

Learning

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ABSTRACT

Learning is an ever-evolving process. In human life, the process of learning continues continuously, from when the child is born till the death. When a child is young, he learns from his surroundings, environment, siblings, friends, parents, etc., then learns from the teachers in school, then learns from the conditions of the society and so on in the struggles of life. The process goes on continuously. This learning process leads to changes in the behavior of the individual which is influenced by the past behavior. What changes come in human behavior through learning, here we will study them too.

Keywords : Learning, Behavior, Human Nature, Learning Process

I. INTRODUCTION

Introduction- Acquisition of new information is the aspect of cognition called as learning (Surgenor, 2016). Learning refers to the acquisition of new data or information. Learning is undoubtedly an integral process of any cognitive ability (Gibson, 2016). The concept of learning is held of great importance across different fields of science, philosophy. The purview of learning mainly falls under the discipline of psychology. In psychology, there are various perspectives, orientations, theories that have sprung up in an attempt to define and conceptualise, learning. However, one widely accepted definition is by Atkinson (1993) who regards learning as a relatively permanent change in behavior, which includes both observable activity and internal processes such as thinking, attitudes and emotions,. Thus, learning is considered as:

- relatively permanent change in behavior
- not just a visible but also a manifest responses of the learner
- Modifying the learner's behavior.
- Being dependent on previously acquired experience.

The procedure of learning is central to the appropriate and effective normal functioning of human beings. One of the main things that make human beings different from other animals is the ability to learn very complex behaviors and apply the different learned concepts to create new concepts (Science, 2011). Learning is acquired due to the prior experience one has gained. A child may learn from his/her environment consciously or unconsciously, and in the process, his/her behavior is being modified either negatively or positively (Roschelle, 2016).

Learning meaning and nature

Human behavior changes through learning. Therefore learning is a change in behavior that is influenced by past behaviour. Skills, knowledge, habits, attitudes, interests and other personality characteristics are all outcomes of learning.

Learning is defined as any relatively permanent change in behavior that results from practice and experience, and this definition has three important elements:

1. Learning is a change in behavior, good or bad.
2. It is a change that occurs through practice or experience but changes that occur due to growth or maturity are not learning.

3. This change in behavior should be relatively permanent and last a fairly long time.

Learning includes all kinds of activities whether it is physical or mental. Physical activities can be both simple and complex, involving various muscles and bones. Mental activities can also be very simple, involving one or two movements of the mind or it can also be complex that involves high mental activity. What activities are learned by the individual is related to the types of learning for example habits, skills, facts etc.

Types of Learning

There are different types of learning. Here we describe some important and common learning activities.

1. **Motor Learning:** Most of our activities in our daily lives take place in the context of motor activities. One has to learn them to maintain their regular life like walking, running, skating, driving, cycling etc. Muscle coordination is necessary in all these activities.
2. **Oral Learning:** This type of learning involves the language we speak, the communication tools 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 a form of learning that requires higher order mental processes like thinking, reasoning, intelligence etc. We learn different concepts from childhood. For example, when we look at a dog and attach the word 'dog', we learn that the word dog refers to a particular animal. Concept learning involves two processes, viz. Abstraction and Generalization. This learning is very useful in recognizing things.
4. **Discrimination Learning:** Learning to differentiate between stimuli and showing appropriate responses to these stimuli is called discrimination learning. For example, sound horns of various vehicles like bus, car, ambulance, etc.
5. **Learning Principles:** Individuals learn certain principles related to science, maths, grammar, etc. to perform their work effectively. These principles always reflect the relationship between two or more concepts. Example: formula, law, union, correlation, etc.
6. **Problem Solving:** It is a higher order learning process. This learning requires the use of cognitive abilities such as thinking, reasoning, observation, imagination, generalization, etc. It is very useful to overcome the difficult problems faced by the people.
7. **Attitude Learning:** Attitude is a tendency that determines and guides our behavior. We develop different perspectives about people, objects and everything we know from an early age. Our behavior can be positive or negative depending on our attitude. Example: Attitude of nurse towards her profession, patients etc.

