328en06

6

LEARNING PROCESS AND ACQUIRING SKILLS

*H*ave you seen a newly born child able to walk, talk, feed or dress by herself or himself? The mother feeds and dresses the child and gradually teaches to walk and talk. But you can do all of the above actions yourself. Have you ever thought how this dramatic change happened? Of course through learning. Further, you have learned social habits and customs, and as an adult you deal with various situations in life. You would even have learnt various professional skills like typing, reading, riding a bicycle, speaking etc.

Since everything we do and think comes out of learning, it is the key to understanding how most individuals behave. It is through the process of learning that we become competent, skilled, perform various activities and excel in life. We become what we learn. No doubt, you have been learning throughout your life, without knowing how learning takes place. In this lesson we will study how learning takes place, methods of learning and the factors that influence it.

OBJECTIVES

After studying this lesson, you will be able to:

- explain the concept of learning;
- describe the process of learning and its scope;
- describe the different ways of learning; and
- explain certain important phenomena such as preparedness for learning, learning disability related to learning.

6.1 NATURE OF LEARNING

If a child avoids touching burning firewood after being hurt, it can be said 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, social, 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. Thus learning brings about improvement in performance.

(iii) Before it can be called learning, the change must be relatively permanent or enduring, that is it must last a fairly long time. For example, once an individual learns to ride a cycle he or she does not forget it.

> ***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.*

INTEXT QUESTIONS 6.1

(1) Fill in the blanks:

Learning is any change in _____ which occurs as a result of _____ or _____.

(2) Write True and False against the characteristics of learning listed below:

(a) Learning is not a continuous process. True/False

(b) Improvement in performance is brought about by learning. True/False

(c) Learning is a gradual process. True/False

(d) Changes in behaviour due to maturation or fatigue are called learning. True/False

Learning is a thoughtful reaction to a given stimulus. Learning needs to be differentiated from other concepts, such as, maturation, reflex and instinctive behaviour.

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

Learning and maturation both result in changes in 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.

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

Reflex action is a direct automatic and immediate response of a muscle or a gland to the stimulation of a sense organ. For example blinking of eye 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.

Try It Yourself

Try to teach a 3 month old infant to walk Can she walk? No, because his/her legs have not developed and matured enough. Try to teach a one year old to walk. Can she walk? Yes, because the muscles of the legs have developed and matured enough to support his/her 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) Reflex behaviour is _____ and _____ response of a muscle or a gland to the _____ of a sense organ.

6.2 BASIC EXPERIMENTS IN LEARNING

Different types of learning have been investigated by psychologists. Some of the important types of learning include 'classical conditioning', 'operant conditioning', 'insight', 'trial and error learning, 'motor learning', 'verbal learning', and 'social learning'. In this section we shall study some of the major forms of learning.

(a) Learning Predictable Signals : Classical Conditioning

Conditioning is a form of associative learning. In classical conditioning a connection or association between a stimulus and a response is established, for example the behaviour of a child who avoids burning match sticks after being hurt by it once.

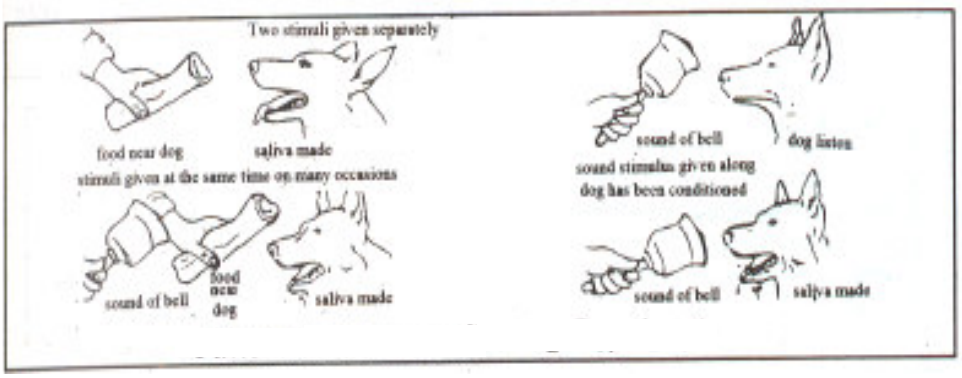

Figure 6.1: *Pavlov's classical conditioning Experiment*

Classical conditioning gets its name from the experiments of Ivan P Pavlov (1849-1936). It is also sometimes called respondent conditioning or Pavlovian conditioning. Pavlov observed that just prior to being fed, his laboratory dogs secreted saliva from their mouth. In his first experiment, Pavlov served the dogs food and 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 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 stimulus namely sound of bell.

