Unit 6

Lear ning

After reading this chapter, you would be able to:

What is Learning?

What are different types and procedures of learning?

What are different theories of learning?

What are the factors which influence learning.

What is the benefits of understanding laws of learning in daily life.

Contents

Introduction : Meaning and Nature of Learning:

Learning is an important process in human behaviour. Learning refers to relatively permanant change in behaviour or behaviour potentialit y due to experience or practice. This definition shows that learning has the following features.

i. In the process of learning, change in behaviour occurs because of practice or experience.

ii. In learning, the change in behavior is relatively permanent. It indicates that in learning the behavior change is not temporary but remains for a longer period of time. Behaviour change due to drugs, fatigue, illness etc. is not considered as learning. For example, when a child sits down on getting tired, this behaviour change will not be called learning.

iii. Change may occur in both, overt behavior or potentiality of behavior. For example, a person, after studying a map, learns the way to reach his friend's home, though in reality he does not go to his home. This will be considered learning as the person has learnt how to go to his friend's home.

iv. The change in behavior occurs due to practice or experience. For example, a child touches a hot stove and his hand burns. After this experience the child never touches the stove. This behavior will be called learning. In the same manner a child moves his face towards fan on listening the word "Fan" again and again. Dancing, cycling, memorizing a poem by repeating it again and again are examples of learning by practice. Any change in behaviour which does not occur due to practice or experience is not called learning. Change due to maturity, durgs or fatigue will not be considered learning.

v. Learning is an inferred process and is different from performance. Performance is an overt behavior or action. For example if one learns a poem by reading it repetitively and recite it when asked by the teacher then this will be known as performance. On the basis of this performance the teacher infers that one has learnt the poem.

Paradigm of Learning:

Learning takes place in many ways. Psychologists use different methods for acquisition of simple responses and complex responses. The simplest type of learning, based on association, is called conditioning.

In psychology, two types of conditioning- classical conditioning and instrumental/ operant conditioning are identified. In addition to these, observational learning, cognitive learning, verbal learning, concept learning, skill learning are also proposed. Some of these are discussed below.

Classical Conditioning

Classical conditioning was first suggested by Ivon P. Pavlov. Pavlov was a physiologist. During his study on the process of digestion he noticed that dogs started to secrete saliva on seeing even the empty plates which were used for serving the food. On the basis of this observation Pavlov conducted experiments on dogs and proposed the theory of classical conditioning. According to classical conditioning, when a neutral stimulus is paired with a natural stimulus and presented to the organism then, after few trials, organism starts the same response to the neutral stimulus as to the natural stimulus.

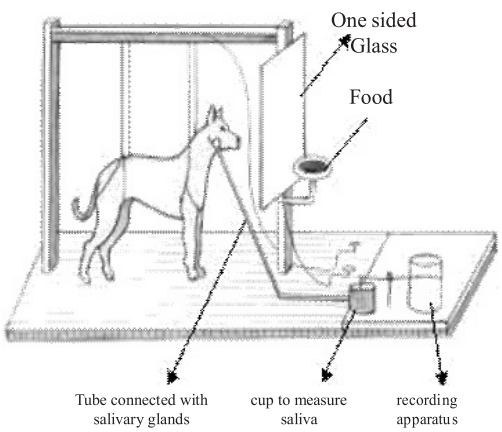

Figure 6.1: Dog for conditioning in the experiment conducted by Pavlov

Experiment of Pavlov: For this experiment Pavlov first placed a dog, harnessed, in a box for some time. Meanwhile, necessary arrangements were made to collect the saliva, secreted by salivary glands in a measuring glass through a tube (Figure: 6.1). After this preparation phase, the dog was kept hungry and a bell was sounded. Immediately after the bell, food (meat powder) was served. For the dog, the sound of bell is a neutral stimulus because secretion of saliva here is not a natural response. But the food is a natural stimulus to which the dog secretes saliva. Few more trials were repeated for the next few days, in which after the bell the food was served to the dog. In the test trial, no food w as served after the sound of be ll. It was noticed that the dog secreted saliva after the sound of bell, as it did in previous trials when food was given, in the expectations that food will be served. This association between sound of bell and food is called conditioning.

Major concepts used in Classical Conditioning

Unconditioned Stimulus (US): In the experiment of Pavlov the food is an unconditional stimulus as it is a natural stimulus to which the dog secrets saliva. In other words, unconditioned stimulus (US) is a natural or unlearned stimulus that leads to involuntary or reflexive response.

Unconditioned Response (UR): Salivation is a natural response to food. Therefore, in the experiment of Pavlov salivation to food is an unconditioned response. An involuntary or reflexive response to a natural or unconditioned stimulus is called unconditioned response (UR).

