

20. LEARNING PROCESS

Learning is the process of modifying our activity through experience. This is a process that is continuously going on in all human being and animals. By learning we increase our knowledge of the external world.

Learning is the process by which the individual acquires various knowledge and attitudes that are necessary to meet the demands of life in general. Learning is defined as the process of effecting changes in the individual behaviour and making such changes permanent.

Important Points Regarding the Process of Learning

Learning means modifying or changing one's behaviour with reference to achieving a particular goal. Learning means the development of a method for dealing with problems.

Conditioned Learning (Classical conditioning)

The principle of conditioning was first noticed by the Russian Psychologist Petrovitch Pavlov. Conditioning represents learning at a very simple level. According to some people conditioning is the only principle by which all human or animal learning takes place.

Pavlov's Experiment on Conditioning

Pavlov was conducting some experiments with dogs studying the digestive process. During these experiments a servant was responsible for feeding the dog. The sight of food or the placing of food will always cause the flow of saliva in a dog. Food is the natural stimulus of the salivary reflex. Pavlov one day noticed that even before the food arrived, the mere sound of the footsteps of the servant caused the dog to salivate.

Pavlov demonstrated that the dog can be made to salivate to any stimulus, such as the ringing of a bell. Salivating is a reflex action. It is innate and is determined by natural and unlearned connection with some particular relevant stimuli. Here contact with the food is the natural stimulus. If you ring a bell before a dog, it may bark and get angry just disregard the sound, it will not salivate. There is no natural connection between the sound of a bell and the salivary reflex.

Pavlov demonstrated that if you ring a bell repeatedly for a few times and each time feed the dog, then it will begin to salivate even when the bell is rung and no food is brought. Thus, the process of conditioning simply means the establishment of a connection between response and a stimulus which has no natural connection with it. Pavlov conducted his experiments with the flow of saliva which is a reflex action, he called the response of the dog to the bell the "**conditioned reflex**".

The natural stimulus is technically called the 'unconditioned stimulus' (US) the response to the natural stimulus is called the 'unconditioned response' (UR) the strange experimental stimulus to which the response is conditioned is called the conditioned stimulus (CS) and the response after it has been conditioned to the strange stimulus is called the 'conditioned response' (CR).

Pavlov's conditioning experiments are also called a "**Classical conditioning**".

Instrumental Conditioning

Instrumental conditioning was first given by **Bechterev's** conditioning experiments developed as the 'Instrumental conditioning'. In this instrumental conditioning, the US was the electric shock, the CS was a bell, the response was lifting the foot. The subjects learned to lift the foot at the sound of the bell. In Pavlov's experiments to get the reward viz., food which is the reinforcing stimulus to the dog, did-not have anything to do with. It played only a passive role. Its response of salivating was a glandular reflex.

As different from this in the instrumental conditioning, **Bechterev** insisted the subjects to do something or learn something as avoidance or as positive approach. Because of the activity of the subject being instrumental to effect the final response, this type of experiments came to be called instrumental conditioning.

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Maze learning

Most popular kind of learning experiments has been done with mazes. A maze is essentially a series of alleys some leading to the goal and others leading into dead ends. From the starting place to the goal, the subject meets a number of points where he must choose one or two alternatives.

For rats, the partitions are built in the form of walls over which they cannot climb. For human subjects, the maze pattern may be in the form of grooves of slots in fiber board in which a pencil or stylus is moved. It may be in the form of ridges raised on the surfaces of a board to be followed by the finger tip. In order to make the human problem more comparable with that of rat, the subject may be blindfolded in using slot maze. The maze patterns can be made identical for both rat and man and their modes of learning can then be compared in this

matter.

Experiment

One of the most common experiments in animal learning is maze learning by white rats. The general plan of the experiment is to see the number of trials taken by a rat to learn the maze successfully, i.e. to run without committing any mistake and in the shortest possible time. A turn towards a blind alley is conducted as an error.

When the hungry rat is placed in the maze, it cannot see its way to the food. Therefore, the first reaction is the rat gets active and begins to explore. The beginning activity will not take any organized form. It moves here and there. It may enter almost all the passages including those leading to blind alleys, and finally succeeded in reaching the food. The rat is caught as soon as it reaches the food and after allowing it to have bite is again placed at the start. Like this, several trials may be allowed per day. In later trials the rat does not go into all the blind alleys and even if it takes a wrong turn it does not go very deep into the blind alley. Finally, after a number of trials spread over a few days, it learns to avoid all wrong entrances and go direct and quickly to the food.

Perceptual Learning: (Insight learning)

The factor of perception in learning was emphasized by World Gong Kohler. He has conducted a large number of experiments with chimpanzees to study the problems of learning with particular references to the factor of perception.

Experiment

In one experiment Kohler put the chimpanzee, by name Sultan, inside a cage and a banana was kept outside. Inside the cage two sticks were placed, one longer and one shorter. One was hallow at one end so that the other stick could be thrust into it to form one long stick. The banana was so placed that neither of these two sticks could be reached. When the experiment started, the chimpanzee got active. It tried various means of reaching the banana. It tried in vain with the two sticks one after another.

In one trial Kohler noticed that after some unsuccessful attempts the monkey give up the problem just sat down in a corner and was playing with these two sticks. While playing like this accidentally one stick fell into the hole of the other but not properly. This gave the animal a 'bright idea'. The animal straight away joined the will ling enough to reach. The two sticks were joined and got the banana. Kohler emphasizes the suddenness with which the right solution appeared. This sudden and new way of looking at the problem and solving it is

called 'insight'.

Trial and Error Learning

Motor learning is most affected through the method of Trial and Error

Thorndike's Experiment

Inside a specially constructed cage called the 'problem box' or 'puzzle box', a hungry cat is kept. A piece of fish is kept outside the box. The cat is kept hungry and the fish is kept outside to make sure that the cat would be sufficiently motivated to go into action. The box is built in such a way that its door can be opened by pressing an inside lever. Cat becomes restless and made all kinds of attempts to get out, like clawing and biting at all the bars and shaking all the movable parts and error methods. After some time by chance, the cat presses the lever and opens the door. It is again taken and put into the box for a second attempt and during the second attempt also the cat goes on with the restless and random activity as before.

In the same manner the experiment is continued for several attempts. Thorndike noticed, as the number of trials increased, unnecessary and irrelevant activities of the animal were getting reduced. Gradually, the errors became less till a last after number of trials the animal learned to operate the door straight away. The result of this experiment emphasized; (1) the random activity, (2) the gradual reduction of useless movements, (3) the fact that the animal finally learned the trick. These findings made Thorndike to conclude that animals learn only by trial and error.

Acquisition of skills

When we acquire through learning a co-ordinated series of responses which are performed with proficiency, that is called skill, playing the piano, piloting a plane and reciting a poem are all skills.

Transfer of Training

One of the problems in psychology that has been experimentally studied is the possibility of the skill attained in learning one task, helping the learning of another task. Mastering one skill may make it easier to learn another. One influences the other. This influence may be of two kinds. It may be positive in that the first learning process facilitates the second one. It may be negative, in as much as one learning activity may interfere with subsequent learning activity and retard the progress of the later. The negative transfer is commonly called 'habit interference'.

Williams James and Thorndike have conducted many experiments on this subject. A number of experiments with mazes, puzzles, verbal material etc., have been conducted to study the problem of transfer of training in general and obtaining in learning more

complicated skills. Many experiments have shown that what is actually transferred is the technique of dealing with the problem; it is actually an application of a principle already learned to new situations.