Learning Psychology Copy Notes

ICT 4th Semester

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Unit-1

Learning Psychology

The word psychology is made up of two Greek words 'psyche' and 'ology'. "Psychology" means 'breathe' or inner spirit (life force) or 'soul'; "ology" means the "study of". It is then the study of inner spirit.

The current definition of Psychology is the study of the mind and behaviour. So, now psychology is well defined as the study of mind and behaviour. It may be the study of human behaviour in relation to the mind. In other words, how behaviours are affected by our minds is the concern of psychology.

It is an academic discipline and a social science. Psychologists explore behaviour and mental processes, including perception, cognition, attention, emotion (affect), intelligence, motivation, brain functioning, and personality. This extends to interaction between people, such as interpersonal relationships.

1.1. Meaning, definition and characteristics of learning

Learning is one of the fundamental concepts in Psychology. It is explained as the permanent change in behaviour of an individual. The change in behaviour includes acquisition of new knowledge, skill and attitude. It changes the aspect of knowing, doing and feeling of an individual. By this process, the individuals modify and change their old mode of knowing, doing

and feeling and acquire new modes of these aspects of behaviour.

Definitions of learning

Different scholars have defined learning in the following ways:

1. According to Gardner Murphy, "Learning is the modification of behaviour to meet environmental requirements."

2. According to Kingsley and Garry, "Learning is the process by which behaviour is organized or changed through practice or training.

3. According to Gates, "Learning is the modification of behaviour through experience and training."

4. Skinner argues that, "Learning is an acquisition and retention.

~~Characteristics~~

Characteristics of learning:

Following are the characteristics of learning:

i) Learning is both a process and a product.
ii) It brings permanent change in the behaviour of an individual.
iii) It is doing and practice.
iv) It is continuous process till death.
v) It is goal directed i.e to fulfill some basic needs.
vi) Its outcome may or may not be positive.
vii) It is the product of activity.
viii) It helps in proper growth and development.
ix) It is universal irrespective of color, creed, language etc

1.2. Philosophical foundations of Learning Theories

The roots of learning theory are in the area of philosophy "epistemology", a field concerned with how we acquire knowledge. Two philosophical traditions emerged from the writings of the ancient Greek philosophers, Plato and Aristotle. Plato introduced the cognitive or nativist or rationalist tradition but Aristotle started behavioural or empiricist tradition in learning theory. Then, at the philosophical level, empiricism and rationalism are two schools of thought that are characterized by different views.

1.2.1. Empiricism and behaviourism

Empiricism says that all knowledge comes from sense experience. Beginning with Aristotle, empiricist philosophers have proposed theories to explain how experience gets translated into knowledge. The basic process proposed was association. An association is a connection. If two ideas are associated, when you think of one you will automatically think of the other. In fact, Empiricism is the belief in sense perception, induction, and that there are no innate ideas. Theoritical tradition based on the empiricism is known as behaviourism.

Page No. 5
Date

Science uses an empirical approach. Empiricism (founded by John Locke) states that the only source of knowledge comes through our senses - e.g. sight, hearing etc. This was in contrast to the existing view that knowledge could be gained solely through the powers of reason and logical argument (known as rationalism).

Some beliefs of the empiricism:

- We have no source of knowledge other than sense experience.
- Mind is a blank sheet of papers / a blank slate.
- Our knowledge is posterior (after birth), dependent upon sense experience.
- According to the Empiricist, the innate knowledge is unobservable and ineffective, that is, it does not do anything. The knowledge may sit there, never being used.
- Induction (induction method).
- Aristotle, John Locke, George Berkeley, and David Hume are empiricists.
- Much of science is founded on empiricist principles.

1.2.2 Rationalism and Cognitivism

Another way to achieve knowledge is through "reason" (without experience). This is the philosophy of rationalism. It rejects other possible sources of knowledge through sensory experience. In fact, Rationalism is the belief in innate ideas, reason, and deduction.

The rationalists believe that reality has an innately logical structure. Because of this, the rationalists argue that certain truths exist and that the intellect can directly grasp these truths. That is to say, rationalists believe that certain rational principles exist in logic, mathematics, ethics and metaphysics that are so fundamentally true. The rationalists had such a high confidence in reason that empirical proof and physical evidence are unnecessary to determine certain truths. In other words, "our concepts and knowledge are gained independently without sense experience."

Theoritical tradition (in psychology) based on the rationalism is known as Cognitivism.

- The knowledge we gain by intuition and deduction or have innately is superior to any knowledge gained by sense experience.

- Superiority of a priori knowledge or innate ideas.
- Deduction
- Contributors : Rene Descartes, Chomsky, Robert Mills, Gange (1916-2002), Jerome Bruner (1915-2016).

characteristics Rationalism

* perception
* Attention
* learing
* memory
* concept formation
* Judgement & decision
* problem solving.
* language processing.

characteristics empiricism

* It is based on classical conditioning.
* It associated initial stimali with events.
* It has operable conditioning.
* It studies the different behaviors that are subject to the laws of behavior.
* It denies the existence of the mind.
* There is a constrant association between stimuli and response -

characteristics of constructivism

* provide multiple representation of reality.
* Represent the natural complexity of the real world.
* Focus on knowledge construction not reproduction.