Table: 6 Relationship between Stages of Conditioning and Operations

Stages of conditioning	Nature of Stimulus	Nature of Response
Before conditioning	 Food (Natural Stimulus)	 Salivation (Natural Response)
	 Sound of Bell (Neutral Stimulus)	 Alertness (No salivation)
During conditioning	 +  Sound of Bell + Food (Neutral Stimulus + Natural Stimulus)	 Salivation (Natural Response)
After conditioning	 Sound of Bell (Conditioned Stimulus)	 Salivation (Conditioned Response)

Conditioned Stimulus (CS): When a neutral stimulus repeatedly paired with unconditioned stimulus begins to cause the same kind of reflexive response then this neutral stimulus is called conditioned stimulus (conditioned means learned). In the experiment of Pavlov the sound of bell is a neutral stimulus (salivation to sound of bell is not a natural response). When it is presented in repeated trials with food then the dog begins to salivate to the sound of bell (as it used to do on serving the food). Here, bell is an example of conditioned stimulus.

Unconditioned Response: A learned reflexive response to a conditioned stimulus is called conditioned response. In the experiment of Pavlov the response of salivation to sound of bell is an example of conditioned response.

In everyday life, instances of classical conditioning can be seen. For example, a child comes near a bicycle and its tyre bursts with a loud noise. The child's response is fear. If it happens repetitively then the child will begin to show fear for bicycle. Similarly, in hostel / school students who get lunch after the bell begin to secret saliva at the sound of bell. Saliva begin to secrete in response to the sound of lunch time bell in the expectation that they are going to get food very soon. In these examples, the bicycle and the sound of bell are conditioned stimulus (CS) to which conditioned response (CR) of fear and secretion of saliva respectively occurs due to establishment of association. Similarly, if a doctor wearing white coat, gives injection to a child then a fter few such incidences the child may become afraid of any person wearing a white coat. Most of the phobias develop due to classical conditioning.

Determinants of Classical Conditioning

In classical conditioning the strength and quickness of acquisition of responses are determined by several factors. Some of the major factors affecting conditioned responses are as follows:

1. **Interval between Conditioned Stimulus and Unconditioned Stimulus:** Classical conditioning is affected by the time interval between the onset of conditioned stimulus (CS) and unconditioned stimulus (US). There are four procedures of classical conditioning on this basis.
   i. In Simultaneous Conditioning both conditioned and unconditioned stimuli (CS & US) are presented simultaneously.
   ii. In Delayed Conditioning CS is presented. The onset of US begins before the end of CS but CS ends before the end of US.
   iii. In Trace Conditioning the beginning and end of CS precedes the onset of U S. There is some time gap between the end of CS and the beginning of US.
   iv. In Backward conditioning, the US precedes the beginning of CS.

It is established through experiments that the classical conditioning is strong and quick if the time interval between conditioned and unconditioned stimulus is of few seconds only. It takes more time in conditioning if the time interval is increased. Delayed conditioning is the most effective method to quickly acquire conditioned response. Simultaneous and trace conditioning procedures also establish conditioning but there is very little chance of acquiring conditioned response in backward conditioning procedure. Therefore, in classical conditioning CS is presented before the onset of US.

2. **Types and Intensity of Conditioned Stimuli:** If the conditioned stimuli used in experiments of classical conditioning are distinct (for example, bell is generally not found in laboratories) then conditioning will be quick. The intensity of CS also increases the speed of acquisition of CS. In other words if CS is distinct and of high intensity then it will take less trials to establish conditioning.
3. **Type of Unconditioned Stimuli:** In the studies of classical conditioning, two types of unconditioned stimuli are used- appetitive and aversive.

Appetitive stimuli elicits responses that give satisfaction and pleasure. Eating, drinking, etc. are examples of appetitive stimuli. Aversive stimuli like, noise, painful injection, shock, bitter taste are unpleasing and harmful and elicit responses of avoidance and escape. It has been observed in experiments that aversive classical conditioning establishes in two or three trials but acquisition of conditioned response through appetitive unconditioned stimuli takes more time. The intensity of conditioned stimuli also affects conditioning.

Activity 6.1:

To understand and explain conditioning students can be asked-

- What types of fears are there among students?
- How do they develop?
- Which fears of them can be explained through classical conditioning?

Operant/ Instrumental Conditioning

Behaviour of all the individuals can be categorized into two types: voluntary and involuntary. If eyes get closed due to dusty winds then it is involuntary behavior but if we close and open our eyes then it is voluntary behavior. Classical conditioning is a type of paradigm which explains learning of reflexive or involuntary behaviour. Operant/ instrumental conditioning explains learning of voluntary behaviour. Voluntary responses occur when the organism is active in the environment and is under his control. Skinner called such responses operant. The conditioning of operant behaviour is called operant conditioning.

