UNIT 4 LEARNING

Structure

4.0 OBJECTIVES

After going through this Unit, you would be able to: .

- define learning;
- differentiate classical conditioning and operant conditioning;
- describe cognitive learning;
- state importance of social learning;
- list methods of effective learning;
- state role of transfer of learning; and
- demonstrate significance of learning method for nursing.

4.1 INTRODUCTION

In Unit I, you have studied about the role of psychology in education. This unit will help you to understand about learning process in detail.

Learning is central to all our behaviour. It is the key process in human behaviours as we learn to do various activities like speak, write, think and perceive. Our attitudes and emotional expressions are also learned behaviours. All our adaptive as well as unadaptive, our cognitive as well as affective behaviour are formed by learning processes. These are of vital importance in helping the organism to adapt to its changing environment.

Definition

Learning has been defined as a relatively permanent change in behaviour that occurs as a result of practice/experience. Learning is central to our behaviour as we learn to speak, write, think and perceive. Our attitudes and emotional expressions are also learned behaviours. There are three important factors in this definition:

i) Learning brings change in behaviour.

ii) Change takes place through practice differing here from changes due to growth/ maturation or experience.

iii) The change in behaviour should be permanent to be called as learning.

There are a variety of ways by which we learn, these are given in the next sub-unit.

Check Your Progress 1

1) Define learning.

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2) Write important factors of learning.

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4.2 TYPES OF LEARNING

There are a number of theoretical explanations about the process of learning. These are classical conditioning of operant conditioning which emphasize stimulus-response (S-R) relationships and explain learning as an associative process. Other psychologists argue that all types of learning cannot be explained by simple forms of S-R relationships. Cognitive theories give importance to perception and understanding. However, we are social beings and we learn a number of tasks in social context so another group of theorists give social learning model. We now examine these four theories of learning.

4.2.1 Classical Conditioning

This is the simplest form of conditioning, described Pavlov, a Russian Psychologist. Conditioning is a term used to describe the process by which neutral stimulus gains the power to elicit a specific conditioned response. This is explained through the experiments done by Pavlov. He associated the presentation of food to the dog with another stimulus as sound of the bell. After giving some trials in which bell preceded the presentation of food, the dog started salivating at the sound of the bell. To explain this phenomenon, some technical terms are used.

Food	:	Unconditioned stimulus (UCS)
Salivation elicited for food	:	Unconditioned Response (UR)
Sound of bell	:	Conditioned stimulus (CS)
Salivation to bell	:	Response (CR)

The diagram below explains the conditioning procedure:

Innate Stimulus-Response Connection

[US] Food _____ [UR] Salivation

Learned Stimulus-Response Connection

[CS] Bell _____ [CR] Salivation

The acquisition of a conditioned response is gradual and becomes stronger with repeated trials. There are some aspects of classical conditioning which require consideration.

i) **Acquisition**

For acquisition each paired presentation of the CS (Sound of bell) and the US (Food) should be presented a number of times and the interval between CS and US should be short.

ii) **Stimulus Substitution**

With conditioning a link a bond is formed between the CS and US and as a result of this CS (bell) becomes equivalent to US (food) in eliciting a response. We mean thereby that an association between CS and US enables one to substitute CS for US in evoking a response.

iii) **Stimulus Generalization and Discrimination**

Stimulus Generalization: When conditioning has occurred or when the conditioned response to a stimulus has been acquired, then other similar stimuli can also elicit the same response. This is known as stimulus generalization. In Pavlov's experience the dog gave CR (salivation) to a slightly different bell also.

Stimulus Discrimination: Stimulus Discrimination is to make one response to one stimulus and different response or no response to another. In experiments it is demonstrated by using two different tones (SCI) (bell). On one trial CS (1) is paired with US (food) and on the other trial CS (2) given without US (food). The *s* learns to respond only to CS (I).

iv) **Extinction and Spontaneous Recovery**

Repetition of the conditioned stimulus (Bell) without unconditioned stimulus repeatedly gradually diminishes the response. This is called Extinction. A response that has been extinguished, does come-up later on its own, this is called spontaneous recovery. At this stage, if reinforcement (US) is not presented with CS, the response extinguishes permanently.

