Learning: Meaning, Nature, Types and Theories of Learning

**Meaning and Nature:**

Learning is a key process in human behaviour. All living is learning. If we compare the simple, crude ways in which a child feels and behaves, with the complex modes of adult behaviour, his skills, habits, thought, sentiments and the like- we will know what difference learning has made to the individual.

The individual is constantly interacting with and influenced by the environment. This experience makes him to change or modify his behaviour in order to deal effectively with it. Therefore, learning is a change in behaviour, influenced by previous behaviour. As stated above the skills, knowledge, habits, attitudes, interests and other personality characteristics are all the result of learning.

Learning is defined as "any relatively permanent change in behaviour that occurs as a result of practice and experience". This definition has three important elements.

a. Learning is a change in behaviour—better or worse.

b. It is a change that takes place through practice or experience, but changes due to growth or maturation are not learning.

c. This change in behaviour must be relatively permanent, and it must last a fairly long time.

All learning involves activities. These activities involve either physical or mental activities. They may be simple mental activities or complex, involving various muscles, bones, etc. So also the mental activities may be very simple involving one or two activities of mind or complex which involve higher mental activities.

What activities are learned by the individual refer to types of learning. For example, habits, skills, facts, etc. There are different types of learning. Some of the important and common learning activities are explained here.

**Types of Learning:**

**1. Motor learning:**

Most of our activities in our day-to-days life refer to motor activities. The individual has to learn them in order to maintain his regular life, for example walking, running, skating, driving, climbing, etc. All these activities involve the muscular coordination.

**2. Verbal learning:**

This type of learning involves the language we speak, the communication devices we use. Signs, pictures, symbols, words, figures, sounds, etc, are the tools used in such activities. We use words for communication.

**3. Concept learning:**

It is the form of learning which requires higher order mental processes like thinking, reasoning, intelligence, etc. we learn different concepts from childhood. For example, when we see a dog and attach the term 'dog', we learn that the word dog refers to a particular animal. Concept learning involves two processes, viz. abstraction and generalisation. This learning is very useful in recognising, identifying things.

**4. Discrimination learning:**

Learning to differentiate between stimuli and showing an appropriate response to these stimuli is called discrimination learning. Example, sound horns of different vehicles like bus, car, ambulance, etc.

**5. Learning of principles:**

Individuals learn certain principles related to science, mathematics, grammar, etc. in order to manage their work effectively. These principles always show the relationship between two or more concepts. Example: formulae, laws, associations, correlations, etc.

**6. Problem solving:**
This is a higher order learning process. This learning requires the use of cognitive abilities-such as thinking, reasoning, observation, imagination, generalization, etc. This is very useful to overcome difficult problems encountered by the people.

**7. Attitude learning:**
Attitude is a predisposition which determines and directs our behaviour. We develop different attitudes from our childhood about the people, objects and everything we know. Our behaviour may be positive or negative depending upon our attitudes. Example: attitudes of nurse towards her profession, patients, etc.

**Theories of Learning:**
Psychologists have tried to explain how people learn and why they learn. They have conducted many experiments on animals and children and come to certain definite conclusions which explain the modes of learning.

These are called as theories of learning. In many books, these explanations are treated as kinds of learning. In a sense it is true. But the term learning is very comprehensive. It covers a wide range of activities which cannot be explained within a limited framework. There are many theories explaining modes of learning. Important among them are:

**Trial and Error Learning Theory:**
This theory was developed by an American psychologist EL Thorndike (1874-1949). He argues that learning takes place through trial and error method. According to him learning is a gradual process where the individual will make many attempts to learn. The essence of this theory is-as the trials increase, the errors decrease.

This is possible because of association formed between sense impressions and impulses to action. Such an association comes to be known as a ‘bond’ or a ‘connection, because it is these bonds or connections which become strengthened or weakened in making and breaking of habits. According to this theory when an individual is placed in a new situation, he makes a

number of random movements. Among them, those which are unsuccessful are eliminated and the successful ones are fixed.

These random movements are not eliminated at once. In the first attempt their number is very large, in the second attempt the number of errors diminishes and the range of activity becomes narrower. Gradually the individual learns to avoid unnecessary movements and reaches the goal. Improvement takes place through repetition.

