

UNIT 1: MEANING AND CHARACTERISTICS OF LEARNING**INTRODUCTION**

The essence of all educational processes is to ensure that students acquire certain skills and behave in a way that they had hitherto not behaved. This acquisition of skills and attitudes that leads to a change in behaviour, which is the goal of education, is referred to as learning. This unit will discuss the concept of learning and differentiate it from other associated concepts.

Learning is one of the most fundamental concepts in Psychology. It is a basic and central component of the distinctive activities that constitute the subject matter of psychology.

The human skills, appreciations and reasoning in all their great variety, as well as human hopes, aspirations, attitudes, and values, are generally recognized to depend for their development largely on the events called *learning* (Gagne 1970).

Learning is at the heart of perception, thinking, imagination, reasoning, judgments, attitudes personality traits, systems of value, and the development and organization of the activities that constitute personality of the individual. One of the characteristics that all of these processes have in common is that the individual is behaving in the light of his own past experience. These activities thus qualify as mental activities, or activities of the mind because they represent instances in which past experiences are used in the individual's behavioural adjustments to the world.

The society wants its young ones to fit into the scheme of things properly. To be well adjusted to the life of the community. Children therefore attend schools in order to learn. Teachers are hired because it is assumed that they possess the skills that will enable them to arrange school experiences so that learning will take place. The questions that often come to mind are

"How do children learn? How should information be organized for learning to take place?"

Thousands of experiments on leaning have been performed and dozens of theories have resulted. A great variety of teaching techniques based on these experiments and theories have been proposed and put into practice.

The thrust of this paper is to introduce the concept of learning, its nature and characteristics and therefore explain briefly how learning takes place in Human Beings.

OBJECTIVES

By the end of the unit, you should be able to:

- i) define learning;
- ii) identify the criteria used in defining learning; and
- iii) distinguish learning from maturation and imprinting.

HOW TO STUDY THIS UNIT

- i) You should carefully study the objectives of the unit outlined above and set your mind towards attaining them
- ii) Carefully read through the contents of the unit noting the high points raised and ensure that you crosscheck to clear unknown or new words.
- iii) Read the unit contents again and situate each objective as you read
- iv) Attempt to answer the study questions raised at the end of the unit
- v) Consult the reading list provided and seek to get supplementary reading materials to help you widen your scope on the subject matter.

MEANING OF LEARNING

There is little disagreement among psychologists as to the importance of learning and the pervasiveness in nearly all forms of human activity; however, there is a marked difference in the ways they look at learning.

There is no universally acceptable definition of learning, and indeed all psychological concepts. Talking about learning, it is probably the topic which is closest to the heart of psychology. A huge body of literature on the subject matter of learning has been piled up by educational psychologists in their attempt to fathom out the characteristics and applications of learning. Hence, huge and diverse theories were developed in respect of learning.

Learning cannot be directly observed but can manifest itself in the activities of the individual. Human beings, more than all other living organisms, have the greater capacity to learn in all ways, and through language, we can learn things we have neither experienced nor observed.

Then what is learning? Several and sometimes varying definitions have been given by different psychologists on the meaning of learning. These definitions however seem to converge on certain trends which highlight the characteristics of learning. Myers, D.G. (1993) defined learning as a relatively permanent change in an organism's behaviour due to experience. Similarly, Mukherjee (2002) gave the meaning of learning as an inference from some performance of the organism resulting in an enduring change of behaviour.

Hengenhann (1982) defined learning as a relatively permanent change in behavioural potentiality that occurs as a result of reinforced practice.

Some other definitions include:

- Learning is the process of the formation of relatively permanent neural circuits through the simultaneous activity of the elements of the circuits-to-be; such activity is of the nature of change in cell structures through growth in such a manner as to facilitate the arousal of the entire circuit when a component element is aroused or activated (Bugelski, 1956).
- Learning refers to the change in a subject's behaviour to a given situation brought about by his repeated experiences in that situation, provided that the behaviour change cannot be explained on the basis of native response tendencies, maturation or

temporary states of the subject (e.g. fatigue, drugs, alcohol etc.). (Hilgard and Bower, 1975).

Webster Dictionary sums up common usage of the word LEARN as “to gain knowledge or understanding or skill by study, instruction, or experience.” The word “gain” in this definition is very important. It implies addition of new knowledge.

From the above definitions, there are key elements that elucidate the nature and characteristics of learning. These are:

- Learning exhibits itself as a change in behaviour.
- Inference is made about learning by comparing the subject’s initial behaviour before he was placed in the “Learning Situation” and what behaviour exhibited after the treatment.
- The change may be an increased capability in performance, altered disposition in attitude, interest or value.
- This change must not be momentary, it must be relatively permanent. It should be retained over some period of time.
- Lastly, the change must be distinguishable from the kind of change that is attributed to growth, such as change in height or the development of muscles through exercise.

When there is evidence of the kind of change given above in behaviour, learning has taken place.

Behaviour is a neural reaction to a given stimulus and it may be Overt or Covert.

Learning is associated with both overt and covert behaviours.

Thus, psychologists have provided certain criteria for determining whether learning has taken place. First for learning to be said to have taken place, there must be the element of change in behaviour overtly or covertly. Second, the change in behaviour as result of fatigue or other transitory conditions such as use of drugs or alcohol do not constitute learning. The third criterion is that the change in behaviour must be based on exposure to the environment. Environment here refers to learning situations or any situation that allows one to gain some experience. Learning, therefore, involved a change in the behaviours of the individual as a consequence of his or her experience. This can manifest in the way the individual thinks (cognitive), acts (psychomotor) or feels (affective). However, the change of behaviour must not be due to such transitory conditions caused by taking drugs or alcohol; and must not be due to maturation.

The two definitions that are very acceptable for our purpose are those of Gagne (1970) and Hilgered and Bower (1975). The two gave a clear picture of the nature of learning.

The two definitions restrict learning to behavioural change that can be accounted for on the basis of interaction with an environment (i.e. experience). Thus, if a behavioural change can be shown to be the result of some factor other than experience then we do not consider it to be learning.

- *An infant crying because of open diaper pin sticking him is not an instance of learning as this is a native response tendency. It is a reflexive action to the painful stimulus.*
- *However, if the child cries to receive attention because crying in the past has always attracted the mothers attention will be an instance of learning.*
- *Voice change, appearances of sexual characteristics and increased physical strength are processes of maturation and not learning.*
- *Temporary behavioural changes produced by such factors as fatigue, the ingestion of drugs and alcohol are excluded as instances of learning.*
- *A child sucking breast for the first time is not learning.*
- *All cases of instincts are not learning.*
- *Migration of Birds, phototropic behaviour are no cases of learning.*
- *Any behaviour exhibited without been thought are no cases of learning.*
- *Specie specific behaviours are no learning. Newly hatched chick walking, flying by birds etc are no learning.*

However, stylistic walking or stepping by the young folk or ladies are instances of learning.

Distinction also has to be made between learning and maturational behaviour in order to ascertain whether the behaviour in question can be subjected to training. If the behaviour can be subjected to training, then it is a learned behaviour. The concepts, maturation and imprinting and how they differ from learning are explained in this unit.

BASIC CHARACTERISTICS OF LEARNING

- I) Learning has to change behaviour;
- ii) The change should be relatively permanent;
- iii) The change should be as a result of experience;
- iv) Learning is an internal process;
- v) Learning occurs under conditions of directed attention and deliberate effort; and
- vi) Learning is distinct from biological maturation and imprinting

Maturation

Maturation, a borrowed concept from Biology, refers to the physiological development of a growing person. Maturation is specifically used for qualitative changes in the organism which are not induced by learning. The relationship between maturation and learning is very close, because learning takes place within a certain level of maturation.

Maturation, has been defined by Gleitman, H. (1996) as programmed growth process which is relatively unaffected by environmental condition. E.g. walking in humans. For training to yield effective results, a defined level of maturation is required. For example, learning and training should start when a child reaches an appropriate level of maturation which implies concept of readiness for an activity. Teachers and parents must not ignore the child's level of maturation otherwise it would be a waste of time and effort to expect a child to perform a task or learn materials he/she is not matured enough to undertake.

IMPRINTING

Learning is sometimes confused with the psychological concept, imprinting. Imprinting is an instinctive reaction an organism displays that capitalizes on certain tendencies which appears whenever the time is ripe. For instance, at certain times after hatching, new duckling can be induced to follow any moving object nearby. The timing is right and behaviour of following is inborn which guides certain species of animals such as bird, reptiles or fish to behave in certain predictable manner. But unlike these other animals, human beings do not have this genetic code of imprinting. Humans rather behave according to their experience in the course of their interaction with the environment.

BOREDOM:

Boredom is not permanent. It is often a result of over labouring of self with some mental or physical activities. After taking enough rest, boredom is removed.

INSTINCT

This is an unlearned response. It is inborn. For instance, sucking of mother's breast by a new born baby, cock crowing and neonatal cry are not learning.

REFLEX ACTION

These are some actions that the organism does not have control over. Some of these actions are heart beat, sneezing, coughing, breathing, etc. some are permanent while some are temporary. Yet, they cannot be said to be learning.

Based on the above discussions, it could be deduced that:

- ▶ not all experiences could produce learning;
- ▶ not all changed behaviours are as a result of learning;
- ▶ not all stimuli that produce responses are permanent; and
- ▶ there are some behaviours that are permanent which are not due to experience.

ACTIVITY I

- 1) Define learning. Discuss the basic criteria of defining learning.
- 2) Discuss the major basic characteristics of learning.

THE ELEMENTS OF THE HUMAN LEARNING EVENT

According to Gagne (1970), there are four elements that constitute the event of learning. These are:

(1) THE LEARNER

The learner is a human being who possesses sense organs, through which he receives stimulation; a Brain, by means of which the signals originating in his senses are transformed in a number of complex ways; and a set of muscles, by means of which he exhibits the various performances that show what he has learned.

The stimulation that is constantly being received is organized into various patterns of neural activity, which are stored in his memory in such a way that they can be recovered. Such memories may then be translated into action that may be observed as the movement of muscles in executing responses of various sorts.

(2) THE STIMULUS SITUATION

All the events that stimulate the learner's senses are collectively called the stimulus situation.

(3) PREVIOUS KNOWLEDGE IN THE MEMORY

The content of the learner's memory which is often recovered is another input in learning. Such content had already been organized from previous learning materials.

(4) THE RESPONSE

The action that results from these inputs and their subsequent transformation is called Response.

HOW HUMAN BEINGS LEARN

As mentioned earlier, the psychologists agreed on the importance of learning as an object of study but disagreed on the mechanics of how the learning process occurred. There are about three major schools of thought. These are:

- (1) **Behaviorist-Associationist:** This views learning as resulting from the forming of connections between stimuli and observable response.

Because behaviour depended upon the relative strength of associations between a particular stimulus and a number of responses, the Behaviourist-Associationists' description of learning logically required a memory system to retain products of learning. However, the elicitation of a response by a stimulus was assumed to be an automatic process.

- (2) **Cognitive-Gestaltists:** They believe that learning resulted from the re-organization of perceptions and the forming of a new relationship. They argued that psychological phenomenon could not be understood by studying simple association among tiny elements, but must be viewed as a total configuration or to use the German word, as a

“Gestalt”. They opine that the whole (Gestalt) is more than just the sum of a group of separate parts.

Learning is seen as the understanding of a total, meaningful relationship and the only acceptable approach to the study of learning is the cognitive one.

Learning comes by insight which is a suddenly occurring reorganization of the field of experience, as when one “has a new idea” or “discovers a solution to a problem”.

- (3) **Information-Processing Approach:** This contemporary theory of learning memory reflects a distinct break from the tradition of learning theories discussed above.

Contemporary theories of human learning and memory propose that the stimulation encountered by the learner is transformed, or processed in a number of ways by internal structures during the period in which the changes identified as learning take place.

Human being is viewed as a processor of information in which the stimulation from the environment is actively processed through the memory system.

The memory system is viewed as consisting of three components: **Encoding, Storage and Retrieval.**

Encoding is the transformation of physical energy from the environment into a form suitable for memory storage.

Storage refers to the maintenance of information over time.

Retrieval is the utilization of information in storage.

Retrieval involves active search for stored material and logically follow encoding and storage.

The information-processing approach is based upon computer models. The encoding, storage and retrieval components correspond to input, storage and output stages of computer processing.

STAGES OF LEARNING

Learning is a process and it often occurs in stages. Psychologists have identified three stages in learning. The three stages are not exclusive of each other, rather are interrelated and in succession.

The Three Stages are:

- Acquisition
- Retention
- Recall

Acquisition

Information is received by the learner as stimulus. The process of receiving information by the learner is called acquisition.

Retention:

The information received by the learner may be stored in the memory. This is the stage where mental processing begins in terms of meaningfulness, interpretation and encoding. Retention could be in short term memory (STM) or Long Term memory (LTM)

- a) **Short Term Memory (STM):** The function of this storage system is to process information that had been stored which are immediately needed.
- b) **Long Term Memory (LTM):** In this type of memory, information which is not immediately needed are processed and pushed out of the short term memory into the long term memory. This implies that only information that are needed over a long period are stored in long term memory

Recall:

This is the process whereby information that had initially been acquired and retained is subsequently retrieved. If for any reason, acquired information cannot be recalled, something may be wrong with retention that has not made learning possible. It is important to note that learning completes its circle when information acquired, is retained and are subsequently retrieved or recalled.

ACTIVITY II

1. Differentiate between learning, maturation and imprinting.
2. Explain the process of maturation and imprinting.
3. Explain the following terms
 - i) Boredom
 - ii) Reflex Action
 - iii) Imprinting
 - iv) Direct Experience
 - v) Indirect Experience.

SUMMARY

- Learning may be defined as a relatively permanent change in an organism's behaviour due to experience. Learning changes behaviour, but the change should be relatively permanent and should be as a result of experience. Learning is an internal process.
- Learning is different from instincts, maturation, imprinting, reflex action and boredom. The stages of learning are acquisition, retention and recall.

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UNIT 2: TYPES AND SIGNIFICANCE OF LEARNING

INTRODUCTION

As earlier mentioned, learning is important to the psychologists and the teacher. There is the need not only to study some of the theories guiding it but its various forms. In this unit, the various types of learning are discussed.

OBJECTIVES

By the end of the unit, you should be able to:

- i) identify types of learning;
- ii) discuss the significance of learning;
- iii) distinguish between signal learning, concept learning, chain learning, discrimination and problem solving; and
- iv) determine how the teacher can create and sustain a conducive learning environment.

HOW TO STUDY THIS UNIT

- i) Please go back to the last unit (i.e. unit 3) and refresh your memory on the subject matter of learning, its meaning and characteristics.
- ii) Then carefully go through the objectives of unit and set your mind to achieving them.
- iii) Read the content of the unit very carefully. Note the new concepts and their meaning as well as the pattern of the issues raised.
- iv) Attempt the study questions.

TYPES OF LEARNING

Although there are different types or categories of learning, it is difficult to make a clear-cut classification as the individual categories tend to overlap with one another.

Bloom divided learning into three major categories:

- i) Cognitive learning which emphasizes the intellectual endowment such as learning of facts and problems-solving.
- ii) Affective learning emphasizes development of attitudes and emotion; and
- iii) Psychomotor learning is concerned with skills development such as walking, writing, swimming, knitting, etc. These require the use of motor skills.

Gagne has attempted to classify learning into eight hierarchically ordered types:

- i) **Signal Learning:** Signal learning refers to the Pavlovian or classical conditioning developed by the Russian physiologist, Ivan Pavlov. In this type of learning, food (unconditioned stimulus) and sound of a bell (conditioned stimulus) were paired and presented to a dog several times. The result was that when sound of the bell was heard

even without the food, the dog salivated. This process is called conditioning. It will be discussed in greater detail in the subsequent units.

- ii) **Stimulus-Response Learning:** Operant conditioning – Operant (or sometime called instrumental) conditioning was spearheaded by two American psychologists: E.L. Thorndike and B.F. Skinner. They both used animals to conduct their experiments and attempted to apply the principles in human learning. Operant conditioning is more flexible than classical conditioning since the response conditioned are not restricted to natural or innate responses but to a variety of responses. This will also be discussed in greater detail in the subsequent unit.
- iii) **Chain Learning:** Chaining implies the connection of a set of individual stimulus-response in sequence. There are two main types of chaining-motor and verbal. Verbal chaining entails connecting together in a sequence, two or more previously learned stimulus-response. Language is full of such chains of verbal sequence as for instance, mother and father. Motor chaining is through the sequences of motor responses like setting a clock or operating a generating set. Individual acts that have been previously acquired through S-R learning are combined in proper sequence repeatedly.
- iv) **Verbal Association Learning:** The ability of humans to vocalize especially in social situations is well acknowledged. Verbal chaining is illustrated in naming. Two chains are involved in this: (a) observing the stimulus-response (S-R) connection that connects the appearance of the object and distinguishes it from other objects; and (b) the S-R connection that stimulates the child itself to the name of the object.
- v) **Multiple Discrimination:** Discrimination refers to reinforcing selectively, some responses, to one aspect of the environment. The behaviour may then show a specificity of response to only one given stimulus. Discrimination involves higher mental processes. It is the basis upon which we learn to think and solve problems. Children learn to differentiate certain objects in the environment such as infants distinguishing the feeding bottle from ordinary bottles.
- vi) **Concept Learning:** Children and all growing persons learn to classify objects on the basis of some common characteristics of say, colour, size, height, shape, etc. For example, children would gradually differentiate animals from trees, dog from sheep or books from table. They also learn to make generalization, within classes of objects and discrimination between classes of objects.
- vii) **Learning of principles:** Children's learning of principles is gradual and is usually dependent on learning of concept formation and other forms of learning. Principles involve regular interaction among two or more concepts and this is essential for every person to function effectively in the environment. Principles of spoken language, moral code, and psychomotor skills are learned to help the individual function more effectively.
- viii) **Problem solving:** Gagne places problem solving at the highest stage of his hierarchy of the learning process. Its description fits into Bloom's cognitive learning mentioned at the beginning of this unit.

FORMS OF LEARNING

Human learning can take many forms. At this level we are not expected to be familiar with all these forms. The types which we wish to consider are those that are very necessary for our functioning as teachers. These are:

- a. Simple versus complex learning;
- b. whole versus part learning;
- c. rote versus discovery learning.

a. Simple Verses Complex Learning

Learning can be simple. This approach builds on the assumption that human learning must take into account the stage of development of the learner. Everyday experience teaches us that the younger a child is, the simpler the skills and ideas which we should expect him to master. Simplicity in learning means that we should build the necessary foundation for more demanding learning tasks. It should be obvious to us that it would be fruitless teaching a two-year old child how to read before he learns the alphabets of a given language. He would be too young for this kind of activity.

Adults also engage in simple learning. In this case, we are primarily concerned with the nature of the learning task. If the outcome of learning is defined as the ability of the learner to recognise, remember or recall a given fact, then this is simple learning. If an adult reads a passage and he is required to answer questions arising from his knowledge of the facts, this also corresponds to simple learning. The same can be said for learning which is the same thing as habit. For instance, a mother teaches a child how to exchange greetings with others or to keep his finger clean. By a process of imitation, the desirable behaviour is acquired. Simple learning does not require the learner to use learned information for the solution of a given problem.