Learning Principles

Psychologists have tried to explain how and why people learn. He has conducted many experiments on animals and children and reached certain conclusions which explain the methods of learning. These are called principles of learning. The term learning is very broad. It covers a wide range of activities that cannot be explained within a limited framework. There are many theories explaining the methods of learning. Important among them are:

Trial and error learning principle

This theory was given by an American psychologist E.L. Thorndike (1874–1949). He argues that learning takes place through trial and error method. According to him learning is a gradual process where one will make many efforts to learn. This principle means as the tests increase, the errors decrease. This is possible because of the link between the sense impressions and the impulses of the action. Such

associations are known as 'bandhans' or 'sanbandhans', as it is these bonds or those ties that become stronger or weaker in the making and breaking of habits. According to this theory, when a person is placed in a new position, he makes a number of random movements. Those who fail are discarded and those who succeed are kept. These random movements are not eliminated all at once. In the first attempt the number of errors is very high, in the second attempt the number of errors is less and the scope of the activity becomes smaller. Gradually one learns to avoid unnecessary activities and reaches the goal. Repetition leads to improvement.

Thorndike studied the character of trial and error learning in several experiments on cats; he used a box he called a 'puzzle box'. In this experiment a hungry cat was placed in a box and the door was closed which could be opened by pressing the latch. A fish was placed on a plate outside the box. The cat could see this fish. 100 tests were done on the cat which lasted for 5 days, 10 of them daily in the morning and 10 in the afternoon. At the end of each experimental period the cat was fed and then given nothing else to eat until after the next session. If by chance he succeeded in opening the door in some case, he went to eat the food (fish). A complete record of the cat's behavior was made during each trial. Initially the cat did many random actions like biting, pawing, dashing etc. Gradually in subsequent trials the cat reduced the incorrect responses (errors) as it was in a position to be manipulated as soon as it latched onto the box. This experiment showed that random movements were gradually reduced, that is, as trials progressed, errors decreased. As trials increased the solution to opening the door was discovered (by pressing the latch) and finally, the cat could open the door with zero error. The time taken for each trial was eventually reduced.

Thorndike conducted several experiments with maze and puzzle box learning in which cats and rats were

used. They have shown that through many trials the animal learns a lot and gradually improves its effort. We all also learn many skills through this method like swimming, cycling, horse riding etc. By this method children learn to sit, stand, walk and run. However, this method involves considerable waste of time and effort.

Learning by Conditioning

In the literal sense, conditioning means 'getting used to', or 'adjusting' to a new situation, or stimulus. It is a process of replacing the original stimulus by a new one and associating the response with it. There are two types of conditioning principles:

1. Classical Conditioning: This method of conditioning gets its name from the fact that it is a kind of learning condition that was present in the early classical experiments of Ivan P. Pavlov (1849–1936) a Russian physiologist, who was awarded the Nobel Prize for his experiments in 1904. Pavlov designed an instrument to measure the amount of saliva produced in response to a meal (meat power). At the beginning of his experiment, Pavlov observed that no saliva was produced when the bell was rang. Then they trained the dog by ringing the bell and after a while by presenting the food. After pairing the sound of the bell with food several times, they tested the effects of training by measuring the amount of saliva that flowed when the bell was rang and food was not presented. They found that some saliva was produced in response to the sound of the bell alone. They then resumed the training-paired presentation of the bell and food a few times and then tested again with the bell alone. As training continued, the amount of saliva on trials with the bell alone increased. Thus, after training the dog's mouth watered saliva whenever the bell rang. This is what was learned; This is a conditioned response.

This theory states that the CS (bell) becomes a substitute once it is combined with the UCS (food) and acquires the ability to elicit feedback. This is because the conditioning is formed between the CS and the UCS. It can be represented symbolically as:

Sub-Principles of Classical Conditioning: "There are some sub-theories that explain the various phenomena of this experiment.

Extinction and Spontaneous Recovery: Extinction means the cessation of the reaction. The strength of the CS gradually decreases when it is presented alone and is not followed by the UCS for many trials. This process is called 'extinction'. In this experiment when only the bell without food was presented for several trials, the dog gradually stopped salivating but when the CS (bell) was again paired with the UCS (food) for some trials, the CR (saliva) recovered again. This is known as 'spontaneous recovery'. Self-recovery requires fewer trials for the dog than it did the first time, because the relationship between the CS and the UCS still exists in the animal's brain.