* Faster reflective practise.
* provide for learner control.
* The use of multiple representations of mathematical concepts.

Unit -2
Behaviouristic Theories

Page No. 9
Date

3.1. Introduction to Classical Conditioning (Pavlovian Conditioning)

This learning theory was developed by ~~Two~~ Russian psychologist (scientist) Ivan Pavlov based on the experiments upon the dogs.
Classical conditioning is a learning process in which learning occurs through association between an environmental stimulus and a naturally occuring stimulus. In other words, classical conditioning basically involves forming an association between two stimuli. The result will be a learned response (learning).

Classical conditioning theory is defined as : Conditioning in which the conditioned stimulus (such as the sound of the bell) is paired with and preceeds the unconditioned stimulus (such as the sight of food) until the conditioned stimulus alone is sufficient to elicit the response (such as salivation in a dog).

> Classical conditioning is a reflexive or automatic type of learning in which a stimulus evokes a response that was originally evoked by another stimulus.

3.1.1 Basic process of conditioning and experiment on dog

Experiment on Dog

Classical conditioning is the type of learning popularized by Pavlov's experiments with dogs.

In this experiment, immediately after ringing a bell, food was served to dog and allowed to eat it. This continued for some days. After that, test was conducted in which all the things were same but after ringing of bell no meat powder (food) was served to dog. But surprisingly, dog still salivated. It salivated to the sound of the bell expecting the presentation of meat powder. Now dog is conditioned to sound of bell connecting it to serving of meat powder. Now, salivating to sound of bell became the conditioned response of the dog.

Pavlov found that for association to be made, the two stimuli had to be presented close together in a time. He called this law of temporal contiguity. If the time between the conditioned stimulus (bell) and unconditioned stimulus (food) is too great, then learning will not occur.

Three stages of Conditioning:

1. Before Conditioning

Before Conditioning, ringing the bell caused no response from the dog. placing the food in front of dog initiated salivation.

Before conditioning, the unconditioned stimulus (UCS) of meat elicits (produces) an unconditional response (UCR) of salivation from the dog. The for eg. a perfume (UCS) could create a response of happiness or desire (UCR).

This stage also involves the neutral stimulus (NS) which has no effect on a person. The NS could be a person, object, place etc. The NS in classical conditioning does not produce a response until it is paired with the unconditional stimulus.

2. During Conditioning:

During Conditioning, the bell was rung a few seconds before the dog was presented with the food. During conditioning, the conditioned stimulus (CS), the food is presented immediately before the UCS.

3. After Conditioning

After Conditioning, the ringing of the bell alone produced salivation.

After several pairings, the tone (CS) alone

elicits (produces) the conditional response (CR). The dog learns to produce CR (salivation) after the presentation of CS (ringing of bell).

Eg: Definition

Stimuli that animals react to without learning are called unconditioned stimuli (UCS). These are natural. Eg: These include food, pain etc

Stimuli that animals react to only after learning about them by associating them with UCS are called conditioned stimuli (CS).

The reaction associated with UCS ~~are called~~ is called unconditioned response and the reaction associated with CS is called conditioned response.

~~3.1.2 Phenomena and Characteristics of Classical conditioning : extinction, spontaneous recovery, inhibition and generation~~

Classical conditioning paradigm

	Stimulus	Response
Unconditioned	Meat powder →	Salivation
Conditioned	Ringing of bell →	Salivation

3.1.2 Phenomena and characteristics of classical conditioning: extinction, spontaneous recovery, inhibition and generalization

1. Extinction

When reinforcement is discontinued and the conditioned stimulus is presented alone without an unconditioned stimulus, the conditioned response gradually disappears (stop). This process is called extinction.

For example: if ringing a bell is ~~presen~~ continued without presentation of food for a long time, the dog will gradually leave to salivate for the presentation of the food. The response eventually became extinct.

2. Spontaneous recovery:

Spontaneous recovery is the reoccurence of extinguished conditioned response. The dog can show salivation for ringing of a bell after some time of extinction without further trial. It is the automatic reoccurence of the learnt behaviour.

3. Inhibition:

Inhibition is opposite of facilitation and refers to a mental state in which there is interference in the conditioned response (CR). It is the cause of extinction. It is claimed that

inhibition is not a temporary process. There is a number of inhibitions (causes of extinction / interference for CR)

a) Conditioned inhibition → It is the process of inhibition in which CR is permanent.

b) External inhibition → It is the process of interference -e caused by external stimulus.

c) Latent inhibition → The basic idea of latent inhibition is that it is often easier to learn something new than to unlearn something familiar. If something is already known, it interferes to learn differently because the earlier learning interferes later learning.

d) Disinhibition → A novel situation or stimulus can make an extinguished CS effective again. This is known as inhibition.

3.4. Stimulus generalization

A conditioned organism can generalize its learning to other similar situations. For example, a dog conditioned to salivate for ringing of a bell, can salivate to other sounds similar to the bell. They can realize the similarity of sound in both occasions and can elicit (produce) conditioned response in the latent occasion.

3.1.3. Educational implications of classical Conditioning

1. Animal training: Classical conditioning is very important to the animal hainers. The dog trainers and trainers in circus use this method to train specific behaviours to the animals. It is done by pairing UCS with CS. in systematic manner.