On the other hand, learning can take a complex form. In such a case, the learner is required to build on previously acquired knowledge in performing subsequent tasks. With practice, it is possible for someone to move from simple sentences to the construction of compound and complex ones. Complex learning also involves the utilization of a learned method in the solution of problems of a similar nature. The learning of mathematics is based on the assumption that when the child understands the tasks involved in addition, subtraction, multiplication, and division, he naturally has a good chance of coping with more complex mathematics for example the use of 'BODMAS' that is (Bracket of, division, multiplication, addition, subtraction) in solving some more complex problems in Arithmetic.

b. Whole Versus Part Learning

Among teachers, there are those who believe that learning proceeds better if the learner adopts a step-by-step approach. This is in line with the argument by some scholars (see relationship between learning and teaching under the introduction section) that each subject matter or learning task contains certain elements which need

to be understood before any meaning can be gained from the subject or task. In grammar, their position is that words should be learnt before sentences, sentences before paragraphs, etc. In this instance, even common sense would dictate this approach.

It is in the interest of the learner since, during recall, the learner has a greater chance than when his mind is crammed with information. The merit of this kind of learning is that it gives ample opportunity to a learner to clear areas of difficulty before proceeding to other areas.

With some other scholars, it is felt that there is no way in which meaningful learning can take place except the learner takes the entire parts of a learning task into account. Take the study of poetry, the serving of a ball in the game of lawn tennis, or the memorization of a scientific law. None of these activities can be undertaken in bits without some loss in terms of the ability to perform the task. Among the advocates of this method, learning involves looking for a relationship between units and subunits of each given task.

Normal everyday practice appears to teach us that we cannot have very clear distinctions between whole and part learning. It seems evident that the method to be adopted in learning depends on who does the activity as well as the nature of the learning task. Breaking down of units may be very necessary for those who are slow at learning. When the subject-matter is likely to task the concentration of the learner, it makes sense to take it bit-bit.

c. **Rote Versus Discovery Learning**

Rote learning refers to the tendency for learners to commit different kinds of learning and information to memory. No attempt is made to establish a relationship between one fact and another. What then follows is a repetition of the ideas when there is an examination or another activity that calls for the reproduction of facts. With the passage of time, this kind of learning is easily forgotten. Rote learning often occurs when there is over-emphasis on the recitation of facts as a way of indicating brightness. It so happens that children, out of a desire to meet the expectations of adults, learn poems and stories by heart. In secondary school, adolescents may also display special ability in memorizing scientific laws and principles. However, many of these children and adolescents are incapable of solving the simplest task requiring independent reasoning. This kind of learning is not very efficient because it does not prepare the learner to utilize present knowledge in the performance of subsequent and more demanding tasks. If a student is required to name some of the minerals available in Nigeria and the answer takes this form: "coke, fanta and ginger," it becomes obvious to the teacher that the student has not been able to go beyond the initial and specific meaning of mineral that he was taught. A more meaningful type of learning would have indicated that the word may have another meaning that has no bearing to what was previously learnt. In contrast, there is the discovery method of learning. The method encourages learners to look beyond the available facts, endeavour to understand the relationship between one idea and another, and to attempt to relate new

ideas to what had been learnt in the past. The important consideration in discovery learning is that the learner ensures that each new information that is provided makes some meaning to him. The discovery method advocates that instead of a learner, for instance, memorizing Newton's Law of gravity, he should be engaged in kinds of activities which would lead him into establishing such a law through observation.

In this case, an experiment using objects that are thrown up will quickly show that there is a tendency for such objects to come back to earth. Another advantage of discovery is that it helps to develop the ability to reason logically in adolescents particularly and other groups of learners in general. A final point to be made for discovery learning is that the encouragement of students to search for knowledge by themselves brings added interest to the learning activity.

THE CONCEPT OF TEACHING

Time was when the teacher was regarded as all-knowing and all-giving. His major task was then to transfer such knowledge or skill to those who needed to acquire it. Student activities were limited to their presence in class and reception of the ideas of the teacher. They were not supposed to make any meaningful contribution to the process of learning. New knowledge has compelled the teacher in our own time to abandon this idea of teaching. The result is that not many people persist in thinking of the teacher as a person who possesses unlimited knowledge and authority. Today's teacher recognizes that he is a learner just as much as the student. His role has thus shifted from that of a monopolist of ideas and skills to that of guidance of the learning activity. In this connection, the teacher serves as one **who creates the necessary conditions** that will make learning meaningful and pleasurable. He also provides leadership in the quest for knowing by not only providing available information to the learner but also developing in the latter the capacity to inquire into things and search for new ideas and approaches to the problems of life. This concept of teaching sees the teacher as a mediator in learning, that is one who assists the learner to search for and utilize information in ways which bring about observable benefits both to him and to the larger society.

FUNCTIONS OF THE TEACHER

- The first significant job of the teacher is to plan what to teach, how to teach it and the manner in which the outcome of teaching is going to be measured. Related to this is the issue of developing the ability to inquire and experiment with ideas in the minds of learners.
- A second major function of the teacher is that he estimates the educational needs of each individual. This means that in the process of interacting with the learner, the teacher should be able to determine what the student can do, with a view to deciding what the person is going to have to do. Whether it is in Mathematics, Physics, English, History, etc. a major expectation of a teacher is that he will be able to anticipate student difficulties and undertake some remedial work.
- A third function of the teacher is to establish the proper climate for learning to take place. In order to be able to do this, there must be indication that the teacher accepts

the learner for what he is worth. Respect, warmth, love and sincerity - these are qualities which the teacher must bring to his relationship with the learner. The teacher should not ridicule any person in his class. This is important since a positive attitude to students helps to sustain feelings of self-esteem and in turn makes them favourably disposed to the work of the school.

- The teacher is also expected to maintain some contact with the home of each learner and even with the larger community. He should show interest in appreciating the social circumstances of children placed in his care. The importance of this comes from the fact that it is not always appreciated that inability to learn may be linked to causes that have no direct relationship with classroom work. Poor learning, for instance, may be as a result of hunger, emotional stress, or poor health. Part of the custodial function of the teacher is to look for causes of unusual behaviour and be able to provide appropriate responses. Some of these causes can be recognised by the teacher alone while others require assistance from the members of the child's family or even others in the larger community.
- Evaluation (determining how well the learner has profited from the learning activity) is a major function of the teacher. Evaluation is useful to the teacher because he can utilize its outcome in two major ways.
 - (1) He is able to give the student some idea of the progress that he has made and what aspects of school work require further time and effort.
 - (2) He uses the results of evaluation to determine the extent to which he has been able to achieve the objectives of education and what aspects of classroom work call for remedial work.
- The teacher serves as a motivator of learning. The ability of the student to learn is, to a large extent, dependent on what the teacher does to arouse his interest in school work and to bring him to appreciate the importance of education as a human activity.
- The job of motivating learners implies that the teacher has some understanding of individual differences in the physical and psychological make-up of human beings. This ability makes it possible for him to recognise that some learners are slow in benefiting from ideas and skills while others are fast. Irrespective of the level of ability the function of motivation makes the teacher responsible for the further progress of slow and fast learners. (You will read about the full implications of motivation in another unit). The development of positive values in the students is a significant aspect of the work of the teacher. In school, students are supposed to be led into such values that encourage respect for elders and authority, co-operation, regard for beauty, good citizenship, creativity, and all the qualities that work toward the good of the human society.

RELATIONSHIP BETWEEN LEARNING AND TEACHING

As we have indicated in the introductory part of this unit, there is a strong relationship between teaching and learning. One of the activities cannot be effectively carried out without

the other. We can safely say that both are bound together in the same way that the egg is bound to a hen. In this kind of situation, it is always difficult to suggest which one comes before the other. In order to organise learning activities effectively, a teacher has to understand 'how' and 'why' people learn. It is not enough gathering children in an enclosure in the name of teaching them.

There must be a conscious effort to learn about the conditions that favour the teaching of individuals. In the world of today, the teacher has to in one way or the other, be guided by scientific findings regarding the nature of children, their development and capabilities for learning and how they can be guided into becoming very useful citizens. Ideas that perform these functions are generally referred to as theories of learning. In order to achieve clarity, we shall briefly consider what a theory is, its role in learning and teaching.

Generally, there are two broad theories of learning. One of them is the **Stimulus-Response (S-R)**; the other is **Cognitive theory of learning**. Each of these broad categories has a number of variations within it. However, the differences are not so significant as to warrant our separating them. S-R learning theory is associated with names such as Pavlov, Skinner, Thorndike, and Watson. Advocates of S-R learning see learning as a process of establishing a connection or association between a stimulus and a response. For instance, if I teach a child to say "Good morning" to an elder early in the day S-R learning believes that I have succeeded in establishing a relationship between the stimulus in this case, the sight of an elder and the response (which is the greeting).

On the other hand, Cognitive learning theories such as Kohler, Koffka, Wertheimer, Lawin, Bruner, and Piaget believe that when an individual is faced with a problem, that person uses previous experience to interpret aspects of the problem. After studying the circumstances in which the problem occurs, he then decides on the best line of action. Suppose you have just purchased a music set unfortunately, you misplaced the handbook that went with the set or you do not even understand the procedure for setting up the equipment. Initially, you are confused, you pause for a while. Then you go back to the problem and try connecting the wires. Your effort then pays and you experience a feeling of satisfaction. According to cognitive theory, the solution to the problem would have after you examined the puzzling situation and came out with the most likely approach. This is response to pattern, to various aspects of the problem.

IMPLICATIONS

Lessons from the study of learning and Teaching

A number of lessons emerge from our study of the relationship between learning and teaching. It is important to note these lessons and let them guide you in studying subsequent units and in your functioning as a teacher.

- One important lesson that we have got is that learning is very necessary for human beings. It is the ability to engage in varied ideas and activities that distinguishes man from all other animals. It is desirable that we support all efforts that human beings make to learn, whether the learners be children, adolescents or adults.

- We have seen that learning can be of different types. It is the objective which a teacher has in mind that determines the nature of learning which will be appropriate. Learning should be arranged with the age and experience of the learners in mind.
- There are situations in which children can be encouraged to memorize. Generally however, people learn better when they ask questions about the experiences which they acquire and also try to look for relationships between one fact and another. In doing our work, let us encourage our learners to develop the ability to ask questions, search for meaning in what they do, and reach their own conclusions.
- The teacher's role is to guide the process of learning and make it pleasurable. This means that he should make special effort to understand the nature of learning and those conditions that result in very effective learning.
- Teaching can be done in various ways. The teacher is encouraged to vary his style of doing things so that he can ensure that children retain their interest in what goes on in class.
- Within the classroom and outside, the teacher has several functions to perform. We advise that you take these functions seriously and endeavour to judge your teaching by how closely you are doing these things. The teacher should serve as a model in terms of looking for new ideas, acquiring desirable values and caring for the well-being of others.
- We have also seen that new ways of functioning are being introduced. It is in our best interest to keep abreast of these changes. Our job will become more exciting when we can approach it from many angles.

ACTIVITY

1. While teaching, draw up a list of the factors which you consider would influence the learning habits and developments of skills of your students. Provide an explanation for your observation.
2. Write an essay of not more than a page of your own idea of what the teacher in Nigeria should be.

SIGNIFICANCE OF LEARNING FOR THE TEACHER

Sometimes people wonder and ask why teacher trainees (Like yourself i.e. the students of this course) need to study learning process and the wide range of theories developed by psychologists. In proving an answer to this question, it is important to note that the ultimate goal of a teacher is to engender certain positive changes in the behaviour of the learners.

Based on the foregoing, therefore, it is pertinent that the prospective teacher understands the basic operations and approaches to learning so that he/she can develop good instructional strategies that would deliver better results. How can the teacher in training benefit from

studying educational Psychology in general and the subject of learning and learning theories in particular?

The essence of studying learning and its processes is to help the teacher facilitate the teaching learning process. Hence, in the course of teacher training, the teacher gains a lot from the works of educational psychologists. The teacher would come to understand individual differences among learners of different age range, sex, social status, cognitive ability, etc. This would enable the teacher make the necessary adaptation to suit the teaching learning requirements of each individual learner.

Secondly, educational psychologists have advanced our understanding of the teaching-learning process through the concept of motivation. Studying the needs and motives of children and indeed all other categories of learners would enable the teacher work towards motivating them.

Thirdly, through the study of learning theories, the teacher gets to understand the process of remembering and forgetting and how to minimize the incidence of forgetting learned things. In the same vein, the teacher can assist students not only to remember what has been learnt but also to apply this to situations outside the classroom.

Fourthly, the prospective teacher studying psychology would have the opportunity of learning how to diagnose and identify children and learners with special learning difficulties. These difficulties could be a child with poor sight or hard of hearing or the mentally retarded. This would allow the teacher to help this kind of children learn in spite of their difficulties.

Finally, through the study of psychology and learning, the teacher can help in creating and sustaining a conducive physical and social environment necessary for smooth teaching and learning.

ACTIVITY:

1. What are the different categories of learning?
2. What is the significance of learning to a teacher?

SUMMARY**TYPES OF LEARNING**

- Bloom divided learning into three major categories viz:
- Cognitive learning: This emphasizes the intellectual ability. It involves the learning of facts and problem solving
- Affective Learning: It emphasizes development of attitudes and emotions
- Psychomotor learning: This is concerned with skill development. Others are signal learning or Classical Conditioning, Stimulus Response learning, S-R or Operant

Conditioning, Chain learning, verbal association, multiple discrimination, concept learning, learning of principles and problem solving.

Other Types of Learning

- Simple vs. complex learning-here the learners go from simple to a more demanding task or experience
- Whole vs. Part learning: As the name implies, whole learning takes place when the learner takes the entire part of a learning task while part learning refers to step by step approach i.e. the whole task is broken down into small units/pieces.
- Rote vs. discovery learning: the learner commits a learning material into memory without understanding it while discovery learning encourages learners to look beyond available facts.

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UNIT 3: FACTORS THAT AFFECT LEARNING: *THE PUPIL, THE TEACHER AND THE CLASSROOM ENVIRONMENT*

INTRODUCTION

Three important factors are associated with formal learning in the school. These are the pupil, the teacher and the class environment.

OBJECTIVES

By the end of this unit, you should be able to:

1. state the factors that affect learning;
2. discuss the characteristics associated with the learner;
3. discuss at least four characteristics associated with the teacher;
4. discuss the importance of the classroom environment for learning;
5. list at least four major lessons that you have learnt from the unit.

LEARNING CHARACTERISTICS

Observation and analysis of several findings have indicated to us that each human being possesses a number of qualities that make him different from others. If you look at a two year old boy, you may find that he is calm, he enjoys the company of others, and he is healthy. Another child may appear to be easily annoyed, easily frightened, and may avoid the company of people. It is clear that these two children are different in terms of their everyday functioning. Depending on what happens later to them, they bring this sort of background with them from home to the school. Other influences would also have affected them to make us conclude that each of them possess qualities that are strikingly different from the other. It is these qualities which collectively shape the individual's personality and go on to determine the kind of attitude the person will adopt towards schooling. In this section we wish to consider some specific individual qualities that affect learning. These are age, self-concept, family circumstances, peer group, and level of ability. We now take them one after another.

(a) AGE OF THE LEARNER

The Swiss Psychologist, Piaget, and others interested in learning have called our attention to the fact that learning proceeds in stages, which oftentimes coincide with the level of maturity and development of the individual learner. It is pointless teaching children certain ideas when they are not psychologically ready to profit from such teaching. For instance, it has been shown that before the age of six, children learn mainly through play and engaging in the kinds of activities which encourage exploration of the environment. The younger a child is, the more difficult it is for him to solve a problem which involves words alone. A three-year old child will draw a

man more easily than offer a verbal description of the same person. After six, understanding of ideas is aided by the presentation of concrete equivalents of such ideas. In adolescence, we begin to witness the growth of logical thinking and ability to think about objects and situations without their necessarily occurring.

The teacher who understands this link between the age of the learner and effective response to learning puts himself in advantage position to do his job. Age in this context must not be interpreted as being only the calendar years that the individual has spent in the world. Sometimes, a six-year old may have a mind that is more developed than the number of years that he has spent. In this sense, activities which ordinarily would be of interest to children of his age will mean little to him. On the other hand, we may find a child whose mental performance clearly falls behind what is expected of his age. In either case, the teacher has an added responsibility to find out the quality of the mind of the learner in order to arouse and renew his interest in learning. Thus, the teacher would be able to ensure that the child comes up to the level expected of him. This is part of the diagnostic function which we discussed in the previous unit.

Linked to the above is what psychologists call the 'attention span' of the learner. Different stages of human development place certain limits on the amount of time an individual may willingly and safely devote to a given task. Children do not concentrate on a single task for a long time. Even adults do not all have the same level of concentration. This fact has implications for the content of experiences which we, as teachers, present to learners. One which follows logically is that we must organise learning activities in such quantities that those that we teach are able to cope with.

(b) **SELF-CONCEPT OF THE LEARNER**

Self-concept is concerned with the idea that one has about himself. It also includes the way others see him as well as the way he actually is. In addition it includes the way he would like to be. Studies by Psychologists have shown that a learner's level of achievement in school is often related to the kind of self-concept which the person has.

Young people whose experiences do not assist the development of a positive and realistic self-concept tend to perceive the school as hostile and very removed from the realities of life. They would rather prefer to engage in rebellious activities, juvenile delinquency, and avoidance of school than to learn.

Teaching can become meaningful and productive when pupils are assisted towards building a positive self concept. Teachers can achieve this by communicating more intimately with anxious learners than with those who show normal behaviour. During such encounters, pupils are encouraged to talk about themselves and to work towards the development of a realistic self-concept. In this connection, it is advisable for teachers not to label their pupils, i.e., they should not give the impression that some learners are of little use and have no hopes to get beyond their immediate level of achievement. Instead, children need to be helped to realise that success can come, although the process by which it is achieved is often hard. To be able to carry out this

function, pupils need to be convinced that the teacher is sincere and accepts and values them for what they are.

(c) **BACKGROUND OF THE LEARNER**

Children come to school from various backgrounds. Some come from very poor homes while others have well-to-do parents. There are also those whose parents are illiterate while others have parents who are educated. In the same manner, children have parents who are civil servants or who work in non-government establishments. We also have those whose parents are self-employed. Whichever category that the child belongs to, he brings with him to formal schooling a way of functioning which carries the imprint of his upbringing at home.

Studies indicate that majority of Nigerian school children come from poor homes. In such homes, there is little space for man, wife and children to move about, talkless of the space which children require for play and the exploration of their environment. Books which are sources of knowledge for human beings can only be purchased at the expense of meals for the family. Equipment such as radio, television are lacking. They do not also have the kinds of toys, puppets and other materials which children need for an advantageous take-off in life. We may add to this that such parents may not have formal education.

Children who come from well-provided homes and where parents understand their roles as caregivers tend to have an early advantage over those from poor homes. In the first place, they are likely to benefit from an environment which promotes learning e.g. the presence of objects which stimulate children's curiosity and interest in learning, the radio, television, children's books, etc. In addition, they are likely to have their parents tell them stories, read to them (poems, short passages, etc.) and provide adequate support for them to do their home work and assignments given at school. Thus, such parents show proper concern for the education of their children.

Studies have shown that children who are exposed to such influences are generally favourably disposed towards school and adopt positive attitudes toward the teacher. They also tend to do better in the formal school especially as the background would have been laid for effective functioning during subsequent stages of schooling. Early stimulation develops a desire to learn in the child and equips the child with the linguistic readiness which he requires to describe objects and think correctly. Finally, the early social training which may have been provided for him in the early stage of life motivates him to recognise that life in human society is based on rules which have to be observed by everybody.

