, skills, habits, attitudes or other responses from one learning situation, in which they were initially acquired to another learning situation.

### **Terminal Exercise**

Answer the following questions in brief:

1. Explain how does learning occur.
  2. Distinguish between the concepts of:  
(i) Learning and maturation (ii) Learning reflex and instinct.
  3. Describe the two major types of conditioning.
  4. What is the importance of transfer of learning in daily life ?
  5. Which factor according to you affects learning most ? How ?
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**Key to Intext Questions****6.1 1. Fill in the blanks:**

- (a) relatively, permanent, behaviour, practice, experience
- (b) stimulus, organism, response

**2. True and False**

- (a) F            (b) T            (c) T            (d) F

**6.2 1. Learning to ride a bicycle****2. Walking and talking****3. Fill in the blanks:**

- (a) readiness
- (b) cannot
- (c) practice
- (d) maturation, learning
- (e) direct, immediate, stimulation

**6.3 1. Fill in the blanks :**

- (a) Associative                      (e) Modelling
- (b) Classical, Operant            (f) Concept Learning
- (c) Trial and Error                (g) Conditioning
- (d) Insight                         (h) Motor/skill/psychomotor
- (i) Ideas

**3. Match the following :**

- (a-c), (b-d), (c-b), (d-a), (e-g), (f-e), (g-h), (h-f)

**6.4 1. Fill in the blanks:**

- (a) performance, learning
- (b) graph, units of practice, degree of learning

**2. True and False:**

- (a) T                      (b) T                      (c) F

**6.5 1. (a) Feedback or knowledge of results**

- (b) Distribution of practice
- (c) Whole vs part learning
- (d) Meaningfulness
- (e) Interest and Attitude
- (f) Motivation

2. Match the following :

(a, (iii)), (b, (i)), (c, (ii)), (d, (iv))

3. True and False:

(a) F (b) T (c) F (d) T (e) F (f) F (g) F (h) T

6.6 1. Transfer of learning is the process by which previously learned skills are carried over from one learning situation to another.

2. Fill in the blanks

a. (i) Positive (ii) Negative (iii) Zero

3. 1. Learning to draw helps in learning to write-Positive transfer

2. Learning to drive a left hand drive can block the learning to drive a right hand drive car- Negative transfer

3. Learning to play football will have no effect on learning to write an essay-Zero transfer.

### Hints to Terminal Exercises

1. Refer Section 6.3

2. Refer Section 6.4

3. Refer Section 6.5

4. Refer Section 6.8

5. Refer Section 6.7

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