Experiment of Thorndike:

Edward L. Thorndike conducted experiments to explore learning of voluntary responses. He placed a hungry cat in a cage from which the cat could escape and get food by pressing a lever. Thorndike observed that the cat showed different responses while trying to escape from the cage. The cat moved around the cage, pushed, rubbed up against the walls. Among these responses accidentally the cat pressed the lever, door opened and the cat ate food. Here, lever is a stimulus and pressing lever is a response, the consequence is escape from the cage and getting the food. The consequence is satisfactory. The cat has not learnt the connection between pressing of lever and escaping. But after few such trials the cat learned the association between pressing the lever and opening the door. Now, when placed in the cage the cat pressed the lever and came out of the cage.

On the basis of this experiment Thorndike developed Law of Effect. According to this law if a response is followed by satisfactory consequences then it will tend to be repeated and if the consequences of the response are dissatisfactory then the response will not tend to be repeated.

This experiment of Thorndike began the study of learning of voluntary behaviour. But in this field, research work of B.F. Skinner was influential and he proposed operant conditioning.

Experiment of Skinner:

Skinner conducted experiments related to operant conditioning on rats and pigeon. Skinner placed a rat in a specially made box, called Skinner Box (Figure: 6.3). On the wall of the box there was a lever, which was connected with a food container. When lever was pressed then food in a definite amount used to drop on the plate placed below the lever. When the hungry rat was placed in the box it moved around here and there and pawed the walls (exploratory behaviour). Among these trials accidentally, the rat pressed the lever, so food dropped on the plate and rat ate the food.

In next trials, after some time, same exploratory behaviour started. As the number of trials increased, the time between placing the rat in the box and pressing the lever decreased. After few such trials, the rat learned the association between pressing the lever and getting the food. This is called operant conditioning. On the completion of conditioning when the rat was placed in the box, it immediately got the food by pressing the lever. Here the response of pressing the lever is called operant response. Its consequence was getting the food which was pleasant and satisfactory. Thus in opearnt condiitoning the learning is based on consequences of responses.

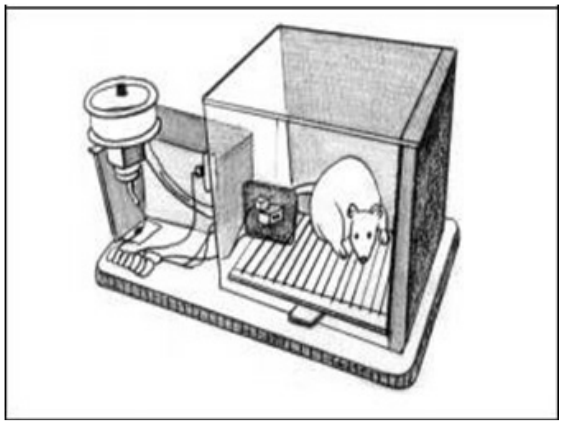

Figure 6.2: Rat in the Skinner box

This type of learning is also known as instrumental conditioning because the response of pressing the lever is instrumental or means to get the food.

Various examples of instrumental conditioning are seen in everyday life. Children learn to

Box 6.1: Differences between Classical and Operant Conditioning

	Classical Conditioning	Operant Conditioning
1.	The responses are involuntary and reflexive.	The responses are voluntary.
2.	The preceding stimulus is important in forming association.	The consequences of responses are important in forming association.
3.	The occurrence of unconditioned stimulus (US) is under the control of experimenter.	The occurrence of reinforcement is under the control of the organism.
4.	The organism is passive.	The organism is active.
5.	There is an expectancy for unconditioned stimulus to come after the conditioned stimulus.	There is an expectancy for reinforcement after a correct response.
6.	The goal is to acquire a new response to a stimulus that normally does not occur.	The goal is to increase the rate of a previously available response.

operate radio, television, mobile, camera etc. on the basis of instrumental conditioning. Children learn to behave politely to those from whom they want something. They explore the place where chocolates or sweets are kept and eat them. In this manner organism learns many tasks to achieve the goal through instrumental conditioning.

Factors Affecting Operant Conditioning

In instrumental/ operant conditioning the response (behaviour) is based on its consequences. These consequences are known as reinforcement. **The reinforcement is a stimulus or an event that increases the probability of a desired response to occur again.** The attributes of reinforcements (type, number, schedule, quality etc.) affect the operant conditioning. The time interval between occurrence of response and reinforcement, nature of response to be learned are also important factors that affect direction and strength of a response. Some of these factors are discussed below.