2. Teaching good habits: This theory can be used for teaching good habits. Discipline can be taught by using this theory. Children can be taught to wash their hands before and after food.

3. Controlling bad habits: This theory can be used to control bad habit by pairing it with an unpleasant stimulus. In bed-wetting case, when the child wets the bed, an electrical circuit is completed causing the bell to ring (UCS). This in turn awakes the child (UCR).

4. Emotional ~~train~~ training: Most of the emotional response can be learned through classical conditioning. A negative or positive response comes through the stimulus being paired with. For example, providing the necessary school material for primary school pupils will develop good feelings about school and learning in them, while punishment

will discourage them from attending the school.

5. The learners develop hatred towards Maths due to teacher's behaviour. But, a good method and loving behaviour of the teacher can bring desirable impacts upon the Learners. The learners may even like boring subjects because of teacher's role.

6. Teach students to generalize and discriminate appropriately.

3.2 Operant Conditioning (Skinnerian Conditioning)

3.2.1. Basic process of operant conditioning and experiment on rat

B.F. Skinner's entire system is based on operant Conditioning. The organism is continuously functioning in the process of "operating" in the environment, which means it is performing many different behaviours regularly. According to this theory, if a certain behaviour of an organism is reinforced by a conditioned stimulus called reinforcer, the organism learns that particular behaviour.

Experiment on rat

Skinner proposed this theory by the help of an experiment on a rat. He put the rat in a cage called "Skinner box". It was special cage, which had a bar or lever on one wall of it. When pressed, it causes to release a food pellet into a plate in the cage. The rat is moving around the cage and doing whatever such as wandering here & there, scratching things around it etc. When the rat accidentally presses the bar, a food pellet falls into the plate. If this process is repeated several times, the rat learns to get food by pressing the lever.

According to Skinner's theory, organism naturally tend to do many activities. They learn those behaviours which are reinforced. The

mechanism of learning in Skinner's experiment can be presented below:

Operant Conditioning Paradigm:

Unconditioned Stimulus	Unconditioned Response	Conditioned Stimulus	Conditioned Response
Lever →	Pressing →	Food →	Eating

3.2.2 Positive and negative reinforcement

According to this theory, learning of a behaviour depends on the reinforcement of it by an unconditioned stimulus. Organisms learn a particular behaviour based on reinforcement for it.

1) Positive reinforcement

In operant conditioning, positive reinforcement involves the addition of reinforcing stimulus following a behaviour that makes it more likely that the behaviour will occur again in the future. The reinforcement caused by such reinforcing stimuli is positive reinforcement.

Skinner showed how positive reinforcement work by placing a hungry rat in the Skinner box. The rat moved around the box, it would accidently knock the lever and a food pellet would drop into a container next to the lever. The rat quickly learned to go straight to the lever and press it for getting food.

Positive reinforcement strengthens a behaviour by providing a consequence an individual finds rewarding. for example, if your teacher gives you 5$ each time you complete your homework (i.e. reward) you will be more likely to repeat this behaviour in the future, thus strengthening the behaviour of completing your homework.

Negative Reinforcement:

In negative reinforcement, a response or behaviour is strengthened by stopping, removing or avoiding a negative outcome or aversive stimulus. Negative reinforcement occurs when something already present is removed (taken away) as a result of behaviour and the behaviour that led to the removal will increase in the future because it created a favourable outcome.

Aversive stimuli tend to involve some type of discomfort, either physical or psychological. Behaviours are negatively reinforced when they allow you to escape from aversive stimuli that are already present or allow you to completely avoid the aversive stimuli before they happen.

For example, providing electric shock after touching the lever instead of food prevents the rat touching the lever.

For example, if you don't complete your homework, you have to give 5$ fine to your teacher. Then you will complete your homework to avoid paying 5$, thus strengthening the behaviour of completing your homework.

Negative reinforcement strengthens behaviour because it stops or removes an unpleasant experience.

3. Schedules of reinforcement

1. Continuous/regular reinforcement

Continuous reinforcement involves delivery a reinforcement every time a response occurs. Learning tends to occur relatively quickly, yet the response rate is quite low. Extinction also occurs very quickly once reinforcement is halted.

2. Intermittent reinforcement:

In such type of schedule, not every right response is reinforced. Instead, it is reinforced according to a particular predetermined plan with a specific gap. The schedules of intermittent reinforcement are as follows:

a) fixed-Ratio (FR) schedule

In this method, responses are reinforced after the definite number of each correct response, for example, every fifth response is reinforced.

b) Fixed interval (FI) Schedule:

In this method, responses are reinforced according to a fixed time interval. For example, responses are reinforced after every 30 seconds.

c) Variable-Ratio (VR) schedules:

It involve reinforcing behaviour after a varied numbers of responses. They leads to both

high response rate and slow extinction rates.

d) Variable-interval (VI) schedule:

This schedule involves delivering reinforcement after a variable amount of time has elapsed. This also tends to lead to a fast response rate and slow extinction rate.

3.2.3. Principle of Shaping:
(Behaviour shaping)

Behaviour shaping is a technique of changing the basic behaviours of an organism into a complex and unusual behaviour by using the specific schedule of reinforcement. Skinner trained a mouse to carry marbles from a place and to store them in other specific place by using a schedule of reinforcement. He also trained to pigeons to play table tennis ball by their peaks and claws as football. For this purpose, the chain of such behaviour should be identified and analyzed in different units. These units should be reinforced in a planned manner to get the desired behaviour. The simple and unusual response pattern of an organism can be changed into a complex and unusual behaviour in this manner.