Incentive Generalization: The tendency to respond to a stimulus that is similar to the original is called stimulus generalization, the greater the similarity, the greater the generalization. In this experiment, the dog started salivating even to the sound of a bell-like buzzer.

Incentive Discrimination: When there is a great deal of difference between two stimuli, the animal can discriminate between the two. For example, if a dog is conditioned to salivate at a red light signal, it will not salivate when presented with a green light.

Higher Order Conditioning: If a 'light' for several trials is followed by a bell and then presented by food, the dog will begin to salivate to the light itself. This phenomenon is called a higher order condition.

All these principles are very useful in behavioral therapy. In our daily life we see many examples of

such learning. For example, a young child who does not know, touches a burning candle, it gives him a painful experience and withdraws his hand. Later this experience will distance him from the burning objects and avoid them all at once. Conditioning is used very effectively as a psychotherapeutic technique in the treatment of abnormal behavior such as phobias, drinking, enuresis, etc. These are called behavior modification techniques. Watson and others have conducted several experiments to prove the usefulness of this method.

2. Operant Conditioning: This method of conditioning was developed by BF Skinner, an American psychologist. This principle is also known as 'instrumental conditioning', as animals use certain operations or actions as tools to find solutions. Skinner did his famous experiment by placing a hungry mouse in a box called 'Skinner's Box'. This box contained a lever and a food tray in one corner of the box. It was arranged in such a way, that the animal was free to move inside the box, but pressing the lever would give the animal a pallet of food in the tray as reinforcement. A mechanical device was also arranged to record the number of times the lever was pressed. Initially it was found that the rat sometimes pressed the lever and received food as a reinforcement for each pressure. Gradually, as the animal learned that pressing the lever would provide some food, it repeated the responses very rapidly. This rapid increase in lever pressing is a sign that the animal is used to getting food. In daily life also, a lot can be learned from this method in animals as well as in humans. Reinforcement will be the motivating factor. This will force the organism to repeat its action. Based on these experiments, Skinner gave his famous statement "reward behavior is repeated". Instrumental conditioning involves more activity by the learner than classical conditioning. Skinner conducted his experiments on various 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. Punishment such as **negative reinforcement** is used to prevent unwanted reactions or behaviors. Operant conditioning is also useful in shaping undesirable behavior and in behavior modification. It is also useful in training mentally retarded children for dressing, eating and toilet training skills, treatment of phobias, drug and alcohol addiction, and psychotherapy and teaching necessary behaviors in children. Furthermore, these experiments have proved that intermittent reinforcement gives better results than continuous reinforcement.

Learning by Insight

Sometimes learning proceeds by a more efficient process of trying out methods that seem to be related to the solution. This is possible through the understanding or perception of the situation. Learning by understanding the relationship in the scene and understanding the situation is practical learning. This theory was developed by a psychologist named Wolf Gang Köhler, who belonged to the Gestalt school of psychology. According to Gestalt theory- the perception of a situation as 'whole' gives a better understanding than the sum of its parts. That is, the situation seen as a whole will certainly look different when viewed from its parts. Kohler performed his most famous experiment on a chimpanzee – called Sultan. In the experiment, the sultan was placed in a cage and a banana was placed at a distance outside the cage. The chimpanzee was then given two sticks, so that one stick could be fitted into the other and the stick could be lengthened. The hungry Sultan first tried to take the banana from his hands. Then he took one of the sticks and tried to pull the banana closer, then tried with the other stick, but failed to reach it. The chimpanzee got tired of this effort and stopped trying to reach the banana and started playing with sticks. While playing, one stick got stuck in the other and

the stick became long. Immediately the sultan was pleased and ate the banana by pulling it with this long stick. This 'sudden flash of thought' was what Kohler called 'insight' to reach food with a long stick. He conducted many experiments to prove that learning happens through insight and not just by trial and error. He concluded that the phenomenon of insight to find a solution to a problem is possible by the assumption of the whole situation. Kohler conducted many experiments along this line of learning to prove that trial and error method alone is not enough to find solutions to many complex problems. May account for the simple acquisition of knowledge, skills, interests, habits and other personality characteristics through trial and error or juxtaposition and conditioning. But it is absolutely insufficient to solve complex problems. It is here that the practical learning method is very useful. Because it involves many higher mental processes like thinking, reasoning, intelligence etc. Insight is when one sees, in a moment, the solution to his or her problem or difficulty. This is not blind or foolish education. This is a smart way to learn. On many occasions people try to shape the situation, things and come to a conclusion. With experience man is able to solve problems better and quicker. He exercises his discriminatory ability in solving problems, and learning becomes a matter of insight rather than trial and error. The example of Archimedes' experience explained in creative thinking is a fitting example for the phenomenon of insight.