Type of Reinforcement: Stimuli or events that are used to reinforce the behaviour are not similar. These reinforcers may be primary or secondary; positive or negative. **Primary reinforcers** are important biologically and satisfy our basic needs like food, water etc.. **Secondary reinforcers** are those reinforcers which have acquired the properties of reinforcement because of the experience of organisms. Money, praise are examples of secondary reinforcers. Desired responses can be acquired with the use of reinforcers.

Positive reinforcers are those stimuli which, following a response, are pleasant and also strengthen and maintain the response. Food, money, praise etc. are examples of positive reinforcers. Negative reinforcers are painful and unpleasant. These reinforcers lead to learning responses of escape and avoidance. Completion of home work in time to avoid scolding; wearing wollen clothes to protect ourselves from cold; reaching in time to the office to avoid fine etc. are examples of use of negative reinforcement. Negative reinforcement is different from punishment. In negative reinforcement, the result of response involves removal of unpleasant stimuli. Removal of unpleasant stimuli strengthens the response. The probability of response decreases by the use of punishment. Punishment suppresses a response whereas reinforcement increases the probability of the response. Beating a child when he speaks abusive language, making a child stand on the bench when he makes noise are examples of **punishment**. In these examples use of punishment (beating and making him stand on a bench) will decrease the probability of using abusive language and making noise respectively.

It is important to understand that punishment does not ceases a response permanently. If punishment is mild and delayed it will not be effective. On the other hand, if punishment is severe suppression of undesired response will be effective and more lasting but not permanent. In every day life also it can be seen that some children get puinshment when they use abusive language. If the punishment is mild then the punishment remains ineffective. If punishment is severe then after some time the undesired behviour of using abusive language reappears.

In this manner punishment has no effect on suppression of response despite its severity. Contrary to it, negative feelings of dislike, anger or hate for the punisher may be developed in the person being punished.

Number, Quality and Amount of Reinforcement: The number of reinforcement refers to the number of trials after which the organism received reinforcement. The quality of reinforcement refers to the attractiveness of the reinforcement for organism. Bread is low quality reinforcement as compared to sweet. The amount of reinforcement indicates the amount of stimuli (food or water, fine, scolding) used for reinforcement in each trial.

Reinforcement Schedule: The system to provide reinforcement in trials of conditioning is known as reinforcement schedule. In operant conditioning, in how many trials or in which trials the reinforcement is available, , affects the acquisition and permanence of the conditioning. When reinforcement is given for each desired response then it is called continuous reinforcement schedule. On the contrary, in partial reinforcement schedule the reinforcement is given some of the times and not always. It is observed that response learned through partial reinforcement schedule is long lasting and resistant to extinction. In continuous reinforcement schedule the learning and extinction of the response both occur fast.

Delayed Reinforcement: Delayed reinforcement to the desired response leads to poor level of conditioning. Conditioning is the most effective if reinforcement is provided immediately after the response. For example, if a child is given appreciation immediately after his completion of work, it will be more effective.

Important Learning Processes:

In both the classical and operant conditioning certain processes occur. The description of some of these processes extinction, spontaneous recovery, generalization and discrimination are given below.

Extinction: Extinction refers to the loss of response that occurs when the available reinforcer is removed, after desired response, from the situation. In classical conditioning, after establishing association between conditioned stimulus and conditioned response (bell- saliva), if unconditioned stimulus (food) is not present then the conditioned response slowly weaken and disappears. Similarly, in operant conditioning, once conditioning is established, reinforcement after the response (food on pressing the lever) is stopped then the response will be gradually reduced and will disappear.

The learned response lasts for sometime even after the reinforcement is removed. In other words, learning resists the process of extinction. How long the learned response will not disappear is influenced by many factors. When numbers of reinforced trials are more, the learned response reaches to the maximum level of strength. At this level the numbers of trials do not affect the strength of response. Resistance to extinction increases with increase in number of reinforcements during trials. After increasing the number of trials from a certain level resistance to extinction decreases. It is observed that as the amount of reinforcement increases in acquisition trials resistance to extinction decreases. If reinforcement is delayed during acquisition trials then extinction of response also occurs late. Resistance to extinction is more for the response learned through partial reinforcement schedule.

Spontaneous Recovery: The reoccurrence of conditioned response after the extinction is known as spontaneous recovery. After extinction the conditioned response does not disappear

completely and the learned response reoccurs after some time to conditioned stimuli. This recovery is spontaneous and seen in both classical and operant conditioning. The spontaneous recovery is shown in Figure 6.4.