(d) **PEER GROUP INFLUENCE**

Children and adolescents exercise a great deal of influence on themselves. This influence is felt both inside and outside the classroom. One known fact about children is that they desire to conform to behaviour that is defined by each particular group. This desire often takes the form of wishing to take part in class activities so that children can win the approval of their parents and teachers. They may also work

towards impressing their classmates so that they can win approval for their behaviour within and outside the classroom.

Linked to the desire for approval is the need for recognition on the part of the child. As much as the child wants "to be like everyone", he also wishes "to be better than anyone". In connection with the second desire, the child works so that it can be said that he is at the top of the class. In all the striving, we see the child's burning desire for the support of his peers. The mark or grade which the child receives is not only a measure of how well he is doing in class but it provides great joy and satisfaction to him as an individual. Sometimes, it may happen that a child may tell lies or even wish to hide the truth in order to be seen to be doing well. The teacher may catch the child copying an assignment from his mate. When confronted by the teacher, he would deny his intention, in order to get that which he does not know so that he can earn the admiration of his companions and the teacher.

(d) **LEVEL OF ABILITY OF THE LEARNER**

Each learner in the class possesses a given level of ability. This factor can be expressed in various ways - interests, aptitudes, achievement, etc. When measurements of these traits are obtained, they become the basis for assigning an individual to one group or another.

Several other elements work together to determine the nature of the ability which an individual has. Among the popular ones is the wide spread belief that ability is, to a considerable extent, inherited. This informs the somewhat unsolicited advice to a gentleman or lady in search of a marriage partner to pay some attention to the level of intelligence of each individual's parents. The implication of this way of looking at the issue is that a person who is generally thought to be bright is not likely to beget a dull person. Conversely, a dull individual can mainly give birth to a dull offspring. On the face of it, this sort of argument appears convincing but there is more to it than can be readily seen.

At birth then, each person already possesses an apparatus which he can use to solve both the simplest and the most complicated problems of human existence. If the brain has been formed normally and the individual gets the kinds of experiences which enhance his development, we can expect that person to perform like any normal human being. The difference between one human being and another (after inherited characteristics are allowed for) will depend on the quality of the influences which a person has received, both in childhood and other stages of existence. Think of what would have happened to you if you had no experiences whatsoever at school. Would you be functioning in the same way that you now do? I doubt it.

When a child therefore comes to school, he carries with him the sum total of the qualitative experiences which he has had. These experiences are important in determining how well or how badly he does at school. Even at that, ability is not fixed in human beings. It can be improved upon by sustained remedial work. The unlimited nature of human ability is shown by the fact that if a boy is taken from a backward village school which lacks good staff, books and other resources which affect the

positive growth of children, and then placed in another school with knowledgeable and skilled teachers the chances are that he will begin to show higher levels of achievement in many school subjects.

TEACHER CHARACTERISTICS

This includes the following:

(a) **Knowledge of Subject-Matter**

Professional teachers have often been criticised for paying attention to the 'how' of teaching and ignoring the 'what' of their function. While this criticism often lacks grounds, it is important to stress the necessity to strike a balance between what should be taught and how it should be taught. This is because both inputs are strong factors in determining the quality of a teacher's products. We will then first start with the 'what' and reserve the other consideration for the next section. We cannot over-stress the point that the teacher should have a certain degree of mastery over what he teaches. Such knowledge enhances his self-concept and ensures that children and adolescents spend their time in school in a worthwhile manner.

There is an obvious tendency for learners to look with disdain and contempt on teachers who display some uncertainty as to what knowledge they are meant to be imparting to those in school. Sometimes, such disregard is expressed in the form of jeering and walk-outs, or even refusal to come to school (especially when such a teacher takes charge of a single class).

As much as possible, the teacher should be able to inspire students to set realisable goals and to wish to undertake the study of a subject which the person teaches. To be able to do this, he has to show understanding of the stage of development of the learner, make decisions as to what aspects of a subject should be presented to the class and at what pace. He should be able to recognise that the class is a mixed group, each individual learner having a different background and experiences associated with it.

(b) **Method of Teaching**

As we indicated in the previous section, knowledge of subject matter is not enough for a person to be an effective teacher. Organisation of learning experiences involves familiarity with the methods by which these experiences could be delivered. Studies which have been done by several scholars indicate that education has acquired the character of science. Part of what is involved in being a science is that it has a body of knowledge which its practitioners ought to have. Secondly, there is a way of giving out that knowledge which we also expect that anyone involved in teaching should know. This implies that the teacher is first expected to learn about the philosophy behind any subject which he teaches. He is expected to convince both himself and his learners that his subject area has usefulness and applications in real life.

Next, he is expected to study what is known as the "internal arrangement" of a subject, that is, how can each content area of that subject be arranged in such a manner that it can be presented to learners.

For instance, we can say in a very special way that Mathematics is the study of how one number is related to another both in space and in time: Biology can be regarded as the subject which studies living and non-living things and their role in man's adaptation to the environment. Having known the structure of the subject, the teacher is expected to determine the best way in which he can deliver each aspect of subject. He must ask himself the question: Do I use exposition (that is, describing the features of an aspect of the subject); Do I use questioning? Do I set the children to discover more of the facts about a particular subject? (discovery). It is evident that the style in which the teacher presents learning experiences does affect willingness of children to learn. The teacher must also know the method of preparing his lessons so that it becomes easy to use them in class.

(c) **Personal Characteristics of the Teacher**

The kind of attitude that the teacher brings toward teaching is important in the teaching-learning process. It is almost self-evident that one cannot do what he does not like well. It is important, therefore, for the teacher to love his job and the children or adolescents who he teaches. This is one way in which he can get the learners to believe in what he is doing and to have regard for him. Such regard translates into general love for the school and what it stands for. We expect the teacher to show warmth, understanding, affection, and unconditional acceptance to all the children in his class. The teacher in class is like a parent to all the children. It is a bad parent who shows open affection for some of his children and dislike for others. The likelihood is that those he does not like will also show their lack of fondness for him. More than this, it will lead to equating him with the negative aspects of schooling and the conclusion that there is no point in going to school. The teacher is expected to remain close to those that he teaches. He should be interested in understanding their problems, in and out of the classroom. Where possible, he can contribute towards solving the students' problems by viable approaches that could be adopted. In relation to this aspect, he should be familiar with the way of life of the area in which his school is located. This will help him know those things he can do or say to the learners and those he ought not do or say. Also, he must get acquainted to the customs, the mores, and total culture of the people. Knowledge of all these is a sure way for the teacher to make himself part of the community in which he serves.

The teacher should be cheerful, have a sense of humour, and be able to manage his own crisis. For example if a man disagreed with his wife the previous night, it does not quite speak well of him to carry the experience into the classroom. If he does, it will easily be noticeable and he may resort to a style of managing the class which the learners were not used to before this. Instead, he should learn to separate his personal problem from the demands of his job and learn to deal with each aspect at the appropriate time.

(d) **Retaining an Interest in Learning**

The primary function of a teacher is instruction. His job is such that should encourage people to learn and even to add to the stock of knowledge. Children in a teacher's

class are supposed to be inspired by him to such an extent that they define various aspirations for themselves. If he should be able to achieve this objective, it follows that the teacher himself must be actively interested in the continued acquisition of knowledge. In our time, it is now generally agreed that learning is a process which begins at birth and goes on until the end of an individual's life. On the basis of this, the teacher should not be content with his present level of attainment. It is probably with this sort of idea in mind that you are making effort to improve yourself.

New ideas are usually contained in journals, magazines, books, newspapers, and newsletters. Of course, we do not discount the influence of radio and television on the mind of an individual. If a teacher fails to make use of these various influences, he will be functioning with a fixed stock of knowledge. He will be unable to know what new ideas there are not only in his own field but in the entire area of education. He will also be ignorant of new teaching methods which gradually emerge on the educational scene. All of these should make us see the necessity for us to be constantly engaged in the search for knowledge. Teachers who develop this ability find it a very rewarding experience.

THE LEARNING ENVIRONMENT

This includes: (a) the classroom, (b) the psychological environment, (c) the environment of the immediate community, and (d) the larger Nigerian society.

(a) The Classroom

The physical setting for learning affects the learner. Within our own context, this is made up of the classroom, the library, laboratories, and other places where formal teaching is done. The setting must be attractive enough to make children wish to spend long hours there. What we have presently in most of our primary and secondary schools does not meet this requirements. The typical village classroom is part of an unattractive building. The roof may still be in place or may have been blown off by wind. If the latter is the case, children are forced to study without being protected from the effects of the weather - rain, sun, and wind. This kind of situation in which the physical comfort of the children cannot be guaranteed is not ideal for learning.

Even when the roof to the building is intact, what we often have is a large hall which has been partitioned with plywood or some other substance. No mechanism exists to check the level of noise that filters from one room to another. Again, we may find that in cases, where the teacher and his children share a single classroom, the appearance is dreary and uninspiring.

(b) The Psychological Environment

When we mention the psychological environment for learning, we have in mind the kind of atmosphere which the teacher creates for interaction between him and his pupils. Studies have shown that learning will proceed smoothly and enthusiastically if

pupils see the relationship between them and their teacher as non-threatening, warm and loving.

They should see themselves as participating actively in the process of learning and also in some decisions that affect them. This contrasts with a style in which the teacher shows no regard for the children, subjects them to abuse and ridicule, humiliates them, and even brutalises them thereby causing them physical harm. The latter style can only result in alienation from the teacher and dislike of schooling.

The psychological environment also has to do with the relationship between one learner and the other within the classroom. Children need to be taught the spirit of healthy competition, respect for others, and co-operativeness as important qualities which they require to be in school. Aggressiveness temper tantrums, envy and jealousy cannot form the basis for a healthy environment within the school.

(c) **The Family and Community Environment**

What happens outside the classroom also affects the process of learning. You will agree with the idea that the child's first school is his home. In that sense, the ideas and experiences that he gets from his father, his mother, and others who relate with him should help to advance the work of the school. A child's parents particularly are meant to play supportive roles to the school in terms of everyday care of the child and his education. They are supposed to show interest in what he does at school and how well he does them. In the case of educated parents, they can do some work which supplements that of the school.

Actual experience indicates that it is not even every parent who is aware of this function. More than this, we find that the struggle for survival in our country often keeps a child's parents out of the home for considerable periods of time. The net effect is that they do not have the time to attend to the needs of the child for learning. It is also common knowledge that very few parents own the kinds of resources which are required for good education of the child - radio and television sets, books, magazines, etc. With the worsening condition in our country, very few people can afford newspapers. The village or town in which a child lives may be far from having a library. Given this state of affairs, the child finds himself abandoned only to the work of the teacher in the classroom. In several situations, such work makes little allowance for the individual attention which a child is meant to receive during learning.

(d) **The Larger Nigerian Society**

The social context in which teaching and learning are done is also an important issue that should be considered. As its primary role, the school exists to advance the intellectual performance of the child. In line with this, it organises experiences which should achieve this stated objective. However, one finds that the larger society emphasizes other values which do not sustain the work of the school. The young children get the impression through what local leaders say and do that it does not pay for one to go to school. Experience shows that some of the least paid workers also happen to be those who have the greatest record of schooling. People whose minds

are not well developed get more money and recognition in the society than those who have theirs trained. This raises doubts in the minds of children who begin to wonder whether any point is made in going to school. The result is that a large number of young people either refuse to learn or dropout from school and take to other activities.

IMPLICATIONS

Lessons from the study of the Factors That Affect Learning.

- As in the previous unit, there are lessons which come out of our study of the relationship between certain factors and learning. It is important to note these lessons and let them guide you in studying subsequent units and in your functioning as a teacher.
- We have learnt that the pupil, the teacher, and the environment are important factors in learning. The learner is the most important of these factors because without him there will be no learning to do. The teacher is important since he is the person who provides the learning experiences which the learner needs. The learning environment counts because it represents all the elements which act to affect the learner in one way or another. The teacher should take these factors into account in planning the learning experiences of children.
- Each learner brings his own kind of background to school. Such a background will be a strong factor that spaces the attitude of child towards schooling.
- Important characteristics are the age of the learner, self-concept, family background, peer group influence, and level of ability of the learner. Teachers in the primary school can do their work with greater effectiveness if they take into account and show awareness of these variables that go with learning.
- The teacher is the person who directs learning. To be able to do so, he needs to have knowledge of subject-matter, good approach to teaching, love, respect for learners, and a lasting interest in adding to his stock of knowledge.
- The implication of this fact is that teachers have to work towards acquiring these abilities that are vital to the work of educating children.
- The learning environment consists of all other influences that affect the child's development. There are the classroom, the psychological environment, the family and community environment, and the larger Nigerian society. The important lesson is that teachers should endeavour to look at the effect of the environment on each child while designing activities for the learner.

ASSIGNMENTS

Attempt the following questions and complete all of them within 20 minutes.

1. Discuss four lessons that you have learnt from this unit.

2. Think of any problem that is related to unusual behaviour in your classroom. How would you use reinforcement to find an answer to the problem?
3. (a) List some names such as:
 - (i) bird;
 - (ii) goat;
 - (iii) mosquitoes; and
 - (iv) shirt;
- (b) (i) Ball;
- (ii) cassava;
- (iii) mango; and
- (iv) yam.

Ask them the one (s) that do not belong to the groups and why?

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UNIT 4: LEARNING THEORIES**INTRODUCTION**

Over the years, learning has been central to the study of psychology. There are many approaches to the study of learning as there are psychologists. The various theories they have propounded provide informed explanations on how human beings learn. In this unit, some of these theories and their implication for classroom teaching will be discussed.

OBJECTIVES

At the end of the unit, you should be able to:

- i) classify various theories of learning;
- ii) describe conditioning theories;
- iii) discuss the contributions of Pavlov, Skinner and Thorndike in understanding the learning process;
- iv) explain the basis of Gestalt psychology;
- v) explain Albert Bandura's contributions to the development of social learning; and
- vi) compare the divergent views of psychologists on learning

HOW TO STUDY THIS UNIT

- i) Refer to the materials studies in Units 1 and 2 in order to establish their link with the crucial subject of learning theories covered in this unit.
- ii) Carefully examine the objective of this unit and set your strategies for attaining them
- iii) Then read the contents of the unit noting each learning theory and especially how these theories would be employed to enhance learning in the classroom. Read other reference materials to acquaint you with other theories not described here
- iv) Attempt all the study questions.

THEORIES OF LEARNING

As has already been indicated, a huge amount of research and theoretical postulations on the psychology of learning have been developed by a variety of psychologists especially during the last century. So many approaches have been attempted by psychologists trying to build one theory or another in their endeavour to explain the problems of learning. Thus, there are quite a number of varying theories and approaches to solve these learning problems.

Theories of learning provide organized knowledge of the explanations on how behaviour develops in individuals and they also attempt to explain the mechanisms of behaviours involved in the learning process. There are significant roles theories of learning can play in helping our understanding of the process of learning and how we can facilitate this process for the benefit of the learners.

Classification of Learning Theories

Learning can be broadly classified into three; viz: stimulus-response (S-R) theories observational or imitation theories and cognitive theories.

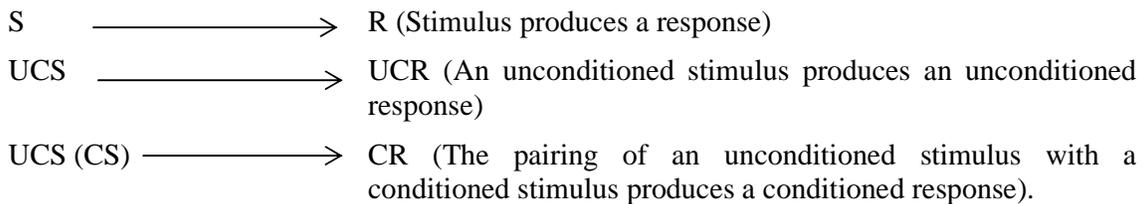
- 1) **Stimulus Response (S-R) Theories:** Stimulus response theories are further subdivided into two major categories. The first set of S-R theories is theories without reinforcement such as classical conditioning by Pavlov as well as learning theories by J.B. Watson and E.R. Guthries. The second set of S-R theories is Connectionism theory by Thorndike and Operant conditioning by Skinner.

CHARACTERISTICS OF STIMULUS RESPONSE APPROACH TO LEARNING

In order to make it easy for you to understand this unit, it is necessary for us to explain some of the words that are used to describe S-R learning. These are stimulus, response, unconditioned stimulus, unconditioned response, conditioned stimulus, and the conditioned response.

- A stimulus (S) is an event which causes a response. This response comes without any form of learning. If there is a plate of well - prepared rice before a child, the natural response is that his mouth begins to produce saliva.
- A response (R) is the behaviour which is produced by the stimulus, in this case, the salivating.
- An unconditioned stimulus is that type which has the natural quality that is needed to produce a response. When used time and again, the result is likely to be the same. A short way of describing it is the UCS.
- An unconditioned response is that which is produced immediately there is a stimulus. This is also known as the UCR.
- A conditioned stimulus is that which comes to produce a response similar to that which is produced by an unconditioned stimulus. To do that, it has to be repeatedly associated with the unconditioned stimulus. The short form is CS
- A conditioned response is the product of a conditioned stimulus. It is also known as the CR.

Usually, psychologists represent the relationships between different forms of stimuli and responses in this way:



CS → CR (A conditioned stimulus, on its own, comes to produce a conditioned response).

We are now in a position to discuss how S - R theory approaches learning. It sees human learning as that type which consists of the ability of an individual to establish a link between a stimulus and a response. Once a person is made to react to a stimulus in a given way that person will react in exactly the same way if that stimulus reoccurs.

In a situation in which a problem exists, initially the individual will not have any clue as to how he should solve the problem.

The first instinct is to adopt a trial-and-error approach. The more difficult the problem, the less likely that a solution will come easily. By looking at the various aspects of a problem and adopting a step-by-step approach, the learner eventually will stumble on the answer. Having come across the solution, there is likelihood that he will react the same way if there is a similar problem.

Generally, S-R learning believes that once the individual has shown desirable behaviour, such behaviour has to be encouraged through the use of reinforcement. In other words, something is done to the learner which increases the chances of his repeating the behaviour when occasion calls for it. For example, if I teach a child to brush his teeth every morning and follow each correct practice with approval: "good boy", "that's good" etc. I may find that the child would have learnt the idea of brushing his teeth. The words of encouragement or praises I say to him become some reinforcement for him.

It may so happen that at a certain time, the reinforcement is not coming. It will be discovered that the child may cease to show the behaviour. In the language of psychologists, we would say that the behaviour has become extinguished. After a period of waiting, the behaviour may be renewed, that is, the individual begins to exhibit the desired behaviour again. In such a case, we usually say that **spontaneous recovery** has taken place. With this happening, reinforcement can be further used to sustain the behaviour.

S-R theory also distinguishes between two types of conditioning. One is referred to as **classical conditioning**. An example of classical conditioning is one in which a child reacts with fear each time he sees a masquerade. What happens is that the child may have been made to associate masquerades with fear. Subsequently, the sight of one will produce fear in him. In classical conditioning, the person involved in learning is regarded as passive. As we shall show later, in an experiment which Pavlov did, (remember him?) the animal is not expected to do something before receiving its reward. Learning occurs once the conditions that produce the behaviour are there.