Steps involved in the process of Shaping:

i) For start, reinforce any behaviour that is even remotely close to the desired, target behaviour.

ii) Next step, reinforce the behaviour that is closer to the target behaviour. Also, you shouldn't reinforce the previous behaviour.

iii) Keep reinforcing the response / behaviours that resembles the target behaviour even more closely. Continue reinforcing the successive approximations until the target behaviour is achieved.

iv) Once the target behaviour is achieved, only reinforce the final response.

3.2.4 Educational implications of Operant Conditioning:

1. Successive approximation:

Behaviour can be shaped through successive approximation in terms of small steps. Successive approximation is a process which means that a complicated behaviour patterns are learned gradually through successive steps which are rewarding for the learner. Every successful step of the child must

be rewarded by the teacher.

2. Eliminating negative behaviour through extinction
When a learned response is repeated without reinforcement, the strength of tendency to perform that response undergoes a progressive decrease. Extinction procedures can be successfully used by the class-room teacher in eliminating negative behaviour of students.

3. Reinforcement: Operant conditioning has valuable implications for reinforcement techniques in the classroom. The schools can use the principles of operant conditioning to eliminate the element of fear from school atmosphere by using positive reinforcement.

4. Behaviour modification/shaping:
Shaping may be used as a successful techniques for making individual learn difficult and complex behaviour. Operant conditioning technique also implies the use of behaviour modification programmes to shape desirable behaviour and to eliminate undesirable behaviour.

5. Basis for programmed instruction:
Programmed instruction is a kind of learning experience in which programme takes the place of tutor for the students and

leads him through a set of specified behaviours.

3.3. Connectionism (Thorndike's Theory of Learning)

3.3.1. Basic process of Connectionism (process of trial and error) and experiment on cat

The process of Connectionism was presented by an American psychologist, Edward Lee Thorndike. His learning theory is also known as 'Trial & Error Learning'.

Thorndike presented an explanation of learning process, which is popularly known as "trial and error" learning theory. A trial is defined by the length of time or number of errors involved in single attempt reaching a goal and error counts its ~~unnecessary~~ unsuccessful attempts. According to this theory, the learner learns by trial and error. In each trial, the numbers of errors are decreased and the number of correct efforts are increased. Ultimately, it becomes successful in minimum time and with a minimum effort. After learning, the learner learns to perform this specific task in the minimum time or by minimum effort.

Since, in the process of learning by trial and error, the learner discovers a connection between stimulus or S (fish) and response (R), (opening the door by touching unlatching instrument); this

theory is also known as connectionism. This connection can be presented by "S-R Connection" or "S-R bond". Since, the connection between S and R is also called a bond, this theory is known as "bond theory".

Experiment on cat:

Thorndikes famous experiment of "trial and error learning" was conducted on a cat. He put a hungry cat inside a specially built cage. The cage had some sort of unlatching or opening device such as a loop of wire, a handle, a knob etc. When the animal touches it, it automatically opens. Thorndike placed a fish outside of the cage as a stimulant to the cat. Since, the cat was very much hungry, it tried to escape from the cage to get the fish. It did many unsuccessful efforts to escape and accidentally, it touched the unlatching device and escaped from the cage. Thorndike put it again inside the cage. The cat became successful to escape from the cage in less time than the previous trial. After the several repetitions of this trial, the cat learnt to escape from the cage by opening the door using unlatching device in minimum response time.

3.3.2 Primary laws of learning: law of readiness, law of exercise and law of effect.

1. Law of readiness:

It is the first law of learning proposed by Thorndike. According to this law, the learner should be ready to learn for effective learning. Only if the learners are ready to learn, they will learn the behaviours taught. Here, readiness does not mean physical maturity. By readiness, Thorndike means mental alertness or being responsive to learn.

There are two subordinate laws of "law of readiness":

- Law of satisfaction - According to Thorndike, if a learner is ready to learn, providing him or her, an opportunity to learn, provides satisfaction (law of satisfaction).

- Law of annoyance - If he or she is not ready to learn, forcing him or her to learn causes annoyance (law of annoyance).

2. Law of Exercise:

It is another important law of learning proposed by Thorndike. According to this law, exercise or practice strengthens learning. Exercise or practice means repeating the same response in the presence of the same stimulus. It decreases

the rate of unsuccessful trials and increases the rate of successful trials. for example, if we want to learn servicing in table tennis, we should repeat the job of servicing in the presence of net and table repeatedly.

Learning is the process of stamping in correct responses and stamping out incorrect response. It takes place only in the condition of practice.

There are two subordinate laws of the law:

a) Law of Use - It states that practice or exercise strengthens learning. If we use some behaviour repeatedly, it is learnt and memorized. ~~On the other hand, if we do not use any sort of learning for a long time, we may forget it.~~

b) Law of disuse - If we do not use any sort of learning for a long time, we may forget it.

3. Law of effect :

The law of effect states that response that are closely followed by satisfying effects become associated with that situation, and are more likely to recur when the situation is subsequently encountered.