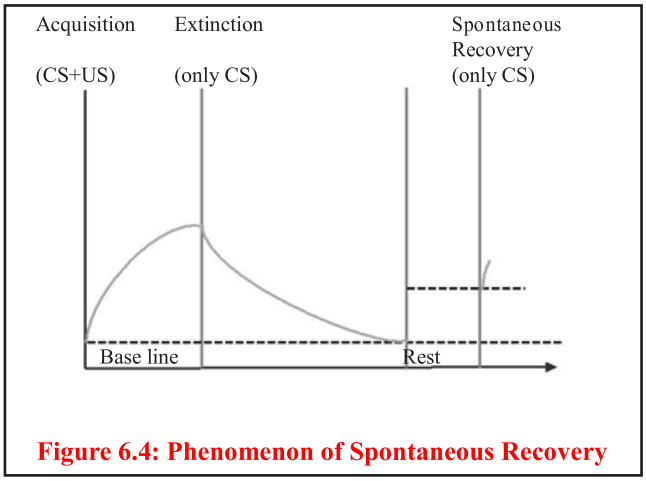

Figure 6.4: Phenomenon of Spontaneous Recovery

Generalization: Generalization phenomenon refers to the tendency to respond similarly to a stimulus that is similar to the original stimulus. In generalisation learned response is given to a new stimuli. Generalization is observed in both classical and operant conditioning. For example, in classical conditioning, the dog has learned to secrete saliva at the sound of bell and after establishment of conditioning the dog gives conditioned response (secretes saliva) to stimulus similar to original conditioned stimuli. Similarly if a child who has fear of a person with beard exhibits fear to other bearded persons, it will be an example of generalization.

Discrimination: Discrimination is the complementary process of generalisation. It is a response to differences. In the experiment of Pavlov, once conditioning is established the dog secretes saliva to the sound of a specific bell. If the dog does not respond to other sounds of bell then it will be an example of discrimination learning. In everyday life examples of generalisation and discrimination can be seen. When a child is very young he responds to every similar figure as he does to his mother. But after few days he discriminates and responds only to his mother not to other women. The response of discrimination depends on discrimination ability or learning of discrimination.

Box 6.2 Learned Helplessness

Saligman and Maier were the first to discover the phenomenon of learned helplessness during their experiments on dogs. They presented, in classical conditioning experiment, a group of dogs a sound and then an electric shock. These dogs could not escape the shock. Later on they kept dogs in a situation in which they could escape from the shock by jumping on the other side of the cage. Saligman and Maier found that the dogs of this group did not try to escape from the shock and suffered from the shock. The other group of dogs which were not kept in the first situation learned very soon to avoid or escape from the shock by jumping on the other side on the sound.

This phenomenon is also observed in human beings. A person leaves his efforts for the work after continuous failure in the task. Studies have proven that learned helplessness is one of the causes of depression.

Observational Learning

Observational learning refers to learning of a behavior through observing others. Bandura and his colleagues conducted a series of experiments on observational learning. In a study they showed two five minutes films to two groups of children. In these films there were numerous toys including a large sized doll (bobo doll) in a large room and a boy entered in the room. In one film when the boy entered in the room he showed aggressive

behavior toward those toys specially to the bobo doll. He shouted at it, hit and kicked it and even threw it and sat on it. In another film the boy behaved with the bobo doll and the toys in a non aggressive manner.

After showing the film the children were placed in a room. It was found that children who watched the aggressive behavior were aggressive though there was no reinforcement for aggression. The second group of children who did not see aggressive behaviour in the film showed no aggression.

In another study Bandura showed a boy beating the bobo doll in the film. In one experimental situation the boy was rewarded for beating the doll. In the second situation the boy was punished for beating the doll. In the third situation the boy was neither given any punishment nor any reward. Bandura showed these three films to three groups of children (one film to each group). Then he left children free to play in a room. It was observed that children who saw the boy being rewarded for aggressive behavior were most aggressive. Children who observed the boy getting punishment were least aggressive.

From the experiment it is clear that children learned aggression by observing the film. In the process of learning through observation organism acquires knowledge but in what way he will behave depends on the situation, whether he saw the model being rewarded or punished for the behaviour.

Children learn most of the social behavior through observation or imitation. Young children play games of marriage ceremonies, play of house, functions etc. through observation. They see persons of their likings from television, magazines and try to imitate and emulate their behaviour, life style, clothing style, hair styles etc. Altruism, politeness, courtesy, laziness, respect, hard work etc. can also be learnt by this method. The knowledge of type of behavior one should do in various situations is also acquired and imitated through observation. This form of learning is also known as modeling.

Bandura has proposed four major elements of observational learning.

Attention: To learn through oberservation it is necessary for the learner to pay attention to the model. For example, we imitate and learn behavior of only those persons who are attractive and on which we concentrate while watching television or reading newspaper.