4.2.2 Operant Conditioning

Operant conditioning is another approach to the study of associative learning. The term coined by B.F. Skinner means that the likelihood of a behaviour depends on the significance of the event immediately following it to person showing the behaviour. If the event following the behaviour is positively reinforcing or rewarding, then it will recur. 1f it is not reinforced or is punished, then it is less likely to recur and eventually stops completely a process known as 'extinction'. An alternative related approach is 'stimulus control' — changing the event preceding. When a response operates on the environment, it may have consequences that can affect the likelihood of the response occurring again. This from of learning is also known as **instrumental conditioning** because some action or behaviour of the learner is instrumental in bringing about a change in the environment that makes the action more or less likely to occur again in the future. For example putting food in your mouth (an operant) is likely to be repeated because of its pleasant consequences.

Behaviour	Positive Consequences	Recurrence of behaviour (Positive reinforcement)
Behaviour	No reward of punishment	Behaviour disappears (extinction)

It is a powerful method for teaching new behaviour patterns both to humans and animals. The basics of operant conditioning are reinforcement and punishment. In children the most common form of positive reinforcement is social, children are likely to repeat behaviour which gives pleasure to those whom they are fond of.

Usually, but not necessarily, their parents, teachers are the most important positively reinforcing figures, but as they get older, other children increasingly take on this role. If a teacher pays gratifying attention to bad behaviour (even if the attention takes form of shouting

at the child), then bad behaviour will recur. Material rewards, such as money, sweets, chocolates, other favourite foods, watching television are also used.

i) **Reinforcement**

The basic principles of operant conditioning is that when a behaviour occurs and is followed by a **reinforcement,** it is more likely to occur again in the future. A great deal of our behaviour has been learned because it has been rewarded. For example you study because you may find it reinforcing in terms of marks attained, praise from your colleagues. Many responses can be made to occur more frequently by following it with reinforcement. The behaviour can be shaped and moulded by appropriate arrangements of responses and reinforcers.

Nature of Reinforcers: Whether something is positively reinforcing or punishing depends on the effect it has on behaviour. What may be positively reinforcing to one child may not be so for another. For example, usually food will be positively reinforcing but to an anorexic girl who hates the sight of food it may be punishing. Pain is usually punishing, but to a child preoccupied guilt with masochistic tendencies it will be positively reinforcing or rewarding. Further, the strength and direction of reinforcement will depend to some degree on the child's relationship with the person administering or involved in it. A game of football is likely to be more positively reinforcing for a boy if it involves his father than his mother. A star chart for bed wetting worked out in co-operation with a mother with whom a 6 year old has a good relationship is likely to be more effective than if the mother and child are in serious conflict.

Reinforcements are broadly into two types: (1) **primary** or material rewards, snacks sweets, food (2) **secondary** or social rewards such as praise, smile. Events or consequences which strengths behaviour when they are presented are called **positive reinforcers.** In **negative reinforcement** the response cause the termination of painful event. Removal of painful or unpleasant consequences can also strengthen or reinforce behaviour. For instance, offering a screaming child an ice cream may result in a child stopping screaming. The adult is likely to continue to give ice cream (operant) to stop child screaming (negative reinforcement for the adult).

Schedule of Reinforcement: According to Skinner, at the beginning of training you should reward each and every move the child makes toward the goal. However, once the child has mastered a given response in the chain, you may begin **slowly fading out the reward** by reinforcing the response intermittently. Continuous reinforcement is necessary at first, both to keep the individual eager to perform and to let him know that he is doing something right. However, once the child learns what that something" is, you may begin reinforcing the response every second time, then every third or fourth time, then perhaps every tenth time. If you fade out the reward very gradually, you can get a child to make a simple response several times for each reinforcement.

During the fading process, the exact scheduling of the reward is crucial. If you reinforce exactly every tenth response, the, child will soon learn to anticipate which response will gain him reward. Skinner calls this fixed ratio reinforcement, because the ratio between the number of responses required and the rewards given is fixed and never varies. Instead of reinforcing exactly the tenth response, we can vary the schedule so that sometimes the third response yields reward, sometimes the twentieth or any response in between. A hundred responses will yield about 10 rewards, but the child will never know when the next reward is coming. When trained on variable ratio schedules, individuals response at a fairly constant pace.

Extinction generally occurs most rapidly following withdrawal of things that are positive reinforcers. Thus the withdrawal of love from people of whom the child is fond is often the most effective way of achieving extinction of the undesirable behaviour. In other children, the withdrawal of material goods, such pocket money, special food or think, and opportunity to watch television is more important.