The essential requirement for conditioning to take place is that the two stimuli shall occur together. In laboratory, 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 reward before she had performed a task.

The classical conditioning can be depicted as follows:

UCS → UCR (Food → Saliva)

CS + UCS → UCR (Bell + Food → Saliva)

CS → (Bell →Saliva)

Generalization and Differentiation : In the course of learning a newly learned conditioned response may become generalized with respect to stimuli and responses. If the same response occurs to two different stimuli which are some what similar it is a generalized response. For example, a dog taught to salivate when a bell is rung, may also salivate when a buzzer is rung. By further practice, animal 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 responses 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 new 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 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, applying brakes 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/she 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) Learning by Consequences : Operant Conditioning

Another important type of conditioning is operant conditioning. B.F. Skinner, speaks of operant behaviour as voluntary behaviour of an organism. In operant conditioning the reinforcement is dependent on the response of the organism. Since response is instrumental in getting the reinforcement, it is also known as instrumental conditioning or learning.

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. The principles of learning new behaviour through reinforcement have been applied by Skinner to human beings. For example, (i) teaching new material in schools by means of programmed learning (a method by which in each correct step the learner is reinforced by response). (ii) Behaviour modification techniques for treating behaviourally disturbed children and adults.

Other Forms of Learning

Skill Learning

Skill learning 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 activities that demand skills learning such as 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 require coordination between environmental and internal bodily stimuli and the act to be performed.

Verbal Learning

The child begins to acquire verbal skills as she grows. Initially, a child has 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 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. 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 modelling.

While studying verbal learning, psychologists use a number of methods for presenting the material. They include serial learning, free recall and paired associates learning. In serial learning the learner is asked to recall in the way the words were presented to him. Free recall requires the learner to recall the words without regard to their order of presentatiion. In paired associates the verbal material is presented in pairs such as CRAT-BOOK

Concept Learning

Concept is a category name and it has certain characteristics. Concept learning involves 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 she differentiates between dog and a cat, etc. Thus, an individual learns to make different responses to stimuli from different categories. All concepts represent a set of features connected with the help of some rule.

The individual learns to respond to objects in his or her environment in terms of their different features like colour, shapes, position, number and so on. He/she tries to find certain common properties in a group of objects and attaches 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 examples of concepts. Learning concepts is useful in understanding the world and in solving problems. Most of the subjects which we study involve concept learning.

Social Learning

As we grow our environment widens to include people, objects and events. We learn new habits, as well as modify our 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 way to act towards an object, person, situation or an idea. It determines favourable or unfavourable responses to the person, situations, places

or things. For example, one learns to respect and disrespect different persons in his/her environment due to habit formation and attitudes. Certain social responses are reinforced by the society if they are acceptable as per the norms of the society. The learned behaviour of a person is 'shaped' accordingly. In addition to other mechanisms social learning involves 'imitation' of the role models which is a process by which individuals learn new behaviour by observing others, also called modelling or observational learning. In this process no direct reinforcement is involved.

INTEXT QUESTIONS 6.3

(1) Match the following:

(a) Classical Conditioning	(a) BF Skinner
(b) Operant conditioning	(b) Ivan Pavlov
(c) Motor learning	(c) Words, sentences to form ideas
(d) Verbal learning	(d) Shaping of behaviour as per social norms
(e) Concept learning	(e) Muscular movements
(f) Social learning	(f) Classification of objects in terms of their common properties.

6.3 LEARNING CURVE

Learning can be measured by assessing the performance of an individual on a given task. The rate of learning, as normally measured by performance, 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 on some measure of performance, such as percentage of correct responses, amount of time to achieve a goal, etc.

In Fig. 6.4 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).