Memory: It is necessary for a learner to remember what the model has done. For example, for learning to cook a sweet dish it is required to remember the steps of cooking. **Imitation:** For a learner it is essential to have an ability of imitation. For example, a child of two years can learn to tie shoelace through observation only when he has sufficient motor skills for imitating this behavior.

Motivation: The learner should have sufficient desire to learn the behavior. By seeing a dance only those persons can learn dance who are motivated for it or whose dancing behavior is being rewarded.

Activity

Observational learning can be experienced through the following activity.

Gather seven or eight school going children and demonstrate how to make a paper boat or draw a diagram on the paper or do any other activity that is interesting to children. Ask the

children to see this demonstration carefully and repeat this demonstration three - four times. Then ask children to make the paper boat or to do the activity which they have seen. Most of the children will be able to make the boat or do the activity.

Cognitive Learning

In classical and operant conditioning there is focus on only external observable behavior (S-R or S-S relationship). Some psychologists considered mental processes is important because of which change in knowledge of a person occurs. These psychologists tried to understand learning process on the basis of cognition. Insight and Latent learning represents cognitive approach to learning.

Insight Learning:

Kohler, who was a gestalt psychologist, presented insight learning on the basis of his experiments on chimpanzee. Kohler, in his experiments on problem solving kept bananas at a place that could not be taken by arms. Chimpanzee tried to take bananas with hands but remained unsuccessful. Then he took bananas with the help of a stick. In the next experiment bananas were kept at a distance that could not be reached by any of the stick. In cage two sticks were kept which can fit into each other. The chimpanzee tried to get bananas with one or the other stick but remained unsuccessful. After many trials suddenly the chimpanzee developed an insight. He carefully saw both the sticks, fit them into each other and got the bananas. Kohler called it insight learning. The insight is the sudden perception of relationship among various parts of a problem, allowing the solution to the problem to come quickly.

In insight learning, once the solution is achieved it can be repeated immediately when confronted with the problem next time. Thus, it is clear that learning is not the conditioned association between stimuli and responses only but it is a cognitive relationship between means and end. Its generalization can occur in other situations as well.

Latent Learning:

In latent learning new behaviour is learned but not exihibited until it is not being reinforced. Tolman conducted important experiments in this field. Tolman left two groups of rats in a maze. To one group food was given at the end of the maze but to another group no reward was given at the end point. It was observed that the first group very soon started to run in the maze from beginning point to the end point but the second group did not show any sign of learning. Later on when rats of second group were rewarded to show the behaviour they also started to ran from start point to the end point with the same efficiency as the first group did.

Tolman explained that the second group which was not given reinforcement understood the map of the maze and developed a cognitive map. They demonstrated the latent learning only when reinforcement was given to them.

Verbal Learning

Verbal learning is limited to human beings only. Verbal learning refers to understanding the meaning and relations of symbols, signs, numbers, concepts, letters, group of letters, sentences etc. In verbal learning a person relates the verbal items, learns the sequence in which they were presented, differentiate between verbal items or recalls items freely in same or different sequence in which they have shown. Human beings generally acquire

knowledge by means of words. One word is associated with the other words. In the process of verbal learning psychologists use varieties of materials like nonsense syllables (VCQ, GUX), meaningful syllables (MAN, DAM), sentences and paragraphs.

Factors Influencing Learning

The process of learning is influenced by many factors. Some factors are related to the materials to be learnt, some are related to the learner and some are related to the environment. Some important factors are discussed below.

1. Features of the learning material:

The length, meaningfulness, familiarity, association between learning materials, attractiveness and clarity of the learning materials affect the process of learning. The learning of meaningful and familiar materials occurs faster than non-meaningful and unfamiliar material. The association between materials facilitates learning. A story is learnt faster than an essay because there is a relationship in the events of a story. If learning of course material is done making associations in the material then it will also be learnt easily.

In free recall method of verbal learning organisation of some of the material occurs. The organisation process in verbal learning refers to the phenomenon that the learner, when asked to recall the material, recalls it in a different sequence, not the sequence in which they were presented. This organisation depends upon learning material and learner himself. Bousfield presented a list of 60 words in random order to subjects. These words were from four categories- animal, profession, vegetables, cities. When asked to recall, participants organised words according to their categories and not recalled them in the same sequence in which they were presented. He called it Category Clustering. In subjective organisation, the participant organises words or items according to their own way and recalls them. Organisational process facilitates learning.

Activity

Give students a list of 5 fruits, 5 animals, 5 subjects and 5 furniture. These words should be given in random order. After presentation of the list ask students to write words of the list in any order or sequence.

Ask students to anlayse if they have organised words in free recall method and what type of organisation they have done. Discuss how students can use this phenomenon in learning subject material.

2. Environment:

The learning environment also affects learning process. Peaceful, clean environment facilitates learning. Proper lighting, temperature, ventilation etc. also influence learning.