Shaping refers to the gradual forming of the behaviour. It is a step by step method to teach complex behaviour. It is commonly used in teaching skills to mentally retardates.

ii) **Punishment**

When we wish to eliminate an unadaptive behaviour, punishment tends to decreases the likelihood of occurrence of the responses. Any unpleasant consequence of behaviour which

makes that behaviour less likely to occur can be seen as punishing. Physical punishment by parents is the most frequently used, but many children do not respond to it by a reduction in their undesirable behaviour. Probably the attention they get when they are punished has a positive reinforcing rewarding effect, and this result overrides negative experiences of physical pain. The experience of negative emotional states — anxiety, expression and a sense of failure is, by contrast strongly punishing. In other words punishment decrease the frequency of a response, stops the behaviour leading to it. Some of the common methods based on principle of punishment are time out from reinforcement over correction and response cost. These methods if used consistently and systematically, have been found to be very effective in modifying problem behaviour in children.

Comparison Between Classical and Operant Conditioning

	Classical Conditioning	Operant Conditioning
1)	UCS is given irrespective of the organism's behaviour	Organism's own behaviour determines whether or not the UCS will be presented.
2)	Time interval between the CS and the UCS is rigidly fixed.	Time interval depends on the organism's own behaviour
3)	Responses involuntarily medicated by autonomic nervous system like eye blink	Responses under voluntary control, mediated by the central nervous system.
4)	The unconditioned stimulus (UCS) occurs without regard to the subject behaviour.	The reward is contingent upon the occurrence of response.
5)	Association between stimulus response (S-R) is on the basis of law of contiguity (things occurring closer in time and space get associated)	Association between stimulus responses (S-R) is on the basis of law of effect (effect of reward and punishing).
6)	There is pairing of UCS and CS	No pairing of UCS and CS but pairing of a response and the reinforcing stimulus which follows.
7)	Reinforcement comes first as food is presented first to elicit the response	Reinforcement is provided after the response is made by the organism.
8)	We present the (UCS) unconditioned stimulus regardless of whether the (CR) conditioned response occurs	We present the stimulus only if the organism makes the desired response.
9)	Stress is laid on time control	Place of motivation and reward is stressed.
10)	The essence of learning is stimulus substitution	The essence of learning is response modification.
11)	Stimulus oriented	Is response oriented.
12)	Response, is correlated with and controlled by an antecedent event, an eliciting stimulus which is initially the UCS and subsequently the CS.	There is no antecedent behaviour and is controlled by its consequences.

Check Your Progress 2

Differentiate classical conditioning and operant conditioning.

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4.2.3 Cognitive Learning

In learning more complex forms of learning, perception and knowledge or cognitive processes play an important role. Cognitive theorist state that learning cannot be satisfactorily explained in term of stimulus response association. They propose that a learner forms a cognitive structure in memory which organizes information into relationships and, meaning. Without any known reinforcement, new associations are formed and new relationships are perceived among events", simply as a result of having experienced these events. Links are made stimuli so that stimulus-stimulus (S-S) associations are learned.

i) **Insight Learning**

Kohler, a German psychologist, on the basis of his experiments on chimpanzees, emphasized that while working on a problem one grasp the inner relationships through insight, not through mere trial and error, but by perceiving the relationships essential to solution. In his typical experiment, a chimpanzee in the bars was given 2 unequal size of sticks and the fruit was kept outside the bars, which could not be reached by one stick alone. After several trials the animal all of a sudden joined the 2 sticks together to make it a single long stick and with that could reach the fruit.

Insight is often used in problem solving puzzles and riddles. To emphasize the suddenness of the solution, it is also called by some as "Aha experience".

ii) **Sign Learning**

Sign learning is an acquired expectation that one stimulus will be followed by another in a particular context. What we learn, is a set of expectations or a cognitive map of the environment rather than specific responses.

Tolman believed that some learning is sign learning. We develop a sort of cognitive map or structure instead of learning a sequence of the task. On the basis of understanding, we tend to make spatial relationship.

Latent learning refers to any learning that is not evidenced by behaviour at the time of the learning. It occurs without any reinforcement for particular responses and seems to involve changes in the way in which information is processed. You can get ample examples of latent learning from your own experiences, when you have not consciously put an effort to learn, but later you can perform that particular skill or responses.

Check Your Progress 3

Describe cognitive learning.