On the other hand, there is **instrumental conditioning**. In this type, it is believed that the animal has to work on its environment in an active manner so that it can get reinforcement. This ability of the animal to operate on its environment is known as Instrumental or Operant Conditioning. A feature of instrumental conditioning is that the animal is required to be actively involved in the learning situation before it can receive reinforcement. Instrumental or Operant Conditioning has formed the basis for some learning activities. Having been made to respond to a given stimulus, the human child learns to generalize this response to other,

similar stimuli. For instance, a child is trained to greet his father and mother every morning. There will be a tendency for the child to extend such behaviour to adult persons outside his home. The other side of the coin is known as **discrimination**. In this second example, the learner is required to show that there is a difference between one stimulus and another. If a child has learnt that mosquitoes, hens, cockroaches, and goats are all animals, he also should be able to note the differences between them. He should say, for instance, that a goat is not the same as a hen because both have different types of legs; mosquitoes and cockroaches fly, etc. Also, given examples of trees, a child should be able to say what not a tree is when he finds such a name in a list.

Generalization and Discrimination are very useful qualities which all human beings require for their daily functioning. Without these abilities it would be impossible for us to differentiate between one object and another.

We would also find it difficult to establish similarities between objects. Many skills in Science and Mathematics depend on the knowledge of how to generalize and discriminate. An obvious one is the ability to classify objects using several criteria.

Ideas derived from Instrumental Conditioning have enabled us to learn about Programmed learning (described in Unit 1) and Shaping. The latter one requires further explanation. This is a method that is used to change human behaviour from undesirable to desirable forms. Criminals, smokers and delinquents can have their life - styles altered by shaping. The procedure involves teaching the individual what is expected of him. When the teacher observes that the learner has done what is expected of him, he administers reinforcement to the learner. The frequency which he does it will depend on the objective to be attained by the teacher.

Two major ways are known by which reinforcement may be given. These are **Continuous Reinforcement** (this means that reinforcement is given after every correct response) and **intermittent reinforcement** (reinforcement is given from time to time). Each of these methods of administering reinforcement can be further divided into two schedules of reinforcement. In one, the concern is with the number of responses one needs to make in order to be reinforced. In the other, we are interested in the time that it takes a person to make the sort of responses which we desire.

To take them one after the other, a Fixed-Ratio schedule (FR) provides reinforcement after the person has made a given number of responses. A variable ratio (VR) may provide reinforcement after every three responses or so. The ratio is determined by the person guiding the activity of learning. Interval schedules are the Fixed-Interval (FI) in which reinforcement is given after a set interval of time, may be five minutes. Variable interval ratio refers to a system in which the teacher can administer reinforcement every three minutes. The difference between the two lies in the number of reinforcements that can be made and the time to be taken.

Now let us examine some of the S-R theories in greater detail. Afterwards, we would discuss the other learning theories i.e. observational and cognitive theories.

- a) **Classical Conditioning:** This theory was developed by the Russian physiologist, Ivan Pavlov (1849-1936) at the beginning of the 20th century. Conditioning simply means learning or modification of behaviour as a result of the organism's interaction with the physical or social environment.

Classical conditioning emerges out of Pavlov's experiments with a dog. The experiment involves placing some food before a hungry dog, and the dog salivates naturally as a result. Food here is referred to as unconditioned stimulus (UCS) and salivation being the natural response is called unconditioned response (UCR) when however the presentation of food to the dog was preceded with the ringing of a bell and the sequence was repeated several times, it was found out that the dog salivated at the sound of the bell even when food did not accompany the bell sound. Here the bell became the conditioned stimulus (CS) and since the bells have conditioned the salivation response, the salivation is by analogy referred to as conditioned response (CR). The experimental sequence is given below:

1. Before conditioning

Food (UCS) —————> Salivation (UCR)

Bell (CS) —————> No response

2. During Conditioning

Bell and food (CS & UCS) —————> Salivation (UCR)

3. After conditioning

Bell (CS) —————> Salivation (CR)

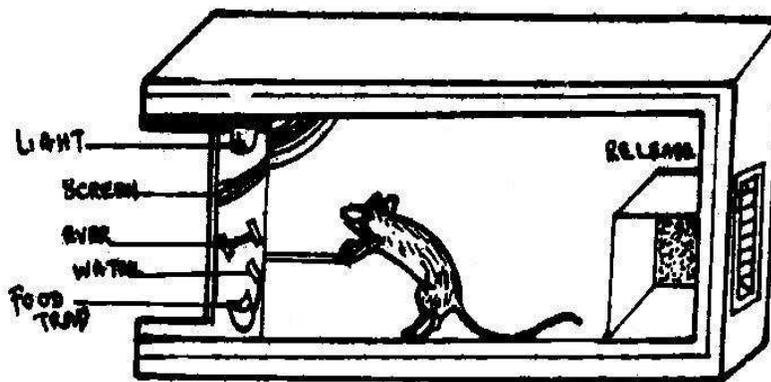
Although Pavlov drew no educational implications from this theory, it is important that we do so because of our interest in the relevance of his theory to our work as teachers. It is the teacher's duty to impress his pupils from the outset that he is their friend and helper whom they could trust. This may help build confidence in and liking for the school and its activities by otherwise skeptical school children. Another example of the applicability of classical conditioning to human learning situations is, if a teacher enters into classroom as soon as the bell for his lesson is rung, the pupils may soon be conditioned to remain ready for lesson to begin whenever the bell rings. This sort of conditioning works better if the pupils do enjoy their lessons with that teacher.

- b) **Operant or Instrumental Conditioning:** Operant or Instrumental or Skinnerian conditioning is another S-R theory of learning propounded by the American psychologist, B.F. Skinner (1904-1990) during the first half of the last century. Skinner insisted that there was a sharp distinction between classical and instrumental conditioning. While in classical conditioning the animal's behaviour is elicited by the CS, to that extent, the salivation is set off from the outside. However, in operant or instrumental conditioning, Skinner

insisted that the organism is much less at the mercy of the external situation. Its reactions are hence emitted from within Skinner called these instrumental responses operants. Skinner believed in the law of effect proposed by Thorndike and the tendency to emit these operants is strengthened/weakened by its consequences.

In conducting experiments, Skinner developed his own method and apparatus to study operant conditioning. His apparatus was commonly called the Skinner box. Skinner developed his box to study the behaviour of his experimental rats and pigeons within a short time and in an objective manner.

The Skinner box has a lever which can be pressed by the rat, and the pressing of the lever would set a mechanism which would deliver some food pellets through a food tube. When a rat is introduced into the box, a chance pressing of the lever would deliver some quality of food for the rat to eat. In a short time, it was observed that the animal goes on pressing the lever to get food reward. Skinner distinguished the salivation of the dog in classical conditioning from the pressing of a lever by a rat in the Skinner's box. Reflexive responses, which he called respondents, are involuntary. While most human behaviour is goal directed, purposive and willful. These are operants as they operate on the environment, make the altered environment suitable for the organism to go on striving and surviving (Mukherjee, 2002.)



A Skinner box. The rat in this chamber gets small pieces of food when ever it presses the lever one or more times.

Reinforcement: B.F. Skinner's experience with rats' and pigeons' learning to associate the supply of food made to coincide with certain actions of the animals, had made the latter learn the instrumental response through a process of reinforcement. Reinforcement is the increase in the frequency of responses when it is followed by a contingent or associated stimulus. It involves an increase in the frequency of a response when positive reinforcer is applied or a negative reinforcer is withdrawn. A positive reinforcer is a stimulus which when applied after a behaviour, tends to strengthen the chance of the behaviour being repeated in future. For

instance, rewarding a pupil for solving a problem in the class may strengthen or serve as reinforcement for the pupils to strive to respond appropriately in the future.

Negative reinforcer on the other hand is a stimulus which when presented after a behaviour tends to strengthen the probability of discontinuance in the future.

Punishment: According to Skinner, punishment is the decrease in the frequency of response when positive reinforcer is withheld or negative reinforcer is applied. Skinner explained two kinds of punishment i.e. punishment by application such as corporal punishment and punishment by removal or withdrawal. We will come back to the role of reward and punishment in learning later.

Implication of Operant Conditioning to the Classroom

- 1) Using negative reinforcement or punishment in the school can increase children's anxiety levels and lead to the adoption of undesirable escape responses.
 - 2) Ignoring disruptive behaviour can lead to extinction of that behaviour.
 - 3) Reinforcement is generally most effective when it immediately follows response.
- c) **Connectionism:** Another S-R theory of learning being discussed, here is connectionism. This theory was developed by the early twentieth century American psychologist, E.L. Thorndike (1874-1949). Thorndike was the first S-R psychologist (often referred to as the father of educational psychology) and was a pioneer in the study of animal behaviours. His experiments were carried out in which he studies how animals went about solving problems. Some of the animals he used were cats, dogs and chickens which were put in cages within sight of food after being deprived of food for a while.

Thorndike referred to his learning theory as S-R Association theory of connectionism or instrumental conditioning because the experimental animals learned behaviour that was instrumental in helping them reach their goals. The theory was based on trial and error process in which an animal placed in a problem posing situation would randomly seek to solve such a problem. Using his puzzle box, Thorndike allowed a hungry cat placed inside to get food only after pulling the right lever. After several attempts, the animal engaged more scientific trial and error behaviour. With repetition, it solved more and more problems. Subsequently, when association had become well established, the animal responded more appropriately. Thorndike advanced that learning is connecting and the connections have a basis in the nervous system. As a result of his experiments, Thorndike advanced his three famous laws pertaining to learning:

- i) **Law of Effect:** It states that a satisfying state of affairs leads to repetition of a given behaviour, whereas an annoying state of affairs tends to weaken a response. The point here is that connections are made or unmade by an organism based on the outcomes. In other words, reward or reinforcement supports learning.

- ii) **Law of Readiness:** This is the tendency of the physiological neurons to operate in order for connection to be made. The organism must be mentally set to perform the instrumental behaviour due to some motivation. If the organism is ready for the connection, the result is pleasurable and therefore enhances learning.
- iii) **Law of Exercise:** Repetition with meaning results in substantial learning and produces effective learning even though repetition by itself does not produce effective learning. Under this law, therefore, a strong bond or connection is established between a stimulus and a response as a result of practice. The more a skill or information is practiced, the more it will be mastered, applied and retained. For instance, children learning the alphabet or even the multiplication table often employ this principle to gain mastery of the subject.

Thorndike had laid great emphasis upon reward and punishment . He argued that punishment is much less effective although it does not have less effective weakening effect on learning. To Thorndike, learning is the stamping in of the successful S-R bonds while forgetting is the stamping out of the unsuccessful S-R bonds

Implication of Thorndike's Theory to the Classroom:

- ❖ Reward is important in learning. It strengthens the occurrence of behaviour it follows.
- ❖ Practice and repetition is vital in the learning process. However, practice efforts should be accompanied by feed back
- ❖ The law of readiness stresses the importance of preparation for learning. The teacher must wait until the learner is ready to learn and should give those experiences which help to enhance readiness. Preparatory experience that will hasten the development of readiness can be provided in elementary classes.

ACTIVITY II

1. Write detailed explanatory notes on ONE Stimulus-Response learning theory you studied. Outline the classroom implications of the theory.
2. Differentiate between classical and operant conditioning theories of learning.
3. Describe the use of positive reinforcement, extinction and punishment to the teacher.

PRINCIPLES OF TEACHING DERIVED FROM S-R LEARNING THEORY

As a result of our study of the S-R learning theory we have derived some rules which should guide the teacher as he does his work.

- Learning is a process of conditioning in which the learner comes to associate a stimulus with an appropriate response. Using this principle, we can learn simple things such as having affection for others, overcoming fear, greeting others, being punctual to school, toilet training, cleanliness, respect for elders, etc.

- Learning is built on the basis of one starting from simple learning and proceeding to the more complex. For instance, alphabets are learnt before a child begins to read. In Arithmetic, addition and subtraction are taught before fractions and compound interest. In like manner, we do not expect a four-year old boy to understand a lesson, "the structure of the atom." Simple learning, at all levels of education, is used to lay the foundation for more difficult work. The younger a child is, the less he can cope with difficult tasks. Even in a class of advanced people, some people may need to revise work which they did not quite understand at an earlier stage before they can benefit from more work.
- Learning should proceed from the known to what is unknown. According to this principle, a link will easily be established between a stimulus and a response if teaching is planned bearing in mind the experiences which someone actually has. For example, it makes no sense talking to a primary school child about a plane instead of a bicycle which he would most likely have seen before.
- Learning is helped by reinforcement. As you would have seen from the earlier sections, learning proceeds faster for the animals when they are reinforced. Reinforcement remains one of the cornerstones of learning.
- A teacher who knows how to use reinforcing words and objects to encourage his learners will notice that the willingness to learn will always be there.
- Learning depends on the nearness of stimulus and response. If we want a child to know that there is an object called 'table' rather than describe it, we present a table. In the same manner, we can show him a cat, a hen, a dog, a goat, etc. In classification, if a child is expected to distinguish between birds and four - legged animals, the stimuli must be presented at the same time as learning is taking place.

IMPLICATIONS FOR LEARNING AND TEACHING (S-R) THEORY

As we indicated at the beginning of this unit, S-R theory of learning is one of the frameworks that we use to study the changes which human beings undergo as a result of experience. It is mainly concerned with learning that comes through habits and step - by-step acquisition of skills. We have also learnt that conditioning is a matter of establishing a link between the stimulus and a response. From these and other points which have been given in the course of this unit, we can gain the following lessons.

1. The idea of teaching, starting from simple before getting on to complex ones, is one that any teacher can overlook to his own peril. The implication is that we must be able to organise our ideas and skills in such a way that the learning of one naturally leads to another. A teacher who is not able to estimate the level of difficulty of his teaching may not easily find out whether his work makes any meaning to learners or not.
2. S-R learning emphasizes that the teacher should take the needs of the learner into account. This is particularly so when we think of the effects of classroom activities on children. In this connection, we should arrange classroom learning in such a way

that learning is pleasurable. Learning proceeds best when the learner sees it as something that is desirable and which will be useful to him in one way or another.

3. The theory (S-R) also emphasizes the importance of generalization and discrimination. As we have shown in this unit, these skills are very necessary for learning about how to classify objects, form concepts and train children in problem-solving and creativity. Teachers need to begin at an early stage to offer children experiences which will enable them learn the skills of generalization and discrimination.
4. Reinforcement is a major condition for most human learning to take place. Children need to be reinforced for engaging in learning activities. Teachers can use both non-material reinforcement (words) and material reinforcement to encourage the efforts which children make to acquire knowledge.
5. S - R theory of learning also teaches us that reinforcement can be used to change the behaviour of children in and outside school. This is important in relation to managing the behaviour of children in class. Unusual behaviour such as lying, stealing, fighting, truancy, cheating, etc. can be changed through teaching and reinforcement.

ACTIVITY

1. List three examples of learning which can be explained by S-R theory of learning.

APPLICATION OF REINFORCEMENT IN LEARNING: PROGRAMMED INSTRUCTION AND BEHAVIOUR MODIFICATION

Reinforcement has already been treated earlier so a brief description of it is given here. It is an event, stimulus, action which tends to increase the rate of occurrence of a behaviour. It can be positive or negative. A positive reinforcement is where a pleasant stimulus is added to a behaviour as an outcome and this increases the chances of the behaviour occurring in future. In negative reinforcement an unpleasant stimulus is withdrawn from a situation with the result of increasing the rate at which a behaviour occurs. For example a child may decide to remove the unpleasant experience of losing his recreation time by attending to his class assignment so as to complete it and be allowed to go out to recreate instead of the teacher compelling him to stay in and complete the assignment during recreating time. The behaviour of attending to his assignment tends to increase in future situations.

Reinforcement can be provided continuously or intermittently. Continuous reinforcement occurs when the expected behaviour of a child is reinforced each time it is exhibited. On the other hand intermittent reinforcement occurs when the expected behaviour of the child is sometimes reinforced and other times not reinforced. Thus the behaviour may be reinforced at the first, fourth and sixth occurrences while it is not reinforced at its second, third and fifth occurrences.

Continuous reinforcement is best used when a new behaviour is to be acquired. However, to maintain the acquired behaviour intermittent reinforcement is best.

REINFORCEMENT IN BEHAVIOUR MODIFICATION

Behaviour Modification is an organized scientific way of changing an undesirable behaviour to a desirable one. The principle of reinforcement is used a great deal in Behaviour Modification mainly to improve the learning or acquisition of an appropriate acceptable behaviour.

A Psychologist like B.F. Skinner believes that it is better to find ways of using reinforcement to modify an unacceptable behaviour to an acceptable one than to use punishment which is commonly used in our Nigerian communities. Thus there are a number of methods in Behaviour Modification which rely on the principle of reinforcement to change behaviour. Four such methods are briefly discussed below. These are first the use of positive and negative reinforcement in changing behaviour, Behaviour Contract, Premack Principle and Positive Attention.

Use of Positive and Negative Reinforcement in Changing Behaviour Reinforcement, both positive and negative are used in changing undesirable behaviour. In the primary school, their use is encouraged since this stage of the child's development is still highly reliant on the authority of the adult.

Positive Reinforcement

It is already explained above that positive reinforcement can be used to increase the rate of occurrence of behaviour. If this is so, then parents, teachers and adults can use it to improve the desirable behaviours of children. In the classroom the teacher can use verbal reinforcers like praise, recommendation to reinforce the oral answers or behaviours of pupils. Verbal remarks like "excellent, good that is a very good answer can be effectively used to increase the frequency of pupils answering questions in the classroom or attempting to get questions correctly answered. Several behaviours of the child in the psychomotor or affective domain like washing glasses and dishes, cooking food, learning to write, saying a nice word to a brother or sister, telling the truth, can be reinforced by parents by the use of verbal reinforcers. Other forms of reinforcers which can be used are material reinforcers. In the primary school inexpensive items like pencils, crayons, erasers and pens can be used by teachers to reinforce an appropriate behaviour of a child. Prizes, special badges can also be used to honour pupils for the academic excellence.

For positive reinforcement to be used effectively certain guidelines are to be noted. First, it is important in most cases to reinforce an appropriate behaviour immediately it is exhibited. In some few cases reinforcement is better delayed; and example being teaching the child to be patient. Secondly, when you want a child to acquire a new behaviour reinforce him each time he exhibits the behaviour. For example if it is teaching the child to speak properly without crying, each time he speaks he is praised ("for example good that's the way to speak").

When the new behaviour has been acquired and it is to be maintained, it is best to reinforce intermittently. Another thing to note when using reinforcers is that reinforcers differ from person to person. One child may like to receive gifts, another may like praise better than gifts. For one individual, reinforcers may vary with time. As a five year old he may like fees as reinforcers, however, as a ten years old he may prefer praise to fees. Such changes imply

that it is important to know and use the things which reinforce a child best since the highly potent reinforcers of the child are the best for effecting behaviour change or improvement. Whenever, a reinforcer proves not to be effective in changing a behaviour it is to be omitted. Often times an undesirable behaviour is maintained by a reinforcer. It is always good to find out such a reinforcer and withdraw it if possible.

Negative Reinforcement

Negative reinforcement as explained above also helps to increase the frequency of occurrence of a behaviour when an unpleasant stimulus which hitherto has been hindering such increase is removed. Negative reinforcement is, however, used in conjunction with punishment. When a child knows very well that he will be punished if he fails to do his home assignment, he tends to do them so as to avoid the punishment. By always doing his assignments so as to avoid being punished he acquired the habit of doing his assignments (that is increase in the expected behaviour).

Adults are to note that whenever they use punishment to suppress an undesirable behaviour of a child they create opportunities for using negative reinforcement to improve an expected desirable behaviour. To teach a child to acquire the habit of telling the truth, spares him or reduces the punishment he is supposed to have received if he admits committing a certain offence, where the offence is committed without any intention to do so, the child may be spared the punishment. For example if a child in washing plates breaks one and admits he broke it unintentionally, he should not be punished.