Learning by imitation

This is the easiest way to learn. Many of our day to day activities are learned by imitating others. For example, the way we eat, drink, walk, talk, dress, etc. are all learned by imitating others. We watch and see what and how other people do certain activities and imitate them. We observe demonstrations given by an expert, imitate their movements and learn from them. By imitating the behavior of others, people

avoid the waste of time and effort of the trial and error method of learning. For example, a boy observes how to hold a cricket bat, imitates the movements of an expert player and learns. Psychologists such as Miller and Dollard have tried to show that the tendency to imitate is in itself a learned response and that if it is strengthened, the person will be more likely to continue to imitate. Many people believe that imitation is a lower form of learning. Still others argue that imitation will never lead to a new response and will have no chance of harnessing the individual's creativity or originality. But at the same time many academics believe that only a person who imitates can learn better. Whatever the opinion, it is quite clear that we learn a lot from imitation.

Learning Laws

EL Thorndike has explained three laws of learning which are called elementary laws and in addition to these, he has also formulated 5 auxiliary laws regarding his theory of trial and error learning.

1. Primary Rule

These are the most important rules, which explain the basic aspects of learning. They:

1. Rule of Readiness: Readiness means that the organism is ready to react or act. This is a more necessary condition for learning. It indicates that the animal or human is motivated to learn. This state of readiness has two effects: satisfaction and annoyance. When the animal is ready to act, if allowed, it gives pleasure. If it's not allowed, it feels annoyed. In the same way when the animal is not ready to learn - it is annoying if asked to learn. On the other hand, it gives pleasure if it is prevented from learning. In the words of Thorndike these points are given below:

- a. Conduction is satisfactory for the conduction unit ready to conduct.
- b. For a driving unit ready to operate - not conducting is annoying.

- c. Not ready to conduct for a driving unit - Conducting is annoying.

This rule clearly shows that the readiness of the individual to learn is very important. So motivate him to learn.

2. Rule of Exercise: This law is also known as the law of frequency. Frequency refers to the number of iterations of learning. Thorndike believed that repeatedly practicing a response strengthened its connection to the stimulus. This aspect refers to the law of use and disuse, which states that, whatever is not in use will perish. Similarly, if the response is not repeated, its bond with the stimulus weakens. This is also in accordance with the statement that 'practice makes a man perfect'. In Thorndike's experiment, the cat becomes perfect after repeating the reaction more times.

3. Law of Effect: This law states that when the relationship is proved with a satisfactory effect, then its power increases. By this, Thorndike meant that it was more likely to happen. In his experiment, if a hungry cat manages to open the door, he will get to eat a dish that suits him. This had a positive effect on its response. Rewards always strengthen the relationship between stimuli and responses, and punishment, on the other hand, weakens the connection.

2. Secondary Law

In addition to the three primary laws mentioned above, Thorndike also gave five secondary or subsidiary laws. They are as follows:

1. Law of Multiple Reaction: This means that when one response fails to achieve the desired effect, the learner will try with new responses until the goal is reached.

2. Law of Set or Attitude: Mental set or positive attitude is very important in any learning.

3. Rule of Associative Transfer: It is nothing but a transference of response to a new situation which is the same as before. Because the fundamental

assumption is that, if the response can be sustained through a series of changes to the stimulus state, it can eventually be given to a new condition.

4. Law of Strength of Elements: This rule states that the learner is able to respond only to the main elements of the problem and not to other unimportant elements.

5. The law of reaction by analogy: It means comparing a new situation with a previously learned situation and thus responding 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 prompted the cat to learn to open the door. According to the second rule, the cat was repeatedly given trials and exercises that strengthened its learning. Finally on each trial the cat was given reinforcement in the form of a fish. This encouraged the cat to continue its effort to learn to open the door. The secondary rules given by him support these conclusions. These laws are highly relevant to the field of education. Teachers can use these laws to make their teaching more effective.

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