OR

The law says that learning takes place properly if the result is satisfactory and pleasurable. On the other hand, if the learner feels

failure or dissatisfaction, the progress of learning is troubled. For example, when a child solves question correctly, he feels encouraged to do more. But if he fails repeatedly, he is unwilling (uninterested) to make following attempts.

There are two key aspects of the law effect:-

a) Behaviours immediately followed by favourable consequences are more likely to occur again. For example, if the boss praises when the worker comes early it is more likely that the behaviour would be repeated.

b) Behaviours followed by unfavourable consequences are less likely to occur again. If you show up late for work and miss an important meeting, you will probably be less likely to show up late again in the future. Because you view the missed meeting as a negative outcome, the behaviour is less likely to be repeated.

3.3.3. Educational Implications

1) This theory suggests teachers that a small child learns some skills through trial and error method only such as sitting, standing, walking, running etc. In the same way, the teacher need to understand that the child learns from mistakes. Making mistakes means the child is learning.

2) The law of readiness draws the attention of ~~teaching~~ teacher to the motivation of the child before teaching a lesson.

3) This theory has emphasized on the importance of practice in learning. It is also emphasized on the importance of reinforced practice instead of blind practice in the process of learning.

4) A clear objective and a good reason for learning sometimes help to motivate students to learn.

5) Habits are formed as a result of repetition (repeated practice or exercise). With the help of this theory, the wrong habits of the children can be modified and the good habits strengthened.

	Classical Conditioning	Operant Conditioning
1.	It is also known as Pavlovian Conditioning.	It is also known as Skinnerian Conditioning.
2.	No reward or punishment is involved.	Often involves rewards and punishments.
3.	It is stimulus oriented.	It is response oriented.
4.	~~Theory~~ Automatic response.	Purposive response.
5.	S-R type, response follows the stimulus.	R-S type, stimulus follows the response.
6.	Controlled by experimenter.	Controlled by organism.
7.	Learner is passive.	Learner is active.
8.	Based on contiguity theory.	Based on effect theory.
9.	Learning conditions: Contiguity and practice.	Learning conditions: Contiguity, practice and reinforcement.
10.	Extinction is produced by withholding the UCS.	Extinction is produced by withholding reinforcement.

Unit-4

Cognitive Theories

4-1. Kohler's Insightful Learning

4.1.1 Meaning and characteristics

Insightful learning theory is a theory related to cognitive learning theory. Wolfgang Kohler propagated this theory.

Kohler said that insightful learning is a type of learning or problem solving that happens all of a sudden through understanding the relationship of various parts of a problem ~~which means that learning~~ rather than through trial and error. According to this, if organisms cannot perceive the situations in their surroundings, they cannot solve the problem. When they clearly perceive the situation, they can relate different elements in the situation and can solve the problem. Learning tends towards clear percept from a poor percept.

Insightful learning is also known as Gestalt learning which means that learning is concerned with the whole individual and arises from the interaction of an individual with his situation or environment.

Characteristics of Insightful learning:

1. The organism must be able to perceive the relationships among all relevant parts of the problem before insight can occur.

2. The organism reacts to the whole situation, not to

its component parts.

3. The organism perceives the relationships between means and the goal, and restructures the perceptual field.

4. Insight follows a period of trial and error behaviour.

5. The insightful solution comes all on a sudden.

6. Once the insightful solution is reached, the organism show high degree of retention and transfer to similar problems.

7. Insight is closely related to organism's capacity to learn. The capacity for insightful learning depends on age, experience, and individual differences.

8. Understanding plays important role in insightful learning.

9. Insight is related with higher order animals and not with inferior animals.

10. Age influences insight learning. Adults are better learner than children.

4.1.2 Experiment on Chimpanzee:

Kohler performed his experiment on chimpanzees in between 1913 to 1917 and published his findings in his book "The Mentality of Apes" in 1917. He mainly carried out two types of experiment:

a) Box experiment:

In the box experiment, he put a chimpanzee in a cage. There was a box inside the cage and a lure in the form of banana, which was hanging on the ceiling of the room. The banana was out of the reach of Chimpanzee and it could reach the banana only by climbing on the box and jumping from it. It was a difficult task for chimpanzee. However, the most intelligent chimpanzee named 'Sultan' could identify the relationship between the height of banana and the box. He dragged the box under the banana, climbed on it and jumped to get the banana. Other Chimpanzees were also able to perform this activity by observing Sultans behaviour and imitating him.

In another instance, the number of boxes was increased. There were two boxes in the cage and the chimpanzee could reach the banana by placing one box on the other and making a suitable two-box structure. The chimpanzees were successful to reach the banana, when the clue

was given to them.

b) Stick experiment:

In another experiment, the banana or lure was put outside of the cage. There was a stick inside the cage and the chimpanzee could reach to the banana only by using the stick. Chimpanzees were successful to drag the banana near to them by using the stick.

There was also a difficult in which two and more sticks were to be used to drag the banana. These sticks had a whole in their one end, in which the tip of other stick could be entered to join them. Only Sultan was able to join the sticks after the clue was provided.

3.3 Educational implications of Kohler's learning theory:

1. Problem Solving Approach: This theory emphasizes that as the learner is able to solve problems by his insight, meaningful learning, learning by understanding reasoning etc must be encouraged in the school.