He may be warned to be careful next time. However, if he denies breaking the plate and it is later found that he broke it, he is to be punished particularly for telling lies. Thus in using negative reinforcement, it is important to teach the child or let him be aware of the appropriate behaviour expected of him. In the example above, the parent would have to tell the child something like "because you told me the truth that you broke the plate you'll not be punished." It is also important to make it possible for the child to have the chance of exhibiting the appropriate behaviour. If a child stubbornly insists on behaving undesirably but then after receiving three lashes of the cane, pleads to be allowed to behave as expected, he should be given the chance to behave in an acceptable manner. To avoid further punishment the child is likely to choose to behave appropriately. Such an appropriate behaviour is negatively reinforced.

Punishment and Negative Reinforcement

- Punishment involves the infliction of pain or discomfort for some wrong doing e.g. canning, flogging, or shaming a pupil in the class. Punishment differs from reinforcement in several ways namely:
- While reinforcement increases, behaviour punishment decreases behaviour.
- Punishment is largely an interim measure. It is not longer lasting at best it only suppresses the overt performance of undesirable behaviour.

- Punishment does not necessary change the underlying behaviour that is being punished.
- Punishment causes problem of its own by creating student resentment on impairing teacher-student relationship.
- Physical punishment is generally ineffective. It should be minimally used for better result

SUMMARY

Theories of Learning

- Theories of Learning provide organized knowledge of the explanations on how behaviour develops in individuals and also explain the mechanisms involved in the learning process.

Classification of Learning Theories

- Stimulus – Response (S-R) theories: This can be divided into two viz classical conditioning and connections. Classical conditioning theory was developed by Ivan Pavlov. He experimented with a dog. the experiment involved placing some food before a hungry dog and the dog salivates naturally. Food here is referred to as unconditioned stimulus (UCS) and salivation is called unconditioned response (UCR). When the presentation of food was preceded with the ringing of a bell and the sequence was repeated several times, it was discovered that the dog salivated at the sound of the bell even when food did not accompany the bell sound. The bell became the conditioned stimulus (CS) and the salivation conditioned response (CR)

Operant or instrumental conditioning

- This is also called Skinnerian conditioning. Skinner postulated that the organism is much less at the mercy of the external situation. Its reactions are emitted from within. These he called instrumental response operant. He designed a box with a lever where he kept a rat. When the rat presses the lever food is supplied to the rat. When a rat was kept in this cage, he soon discovered that the animal learnt to press the lever to get reward i.e. food.
- Connectionism: This is another S-R Theory. E.L. Thorndike was the first S-R psychologist. His theory is that learning is a result of S-R association or connectionism.

ASSIGNMENT

Complete questions 1 – 3 within 15 minutes

1. What are the major advantages and disadvantages of Programmed Learning?.
2. Outline the guidelines one should follow in using positive reinforcement to change behaviour.

3. Describe how you will use behaviour contract to help a pupil stop stealing behaviour.
4. (a) Observe a child in your neighborhood and note down the activities he likes to do most of the time and those he does not like doing so much.
(b) Get a child who dislike mathematics and plan a programme using Premack Principle to help this child develop interest in mathematics.

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UNIT 5: COGNITIVE APPROACH TO LEARNING: GESTALT AND PIAGET

INTRODUCTION

In the previous unit, we dealt with the Stimulus-Response or S-R theory of learning. We indicated that along with Cognitive theory, they give us an understanding of how human beings learn. In this unit, we propose to examine Cognitive theory of learning in detail. The major objective is to show its many characteristics and thus enable you to find out the differences between Cognitive and S-R theories of learning. As we did in the last unit, we will show the experiments which were carried out in order to arrive at what we have today as cognitive theory. We also hope to consider some of the principles which derive from cognitive theory. By way of concluding the treatment of this subject, we will consider the implications of the theory to learning and teaching.

OBJECTIVES

By the end of this unit, you should be able to:

1. enumerate two qualities associated with Cognitive approach to learning;
2. state one conclusion from the experiments that go with cognitive learning;
3. mention two principles derived from Cognitive learning;
4. state two lessons that can be learnt from Cognitive theory;
5. provide two examples of learning that can be explained by the theory.

CHARACTERISTICS OF COGNITIVE LEARNING

As we did in the last unit, we will discuss two major ideas put forward by the Cognitive school of learning. The reason why we start this way is to make you realise that even among those who agree on a broad basis about what happens during learning, there are still some points that make them differ. No theory of learning can be said to be complete in the sense that it has brought in all aspects which scholars now consider to influence the process of learning.

In order to make the lesson clearer, we may as well introduce the major actors involved in cognitive learning that we are dealing with. One group consists of major names such as Max Wertheimer (1880-1943), Kurt Koffka (1887-1941), Kohler (1887-1967), Kurt Lewin. A second group which, for a purpose, consists of one person Jean Piaget (1896-1980) as its major advocate.

1 Gestalt Theory

Let us begin with the Gestaltists. Where the Conditioning school placed emphasis on learning which occurs as a result of placing the stimulus and the response in close relationship, the Gestalt school believed learning occurred by insight. They argued

that solutions to human problems cannot be reached by a bit by bit approach. In place of the S-R approach, they brought in the idea of insight.

Gestalt psychology emerge as part of the growing criticism of the stimulus response theories during the 1940s and 1950s. A group of German psychologists led by Wolfgang Kohler, Kurt Koffka and Max Wertheimer became very much dissatisfied with S-R connections as the explanation of processes as the proper subject for study and they advocated that we perceive and think of wholes rather than the S-R theory assumptions which claim that everything we see or think is put together of tiny pieces like those of a Jigsaw puzzle.

Gestalt is a German word meaning “pattern”, “shape”, “Form” or “Configuration”. The gestaltists believed that we react to pattern of our own perceptions when we face a problem, based upon condition in the environment. When we struggle with a problem, the solution may come to us all of a sudden. This quick response in perception on our part is called insight. Hence, the Gestaltist research focus was mainly in the field of perception. Perception here refers to the psychological process occurring in the brain of organisms leading to the organization and interpretation of sensory information received from given stimulus or stimuli. Perception mechanisms include analysis, synthesis, and integration of sensory information.

According to this view, when faced with a problem situation, the learner first surveys the circumstances which surround the situation. In doing so, the human being is using reasoning, experience, and his ability to see the relationship between one aspect of a problem and another. What is important when there is a problem is to look for what is known as a 'gestalt'. This word comes from German language. It represents the idea of pattern, organization, and wholeness. According to gestalt reasoning, there can be no part of a problem. A problem exists as a whole and must be seen as that.

Gestaltists further argue that, in facing a problem, the human mind is not closed. It is open and thinks of several approaches to the same problem. Man can display inventiveness and creativity which are qualities that are needed in order to approach a given problem from all corners so that a decision can be reached on the best approach which should be adopted. Whether in the solution to a simple or a complex problem, Gestaltists are one in pleading that a planned search to the answer be adopted. An answer comes ultimately, suddenly, but definitely. The person facing the problem is suddenly relieved because the correct idea comes to him. In the language of the gestalts, the individual has an "aha" feeling. The solution has arrived not by trial and error but by very conscious effort.

Gestalt learning uses the building of a house to compare what happens during the solution to problems. The first and natural thing is to lay the foundation. If the foundation is laid for a round building, then the builder cannot erect a square one.

The strength of the foundation also will determine what kinds of walls and other structures the walls can carry. Human learning is like the building of a house. The foundation must be laid in infancy, and on that basis more and more ideas can be

added. This indeed comes close to the view of another Cognitive theorist, Piaget, who we will consider next.

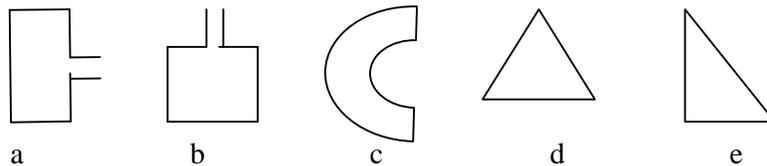
A series of experiments were conducted by the Gestaltists, especially Wolfgang Kohler using hungry chimpanzees placed in problem posing situations. The animals were placed in a cage and food (banana) was placed together with sticks and sometimes boxes with sticks and sometimes boxes which could aid their quest for getting the food. In these experiments, it was shown that the animal must perceive the total situation and relationship among all relevant parts of the problem before insight can occur in solving the problem. Secondly, insight tends to follow a trial and error pattern behaviour on the part of the animal. Once the behaviour is learned by insight, there is the possibility of high degree of transfer of similar problems.

The Gestaltists have developed a number of laws which emanated from their experiments:

- i) **Law of Similarity:** It suggests that similar words, numbers and objects tend to associate in a group and are easy to recall than dissimilar ones.
- ii) **Law of Proximity:** It suggests that objects which are close in space A and B below may as well be perceived as a sphere and a triangle even though they are a collection of dots arranged in a certain pattern.



- iii) **Law of Closure:** It suggests the tendency to complete incomplete patterns. For instance, we tend to perceive incomplete figures as complete.



- iv) **Law of pragnanz:** It suggests that our perceptual patterns always tend to be simple, regular and complete with no loose ends. The gaps are closed by the perceiver. The law of course operates with the principle of pragnanz in all sensory modalities.

EXPERIMENTAL PARADIGM

We will begin this section by examining the experimental work which Gestaltists did in order to arrive at a theory of learning. The school criticised the advocates of conditioning for not thinking about their problems efficiently. The reason why animals failed to solve problems meaningfully in classical conditioning experiments was because those animals had not been

placed in situations that would make them behave in a more thoughtful and intelligent manner. They therefore designed their own experiment. A typical gestalt experiment went this way:

A chimpanzee is placed in a cage. Outside the cage is a banana piece hanging from the top close to the cage. The task of the animal is to drag in the banana which is placed out of his reach without any form of aid. Inside the cage are a stick and box which the animal can use if it should so decide. The animal is placed in such a manner that it can see the stick, the food and the box inside the cage. It is able to survey the relationship between these different objects. Initially, the problem is difficult and the chimpanzee is unable to solve it. Very little progress is made.

The animal takes another look at the box, the stick and the banana. Finally, the animal climbs the box, takes the stick, and goes for the banana. Later stage of the experiment make the banana even more distant and the problem more complicated. On each occasion, the animal takes the same approach; first surveying the scene and subsequently deciding what it needs to do. What is the trick? The gestalt explanation is that the animal (the chimpanzee) thinks better than the animals used in classical conditioning experiments. He looks at the pattern of the problem and decides on an appropriate solution. Thus, it looks at the problem as a whole rather than view each aspect independently as a part or bit.

2 **Piagetian Theory**

Piaget believes that the basic purpose in getting knowledge is to enable the person to adapt to the environment. Neither a child nor an adult is a passive learner, since thoughts are not simply the products of direct teaching by or imitation of others. Knowledge is acquired as part of the effort by a growing person to come to terms with his world. Piaget also sees the individual as active, curious, and inventive throughout the period that he lives. In living, human beings explore the environment, and attempt to meet challenges, and interpret those events. Throughout life, the human being tries to understand his world and reconstruct it, that is change it. As he grows older and more experienced, his knowledge of the world becomes more organised and efficient. In adapting to his environment and also seeking to alter it, Piaget sees three abilities at work in man. He called these assimilation, accommodation and equilibration.

1. **Assimilation:** Assimilation is the tendency for the human child (particularly) to explain whatever new thing that he sees in terms of what he already knows or can do. Suppose a child has been told that objects that fly in the air are birds. Each time, she sees an object moving in the sky, she tries to explain that object using her understanding of a bird. It may then happen that she sees a low-flying helicopter one day. However, she will not be able to reconcile the noise, the shape, and the size with what she knows of a bird.
2. **Accommodation:** She then enters the next level of learning which is accommodation. This is the ability of an individual to change one's actions and ideas because of new ideas, new objects, and new information. In the case of our example, she will realise the need for placing the new object in a different

category. She can find out the name for the object from her parents or other adults. She now recognises that there is a new category of objects that fly and they are different from birds.

3. **Equilibration:** Having solved this 'puzzle', the child enters a state of equilibrium. This represents a kind of mental satisfaction - which comes from being able to relate a new idea to the old ones possessed by the child. The child first attempt to understand a new idea or action by using what he knows already (assimilation); when there is no solution, the child is forced to change his understanding of the world (accommodation). The balancing of assimilation and accommodation leads to the state of equilibrium. (The achievement of this state is known as equilibration). Piaget believes that the use of these abilities is an ongoing process in human beings. Man constantly adapts his behaviour to new circumstances and ideas. This tendency begins from childhood when children indulge in make-believe play.

They assimilate human experiences, which in turn are changed by accommodation. The result is a state of equilibrium. Piaget therefore believes that human knowledge comes to all through this process of interaction between the individual and the environment. This is possible because of the active nature of man which makes him wish constantly to discover and re-discover the world around him. Using the abilities which we have shown above, man is able to learn and develop intelligence. (You can remind yourself of the stages of development which were developed by Piaget. In this connection, see the Unit on Intellectual Development: Theories and Stage - EDU. 121 - Unit I)

EXPERIMENTAL PARADIGM

Piagetian Approach

Piaget began his studies as a Biologist. Out of the deep interest he had in the subject, he published his first article at the age of 15. As he became older he also was introduced to Philosophy. He became particularly interested in the branch of philosophy known as Epistemology, which deals with 'how' man comes to acquire knowledge. This interest in the nature of knowledge marked all the work that Piaget did. He became involved in finding out the events in the life of an individual which leads him to develop highly logical minds, beginning with the very earliest responses of the newborn infant. Piaget's interest was in discovering facts about learning which describes not just individual performance but what could apply to all human beings. He adopted an approach which was different from that of the Gestaltists. Rather than observe the behaviour of animals, he watched the behaviour of human beings. The differences in the various groups that Piaget watched was only based on their age. He watched infants, children, adolescents, adults. Using his own and other children, he observed behaviour as it occurs in real life. He created situations in which he could watch the reactions of different children to whom he gave special tasks. At other times, he interviewed the children, gave them tests and analysed the results of such tests. On the basis

of the painstaking work that he did, Piaget was able to write a great deal about human behaviour.

3. **SOCIAL LEARNING THEORY**

Social Learning theory commonly referred to as observational or imitation theory is primarily based on what a child learns in his environment as he interacts and observes others. This assists his socialization process which is congruent with his society's expectation.

The chief proponent of social learning theory was Albert Bandura, a social psychologist of Canadian descent working in America. Bandura and other social psychologists believed that learning by reinforcement and S-R generally does not explain the socialization process among human beings. They argued that unlike animals, human have a culture which they transmit from one generation to the next. Thus, people learn a multitude of solutions to problems that were discovered by others before them. For instance, people learn their mother tongue or the alphabet not by inventing anything. All they need is to listen, observe and imitate. These have already been solved.

Social learning is regarded as a powerful mechanism of socialization. The child observes another person who serves as model and then proceeds to imitate what the model does. Many cultures use such imitative patterns as a way of inducting the child into adult ways.

Then, how does a child learn a new response by imitation? Imitative learning is definitely not part of classical or operant conditioning or even cognitive learning. In social learning, imitation may occur even though the observer does not copy the model's actions immediately they occur (learning without performance) and even though he neither receives a reward himself nor sees the model receive one (Learning without reinforcement).

Social Learning is facilitated by a number of factors. These, according to Mwanwenda (1989) include: attention, memory, motor skills, reinforcement and identification.

PRINCIPLES OF TEACHING DERIVED FROM COGNITIVE LEARNING

Gestalt:

- **Learning is a product of insight.** This means that in solving a problem, the child has to survey all aspects of the situation. Even children are capable of making correct responses to stimuli provided they pay attention to details of the problem. Each experience that a child gets forms the basis for the acquisition of further knowledge.
- **Similarity of learning experiences and situations.** Human beings do not have to relearn the same thing each time they encounter it. The child has to be taught how to see similarities between one experience and another. The important consideration would be to fall back on previous experience and decide what aspects of it could be used to face the new idea or problem.

- **Learning involves exploration of the environment.** Through this process of asking questions, finding out answers, being imaginative, and showing excitement, the child acquires the skill for coping with the world and modifying it.
- **Human experiences and learning take place in wholes, not parts.** Problems in life cannot be solved in sequences or parts which have little or no relationship with one another. For instance, if a child has to memorize a poem, he should be taught how to get about it. The memorization of a quarter would not be a substitute for the rest.

IMPLICATIONS FOR LEARNING AND TEACHING

In this section, we present a few lessons which we believe will assist the teacher in the planning and guidance of learning experiences.

1. Cognitive learning, whether we are thinking about the Gestaltists or about Piaget, emphasizes role of experience in dealing with human knowledge. This means that children need to be constantly reminded of the need to use knowledge which may have been gained in the past as a building block for tackling subsequent problems.
2. Transfer of learning is an important idea in cognitive learning. Children should be made to look for similarities between one learning activity and another. Rules or strategies that have been used in one situation may often be used in similar situations later.
3. We have learnt that insightfulness and purposefulness are necessary qualities in learning. This implies that the teacher should direct children to look for pattern and relationships in facing learning activities in the classroom. In so doing, they find out that for any problem, there may be options. Which of these options will apply to a particular situation will depend on a careful analysis of the nature of the problem. Having made the analysis, the learner chooses a definite and profitable approach to the problem.
4. Cognitive theory also emphasizes the use of reinforcement in the encouragement of learning. Classroom work today relies on reinforcement for part of the effectiveness of the teacher. Teachers should know the kinds of reinforcers which can be used to encourage learners and use them to the advantage of our educational system.
5. The human infant is extremely pliable and can be taught a variety of ideas and skills. The lesson from this is that we should create the necessary climate for children to profit from several influences. The teacher ought to believe that human beings can be taught no matter how unreceptive they are to present ideas.

ASSIGNMENTS

Attempt the following questions and complete all of them within 20 minutes.

Discuss four lessons that you have learnt from this unit.

ACTIVITY I

1. Discuss the classification of learning theories
2. Identify three major stimulus-response theories of learning and discuss any one in detail
3. Examine cognitive learning theories and explain in detail the Gestalt view
4.
 - a) What is social learning?
 - b) Discuss the basis and process of social learning.
 - c) What factors facilitate social learning?
5. Discuss the significance of studying learning theories to teaching and learning.

SUMMARY**Cognitive Learning Theories:**

- Gestaltists, a group of German psychologists who advocated that we perceive and think of wholes rather than the S-R theory assumption that everything we see or think about is putting together tiny pieces.
- Gestalt is a German word which means pattern,” Shape,” “Form” or “configuration” The gestaltists believed that we react to pattern of our own perceptions when we face a problem. Solution to a problem may come to us all of a sudden. This is call insight/ perception- a psychological process which occurs in the brain of an organism leading to the organization and interpretation of sensory information received from a given stimulus or stimuli.

Social Learning Theory

- This theory is commonly called observational or imitation theory. It postulates that a child learns in his environment as he interacts and observes others.

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UNIT 6: MEMORY: REMEMBERING AND FORGETTING AND THEIR IMPLICATIONS TO EDUCATION

INTRODUCTION

Memory is at the centre of human living, progress and activities. Without memory, we can not remember; we can not think; we cannot learn; and we cannot solve problems. We would not be able to know danger and run away from it. We would not be able to invent Science and Technology. We would be completely blank. It would then mean that the individual would be experiencing afresh the same thing over and over again. It would be like trying to fill a bottomless pit.