3. Factors related to the learner:

Motivation: Motivation refers to the mental and physical state of the organism which arouse him to fulfill his present need. Motivation provides energy to work for benefit with strength. For learning, the organism is required to be motivated. If a child wants to eat some sweets then he explores different jars in the kitchen and finds the place of jar containing sweets. In school also only those children work hard for studies who are motivated to learn different subjects. The motivation may be external or internal. In class a child works hard because he will get new bicycle or appreciation on getting good marks in studies. It will be an example of external motivation. But if the child

works hard because he enjoys studies then it will be an example of internal motivation.

The schedule of reinforcement given to motivate the organism also affects learning. In continuous reinforcement schedule (reinforcement for each trial) the organism learning is fast but extinction of the response also occurs fast. In partial reinforcement schedule (reinforcement for some trials and not for other trials) the extinction of the learned response is difficult.

Sensory Capacity: There is variation in sensory capacity and ability to respond in organisms of different species. In other words the learning ability of organisms are limited due to their biological capacities. Learning depends on capabilities of different sensory organs and perceptual abilities. Sensory organs are necessary to become aware of stimuli present in the environment.

Age and Maturation: Learning depends on age and maturation of the learner. To learn different tasks sufficient maturity of learner is required.

Fatigue and Boredom: Fatigue, boredom, monotony reduce the learning process. Fatigue is related to mental and physical tiredness which reduces the capacity and ability of learning. Boredom refers/ indicates to reduced desire. In everyday life also we see that when tired, we cannot learn the lesson properly. In physical and mental freshness (as experienced after sufficient sleep) learning becomes easy.

Emotional Condition: Learning is easy in a state of satisfaction, happiness and joy. The negative emotions like anger, hate, jealousy and sadness are barriers in learning

Previous Learning: New learning is influenced by previous learning. This is known as transfer of learning or training.

If previous learning facilitates the present learning then the transfer will be positive. If previous learning does not affect the present learning then transfer will be zero transfer but if it creates barrier in present learning then it is known as negative transfer. If learning Sanskrit language facilitates learning of Hindi language then it is an example of positive transfer. If there is no effect of learning English on learning Mathematics then it is an example of zero transfer. If learning use of brakes through hands becomes barrier in learning use of brakes through legs then it is considered an example of negative transfer.

Interest, intelligence, aptitude, attitude are other factors that influence learning.

Applications of Learning Theories

There are applications of learning theories in every field of life: to acquire and increase the desired behaviour, and to decrease and eliminate the undesired behaviour. Techniques and methods developed on the basis of classical and operant conditioning, social learning, verbal learning, observational learning etc. are used to enhance the quality and happiness in life and to solve problems. In child rearing, learning theories can be applied. Classical conditioning can be used to make children learn signs of danger and safety. Operant conditioning theory can be applied to increase the desired behaviour like reading, discipline, time management etc. and also to eliminate undesired behaviour like stubbornness, thumb sucking, eating sand etc.. As a model parents can be supportive to children in learning social behaviour and moral behaviour.

In the field of education learning principles are used

to facilitate learning, acquisition of knowledge and to ecourage for new learning. Appreciation like giving toffees by teachers on completion of home work or on giving correct answer are examples of application of operant conditioning.

Box 6.3 Learning disability:

In school some children experience difficulties in studies. The reasons for this are numerous like poor economic condition of the family, cultural and social beliefs, intellectual disability, sensory impairment etc. Learning disability is one of the factor among many because of which the child may experience difficulty in learning, reading, writing, speaking, or solving mathematical problems. Learning disability may be observed even among children of above average intelligence and adequate sensory motor systems. Following symptoms may manifest in different combinations among children suffering with learning disabilities.

1. Difficulties in writing letters, words and sentences, reading and speaking the written text.
2. Difficulty to sustain attention on a subject or point for long.
3. Inadequate sense of time and poor space orientation.
4. Poor motor coordination and manual dexterity may show poor of physical balance.
5. Difficulties in understanding and following oral instructions.
6. Difficulties in judging social relationship. Fails to learn and understand body language.
7. Difficulties in perception of visual, auditory, tactile and kinesthetic signs.
8. Symptoms of dyslexia like, difficulty in distinguishing between b and d, p and q, 6 and 9 etc.

Timely remedial teaching methods should be used to cure difficulties of these children. Otherwise these problems may remain throughout life and may affect professional, social and daily activities in life.