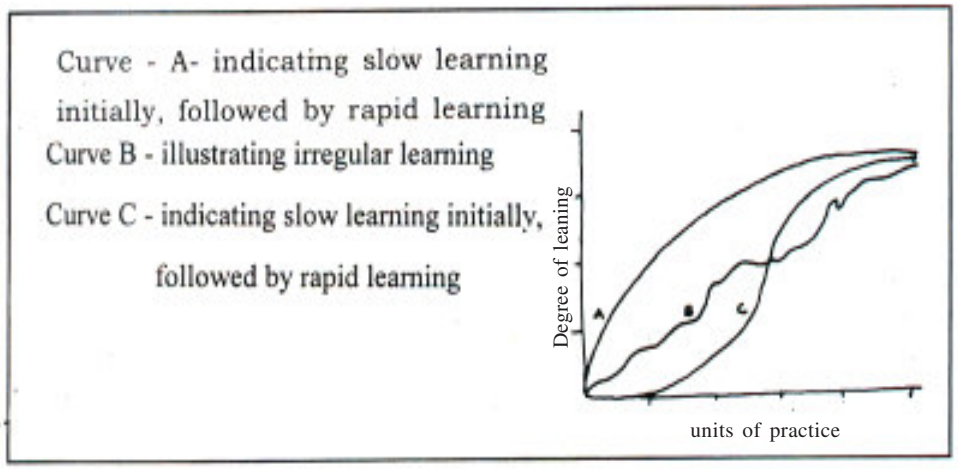

Fig. 6.2: *Learning Curve*

The rate of learning 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 learning task.

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. True/False

(b) The rate of learning varies with practice. True/False

(c) Performance on a task is not an indication of learning. True/False

6.4 FACTORS INFLUENCING LEARNING

There are certain factors that affect learning. Some of the important ones are described below. These factors are related to the stimulus, task or the learner.

(a) Reinforcement

Learning requires motivation and reinforcement is an important aspect of motivation. A reinforcement is anything that strengthens a response and increases the probability of its occurrence. A reward is an example of reinforcement. Reinforcement is the key to learning. If it is not applied in the right way at the right time, there will be no observable learning. Reinforcement is of two types i.e. primary and secondary. The source of reinforcement is called reinforcers.

A primary reinforcer is an natural or unlearned source of reinforcement. Food is a primary (positive) reinforcer for a hungry animal.

A secondary reinforcer, on the other hand, is learnt or an acquired source of reinforcement. The rule for learning a secondary reinforcer is that it should be paired with a primary reinforer. The effect of reinforcement depends on the way it is given.

(b) Feedback or Knowledge of Results

It is another motivational variable. 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 one's performance on each trial will help to know where the person has made mistakes. The person may try to correct accordingly. It also helps to eliminate errors and increase the precision in performance. 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 between trials affect the progress of learning 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 pauses. 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 long practice sessions with intervals rather than after one continuous three-hour long 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 learnt this entire lesson in totallity it would have been difficult for you to learn as it is easier to learn it in parts than as a whole. Whole learning is often considered as an efficient method to learn the task particularly for fast learners and for short or meaningful material which is easily memorized as a whole. 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 having no meaning. 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 are required to learn it.

(f) Interest and Attitudes

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 that it will help you in achievement of your goals, you develop a favourable attitude towards the lesson on learning and make sincere effort to learn and remember it. If one feels that nothing worthwhile will result from learning something, one's rate or progress of learning will be poor.

INTEXT QUESTIONS 6.5

(1) List the factors that affect learning.

(a) _____

(b) _____

(c) _____

(d) _____

(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 learning material (iv) Better and faster learning.

(3) Write True / False for the statement given below:

(a) If an individual is interested in the learning material, the learning may take longer time. True/False

(b) Motivation on the part of an individual brings about better learning. True/False

(c) Role of reward and punishment in learning is not important. True/False

(d) Primary reinforcers are learned. True/False

(e) Punishment is a positive reinforcement. True/False

(f) Reward and punishment are used in conditioning. True/False

6.5 PHENOMENA RELATED TO LEARNING

Learning is one of the most widely investigated fields of study. As a result, the researchers have observed a variety of phenomena which are peculiar to the process of learning. You have already studied about some of them in connection with conditioning and factors influencing learning. In this section you are going to know about three more phenomena of great importance. They include preparedness for learning, learning disability and transfer of learning.