But with memory, we are able to store away useful information and recall them when needed. We can think and solve problems. We are able to learn, store what we have learnt and recall it for use whenever necessary. There is a two-way relationship between learning and memory. If information acquired from learning is not stored in the memory, it will be lost and so we would be unable to recall it. On the other hand, the information we have already stored in our memory, influences our new learning.

To be effective, a teacher must acquaint himself with the way memory works. He must find out why children forget and be able to prevent it. He must consciously teach to promote effective storage of the material learnt by the students. This unit will therefore describe how memory works, the major reasons why we forget and the implications of these for learning and teaching.

OBJECTIVES

By the end of this unit you should be able to:

1. Describe the information processing model of memory.
2. Give at least five reasons why we forget based on the information processing model.
3. Describe at least six measures that the teacher can adopt to promote remembering among his pupils.

MEMORY

Memory and learning cannot be separated because memory is the reservoir of our accumulated learning. It is therefore catastrophic for one to lose his memory i.e. lose all that he has learnt including his language and even his name.

In psychological literature, memory is our ability to store and retrieve information. It is very important for the survival of the human species for without it, no one would retrieve any previously learned information. People think and reason using remembered facts and can only deal with the concept of time-past, present and future with the aid of memory.

Memory is divided into two: Short Term (STM) and Long Term Memory (LTM).

Short-term memory is where the information received, processed and retained only for a short while. Short term memory is of a limited capacity and therefore cannot store information for a long time

According to Mwanwenda (1989), Miller in 1956 reported that most human beings can retain an average of seven items of information at a time in short term memory. Given short term memory's capacity for retaining information, people tend to be selective about the stimuli they receive and focus only on what is perceived to be relevant and important for further processing.

Long term memory on the other hand is not only unlimited in capacity but also capable of retaining all the experiences a person had during his life time. Information in long term memory may not be forgotten easily.

Researchers have shown that there exists three main processes or phases in learning. The first phase is the acquisition or encoding phase during which the learner takes in or assimilates the materials to be learned. It is the process whereby information is put into the memory. Next we have the storage phase in which the learner stores what is acquired from the first phase. Finally, there is the retrieval phase when the learner recalls the information out of the storage when needed. It relates to the recovery of stored information from memory.

How does memory work? Why do we forget? How can we promote remembering? These are important questions for the teacher. Various theories have been used to explain how memory works. About the most comprehensive theory of memory is the information processing model of information. We shall see how the theory explains the processes of encoding, storage and retrieval.

The Information Processing Model of Memory

In this model, there are three levels of memory, namely;

- i) The sensory memory (SM),
- ii) The Short-Term Memory (STM), and
- iii) The Long-Term Memory (LTM).

Below, is a diagram explaining the model. As you read along refer to the diagram.

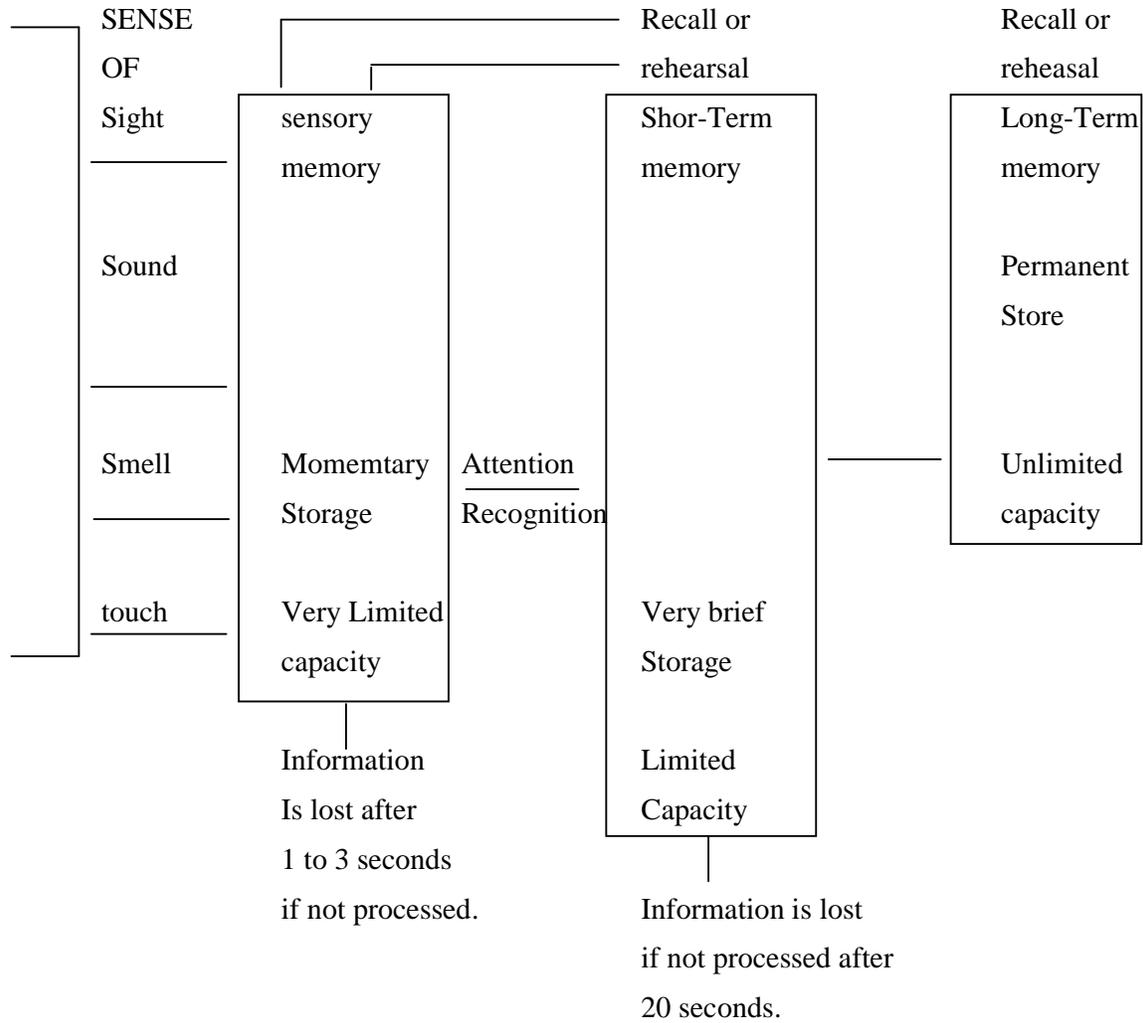


Fig. 1 The Information Processing Model of Memory (Adapted from 1986 Dennis Child, Psychology and The Teacher, London, Cassell).

According to this theory, each memory store varies as to how much information it can hold and for how long. The flow of information between the three memory stores is controlled by some processes, namely: recognition, attention, rehearsal, encoding and retrieval. We shall now take each memory store and see how much information it can hold, for how long and how much it relates with other memory stores.

1. The Sensory Memory (SM)

This is also called the **sensory register**. It is the first store in the system. As soon as we experience a sensation (smell, sight, touch, taste etc.). It enters our sensory memory. The sensory memory holds the information just long enough (one to three seconds) for us to decide whether to **attend** to it or not. If we don't attend to it and **recognise** it as meaningful or useful or relevant, it gets lost or disappears. But if we

attend to it and recognise it, it is then moved to the next level of memory for further processing. That is, to the Short-Term Memory. For example, it is possible to read through this unit without being able to recall what you have read, although you had 'seen' the words. This may be because you have not recognized the information in it as useful or related to your past experience. The two processes that determine whether or not information in the sensory memory is processed further or not are attention and recognition. And both are controlled by the nature of the information itself (e.g. familiar, meaningful or related to previous knowledge, etc) and related past experience (e.g. pleasant, interesting, etc.)

2. **The Short Term Memory (STM)**

Once information has been attended to and recognized as meaningful, it is transferred from the sensory memory to the short-term memory. The short-term memory lasts longer than the sensory memory. It can hold information for approximately 20 seconds. It also has a limited amount of information it can store. It holds information for immediate use and for further processing into the long-term memory. This is why it is also called working memory. Information not processed within about 20 seconds disappears. This problem can be dealt with through rehearsal (is the repetition of information to oneself). It may be for immediate use as when you chant a telephone number to yourself while dialing the telephone.

You keep chanting it so that you remember it while your dialing lasts. As soon as you finish dialing you forget it. Apart from this rehearsal for temporary use, we may also rehearse information so that we don't forget it again. To do this, we link the materials to be learned to our previous knowledge already stored in the long-term memory. We do this by using some devices. For example, to remember the days of the month, we learn the rhyme "thirty days has September. April, June and November,..." or the spelling rule "i before e except after c" or we use the acronym BODMAS to stand for Bracket, OF, Division, Multiplication, Addition and subtraction in that order. These are called mnemonic devices.

3. **The Long-Term Memory (LTM)**

It is believed that this memory store has an unlimited capacity for storing information. It is also relatively permanent store. That is, information in the long-term memory **does not decay**, it does not disappear. It is the long-term memory that enables us to recall memories from long ago. All the knowledge, skill, interests and attitudes of this world and of ourselves that we have are stored in the long-term memory. The long-term memory is organized in terms of personal episodes and schemata. Our day-to-day personal experiences or episodes such as what we did, where we did it, and at what time we did it are recorded as episodes in the long-term memory.

This is called episodic memory. It is like our diary or autobiography. Such information are often difficult to retrieve unless cues or contexts are given. We normally don't pay close attention to when and where we experienced certain events. Objects, concepts, relations, qualities, events, facts, principles, are stored in the long-

term memory in categories or classes". Because these are made up of interrelated concepts and rule that have been encountered repeatedly in a variety of contexts, they are less subject to forgetting than episodic memories.

The individual categorizes or classifies in-coming information according to an existing `scheme` or `format` in this memory. Such scheme or `picture` determine the degree to which learners attend to and understand new information, how much information is recalled, and how accurately it is recalled. In general, human beings process information very systematically.

Our ability to understand and recall what we experience largely depends on how much information we are made to deal with at one time. **The longer the speed** the more technical and unfamiliar the new learning, the less able we learn them and therefore recall them. It would take more efforts to learn them. Moreover, the extent to which information is organized (during presentation to us or the more we can organize the new experience) and meaningfully to us the more we understand it and are able to recall them. Finally, each individual needs to know how his memory works as this is very useful in knowing what memory strategies can be most efficient.

Our school children too need to be made aware of the existence of memory processes (e.g. attention, rehearsal, encoding) and how they can be controlled for the purpose of learning and remembering. The knowledge of how one's memory works is called metamemory. For example, we know that interesting material is remembered better than non-interesting material, it is easier to recognize than to recall something; that lengthy amounts of material take longer the time lag between learning and recall, the less we are likely to remember. Such knowledge enables the child to make a realistic appraisal of his memory ability and minimises discouragement.

Factors Aiding Memory

A number of factors have been identified which enhance our ability to store and retrieve information already learned. Teachers working for the promotion of teaching and learning need to be mindful of these factors that would help them fulfill their duties. The factors are highlighted below:

- i) **Recognition** - The product of two sets of information S-R already existing in long term memory
- ii) **Rehearsal** – When the information received in the sensory region is selected for further processing. This involves repeating or reciting the skill or information in order to store it in long term memory
- iii) **Organisation** - if the information learned fits into an organized pattern, it may easily be remembered.
- iv) **Meaningfulness** – if the information learned fits into a meaningful pattern it may easily be remembered.
- v) **Mnemonic devices** – These are special phrases of symbols used to group information. For TV may stand for television, or BBC for British Broadcasting

Corporation, etc. Mnemonic devices help in the learning of unfamiliar information.

- vi) **Attention** – This is the process of selecting vital information for further processing. Unless selective and proper attention is given to what is to be learned, learning is unlikely to be effective.
- iv) **Relearning:** This is where a person is required to learn again information which was experienced before. It is mainly for research purposes to determine whether relearning would take more or less time than learning for the first time.

FORGETTING

Psychologists have made attempts to study or understand why we forget certain body of information or skill after a while. A number of explanations are often given on the causes and process of forgetting and how these may affect learning or what may have been learnt. These theories are:

- i) **Passive decay:** - This is a result of memory trace fading away. Memory trace is a mark of representation of an experience stored in one's brain. It assumes some kind of change in the physiology of the brain as a result of learning. Due to time passage and infrequent use of memory traces, the normal metabolic processes of the brain bring about the decay or fading of the memory traces of certain information. The traces of information would then slowly disintegrate and become extinct.
- ii) **Interference effect:** Interference theory describes how some old learning may interfere with or inhibit the learning of a new thing. This is called proactive inhibition. On the other hand, a new learning may interfere with or inhibit access to an old learning. This is known as retroactive inhibition.
- iii) **Motivated forgetting:-** This is also referred to as repression. Motivated forgetting occurs when we forget or suppress certain information which is likely to expose us to shame, fear, pain or guilt. People have their unpleasant moments and some would want to put those moments behind so as to avoid embarrassment and guilt.

WHY STUDENTS FORGET

A very important question for the teacher is: why do we forget? The proof that a child has learnt is his ability to remember something. But when he is unable to demonstrate or recall what he has learnt, the teacher would get disturbed as he would feel his efforts have been ineffective. The question of why we forget should interest a good teacher. As discussed in the previous section, learning involves the three phases of acquiring information, storing it and retrieving it when needed. It is therefore clear that forgetting may be due to failure of any of the three operations above. Below we examine the major reasons why our pupils forget.

1. Lack of Attention

Information will not be processed into the short-term or long-term memory if it is not attended to. It will disappear since it has not been processed at all.

2. Too much Information at a time

Our ability to understand and recall what we experience largely depends on how much information we are forced to deal with at one time. The sensory memory and the short-term memory have limited capacity for storing and processing information. Wherever the pupils are given too much work at a time, only a part of what is taught can be assimilated. The rest is forgotten.

3. Poor Rehearsal

When material being learnt is not well rehearsed it cannot move from the short-term memory to the long-term memory. Similarly, material in the long-term memory will be difficult to retrieve if it is not used for a long-term memory. Indeed, there is a limit to the amount of time that information lasts even in long-term memory. In other words, if material already well learnt is left unrevised for a very long time, forgetting sets in.

4. Poor Organization:

When children are made to learn disjointed facts or unrelated materials, they easily get confused and be unable to organize it into the scheme they already have in their long-term memory. At the time of recall, they are likely to find it difficult to get cues. But when a learning material is well organized (or can be organized) and it is meaningful, understanding and therefore recall is enhanced. The search for them at the time of recall becomes easy.

5. Serial Position Effect:

It has been found that when we attempt to recall a list of words, we begin by recalling words at the end of the list that is those more recently presented and then proceed to the recently presented and then proceed to the beginning of the list. The words in the middle of the list are likely to be forgotten. This is because the early items were better encoded or rehearsed and are therefore more likely to be stored in the long-term memory. Furthermore, the items from the end of the list are well recalled because they occurred so recently that they may still reside in the short-term memory. This can be easily demonstrated in the learning of the alphabets or numerals by children.

6. Previous Unpleasant Experience:

Previous experience recorded in the long term memory influences the recall of information. Particularly painful or sad memories or events are, though still the long-term memory, prevented from coming into our consciousness. This is because their recall would cause us strong feelings of guilt and anxiety. This is called motivated forgetting or repression.

7. Interference From Present or Previous Learning:

We forget because the learning of one group of materials may interfere or inhibit the recall of some other learned material. When children learn alphabets, similar

alphabets such as `b' or `d', `p' or `q', `y' or `v', may interfere with each other. The child may write `b' instead of `d', or `p' instead of `q', or `v' instead of `y'. When previously learned material prevents the recall of new learning, we say that there is proactive inhibition. Conversely, when newly learned material hinders the recall of previously learned material, we say there is retroactive inhibition.

REMEMBERING

Remembering is the recall of learned material already stored in the memory. We cannot remember what has not been learned and stored. When a material is well learned, it will be remembered easily. In other words, anything that will make learning permanent will be able to improve retention and therefore remembering. Similarly, retrieval of information from our memory will be facilitated if information is well organized.

Theories of Remembering

Psychologists have documented their works on how people remember information. A few of these are identified here:

- i) **Recollection:** This entails remembering in detail some previous event, Recollection is commonly used by psychoanalysts for treating people with psychological problems.
- ii) **Recall:** This is an attempt to remember a previous event or learned information without going into greater detail
- iii) **Recognition:** This involves presenting a person with something he has experienced to determine whether he is able to identify it as being familiar.

TEACHING FOR REMEMBERING

The following strategies are ways the teacher can promote remembering.

1. Attract and Hold the Attention of the Pupils:

The child is particularly faced with a wide range of stimuli at any one time. As a child he has not learned to handle or ignore some of these distracting stimuli. And unless he attends to what is being learned, he can not move them to the long-term memory. The teacher should therefore use a variety of strategies to attract and hold attention. Individuals are sensitive to any sudden change in the environment. Things that stand out, that break a continuity, or unpredictable are likely to attract attention. The teacher can therefore try the following examples:

- a. Vary your voice, gestures, body motions and expressions from time to time.
- b. Highlight the importance and usefulness of the learning material to the present and future lives of the pupils.
- c. Use attractive (coloured) chalk to emphasize important points written on the board.
- d. Train the children to make listening and observing a habit.

2. Use Rehearsal Techniques to Improve Short-Term Memory

Not only should the teacher encourage 'chanting' of information, he should encourage grouping of items of unrelated information.

This is called chunking - a technique for holding separate items of information in short-term memory by grouping them in some fashion. For example, in reciting the alphabet, the children can follow a rhythm, e.g. abodefg- hijk- lmnop- qrs- tuv- wxyz.

Instead of 26 unrelated information, we have 7 chunks which are more manageable. Another example: to remember the date of birth of a person born on the 3rd of May 1988, we can write the date in figures as 3.5.88 and sum up the first two figures to give us 8. The recall of 8 can help us remember the date.

The main purpose of chunking is to simplify learning by breaking tasks into small, easy-to-manage pieces. This technique can be useful in minimizing the serial position effect discussed under forgetting.

When a long list is broken down into shorter lists, we in effect eliminate the hard-to-memorize middle ground.

3. Encourage the Use of Mental Imagery:

Teach the children to make a mental image or 'picture' of what is being learnt. Let them visualize concrete and abstract words describe what they 'use'. Let them imagine what is going on in a story as it is read. During spelling lessons, let them imagine the appearance of each word and associate the words with their meaning. Let them form a picture in their mind's eye of diagrams, relationships, concepts, etc. Since children differ from one another in their powers of imagery, we should allow them to use as many of their senses as possible images when they have seen, heard, tasted, touched, said and written the learning material.

4. Organize the Material to be Learned:

As we saw in the previous sections, there is a strong relationship between the degree of organization meaningfulness of material to be learned and learning. Material that is well organized, orderly and systematic is easily understood and remembered. To maximize comprehension and recall, information needs to be presented in an organized, meaningful manner and matched to the pupil's level of cognitive development. Teachers should therefore help their pupils to grasp the meaning of each learning task. The materials to be learnt should be clear, simple and straight to the point. Give the main gists of the lesson instead of rambling. Let the children see the relationships or connections between objects, concepts, facts and principles. The teacher should use a variety of examples and graphical illustrations (drawings, diagrams, charts, posters, graphs, tables etc). He should emphasize understanding and application in the assignments.