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4.2.4 Social Learning

There are many forms of learning which cannot be explained through conditioning. We also learn through observation. Social learning theorist stress upon observational learning or modeling in which a person acquires a response to a specific situation by watching others make a response (Bandura, 1969). Imitation is one of the important method based on this theory, which could be applied in learning of many skills. For example many of your skills like giving an injection, making bed or dressing of a wound are learned by you simply by observing your seniors perform those skills. Even maladaptive behaviours like aggression are learnt through imitation. The learner acquires and stores internal (representations) response through images and verbal coding, which may be expressed later.

Check Your Progress 4

State importance of social learning.

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4.3 MAKING LEARNING EFFECTIVE

Learning effectively is a skill in itself. There seems little doubt that good study skills contribute to academic success. Some of the students have difficulties with their studies vanishing not just from lack of application/psychological problems but from specific problems with the way they study and learn. Here are some tips by which you can learn more effectively.

Definite Goal

In any learning student should have clear goal in view, as with a goal in mind on works towards a definite and sure purpose. It also enhances your motivations. Intention to learn ensures better learning.

Knowledge of Results or Psychological Feedback

One must also have conscious assurance that he is making progress towards his achievement. Frequent and regular review of the amount of progress being made toward the goal act as a strong motive to promote continuing effort on the part of the learner. One can build small rewards, as reinforcers into a work schedule, like a 5 minute break after every hour of solid work. In this way we can work more effectively getting away with mental fatigue.

Distribution of Practice Periods

A number of experiments have demonstrated that a shorter practice periods are more economical than longer periods and when distributed over several days yield better returns than when they are concentrated into a single sitting.

Whole versus Part Method

Whether the entire topic should be learned all the way through in each trial or by breaking it into small portions and learning in turns? The former is known as whole method and latter as part method. With easy units, whole method should be adopted. If material is difficult in relation to the leamer's ability, smaller units should be learnt; but they should still be as large wholes as a learner can manage efficiently. Try to learn in natural units.

Logical Learning

This means that instead of learning by heart, rote memorization, you should try to grasp meaning and idea of the text. Logical learning calls for an arrangement and assimilation with ideas in mind.

Take rest in between your studies as mental fatigue prolongs the study process. The learner's level of anxiety interfere's with good performance. Mild degree of anxiety can be useful aid to learning but undue worry, anxiety and nervousness may have an inhibiting and interfering effect. The degree of anxiety varies from one individual to another. Some may be afraid to just answer in class — others may only be in, this state during exams meaning thereby that some are temperamentally more anxious than others while others are made anxious by undue pressures; such as parental expectations.

Rhyming also helps, as it is well known that certain kind of material (poems vs. Prose) lends itself to better learning.

Overlearning/continuous repetitions of stimulus response learning help to retain the material occur a longer period of time provided it is again not rote learning.

Check Your Progress 5

List methods to make learning effective.

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4.4 TRANSFER OF LEARNING

If eyerything we learned was specific to the situation in which it was learned, the amount of learning that would have to be crammed in a lifetime would be phenomenal. But most learning is readily transferable, to other situations with some modification. The influence that learning one task may have on the subsequent learning of another is called **transfer of learning.** Sometimes transfer of learning could be **positive or negative.** Positive transfer of learning is when learning on task does facilitate learning another. When one learning interferes with others, it is called negative transfer of training. There are numerous examples of negative transfer in everyday life.

One special kind of transfer is called **bilateral transfer** for example learning to do a thing with one hand facilitates (transferred) learning with the other hand.

The problem of transfer of learning has been of great concern to educators. For them it constitutes the very important practical question of how the school/college curriculum should be arranged to ensure maximum positive transfer. If learning of psychology would help in the learning of mental health which subject should be taught first to ensure maximum transfer to other subjects. Doctrine of formal discipline, maintained that the mind was composed of faculties that could be strengthened through exercises, much as individual muscles can be strengthened. But this doctrine has been discredited by experiments.

Positive transfer of training has been demonstrated though **learning to learn,** that is when a student is given successive lists of verbal material over a period of days, he can learn with greater speed even if the material is not similar. The students presumably learns a techniques or an approach to the task that facilitates their performance on later tasks of the same sort.