2. From Whole to part:- The teacher should present the subject matter as a whole to facilitate insightful learning.

3. Integrated Approach:- A particular subject should not be treated as the mere collection of isolated facts. It should be dowed integrated into a whole.

4. Importance of motivation: The teacher should arouse the child's curiosity, interest and motivation. He should gain full attention of the whole class before teaching.

5. Goal Orientation:- As learning is a purposeful and goal oriented task, the learner ~~has to be well aware~~ should be fully familiar with the goals and purposes of every task.

6. Emphasis on Understanding: It has made learning an intelligent task requiring mental abilities than an stimulus-response association. So the learners must be given opportunities for using his mental abilities.

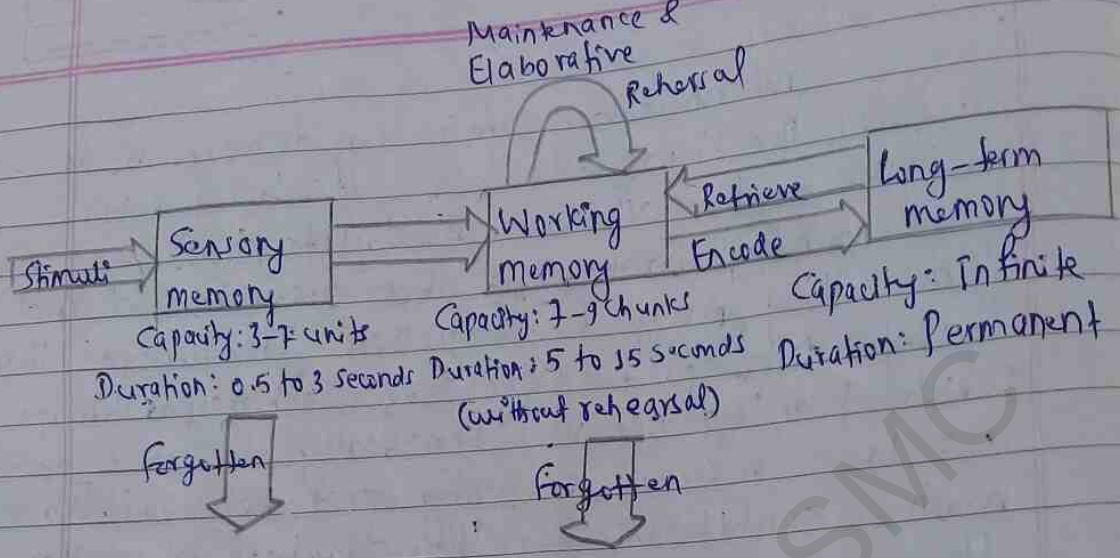
4.2 Information Processing Theory:

Information processing theory/model involves the study of how facts, concepts, principles and skills are attended to, how they enter the memory banks, how they are retrieved and how they may be forgotten. In general, this theory discusses the cognitive mechanisms through which learning occurs. Specifically, it focuses on aspects of memory encoding and retrieval. The main contributors for the development of this theory are:

- George A. Miller (1920-2012)
- Atkinson and Shiffin (1968)
- Craik and Lockhart (1972)
- Bransford (1979)
- Rumelhart and McClelland (1986)

4.2.1. Basic elements: Sensory register, short-term memory/store, long-term memory/store

Information processing is a cognitive process (mental process) which explains how the mind functions in the learning process. In this theory, emphasis is on how the information is processed rather than how learning happens. The theory has three basic components which are:



4) Sensory Register:

According to this model, information first enters the human information system (nervous system and brain) through senses. Due to the great amount of information that constantly bombards the human senses, sensory information is stored in sensory memory just long enough to be transferred to short-term memory. (It means information remains here for very short time until it is transferred to ~~short term memory~~ or deleted). The information represented in SM is "raw data" which provides a snapshot of person's overall sensory experience. So, the sensory register is our ultra short-term memory that takes in sensory information through your five senses and holds it for no more than a few seconds. Sensory information is stored in sensory memory just long enough to

be transferred to short-term memory.

Sensory memory is also categorized as the following:

1. Iconomic memory (visual memory):
The mental representation of visual stimuli are referred to as icons (fleeting images).

2 Echoic memory (Auditory memory)
Echoic memory represents SM for the auditory sense of hearing. Auditory information travels as sound waves which are sensed by hair ~~cells~~ cells in the ears. The echoic sensory store holds information ~~travels~~ for 2-3 seconds to allow for proper processing.

3. Haptic memory:
Haptic memory represents SM for the tactile sense of touch. Sensory receptors all over the body detect sensation such as pressure, itching and pain. Information from receptors travel through afferent neurons in the spinal cord to the post central gyrus of the parietal lobe in the brain.

B) Short-term memory:
Short-term memory (STM) is the second stage of the multi-store memory model proposed by the Atkinson-Shiffrin. It is the smallest part of memory, because it cannot

hold much information at any one time. Short term memory is very short time that you keep something in mind before either dismissing it or transferring it to long-term memory. A person can repeat separate items or chunks immediately without error. Most people can repeat 6 or 7 digits or letters perfectly almost every time, but few can consistently repeat more than 7. The duration of STM seems to be between 15 and 30 seconds. Short-term memory has three key aspects:

1. Limited capacity - Only about 7 items can be stored at a time.

2. Limited duration - Storage is very fragile and information can be lost with distraction or passage of time.

3. Encoding - Primary acoustic, even translating visual information into sounds.

c) Long-term memory:

Long-term memory (LTM) is the stage of the Atkinson-Shiffrin memory model where information (knowledge and skill) lasts longer period of time. It is described in contrast to short-term and working memory, where information last for only about 18 to 30 seconds. Theoritically, the capacity of the long-term memory could be unlimited. Duration might be a few minutes or a lifetime.