Preparedness for Learning

You must have noticed that various organisms and animals (e.g., man, rat, cat, dog) differ in their sensory and motor capabilities. Thus dogs have extra sensitive nose. Similarly, cats jump and run very fast. A close scrutiny of the variations found across species indicates that organisms work under certain biological limits or constraints. Every organism is not equally ready or prepared to learn a given response. Organisms are differentially endowed with capability to respond. So, the possibility and ease of learning is determined by the degree of preparedness on the part of organisms for a given learning task. All organisms are not equally prepared for all responses or associations. This becomes one of the key determinants of learning.

Learning Disability

It is a disorder which leads to difficulties in reading, writing, speaking, and doing mathematical exercises. These problems are found because of some problem in the central nervous system. It may be related to sensory impairment or some kind of mental/physical handicap. They may occur in children with average or superior intelligence. If not remedied they may continue and interfere with their personal and social development in subsequent years. The main features of children with learning disability include difficulty in writing and reading, attentional problems, poor motor coordination, perceptual disorders, and difficulty in following instructions. An important problem faced by them is dyslexia in which children fail to distinguish letters (e.g., P and I, was and saw). Remedial teaching is used in helping these children.

6.6 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 a different learning situation. For example, a person who has learnt to ride a bicycle finds it easy to learn to ride a scooter. It means that experience or performance on one task influences performance on subsequent learning 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 the domain of intellectual tasks and in complex motor skills, but also in emotional reactions and attitudes of individuals. If transfer of learning does not take place, each task would have to be learnt afresh and it would make life difficult.

Types 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

When learning of the 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 subject or task. 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 makes 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. For example, 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

There are cases in which the previous learning interferes with subsequent learning. In such cases, the carry over of knowledge or experience in one task interfere with further learning. As a result of negative transfer, performance on one task may block performance on the subsequent task. For example, a child's experience in learning the plural of 'house' may inhibit his/her learning the plural of a word 'mouse'. He/She may spell the plural of the world 'mouse' as 'mouses', 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.

(c) Zero Transfer

There are instances, where the learning of one task, does not have any effect on the ability of a person to perform another task. It happens when the tasks are dissimilar in stimuli as well as responses. In zero transfer, the performance in the new situation is neither aided nor hindered by the past learning. Learning history may contribute to the understanding of 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.

INTEXT QUESTIONS 6.6

1. What is transfer of learning?
2. Give one example each of Positive transfer, Negative transfer and Zero transfer.

   a.

   _____

_____

_____

b.

_____

_____

_____

c.

_____

_____

_____

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. It is a continuous and a gradual process that brings about improvement in performance.
- Learning differs from other concepts such as maturation, reflex actions and instinctive behaviour. Learning is a result of experience, 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 behaviour.
- 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.
- 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.
- 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 through modelling.
- 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.
- 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.
- The factors affecting learning include: reward and punishment, feedback or knowledge of results, distribution of practice, division of learning task, meaningfulness, interest and attitude, and motivation.

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) Which factor according to you affects learning most? How?

(5) What is the importance of transfer of learning in daily life?

ANSWER TO INTEXT QUESTIONS

6.1

1. Fill in the blanks:

   relatively, permanent, behaviour, practice, experience

2. True and false

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

6.2

1. Fill in the blanks:

   (a) readiness

   (b) cannot

   (c) practice

   (d) maturation, learning

   (e) direct, immediate, stimulation

6.3

1. (a)-(b), (b)-(a), (c)-(e), (d)-(c), (e)-(f), (f)-(d)

6.4

1. (a) performance, learning

   (b) graph, units of practice, degree of learning

2. (a) T (b) T (c) F

6.5

1. (a) Feedback or knowledge of results

   (b) Distribution of practice

   (c) Meaningfulness

(d) Motivation

2. (a)- iii, (b)-i, (c)-ii, (d)-iv

3. (a) F (b)T (c) T (d) F (e) F (f) 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. (a) Learning to draw helps in learning to write- Positive transfer

   (b) Learning to drive a left hand drive can block the learning to drive a right hand drive car- Negative transfer

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

HINTS TO TERMINAL EXERCISE

1. Refer to section 6.1

2. Refer to section 6.2

3. Refer to section 6.3

4. Refer to section 6.5

5. Refer to section 6.6