Learning to learn has been extensively investigated with small children. The finding indicate that learning depends on different factors like ignoring distracting noises and other irrelevant stimuli, learning to identify the relevant cues in the situation. It involves learning a principle, this is the chief method by which learning is transferred. Transfer is also possible if principles learned in old situations are appropriately applied to the new situations, like principles of reasoning learned in logic are applicable in mathematics:

4.5 SIGNIFICANCE OF LEARNING FOR NURSING

Learning is fundamental to the development and modification of behaviour, thus knowledge of the learning process may be usefully applied to many clinical situations you may encounter and also in your academic work.

Using these principles you can dovelop positive attitude towards healthy life style, family planning etc. in the patients and community. Knowledge of learning theories and its principles are fundamental for an effective nurse educator.

Many of our subjective feelings, emotions and attitudes are probably conditioned responses. Through generalization it becomes difficult to identify the origin of our emotional responses. Both our adaptive emotional responses as well as unadaptive responses are learned and can be unlearned through principle of learning.

Behaviour modification or behaviour therapy is a group of techniques commonly used in the treatment of various psychiatric disorders and in the training of mentally retarded children. Cognitive learning methods are also applied in clinical setting.

Behaviour therapy and cognitive therapy are used to modify problematic behaviour of both adults and children. Most behaviour disorders are understood and changed using same learning principles that govern normal behaviour.

Learning methods have a wide applications in educational setting. In programmed learning the material to be learned is broken up into small easy steps, so that the learner can accomplish without frustrations. Also with programmed learning, learner can master the task at his own pace. With versatile and flexible learning you can improve your learning style.

Applications of reinforcement principles can often increase productivity both in your studies as well as in your profession.

Applications to Education

The extent of transfer of an academic subject clearly depends on the teaching methods. Teaching for transfer requires emphasizing the similarities between the current subject and the situations to which the new learning will transfer. If the two subject areas are similar in general principles or concepts, then transfer depends upon the extent to which the principles and their broad applications are stressed. Transfer of learning is also dependent on high degree of mastery on basic problem and experience with a variety of similar problems to ensure generalization of the principle. If a student is presented with a wide variety of problems without time to learn any on to a moderate degree of mastery, there will be little transfer.

Improvement in learning, how to learn on study skills also helps in transfer. It has been demonstrated that when one learns certain principles of performing or solving problem then there is marked improvement in one's ability to learn and remember.

Check Your Progress 6

Demonstrate significance of learning method for nursing.

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4.6 LET US SUM UP

Learning is defined as any relatively permanent change in behaviour that occurs as a result of practice or experience. Methods of learning are broadly classified classical conditioning operant conditioning cognitive learning and social learning. In classical conditioning a neutral stimulus CS is presented before the unconditioned stimulus (US) that evokes an unconditioned response (UR). As a result of association the previously neutral stimulus begins to elicit a conditioned response (CR). In operant conditioning an action of the learner is instrumental in bringing about a change in the environment that makes the action more or less likely to occur again in the future. Reinforcement is basic in this form of learning. Cognitive learning refers to changes in the way information is processed as a result of experience a person has had. Insight learning and sign learning are examples of cognitive learning. Social learning emphasizes the role of observation, imitation and modelling in learning.

One can learn effectively by defining a definite goal. giving feedback, spacing your study time, learning unit size that is easily grasped, understanding the material rather than rote learning and by avoiding anxiety.

4.7 KEY WORDS

Assimilation : The modification of one's environment so that it fits into already developed ways of thinking and behaving

Behaviour : Anything a person does that can be observed in some way

Behaviour therapy : Methods developed to alleviate psychological disorders

Conditioning : Process by which conditioned responses are learned

Cognitive learning : A change in the way information is processed as a result of experience that a person has had

Cognitive map : The learned mental representation of the environment

Extinction : The procedure of presenting the conditioned stimulus to an organism previously conditioned

Imitation : Copying the behaviour of another

Latent learning : Learning that becomes evident only when the occasion for using it arises

Modelling : Learning to copy behaviour, a technique used in behaviour therapy

Performance : Observed behaviour

Transfer of training : More rapid learning in a new situation because of previous learning in another situation.

4.8 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress 1

1) Refer to Section 4.1

2) Refer to Section 4.1

Check Your Progress 2

Refer to Sub-section 4.2.1 and 4.2.2

Check Your Progress 3

Read from Sub-section 4.2.3

Check Your Progress 4

Read from Sub-section 4.2.4

Check Your Progress 5

Refer to Section 4.3

Check Your Progress 6

Refer to Section 4.4