Thorndike studies the character of trial and error learning in a number of experiments on cats-using a box which he called ‘puzzle box’. In one of the experiments a hungry cat was placed in the box and the door was closed which could be opened by pressing a Latch. A fish was placed outside the box in a plate.

The cat could see this fish. The cat was given 100 trials-ten in the morning and ten in each afternoon for five days. The cat was fed at the end of each experimental period and then was given nothing more to eat until after the next session. If, succeeded in opening the door in any trial by chance, he went to eat food (fish). A complete record was made of the cat’s behaviour during each trial.

In the beginning the cat made a number of random movements like biting, clawing, dashing, etc. gradually in subsequent trials the cat reduced the incorrect responses (errors), as it was in a position to manipulate the latch as soon as it was put in the box.

This experiment revealed that the random movements were decreased gradually, that is-as the trials increased the errors decreased. As the trials increased the solution to open the door (pressing the latch) was discovered and at the end, the cat could open the door with zero error. The time taken in each trial was eventually reduced.

Thorndike conducted many experiments with maze and puzzle box learning in which cats and rats were used. He has demonstrated that

through numerous trials the animal learns much and gradually improves his effort.

We all learn many skills like swimming, cycling, riding, etc., through this method. Children learn to sit, stand, walk, and run by this method only. However, this method involves considerable waste of time and effort.

**Learning by Conditioning:**
In literal sense, conditioning means 'getting used' to, or 'adjusted 'to a new situation, or a stimulus. It is a process of substituting the original stimulus by a new one and connecting the response with it. There are two types of conditioning theories:

**1. Classical conditioning:**
This method of conditioning got its name from the fact that, it is a kind of learning situation that existed in the early classical experiments of Ivan P Pavlov (1849-1936), Russian physiologist who was awarded Nobel Prize, in 1904 for his experiments.

Pavlov designed an apparatus to measure the quantity of saliva produced in response to food (meat power). At the beginning of his experiment Pavlov noted that no saliva flowed when he rang the bell. He then trained the dog by sounding the bell, and shortly afterwards presenting food.

After the sound of the bell had been paired with food a few times, he tested the effects of the training by measuring the amount of saliva that flowed when he rang the bell and did not present food. He found that some saliva was produced in response to the sound of the bell alone. He then resumed the training-paired presentation of bell and food a few times and then tested again with the bell alone.

As the training continued, the amount of saliva on tests with the bell alone increased. Thus, after training the dog's mouth watered-salivated-whenever the bell was sounded. This is what was learned; it is the conditioned response.

This theory states that CS (bell) becomes a substitute after pairing with UCS (food) and acquires the capacity to elicit a response. It is because the association (conditioning) is formed between CS and UCS. This may be symbolically presented as follows:

UCS<——————————————à UCR

(Food) (Saliva)

↓ (Conditioning)

CS<——————————————-à CR

(Bell) (Saliva)

**Sub-principles of Classical Conditioning:**
There are certain sub-principles which explain the different phenomena of this experiment.

**a. Extinction and spontaneous recovery:**
Extinction means cessation of a response. The strength of the CS gradually decreases when it is presented alone and not followed by UCS for a number of trails. This process is called 'extinction'. In this experiment when only bell is presented without food for a number of trials, the dog stopped salivation gradually.

But when the CS (bell) was paired again with UCS (food) for some trials, the CR (salivation) recovered. This is known as 'spontaneous recovery'. In spontaneous recovery the dog required less number of trials than the first time, because the association between CS and UCS still existed in the brain of the animal.

**b. Stimulus generalization:**
A tendency to respond to a stimulus which is similar to original one is called stimulus generalization, the greater the similarity, the more the generalization. In this experiment, the dog started salivating even for the sound of a buzzer which was similar to bell.

**c. Stimulus discrimination:**
When there is much difference between two stimuli, the animal can discriminate between the two. For example, if the dog is conditioned to salivate at the signal of red light, it will not salivate when green light is presented.

**d. Higher order conditioning:**
If a 'light' is presented followed by bell and then by food for a number of trials, the dog will start salivating to light itself. This phenomenon is called higher order condition.

All these principles are very useful in behaviour therapy. Conditioning is not confined only to the laboratory.