5. Teach the children How to Use a Variety of Mnemonic Devices:

A good number of school work requires learning by 'heart'. We have to memorize the letters of the alphabet, numerals, symbols, biological names and systems, formulae, definitions, dates, poems, scientific principles, etc. The teacher should encourage the pupils to use various devices for improving recall. The devices for improving recall in a quick orderly way are generally called **Mnemonics**. The following are some examples:

- i. **Rhymes** for example, the calendar rule "thirty days has September, April, June and November..." and spelling rule "i" before "e", except after "c" for spellings like 'believe' 'receive' are useful aids to memory.
- ii. First letter mnemonics (called acronym) for example, BODMAS which stands for Brackets, Of, Division, Multiplication, Addition and Subtraction in that order, or ROYGBIV which stands for the colours of the rainbow-Red, Orange, Yellow, Green, Blue, Indigo and Violet, are also useful mnemonic devices,

Various other mnemonic devices exist. The teacher should explain how they work and support them with examples. Once the pupils have understood how mnemonics are supposed to work, they should be encouraged to construct mnemonics to learn various facts and concepts. Children also need to know how to use other perceptual organizers such as underlining important points, placing bars against paragraphs, using arrows to establish relationships between one idea and another, such perceptual organizers help the location and retrieval of valuable information.

6. Help the Child to Discover the Way his memory Works

It has been discovered that children's memory performance may be improved by helping them to understand how rehearsal, imagery, verbal elaboration and mnemonic devices contribute to effective learning. It is important that pupils be told in simple terms how memory works and the circumstances under which the techniques are most effective. They should practice using these techniques and find out which of them suits them best.

7. Minimise The Possibility of Interference:

As we noted when treating forgetting, interference in learning can impede memory and therefore recall. Interference in the material, the similarity of parts of the materials and the extent to which practice is massed. Interference can be checked by making the original and later learning meaningful. Rehearsal can also help to minimize such interference. Make clear distinction and enough discrimination between materials that interfere.

8. Create a Conducive Learning Environment:

As we noted in our discussion of memory, our past experiences stored in the long-term memory have a strong influence on our new learning and therefore on our ability to store and retrieve information. The emotional and motivational state of the child at

the time of learning can either facilitate or interfere with the recall of such materials. A worried child, for example, will find it difficult to recall what he has learnt. The learning environment should therefore be warm, loving, pleasant and interesting. Through proper and regular revision, for example, we can minimise the tension that often accompany the onset of examinations.

ACTIVITY

1. Explain the role of remembering and forgetting in learning.
2. Discuss at least two theories each of memory and forgetting
3. Account for the major factors aiding memory
4. Discuss the educational implications of the theories of remembering and forgetting.

UNIT 7: TRANSFER OF LEARNING**INTRODUCTION**

Why do parents send their children to school? Why are you doing this course? Why does the government spend the tax payers money in funding public education? Why does the teacher teach principles, concepts, facts, etc? Is school learning relevant to real life situation?

These questions are focusing on the usefulness of education and learning to the learner and to the society. This is the subject of transfer of learning which will wrap up this Unit.

OBJECTIVES:

1. Explain the meaning of transfer of learning with relevant examples;
2. Differentiate between positive and negative transfer;
3. Give the meaning of general and specific transfer, vertical and lateral transfer and sequential transfer.

WHAT IS TRANSFER OF LEARNING?

Transfer of learning (or transfer of training as it is sometimes called) is the influence that a person's learning in one situation has on his learning and performance in other situations. It is the carry over of learning experiences in one situation into other learning experiences. When we make use of our skills in Badminton to play Lawn Tennis, it means that we have transferred our learning experiences in badminton to lawn tennis. If a pupil carries over his learning of addition and subtraction of money in school to the real life shopping situation (where he gives or takes change), then there has been a transfer of learning. Thus, the whole concept of transfer of learning is about how much and in what manner that the learning of a given material aids, hinders or has no effect upon subsequent learning.

Positive and Negative Transfer of Learning

When we think of transfer of learning, we usually consider how one learning experience strengthens another. We need to realize that some learning experiences do weaken others. In other words, transfer of learning may be **positive** in which case learning in situation facilitates or helps our learning in others, or it may be negative in which case one learning experience interferes with or weakens another. It is also possible that there may be no effect at all of learning one material on another. In this case we say there is no transfer that is, **zero** or **neutral** transfer.

Positive transfer of learning is what we desire in education. We want the learning of addition in the school to help us learn multiplication. We want the child to apply the concepts, skills, theories, rules, principles that he has learnt in other lessons within the subject, to other subjects and to real-life problems. But the opposite effect can occur. That is, the learning of a concept, skill, theory, fact, rule or principle may weaken or hinder or

interfere with the learning of another. This is **negative transfer** of learning. For example, it is common for us to use certain English words while conversing in our native language.

Also, pronunciation in our mother tongue can negatively affect our pronunciation in English for example, the Hausa would say "ze" instead of "the", the Yoruba man would say "shush" instead of "church", the Ibo man would say "Lappa" instead of " Wrapper" Negative transfer can occur in two ways: when previous learning hinders the learning of a new material, we say that there is a proactive inhibition, conversely, we say there is retroactive inhibition when the learning of a new material interferes with (confuses) previous learning. While the teacher makes all efforts to promote positive transfer of learning, he also has to tackle the problem posed by negative transfer.

Forms of Transfer

a. **Specific and General Transfer**

Knowing that one learning has had a positive or negative or neutral effect on another is not enough. We would also want to know if the transfer has resulted from specific similarities or to general or non specific similarities. When we can identify the specific relationship between two facts or skills that make transfer easy or difficult, then we say that the transfer is specific. For example, without the knowledge of L.C.M., it will be difficult to do addition and subtraction of fractions. However general transfer can occur even when we can not trace it to a specific relationship. For example, our problem solving techniques will help us solve a problem whether in the school subjects or in real-life situations. General transfer may also result from our attitudes, mental set, know how. A child can generalize his fear of a reading book, or one text to other books or texts, or he may transfer his dislike for his teacher to another teacher in a different classroom without any specific similarities between them.

b. **Lateral and Vertical Transfer**

We also need to make a distinction between vertical and lateral transfer. Lateral transfer occurs when knowledge acquired in one context is applied to solving a similar problem in a different context. For example, our knowledge of addition, subtraction, multiplication and division can be applied to numbers, money, weight, linear measurement. Vertical transfer on the other hand involves moving from one level of operation to a higher level. This occurs when a previously learned ability or skill or knowledge contributes directly to the acquisition of a more complex capability. Most problem solving tasks in the school require the use of specific and lower-order kinds of skills, knowledge, facts, concepts, etc.

c. **Sequential Transfer**

Our school learning is often organized in such a way that we move from one step to the other, with each subsequent step building on previous steps. We ensure that what is learnt today is a follow-up to what was learnt yesterday and would facilitate learning that will take place tomorrow. This is sequential transfer. In infancy the

child learns to speak a word or two. Later, he learns to make sentences with the words. Later still at school he learns to recognize and learn the alphabet, to recognize and write words, sentences, paragraphs and stories.

HOW DOES TRANSFER OF LEARNING TAKE PLACE?

Every one agrees that transfer of learning from one situation to another takes place and that education will be more effective and useful if we promote maximum transfer of learning to future learning situations. The problem, however, is to know how transfer of learning takes place so that we can design means for promoting it.

THEORIES OF TRANSFER

Many learning theories have explained how transfer of learning occurs and how it can be promoted. Here, we shall briefly take three of the theories, viz:

- a. Identical Elements
- b. Generalization
- c. Transposition of Insights

a. Identical Elements

The identical elements theory of transfer was developed by Thorndike and his followers. According to them, transfer of learning occurs automatically between two learning situations if they both have identical elements. For example, because the identical skill of eye-finger coordination exist in both typing and the playing of a piano, learning typing will automatically influence the learning of the piano. Similarly, learning to ride a bicycle will help in the learning to ride a motorcycle. This is due to the similarity in the skills needed in both learning situations. Other elements that can bring about transfer are similarity in facts, concepts, action, principles, procedures or attitudes. To promote the transfer of learning therefore, we simply make connections between identical facts, concepts, principles. The teacher simply identifies the identical elements that exist between subjects or learning situations and teaches them directly.

b. Generalization

Judd and his followers insist that what we transfer to new situations are generalizations and not identical elements. To them, we learn rules, relationships, principles in one situation and transfer or generalize to other situations. For the teacher to promote transfer of learning, therefore, he should organize his teaching in such a way that the learner will constantly be made to see broad relationships between facts, concepts, principles, theories.

c. Transposition of Insights

The cognitive psychologists argue that we develop in one learning situation generalizations, concepts, or insights and then employ them (or transpose them) in

others. Thus, transfer of learning is a purposeful and deliberate activity; it is not automatic. For transfer to occur, a learner should not only be able to generalize, he should also understand how the generalization can be used, and he should have a desire to use it.

We can promote transfer, therefore, by helping our pupils to understand and discover many widely useful relationships, principles or generalizations. We must train them to recognize opportunities for transfer and we must make them to want to use such opportunities.

PRINCIPLES OF TRANSFER

The following principles have been derived from theories and researches into transfer of learning. They have vital implications for the teacher which we shall tackle in the next section.

a. **Similarity Between Learning Tasks and Situations Facilitate Transfer of Learning**

Transfer of learning is greatest when there is similarity between two activities either in content or procedure. Because similar procedure is needed for shooting the ball in netball and basket ball, the skill of shooting in one can be transferred to the learning of the skill in the other.

The sciences employ the scientific method and so transfer is possible between them. Transfer will easily occur between two subjects or activities if they have something in common such as facts, skills, methods, concepts, theories or principles.

b. **Mastery of a learning task increases the possibility of its transfer**

The greater the amount of practice on the original task, the greater the likelihood of positive transfer. Conversely, negative transfer is likely to occur if the original task is not well practiced.

c. **Variety of Experiences During Learning Promotes Transfer**

Generalization is more likely to occur when we present a variety of experiences during learning. Such variety of experiences equip the learner better with varieties of possible applications.

d. **Understanding of Principles and General Rules Promote Transfer**

It is easier to transfer knowledge of a general rule or principle to specific situations than to merely learn detailed facts. And transfer is greater if the learner understands the general rules or principles which are relevant in solving new problems.

TEACHING TO PROMOTE POSITIVE TRANSFER

1. **School Learning Should Be Purposeful**

Learning is useless if it will not be applied in future lessons, in solving problems or in real life situations. The teacher should therefore teach with specific objectives in his

mind. School learning should not be for passing examinations only. It should be a means to future learning and living. It is even wise for the teacher to stress to his pupils how the lesson or task will help them later in school or in life.

2. **Call the Pupils' Attention to Similarities Between Present, Previous and Future Learning**

Transfer is said to occur when connection is made between similar learnings. Teachers should make conscious efforts to relate what they are teaching to previous and future learning.

3. **Encourage Step-by Step Mastery in Learning.**

The teacher should encourage the pupils to master each skill, concept and principle before learning another. When skills, facts, concepts, principles are completely learnt, they become easily available for transfer to new situations.

4. **Emphasize Understanding of Concepts and Principles**

Concepts, rules and principles make it possible for learners to apply a single idea in many different situations. Knowledge of BODMAS can be applied to the solution of any problem in fraction if the concept is well understood.

The teacher should use concrete examples, illustrations, models, graphs, pictures, diagrams, to demonstrate concepts, rules and principles. Emphasize genuine understanding of concepts and principles rather than mere memorization.

5. **Give a Variety of Tasks and Examples.**

Variety of experiences during learning promotes transfer. The teacher should therefore present a variety of relevant examples and tasks for whatever is being learned. Numerous examples should be used in the teaching of skills and concepts. Such examples should be related to the direct and daily experiences of the child. The child requires opportunities for using his knowledge in a variety of ways.

6. **Help the Pupils to "Learn How to Learn".**

If children know how to learn, they can transfer such knowledge to other learning that they face. Project work is particularly useful in helping pupils develop the learning skills of identifying the problem, clarifying it, collecting information to solve them and presenting the findings. Pupils should not spend all of their time acquiring information alone. They should at least have few opportunities to gain experience using what they have learned.

7. **Encourage Self-discovery Among the Pupils**

In addition to helping pupils find solutions to problems through project work, the teacher should instil in the pupils the urge or desire to make discoveries. This can be done by being alert to new ideas and reinforcing them. Create a free, relaxed but creative classroom environment. Encourage and evaluate self-initiated learning.

8. Help the Child to Develop and Transfer Positive Attitude to Learning

Pupils easily transfer attitudes and emotions from one situation to another. Gratifying experiences can bring about positive attitudes towards learning. Teachers should give due praise to their pupils for their efforts and achievements especially when they solve problems under their own initiative. Pupils should be made to realize that a task which may be unpleasant or dull now will lead in the foreseeable future to a result that will be useful and pleasant. They should see problems as challenges to be tackled with all the knowledge at our disposal rather than as obstacles to be avoided.

GENERAL PRINCIPLES OF LEARNING

Going through the various learning theories discussed in the last unit, it is clear that a lot of lessons can be learned towards formulating an instructional procedure. In this Section, we would examine the lessons or factors or principles that aid classroom learning and thus enhance remembering and transfer of learning. . These include:

- i) **Reinforcement:** Reinforcement implies the use of reward and punishment in teaching. Reward is found to be normally more effective in aiding learning. All the instrumental conditioning theories and even social learning theory have emphasized the significance of reinforcement. To encourage learning, psychologists, especially Skinner recommend that reward or positive reinforcement should be used minimally or just enough to ensure that the appropriate behaviour will be repeated.
- ii) **Motivation:** This refers to what energizes a person to behave in a particular way. It is a complex concept, which deals with people's wants, needs, demands and desires. Motivation is central in energizing an individual to seek to learn or remain attentive and active in the learning process. A motivated learner strives to put greater effort in the classroom so as to achieve his or her goals. A detailed discussion of motivation and its relationship with classroom instruction will be presented in the next module of this volume.
- iii) **Feedback:** Theories of learning have for long emphasized the importance of knowledge of result or feedback as a factor aiding learning. Thorndike had emphasized this point when he modified his three famous laws. Evaluation of progress toward goals is very important. Practice works only if the learner sees the result of his practice. Feedback can be provided in cognitive learning by employing short, informal quizzes and then asking the learner to correct his own work. Knowledge of result in psychomotor learning is easier to provide.
- v) **Relevance:** It is easier to learn and to remember something if it is related to what is familiar, and if it has meaning or importance to the life of the learner. Thus, teachers would facilitate classroom learning when the content of the lesson is related to what is significant or motivating to the learner.
- vi) **Experience:** In as much as learning should be organized and be within the realm of the learner's capability, it must also be experience centred. Teachers and instructors must make use of teaching aids and materials that are within the experience of the learner so as to enhance the rate of assimilation and retention. Whenever a lesson is

experience centred, the learner would tend to see its relevance. Meaningfulness can be further enhanced when vocabulary is drawn at first from the experience of the learner.

THE LEARNING ENVIRONMENT

Learning environment refers to the learner's physical and social surrounding. Physical surroundings for the school child include a host of structures such as the school buildings, furniture, equipment and instructional materials. The social surrounding on the other hand refers to the child's teachers, peers and other people involved in the affairs of the school.

A conducive learning environment has since been emphasized as an essential requirement for a smooth teaching and learning process to take place. Almost all the learning psychologists had supported the establishment of a conducive atmosphere for learning to actually take place.

Socially, teachers are urged to be friendly and endeavour to become worthy substitute of the child's parents in order to motivate and reassure him or her. Teachers should use play method and employ a variety of learning aids especially for young primary school children in the classroom.

School children should be encouraged to feel truly at home whenever they are at school. Any environment that is perceived by the learner to be hostile may instill fear and apprehension which consequently could push the learners to take to truancy or even withdrawal. It is thus the primary responsibility of the school teacher and indeed school authorities to ensure that both the physical and social environment in the school are ideal and supportive of learning.

ACTIVITY I

1. Discuss the general principles aiding learning among school children.
2.
 - a) What is a conducive learning environment?
 - b) How can the teacher enhance a conducive learning environment?

LEARNER'S FACTOR IN LEARNING

There are so many factors relating the learner himself that can affect learning. These are:

a) **Health:**

A healthy child, is a wealthy child. The child's state of health is a very crucial factor that can affect child's learning. A child who is taken ill may probably miss many class lessons leading to poor performance.

b) **Readiness and Maturation:**

Maturation and readiness are twin concepts that can also affect learning. Maturation is the qualitative increase in physiology of a child. This also goes with the passage of time. It is also natural. With the passage of time, that individual increases in age. Every other organ in the body begins to mature. This maturation also, in a way,

implies a child's readiness to learn. It also goes along with the chronological age of the child. Without doubt, the age of the child determines what he/she will learn and how he/she learns it. As such, readiness, maturation, mental and chronological age are interwoven and can affect learning.

c) **Self Image perception:**

This is the way an individual child sees himself/herself in relationship with his/her environment. In a study by this author, it was established that self image perception affects learning. A child that perceives himself very low, automatically will develop low self-concept and vice versa. This in turn affects his/her self-esteem and self-actualization. A lot of studies have been carried out to establish the relationship between these concepts and learning.

d) **Motivation:** This is a force, a propellant, a push that activates a child to learn. This could be negative or positive, internal or external. When a child is motivated internally, it is said that the child is intrinsically motivated. When it is external, it is said to be an extrinsic motivation. Whatever might be the type of motivation, it can determine how a child learns.

e) **The Nature of Learning:** Another important factor that can affect learning is the learning task or the material itself. The meaningfulness of a learning task also affects the child's learning. There are factors that can enhance meaningfulness of materials. These include methodology or teaching strategies, organization, relevance etc. When a material is very meaningful, recall will be made easier and learning is enhanced.

f) **Peer group Influence:** The type of friends a child keeps can affect his/her learning. Peer behaviour and attitude could be acquired by a child. Hence, the child begins to copy his/her friend's behaviour. It is capable of affecting the child's learning. The detail influence of this will be discussed in another course.

In summary, there are so many factors that affect a child's learning. These are inexhaustible. One thing that is clear, a factor that is capable of affecting child A's learning negatively, can equally affect child B's learning negatively or in some situations, positively.

ACTIVITY II

1. Explain the learner's factor in learning.
2. List and explain factors that affect learning in children.

ASSIGNMENT

1. What is transfer of learning?
2. Of what importance is transfer of learning to the following?
 - (a) to the learner.

- (b) the teacher, and
 - (c) the nation.
3. Do you agree with the following statement? Give reasons for your answer.
 - (a) “Learning of principles and general rules and transfer of learning”
 - (b) Insights make transfer of learning possible.”
 4. Give any six strategies a teacher can use to ensure transfer of learning.
 5. Distinguish between memory forgetting and remembering.
 6. Give any five reasons why we forget.
 7. List any five strategies you would use in teaching for remembering.
 8. Name four techniques that you would use to encourage your pupils to use for memorizing a given learning materials.

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UNIT 8: MOTIVATION AND LEARNING**INTRODUCTION**

The term motivation is derived from a Latin word “movere” which means “to move” to action. Motivation makes us kick like an engine leading to action and performance. At every state of human development, there are certain needs that an individual wants to meet. The satisfaction of these needs is important in that it enables the individual to reach a state of equilibrium with himself, his society and the larger society. This is noticed in all spheres of life. For instance, learners in spite of their good brains and available learning materials, do not perform in their learning in the same vein. Workers, despite all the trainings and qualifications do not always perform well in their duty posts until they are motivated.