In organisations, learning theories are applied to reduce indiscipline and absenteeism among workers, to increase interest for the work, to develop required skill, to use safety measures etc. In therapeutic field, on the basis of learning theories techniques are developed such as behaviour modification (operant conditioning), modelling (observational learning), biofeedback etc. These are used to modify behaviour and to improve adjustment. Extinction, implosive, flooding technique and systematic desensitisation technique are used for the treatment of phobia. In implosive therapy client imagines the situation of fear. In flooding therapy client is confronted with the object of fear. The systematic desensitization technique is based on counterconditioning. Aversive technique is used to eliminate undesired behaviour or addictions like taking excessive alcohol, smoking, drug addiction etc.. The therapist arranges situation in such a manner that the client gets painful results of undesired behaviour. For example the alcohol is paired with emetic drugs so that sensations of nausea and vomiting become conditioned response for alcohol. Assertive training is useful to improve interpersonal relationships. Biofeedback technique is based on classical and insturmental conditioning. In it, a bodily function like heart rate, blood pressure is monitored and its feedback is given to the client to facilitate improved control of physiological process.

In this way, by applying theories of learning life can be oriented towards happiness and progress.

Key Terms

Learning, Conditioning, Classical Conditioning, Operant Conditioning, Conditioned Stimulus, Conditioned Response, Unconditioned Stimulus, Unconditioned Response, Generalization, Discrimination learning, Extinction, Spontaneous Recovery,Observational Learning,Reinforcement, Reinforcement Schedule, Positive and Negative Reinforcement, Punishment, Verbal Learning

Important Points

1. Learning is a relatively permanent change in behaviour or behaviour potchliality due to experience or practice. Learning is based on conjecture and is different from performance. Performance is observed behaviour or response.
2. Classical conditioning was proposed by Ivan P Pavlov. In classical conditioning the organism learns association between two stimuli (neutral and natural). When a neutral stimulus (conditoned) is paired with natural stimulus (unconditioned) and presented to the organism then the organism starts giving conditioned response to conditioned stimulus in expectation that natural stimulus will be presented.
3. Operant conditioning was proposed by B. F.Skinner. Operant conditioning is a type of learning in which response is strengthened by reinforcement. Reinforcement refers to any object or incidence which increases frequency of antecedent response. In this type of learning the response is based on its consequences. Operant conditioning is affected by type of reinforcement, reinforcement schedule, number of practices/trials and delay in reinforcement.
4. In observational learning knowledge is acquired through observation of behaviour of the model. Performance depends on reinforcement or punishment given for the behaviour of the model.
5. Verbal learning is associated with sign, symbols, digits, letters, words and sentences. Verbal learning is affected by environment, meaningfulness of material, familiarity, subjective organisation, clustering and factors related with learners. Factors related to learner include motivation, age and maturity, capacity of sensory organs and perception ability, interest, intelligence, aptitude, attitude, previours learning, fatigue and bordom, emotional state, physical illness etc..
6. Learning theories are applied in different fields of life - organizational, therapeutic, child rearing, educational as well as to acquire and to increase the desired behaviour and to reduce and eliminate undesired behaviour.

Multiple Choice Questions

1. In which of the following learning theory, association between stimulus and response occurs?
   A. Observational learning
   B. Classical conditioning
   C. Operant conditioning
   D. Latent learning
2. One should behave properly infront of children. With which theory is this statement related?
   A. Observational learning
   B. Classical conditioning

C. Operant conditioning
D. Latent learning

3. Which of the following statement is not correct about learning?
A. Learning is change in behaviour.
B. Learning is different from performance.
C. Learning is relatively permanent change in behaviour.
D. Learning occurs due to growth and maturation.

4. A teacher appreciates a child when he submits his homework in time. It increases the submission of home work in time. Which theory is exemplified here?
A. Observational learning
B. Classical conditioning
C. Operant conditioning
D. Insight theory

5. Which of the following learning theory is a cognitive theory?
A. Observational learning
B. Classical conditioning
C. Operant conditioning
D. Latent learning

Very Short Answered Questions

1. What is learning?
2. What is organisational process in verbal learning?
3. Who has proposed classical and operant conditioning?
4. What is latent leraning?

Short Answered Questions

1. What is extinction and spontaneous recovery?
2. State the difference between generalization and discrimination.
3. How does reinforcement schedule affect learning?

Essay Type Questions

1. Explain classical conditioning with the help of experiment.
2. What is operant conditioning? Explain factors affecting operant conditioning.
3. Parent or teacher must behave like a model. Explain the learning theory which favours this statement.
4. Explain factors of verbal learning.

Project

1. Improve your learning using learning theories.
2. How your parents and teachers reinforce proper behavior in you? Discuss.
3. Use learning theories to remove undesired behaviour of your younger brother or sister.
4. Use observational learning to learn any new task and discuss the efficiency of this method.

Answers to Multiple Choice Questions

1. -B; 2.-A; 3. -D; 4.-C; 5.-D