In our day-to- day's life we come across many instances of such learning. For example, a small child who does not know, touches a burning candle, it gives him a painful experience and withdraws his hand. Later this experience will make him withdraw from burning objects and avoid them all together.

Conditioning is used as psychotherapeutic technique very effectively in the treatment of abnormal behaviours such as phobias, alcoholism, enuresis, etc. These are called behaviour modification techniques. Watson and others have conducted many experiments to prove the usefulness of this method.

**2. Operant Conditioning:**
This method of conditioning was developed by an American psychologist BF Skinner. This theory is also known as 'Instrumental conditioning', because the animals use certain operations or actions as instruments to find solution.

Skinner conducted his famous experiment by placing a hungry rat in a box called after his name 'Skinner box'. This box was containing a lever and a food tray in a corner of the box. It was so arranged, that the animal was

free to move inside the box, but the pressing of the lever would get the animal a pallet of food in the tray as reinforcement.

Arrangement was also made to record the number of pressings of the lever by a mechanical device. It was found in the beginning that the rat pressed the lever occasionally and used to get food as reinforcement for each pressing.

Gradually, as the animal learnt the pressing of lever would give some food, it repeated the responses very rapidly. This rapid increase in pressing the lever is the indication of the animal conditioned to get food.

In day-to-day's life also, much learning takes place in animals as well as in human beings by this method. The reinforcement will be the motivating factor. It will make the organism to repeat its action.

It is on the basis of these experiments, Skinner made his famous statement "Rewarded behaviour is repeated". Instrumental conditioning involves more activity by the learner than classical conditioning. Skinner conducted his experiments on different animals like pigeons, rats, etc.

Reinforcement which is the most important aspect of this experiment is divided into two types: positive reinforcement is used in reward training. Negative reinforcement-like punishment is used to stop undesired responses or behaviours. Operant conditioning is useful in shaping undesirable behaviour and also in modification of behaviour.

This is also useful in training of mentally retarded children to learn dressing, eating and toilet training skills, treatment of phobias, drug and alcohol addictions, and psychotherapy and to teach needed behaviour in children. Further, these experiments have proved that intermittent reinforcement yields better results than continuous reinforcement.

**Learning by Insight:**

Many times learning proceeds by the more efficient process of trying those methods which are seem to have a relation to solution. This is possible by understanding or perception of the situation.

Learning by perceiving the relationship in the scene and understanding the situation is insightful learning. This theory was developed by a psychologist known as Wolf gang Kohler, who belonged to Gestalt school of psychology.

According to Gestalt theory—perception of a situation as a 'whole' gives better understanding than sum total of its parts. That is, the situation viewed as a whole will definitely look different from that, viewed through its parts.

Kohler conducted his most famous experiments on chimpanzee- called Sultan. In the experiment, Sultan was put in a cage and a banana was placed at some distance outside the cage. Then the chimpanzee was given two sticks, so constructed that one stick could be fitted into another and make the stick longer.

The hungry Sultan first attempted with its hands to get the banana. Then he took one of the sticks and tried to pull the banana nearer, then tried with other stick, but failed to reach it. By this effort, the chimpanzee became tired and left the attempts to reach banana and started playing with sticks.

While playing so, one of the sticks got fitted into the other and the stick became lengthier. Immediately Sultan became elated and pulled the banana with this long stick and ate it. This 'sudden flash of idea' to reach food with longer stick was called as 'Insight', by Kohler.

He conducted many experiments to prove that learning takes place also by insight and not only by trial and error. He concluded that the occurrence of insight to find solution to a problem is possible by perception of the whole situation.

Kohler conducted many experiments on this line of learning to prove that, just trial and error method is not enough to find solution for many complex problems.

Trial and error or association through connectionism and conditioning may account for simple acquisition of knowledge, skills, interests, habits and other personality characteristics. But it is absolutely insufficient for solving complex problems.

It is here the method of insightful learning is very useful. Because it involves many higher mental processes such as thinking, reasoning, intelligence, etc.

Insight occurs, when the individual sees in a flash, the solution to his problem or difficulty. It is not blind or stupid learning. It is an intelligent way of learning. In many occasions people try to size up the situation, things and arrive at a conclusion. With experience man is able to solve problems better and sooner.

He exercises his discrimination ability in solving problems, and learning becomes a matter of insight rather than of trial and error. Archimedes's example of' Aha' experience (eureka) explained in creative thinking is the appropriate example for occurrence of insight.