Long-term memory houses (keeps) all previous perceptions, knowledge and information learned by an individual, but it is not a static file system that is used only for information retrieval. In order to incorporate new information, long term memory must be in communication with short-term memory and must be dynamic.

Long-term memory is commonly labelled as explicit memory (declarative) and implicit memory (procedural memory).

Explicit memory :- Explicit memory (declarative memory) refers to all memories that are consciously available. This memory has three major subdivisions:

i) Episodic memory - Episodic memory refers to memory for specific events in time, as well as supporting their formation and retrieval. Some

example of episodic memory would be remembering someones name and what happened at your last interaction with each other.

ii) Semantic memory :- Semantic memory refers to knowledge about factual information, such as the meaning of words. This includes knowledge about meaning of words, as well as general knowledge. For example; London is the capital of England. It involves conscious thoughts and is declarative.

iii) Autobiographical memory :- Autobiographical memory refers to knowledge about events and personal experiences from an individuals own life. Though similar to episodic memory, it differs in that it contains only those experiences which directly pertain to the individual, from across their lifespan.

Implicit memory :

Implicit memory ~~refers to~~ (procedural memory) refers to the use of objects or movements of the body, such as how exactly to use a pencil, drive a car, or ride a bicycle. Procedural memory is a part of the long-term memory which is responsible for ~~knowledge~~ knowing how to do things; i.e memory of motor skills. It does not involve conscious (i.e it is unconscious-

automatic) thought and is not declarative.

4.2.2 Educational implications of information processing theory:

1. This theory suggests teacher for organizing properly the process of teaching and learning to make sure that processing of information goes smoothly.
2. Teachers should help student develop learning skills that include visual imagery and other memory aiding techniques.
3. The theory also shows that curriculum should be organized in a sequence so that the content at one level is built on the basis of previous one.
4. The theory also suggests that procedural knowledge needs more emphasis and time than declarative knowledge.
5. Teach kids to organize information to remember it through images and stories.
6. Make teaching-learning meaningful! (Context)
7. Get information attended - the teacher should

try to encourage learners to pay attention.

8. Get information rehearsed.

9. Get learned material stored in long-term memory.

Unit-5

Constructivism

Constructivism is a theory of knowledge or an epistemology which argues that humans generate knowledge and meaning from their experiences.

Constructivism is a process of learning in which learners become active participants, drawing upon their personal experiences and their interaction with others to construct new understandings and knowledge.

According to this view, learner is an information/knowledge constructor. People actively construct their own subjective representations (understandings, pictures or images) of objective reality.

Two views on Constructivism:

5.1. Individual Constructivism (Piagetian Constructivism)

It is also known as personal constructivism or cognitive constructivism. This version of Constructivism was proposed by Jean Piaget. According to this theory, people give meaning to their experiences through four stages of cognitive development in which assimilation and accomodation play a crucial role in learning.

Piaget's theory includes two major parts, "ages" and stages". The theory predicts what children can and cannot understand at different ages. It describes how children develop cognitive abilities according to ages (developmental psychology). Piaget states that learning does not occur passively.

It occurs by active construction of meaning according to the developmental stages of cognitive abilities.

5.1.1. Basic Principles and knowledge construction: scheme, adaptation - assimilation and accomodation, equilibrium.

Piaget's theory of cognitive development explains how child constructs a mental model of the world. He regarded cognitive development as a process which occurs due to biological maturation and interaction with the environment. Jean Piaget has presented the following ~~four~~ cognitive process of epistemology or knowledge development:

1. Schema :

Literally, schema means a schematic or prelminary plan. In the system of Jean Piaget, it is an internal representation of the world, an organization of concepts and actions that can be revised by new information related to the world. It is the first step of knowledge development. It is that mental image made by the experiences of an individual, which is used to interpret his or her experiences. For example, if a child experiences a "dog", he or she will make the mental image of it, which is used to identify the dog in later occasions. If a child has the

experience of seeing small dogs, a child might believe that all dogs are small, furry and have four legs.

The schema prepared by individuals is changeable. People change their schema through the process of assimilation and accomodation and find ~~equilibrium~~ equilibration between a new and an old schema.