OBJECTIVES

By the end of this unit, you should be able to

- (i) define motivation;
- (ii) classify motivation;
- (iii) discuss major theories of motivation;
- (iv) identify levels of Maslow’s Hierarchy of Needs; and
- (v) list techniques that can be used to motivate learners.

DEFINITION OF MOTIVATION

Motivation is used as a concept to describe forces acting on or within an individual to initiate and direct his or her behaviour. It is defined as a pushing or moving power that makes an individual to strive to achieve a set goal despite difficulties.

Motivation as a concept or an idea also refers to that which initiates , increases or reduces the vigour or the enthusiasm of an individual's level of activity. As individuals, we often have reason(s) for engaging in one form of activity or another. Motivation provides the necessary force or impetus for learning or for performing any work that is worthwhile. Motivation comes from the word motive. Motives are desires to attain certain goals.

It is believed that the stronger these desires are present in an individual, the greater will be the effort towards achieving the goals. Therefore, motivation ensures that an individual applies himself until a task is accomplished. An enthusiastic teacher motivates his pupils by the use of rewards mainly and at times threats of punishment.

IMPORTANCE OF MOTIVATION

Motivation is very important in learning. Children would want to understand effortlessly what the teacher wants them to understand or learn. But in actual fact this wish or desire fails to crystallize. Motivation is essential in the learning process in order to improve the learning outcomes. It provides the desire in the pupils to learn.

Through it, pupils are encouraged to listen, to express themselves through answering of questions, take part in both individual and group assignments and in fact get involved or committed in the learning process by acquiring ideas, skills and concepts for total development. Since motivation provides the desire for the pupils to want to learn, this then results in pupils getting better grades, developing higher adjustment potentials and better self-concept.

Furthermore motivation helps pupils acquire more favourable disposition towards school in general and learning in particular. Through motivation pupils' areas of interest are constantly being harnessed or used. Healthy competition can be whipped up in pupils through motivating them in groups. In problem-solving, for example, pupils can be divided in groups to find out which group presents the solution to the problem first. The usefulness of motivation can be summarized as follows:

1. Its use helps pupils to pay attention in class.
2. It can lead to self-discovery and independent inquiry.
3. It stimulates pupils to higher achievement.
4. It helps establish cordial relationship between teacher and pupils especially when pupils find learning less boring and less confusing.
5. More learning outcomes are assured.
6. When pupils achieve through motivation, attendance at school becomes regular.

Classification of Motivation

The classification of motivation is always based on its source. This leads to the two broad categories of motivation which are intrinsic and extrinsic.

Intrinsic Motivation

This is the type of motivation that originates from within an individual. This does not depend on reward to be received rather, it involves doing something or carrying out an action with self conviction, self determination and self willingness. It is a biologically inherent will or drive or tendency to perform an act. Individual is self-motivated to achieve a particular objective without external factors.

A student who decides to work hard and excel in all his subjects or courses without being motivated either by parents or teachers' rewards can be said to have exhibited intrinsic motivation.

Some factors that enhance intrinsic motivation include the following :

- (i) Curiosity
- (ii) Goals set by individual
- (iii) Interest
- (iv) Mental stimulation
- (v) Greatness mentality/desire to excel

Students who exhibit intrinsic motivation do not need to be forced or pressurized to be serious in their school work, they do the right thing at the right time.

Extrinsic Motivation

This occurs when an individual is aroused to do a particular thing or behave in a particular way as a result of external factors. It stresses the importance of external condition as the source origin of motivation i. e external factors trigger the learner to be serious in his school work. Examples of external factors in extrinsic motivation include:

- (i) Incentives or reward
- (ii) Praises
- (iii) Competition
- (iv) Counselling
- (v) Punishment
- (vi) Parental expectation
- (vii) Availability of materials and interesting apparatus
- (viii) Success challenge from friends
- (ix) Previous performance

It is important to note that intrinsic motivation is preferred to extrinsic motivation. However,, not all students can be intrinsically motivated. As a teacher, you should encourage the use of both, but the latter should be used with caution to avoid its being in excess.

The choice of motivation will depend on age, maturity and needs of the learner.

Major Theories of Motivation

Many psychologists have researched into motivation which led to many theories of motivation.

We have already tried to explain to you in the foregoing section of this unit what motivation is generally. In this section, we want to treat in a greater detail the theories or views of motivation as held by different schools of thought and eminent Psychologists. We have selected Skinner from the S-R group, Piaget from the Cognitive group Freud'sPsycho analytic theory and we will also present Maslow's theory of hierachy of needs. In all these presentations, we will try and see how the different theories try to answer the following questions:

- (a) What makes a learner start an activity?
- (b) What makes a learner choose a particular activity or line of actions?
- (c) What makes a learner persist in an activity and end it at a certain stage?

1) S-R View of Motivation

Generally, the S-R view, which you studied in module 5 explains learning in terms of establishment of S-R bonds. In the typical experiments described in Unit 3 of the last module, the animals were denied food for some time. They were then placed in a situation to induce performance of desired activities through the use of reinforcement. B.F. Skinner's theory of Operant Conditioning emphasises the impact of reinforcement. Skinner and his colleagues argue that people begin life as blank slates and that our behaviours are shaped by experiences. Therefore Skinner and his followers explain motivation by determining why some experiences seem to arouse responses more than others.

This theory of motivation explains why a pupil is happier and more alert when the time for reading approaches than when the signal for maths is given. Early experiences of Skinner involved observing the behaviour of pigeons rats that had been deprived of food and noting the way reinforcement made them persist in certain activities to obtain food. Reinforcement led to associations between stimuli and responses. Based on these experiments, a conception of motivation was proposed that stresses the importance of **physiological drives** and the way these serve as the basis for other motives.

A pupil could be motivated to learn in order to earn a praise like "you have done it boy" from his teacher. Teachers who favour an operant conditioning approach make sure that the physiological drives of students are satisfied. Then they can reinforce students for correct answers by using material reinforcers (prizes, pencils, books,) and non-material reinforcers (praise, pat on the shoulder). Teachers should use reinforcement to encourage students to learn and these should be supplied at the appropriate moment.

2) Cognitive Theory of Motivation

Cognitive theorists believe that individuals are motivated to learn basically because they want to learn. They become aware that they need to explore to be active, to achieve. They plan and direct their own activities to attain whatever they desire or choose. So, although external reinforcement may help, it is the individual's own interest, plan and desire to succeed that nourish and sustain his actions.

The cognitive theory stresses that human behaviour is influenced by the way individuals think and perceive things. The theory also emphasizes that people are inherently driven to overcome gaps or inconsistencies between what they know and what they experience when what is perceived is not congruent with what is expected.

There is therefore, an imbalance in the individual because a psychological gap has been created. The individual attempts to react to this by filling the gap. In order to fill the gap, an inner drive or struggle is set in motion; this leads to motivation within the individual.

A situation where the thought of an individual is in agreement with the societal rules and regulations, is known as cognitive consonance but when the individual's thought is in conflict with laid down rules and regulations, it is called cognitive dissonance.

Although, Piaget's main interest is in intellectual development, he has much to tell us about learning and motivation.

Piaget says that if there is disequilibrium (dissimilarity) in children's experiences, there is an urge to overcome it.

When pupils' thinking is incorrect, questions are asked to help them revise their perceptions. Furthermore, this view encourages the use of discovery method to help pupils want to find out more about some topics or help them recognize gaps in their thinking.

This is related to Piaget's principles of equilibrium, assimilation and accommodation. According to him, pupils are born with a desire to maintain a sense of organisation and balance in their conception of the world. This he calls equilibrium.

An effort made by pupils to incorporate elements in the environment into their cognitive structure is referred to as assimilation. As new experiences are met, pupils modify their conceptions of the world. This helps them alter their responses to stimuli or things. This Piaget refers to as accommodation.

3) **Freud's Psychoanalytic Theory of Motivation**

Sigmund Freud believed that behaviour is governed to a very large extent by instincts (a natural tendency for people and animal to behave in a practical way using the knowledge and abilities that they were born with rather than thought or training they have received). These instinctual drives motivate people to seek gratification for bodily processes which enable them to maintain equilibrium. Freud believed that there are many objects through which our biological need can be gratified. Moreover, since instincts change, it is possible for our instincts to gravitate from one object to another in order to find maximum gratification (satisfaction) (Osanarenren 1996)

Freud postulated that the conflict people experience originates when the three systems governing the mind compete with each other.

The three systems are

The id

The ego

The superego

The Id: According to Freud, id is the primary source of all psychic energy and seat of instincts. The id is governed by the pleasure principle. The id wants pleasure at all costs without considering the consequences.

The Ego: Ego is the social self. Freud believed that the ego is the organized aspect of id. It provides proper direction to our impulses and urges. It functions on the reality principle.

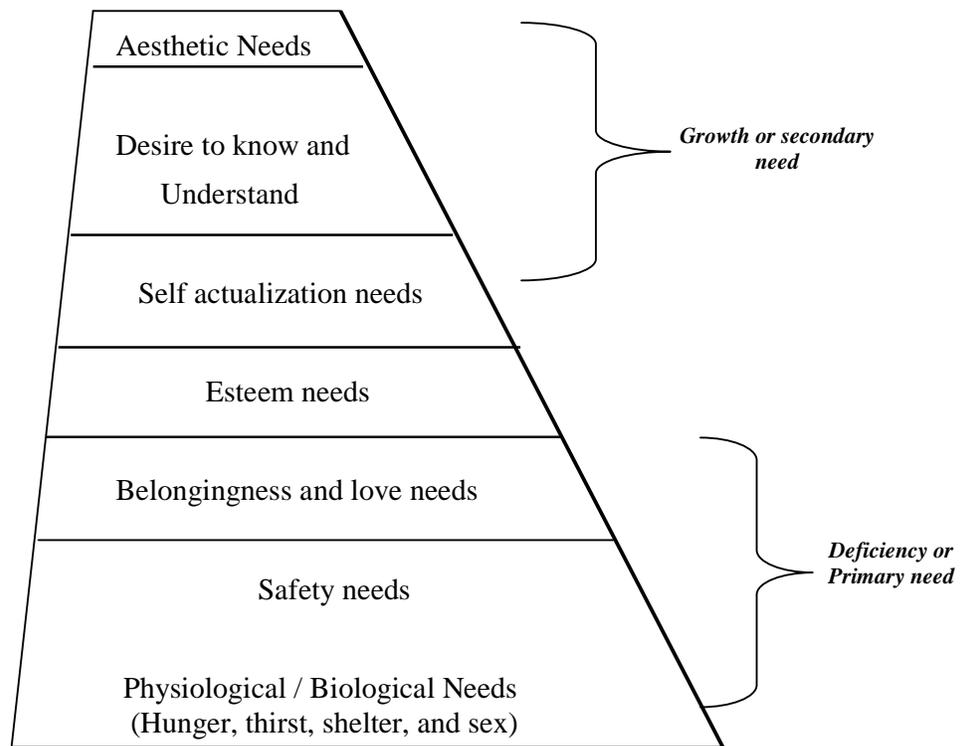
The Super Ego: The super ego could be likened to the internalization of societal values and morals instilled by parents. It is governed by the ideal principle. Thus, when the need for erotic and abnormal desire produces tension in an individual, in an attempt to reduce the tension, motivation occurs. In other words, the individual will now motivate himself to do what is acceptable in society and disallow unpleasant action.

4) **Maslow's Need Theory of Motivation**

According to Maslow (1954, 1965) Man is constantly pre-occupied with needs that must be met. As a result, he is predominantly directing his energy towards satisfying these needs. As each need is met, new needs arise. Abraham Maslow opined that human needs are hierarchical and that they are in two sets namely:

- i) the deficiency or primary needs
- ii) the growth or secondary needs

Maslow's Hierarchy of Needs



Maslow believes that deficiency needs must be satisfied (fulfilled) before the growth needs can be met, for example, physiological needs (hunger, thirst, shelter) must be satisfied before safety needs, then love needs and so on. In the same manner, a person cannot begin to approach satisfaction needs until he feels personally well-fed, safe and loved.

Physiological Needs

This is the lowest on the hierarchy. Physiological needs are the basic needs that human beings need for survival. These include food, water, rest, oxygen, emptying of bowel etc. If these needs are not met, the individual will not have the urge, drive or motivation to want to meet any other needs. Also, children who feel uncomfortable due to hunger or irritating physical conditions may not be interested in learning.

Implication for the teacher: Meeting physiological needs of the child is the responsibility of parents and the school. Parents should provide their children with food in the morning before coming to school. The school on the other hand should compliment the efforts of the parents by ensuring that food vendor is available at the school in case children want to buy food. In some developed countries, children from low socio-economic background are given breakfast and lunch at school free of charge. This will remove the problem of a child not being active in the class due to hunger. Clean water should be provided where there is no tap water, bore hole should be provided for children. Latrine or toilets should be provided in the school to enable children ease themselves when necessary. The classroom should be well ventilated to allow for fresh air. Children need to relax at school, therefore the time-table should allow for some time to eat and relax i.e. break.

Safety needs:

This is the next need to be met after physiological needs.. These include the need for protection, security and freedom from anxiety. Effective learning can only take place in a secured environment.

Implication For The Teacher

The teacher should create a non-hostile and non-threatening environment in the class room. School environment should guarantee adequate security and safety of learners.

Belonging and love needs.

Every individual wants to have a sense of belonging to a group. Failure to satisfy these needs may lead to a feeling of loneliness and isolation. Learners who feel that they are loved and accepted will be more interested in learning than those who feel rejected, ignored and maltreated.

Implication For The Teacher.

All children should be appreciated unconditionally by the teacher. They should be made to know that they are important. Favouritism should be avoided. Effort should be made at giving every child a responsibility within the class.

Esteem Needs:

These include the self esteem and need for others' esteem. Self esteem is the positive way one perceives one's self. For Instance, one may perceive one's self as competent, strong and an independent person. The need for others' esteem is a desire to have a good reputation, to obtain recognition and status. Inability to satisfy the esteem needs may lead to inferiority complex.

Implication For Teachers

Teachers should encourage learners to do task on their own sometimes, and praise them for their efforts. Teachers should allow learners to express themselves and to believe in themselves. Teachers should use words that build rather than words that can shatter their confidence

Need For Self Actualization

According to Maslow, this is the beginning of secondary needs otherwise called growth needs. At this level, individual strives for personal growth, discovery and realizing ones potentialities. It is a stage that individuals want to achieve higher and greater goals to become the very best person they can be.

Implication For The Teacher

The teacher must observe and identify children's areas of interests, capacity and potential. The school counsellor should guide students to identify and select subjects they are best suited for.

Desire To Know And Understand

This is the stage where an individual thirsts and craves for more knowledge and understanding. for example a person may wish to have the Masters degree, Ph.D or venture into other academic fields.

Implication For Teacher

The teacher should encourage learners to fully maximize their talents to the peak of their chosen career especially the gifted pupils.

Aesthetic Needs

This is the last stage under the growth needs. It is the need to have and maintain beauty and cleanliness of self and environment.

Implication For The Teacher

Teachers should encourage students to keep their environment clean and tidy student should also be encouraged to keep themselves clean and tidy.

MOTIVATION AND TEACHING

There is some relationship between motivation and teaching. The primary purpose of teaching is to help children learn. The teacher accomplishes this through motivating the children. They should be encouraged anytime a good effort is made towards understanding what the teacher is teaching. This eagerness to learn can be shown through answering questions voluntarily or through calling children's names by the teacher.

Many children actively participate in class assignment/work or in performing their home work. But those children who fail to show some enthusiasm for learning should be encouraged through motivation. The teacher should bear this in mind while teaching.

A good teacher should feel very happy and satisfied when his children understand what he has taught. To accomplish this, he regularly inspires his children through good teaching and combination of motivation. The use of incentives (positive and negative) should be judiciously applied. The overuse of positive and negative incentives is not good for the child. He learns because he will receive material gifts or because he fears some punishment. Consequently the child fails to pursue the higher order motivation - intrinsic motivation. Nonetheless, it has to be emphasized that adequate motivation results in effective learning and consequently teachers are expected to use incentives to promote effective learning in children.

Practical Ways of Using Motivation To Improve Performance

1. Satisfy the deficiency needs - physiological, safety, belongingness, esteem. Also try to take care of growth needs.

What to do:

Physiological: Remember that children are sometimes hungry and thirsty. If children have brought some food to school, time should be allowed for them to eat the food preferable during break time. Clean water should be provided in the classroom but where this is not possible, children will be encouraged to bring their own water to school.

Safety:

The classroom should be safe from all elements of hazards. Sharp objects and materials should be safely kept away so that children can move freely. The temperature of the classroom should be watched. It should not be too cold or too stuffy. Windows should be closed on a cold day while they should be opened on a hot day. During cold season, children will be reminded to wear their pull-overs. Protect children from the bully of older children. Establish classroom routines in which children can take initiative. Don't force students to participate in new activities except they are ready to do so.

Belongingness and love:

The children in your class are your "biological children" as it were. You should show interest in all of them to help them feel that they are members of the class. One way you can do this is

to learn the names of the children. Children feel happy when the teacher calls them by their names instead of using the impersonal word - you!. Listen to children's complaints attentively. If a child is absent from school try to find out what is the cause.

Esteem:

Learning experiences should be arranged so that children can feel a degree of prestige. In setting maths problems for example, allowance will be made so that dull children can successfully solve some of the problems. Let children be permitted at times to work towards their own goals. Assist slow learners individually.

Growth Choices:

Enhance attractions and minimize the dangers of growth choices. Avoid establishing situations that cause tension or anxiety to your children. If that happens, children will choose safety and would remain uninvolved. Make learning exciting so that children feel moved to learn.

Goals and Objectives:

Goals and objectives are to be challenging and attainable. Let children be guided in the selection of goals. This will help them towards intrinsic motivation. When children have chosen their own goals, it helps to arouse and sustain interest.

Encourage Learning for its own Sake:

By this approach children are given considerable freedom to select activities that appeal to their interest. Let children dramatize situations and draw objects of interest. Provide different avenues for expressing initiatives like singing, painting, reading etc.

Provide encouragement and Incentives for Learning:

Appeal to intrinsic interests of children but sometimes it is necessary to use incentives in order to help children master knowledge and skills which are not fascinating but are necessary if children are to function in the society. As a result you may need to stimulate, persuade, inspire and even cajole children to learn some materials that are essential for everyday living or for subsequent learning.

In summary, the teacher is expected to apply the knowledge of motivation to encourage learning among pupils. This can be achieved through the following:

- the teacher should make his subject interesting.
- Methods of Teaching should be varied to accommodate all pupils.
- Teachers should use interesting and stimulating learning materials to motivate students.
- The teacher should strengthen pupils' confidence and stress the value of achievement.

- School environment and the classroom should be physically and psychologically safe for learning.
- The teacher should make tasks achievable for complex situations.
- Students should be allowed and encouraged to participate fully in the teaching and learning process by asking, answering questions and demonstrations in practical lesson.
- Incentives should be judiciously used, for instance, brilliant performance in class work and examinations should be rewarded.
- Teachers should be sympathetic and responsive to students' needs so that they can build up positive association.

ACTIVITY

1. Explain the term motivation
2. How does motivation relate to learning
3. Describe the term id, ego and super ego. What are their implications to learning?
4. List and discuss any three theories of motivation
5. Describe the types of motivation
6. Discuss ways of motivating learners in the class room

SUMMARY

- This unit has discussed what motivation is and how it can be used by the teacher to improve classroom learning. Motivation may be intrinsic or extrinsic. Both have their strength and weaknesses. However, motivation helps in learning. A sound knowledge of motivation and appropriate use will improve learning.

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