**Learning by Imitation:**

It is the simplest method of learning. Many of our day-to-day's activities are learnt by imitating others. For example, the way we eat, drink, walk, talk, dress, etc, are all learnt by imitating others. We observe and watch what and how other people do certain activities and imitate them.

We observe the demonstrations given by an expert, imitate his movements and learn them. By copying the behaviour of others, people avoid waste of time and effort of trial and error method of learning. For example, a boy observes the way of holding a cricket bat, the movements of an expert player, imitates the same and learns.

Psychologists like Millar and Dollard have tried to show that the tendency to imitate is itself a learned response and if reinforced, the individual will be more likely to continue to imitate.

Many people believe that imitation is a lower form type of learning. Still others argue that imitation can never lead to novel responses and there will be no chance to use individual's creativity or originality. But at the same time many educationists believe that only the imitative individual can learn better. Whatever may be the opinion it is quite obvious that we learn many things by imitation.

**Laws of Learning:**
EL Thorndike has explained three laws of learning called Primary laws and in addition to these, he has also framed 5 subsidiary laws in connection with his trial and error learning theory.

**Primary laws:**
**These are the most important laws, which explain the basic aspects of learning. They are:**
**1. Law of readiness:**
By readiness means the organism is ready to respond or act. This is more essential prerequisite for learning.

This indicates that the animal or human being is motivated to learn. This condition of readiness has two effects— satisfaction and annoyance. When the animal is ready to act- if permitted- it gives pleasure. If it is not permitted, it feels annoyed.

In the same way when the animal is not ready to learn- if asked to learn- it is annoying. On the other hand, if it is prevented from learning it gives pleasure.

**These points have been given below in the words of Thorndike:**
a. For a conduction unit ready to conduct-to conduct is satisfying.

b. For a conduction unit ready to conduct-not to conduct is annoying.

c. For a conduction unit not ready to conduct- to conduct is annoying.

This law clearly shows that readiness of a person to learn is very important. Hence motivate him to learn.

**2. Law of exercise:**
This law is also known as law of frequency. Frequency refers to number of repetitions of learning. Thorndike believed that repeated exercising of a response strengthens its connection with stimulus.

This aspect refers to law of use and disuse, which explains that, anything not in use will perish. So also if the response is not repeated, its bond with stimulus gets weakened. This is also according to the statement that 'practice makes man perfect'.

In Thorndike's experiment the cat becomes perfect after repeating the response more number of times, i.e. it learnt to open the door without committing any error.

**3. Law of effect:**
This law states that when a connection is accomplished by satisfying effect- its strength is increased. By this, Thorndike meant that the probability of its occurrence is greater. In his experiment if the hungry cat succeeded in opening the door, would get its favourable dish to eat.

This had a positive effect on its response. Rewards always strengthen connections between stimuli and responses, and on the other hand, punishment weakens connections.

**Secondary laws:**
In addition to the three primary laws explained above, Thorndike has given five secondary or subsidiary laws also.

**They are as follows:**
**a. Law of multiple response:**

It means when a response fails to elicit a desired effect, the learner will try with new responses until the goal is reached.

**b- Law of set or attitude:**
Mental set or positive attitude is very important in any learning.

***c.* Law of associative shifting:**
This is nothing but shifting of the response to a new situation which is similar to the earlier one. Because the fundamental notion is that, if a response can be kept intact through a series of changes in stimulating situation, it may finally be given to a new situation.

**d. Law of prepotency of elements:**
This law states that the learner is able to react in a selected way, only to the salient elements of the problem and not for other unimportant elements.

**e. Law of response by analogy:**
It means comparing a new situation to the previously learned one and thus giving a response by analogy.

As stated above, Thorndike formulated these laws on the basis of his experiments. According to the law of readiness, the cat was ready to learn, because it was hungry. This hunger motivated the cat to learn to open the door.

According to the second law, the cat was repeatedly given trials and exercise which strengthened its learning. Finally on each trial the cat was given reinforcement in the form of fish.

This encouraged the cat to continue its effort to learn to open the door. The secondary laws given by him support these findings. These laws are highly relevant to the field of education. The teachers can make use of these laws in order to make their teaching more effective.