Adaptation

The schema is ~~of~~ adapted or modified by the following three processes called adaptation.

i) Assimilation:- It is the process of taking new ~~info~~ information into our previously existing schema. It is the process of fitting new experience in the store of old knowledge. It can be defined as the application of a general schema to a particular instance. In this process, the original schema does not change. People modify the old schema through new experiences.) for example, a child who had developed his or her schema related to a "dog" by experiencing a puppy sees a big dog, he or she will identify that dog based on the old schema. However, they will modify their old schema of "dog" and will understand the dog may be bigger and smaller too.

ii) Accomodation :- Accomodation is the process of settlement of differences. In the system of Jean Piaget, it may be defined as the modification of internal representations in order to accomodate a changing knowledge of reality. It is the processing of preparing a new schema based on the old schema. for example, the child being able to differentiate the geometrical figures in the form of triangle, quadrilateral, pentagon, hexagon, circle etc is the formation of a new schema based on the old schema of closed geometrical figures.

iii) Equilibration :- It is the final stage of cognitive process of individuals. It is the process of finding a new balance. By the process of equilibration, people change their cognitive process from one level to other. When people experience new knowledge, which does not fit their old schema, it develops the condition of disequilibrium in their cognition store. They try to assimilate and accomodate this new knowledge in the depository of their old schemas. As the result, new schema is produced and people reach the new level of equilibration. This is the process of making meaning of new knowledge and preparing a new schema, hence ending the situation of disequilibrium in cognitive process and reaching a

new balance.

5.1.2. Classroom implications:

1. Discovery learning- Piaget believed that every child acquires knowledge by directly acting on the environment. So the settings of the home or school environment should be in such a way that it provided wide opportunities for them to discover things for themselves by natural contact with the surroundings.
2. Children can learn only when they are ready to learn.
3. Piaget's theory has contributed to make teaching and learning child centred.
4. It has indicated the role of teacher as a facilitator and guide in teaching-learning process.
5. Piaget's theory has contributed in the selection of instructional materials according to age level of the child.

5.2 Social Constructivism (Vygotskian Constructivism)

Social Constructivism theory, also known as "Socio-Cultural cognitive theory", was propagated by a Russian Psychologist, Lew Semyonovich Vygotsky. He born on November 17, 1896 was a Soviet psychologist and the founder of cultural-historical psychology.

According to Vygotsky, learning of a child is largely affected by their interaction with others, especially with their culture. Which social interaction and culture has a dramatic impact on cognitive development on a child.

5.2.1 Basic principle and knowledge construction : inter-psychological process and intra-psychological process ~~and~~; MKO, ZPD and scaffolding

1. Inter-psychological and Intra-psychological levels

The major theme of Vygotsky's theoritical framework is that social interaction plays a fundamental role in the development of cognition. Vygotsky believed that everything is learn on two levels. First through interaction with others and then integrated into the individual's mental structure.

Every function in the child's cultural development appears twice: first, on the social level

, and later, on the individual level; first, between people (inter-psychological) and then inside the child (intra-psychological).

This applies equally to voluntary attention, to logical memory, and to the formation of concepts. All the higher functions originate as actual relationships between individuals. In other words, knowledge is first constructed in a social context (inter-psychological) and then appropriated by individuals (intra-psychological).

2 MKO

The more knowledgeable other (MKO) refers to someone who has a better understanding or a higher ability level than the learners, with respect to a particular task, process or concept. It may be a teacher, an older adult, a child's peers or an elder child. In fact, the MKO need not to be a person at all. It may be an electronic tutor programmed for instruction.

The dialogue between the learner and MKO takes place in two levels, first at intra-personal level, then at Inter personel level. At first, it takes ~~place~~ between the MKO and the learner and then it takes place within the learner. The role of MKO is "scaffolding", in which he or she plays the role of a facilitator or a guide.

3. ZPD

"Zone of proximal development" (ZPD) is Vygotsky's term for the range of tasks that are ~~no longer~~ too difficult for the child to master alone but that can be learned with guidance and assistance of adults or more-skilled children. The lower limit of ZPD is the level of skill reached by the child working independently. The upper limit is the level of additional responsibility the child can accept with the assistance of an able instructor. The ZPD describes the child's cognitive skills that are in the process of maturing and can be achieved only with the assistance of a more-skilled person.

4. Scaffolding:

Scaffolding is an assisted learning process that supports the ZPD, or getting to the next level of understanding with the assistance of teachers, peers or other adults. In other words, Scaffolding is a social and instructional support for students learning new concepts. It can be compared with the structures erected along side newly constructed buildings. The scaffolding supports the construction and is taken away after completion (or when the lesson is understood).

Scaffolding is an instructional structure whereby the teacher models is the desired learning

strategy or task then gradually shifts responsibility to the students. According to McKenzie, scaffolding provides the following advantages:

i) It provides clear directions for students.
ii) It clarifies purpose of the task.
iii) It keeps student on task.
iv) It points students to worthy sources
v) It delivers efficiency.
vi) It creates momentum.

5.2.2 Classroom Implications:

1. ~~It indicates~~ This theory stresses on the use of cultural background of a learner for effective teaching learning in classroom.

2. It emphasizes on conduction of teaching learning process as social interaction process.

3. It indicates the role of cultural tools such as culture specific language, codes, symbols, logics, mathematics in the learning of a student and makes the learning process culture specific.

4. This theory draws the attention of educationists towards the cultural tools, which may be very

useful for instruction in multicultural society.

5. It may be very useful for making policies for cultural minorities.

6. It has presented a model for individualized instruction.

7. It has explained learning process as an interaction between a knowledgeable person and the learner.

8. It explains learning as a reciprocal process between the teacher & students.

9. It has indicated the area of support for students by the teacher by providing the theory of zone of proximal development.

10. This theory indicates the role of a teacher as a facilitator & guide & emphasizes on active learning process or "learning by doing".