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BES-123
Learning and Teaching

Indira Gandhi
National Open University
School of Education

Block

1

LEARNING: PERSPECTIVES AND APPROACHES

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COURSE: BES-123 Learning and Teaching

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BES 123 LEARNING AND TEACHING

Course Introduction

The Course 'Learning and Teaching' has been conceptualized on the basic premise that learning and teaching should be viewed holistically. This course attampts to facilitate student teachers to understand learning and teaching as a process which works for construction of knowledge.

Psychological and socio-cultural perspectives of learning have been discussed in this course. Various theoretical constructs of learning which will help you to identify the appropriate learning strategies for facilitating construction of knowledges have been analyzed critically. This course wil help you in analyzing the complex nature of teaching learning process and understanding various dimensions of teaching-learning process. Course will explain role of a teacher as a professional as well as a facilitator for learning, as an innovator and an action researcher.

This course is divided into four blocks.

Block 1: Learning: Perspectives and Approaches deals with various aspects of learning. Conceptual framework of learning and discussion on various approaches to learning have been provided in this Block. Block emphasizes on learning as a process for construction of knowledge. It also facilitates you in organizing learning experiences in various contexts through active learning, situated learning, collaborative learning, etc.

Block 2: Understanding the Learner shifts the focus from learning to learner. Understanding the learner and his/her socio-cultural context is equally important for a teacher. Units in this Block discuss socio-cultural diversity among learners. Individual differences and characteristics of learners like their personality, intelligence, motivation, attitude, aptitude, interest, etc. have been discussed in this Block, which are essential consideration for a teacher while planning teaching-learning process.

Block 3: Teaching-Learning Process is focused on various dimensions of Teaching and Learning. It starts with discussion on nature of teaching. Teaching as a profession and role of teacher in providing dynamic curricular experiences have been discussed in this Block. Planning teaching-learning, organizing teaching-learning experience, using appropriate resources for teaching-learning and managing classroom for facilitating learners to construct of knowledge are the key focus areas in this Block.

Block 4 is on role of the **Teacher as a Professional**. This block intends to help you understand diverse role of teachers. Multiple responsibilities of teachers have been discussed in this Block. Teacher as an innovator and an action researcher has been discussed. Role of teacher as reflective practitioner has also been highlighted in this Block. Block ends with discussion of need and importance of professional development of teachers and suggests various ways and means for professional development of a teacher.

BLOCK 1 LEARNING: PERSPECTIVES AND APPROACHES

Introduction to the Block

For success in teaching-learning process, a teacher needs to know about not only the learners' growth patterns but understanding learning is equally important. Perspective about learning has changed a lot in past few years. The behaviorist approach to learning has been replaced by constructivist approach. Focus has shifted from teacher centered to child centered pedagogy. The present Block has focused on providing an understanding about various perspectives and contexts of learning. This Block will help you understand the learning in different contexts. This Block has four units.

Unit 1: Understanding Learning talks about the meaning and dimensions of learning. The Unit explains what comes under learning and what not? Discussion on learning concepts like maturation, teaching and instruction will help you findout differences among these terms. Factors facilitating learning will also be discussed in the unit. Discussion of learning styles and pace of learning will help you to plan your teaching learning keeping in mind the learners' differences.

In **Unit 2: Approaches to Learning,** we start with some common assumptions about learning in various approaches. Discussion will deal the behaviorist, congnitivist and constructivist approaches to learning in details. You will be able to analyze the merits and demerits of each approach and choose the most appropriate approach for your learners.

Unit 3: Learning for Construction of Knowledge will help you to explore various dimensions of constructivism. Ideas of Piaget, Bruner, Vygotsky, Novek and others on constructivism will be discussed keeping in view their utility in teaching-learning process. Role of Zone of Proximal Development, Scaffolding, Cognitive Apprenticeship, tutoring, etc. will be discussed in detail to provide you deeper understanding on constructivism.

Unit 4: Learning in Various Contexts will help you to explore various learning strategies which you can choose as per the nature and context of learning. Methods like active learning, situated learning, collaborative learning will help you to design your teaching-learning activities in more effective way. Discussion on learning out of school will add a meaningful dimension to your teaching learning practices.

UNIT 1   UNDERSTANDING LEARNING*

Unit Structure

1.1   INTRODUCTION

What is learning and what is not? This unit starts with finding the answers of these questions while discussing the concept of learning. As a teacher you will come across questions like, how does learning take place? what are the guiding principles of learning? etc. Along with it, learning needs to be differentiated from various related concepts like, maturing, teaching, imprinting, etc. The present unit discusses the various dimension of learning which help a teacher to achieve a major goal of education i.e. to enhance learning. Discussion on various modes of learning will help you in planning learning experiences. In order to facilitate learning, an understanding of the concepts like transfer of learning, various learning styles and pace of learning are also very important to understand for a teacher. This unit will discuss all these in brief.

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* Few sections in this unit have been adopted from Unit 9 of ES-332, IGNOU

1.2 OBJECTIVES

After going through this unit, you will be able to:

• describe the nature of learning,

• differentiate among learning, maturation, teaching and imprinting,

• identify various activities reflecting learning,

• explain the role of understanding the dimensions of learning for a teacher to improve teaching learning,

• identify various learning styles among learners,

• discuss the use of transfer of learning in the new situation, and

• keep in mind the pace of learning while designing teaching-learning experiences.

1.3 WHAT IS LEARNING?

What is learning? Answer to this question has been attempted by many psychologists and educationists. Learning is not something that takes place within the boundaries of a classroom; rather it takes place anywhere, anytime and from anyone. Traditional Indian Literature has examples where people learnt from trees, mountains, rivers, insects, etc. It means learning is something which is possible anywhere.

In order to understand the concept of learning, let us begin with few definitions of learning which many psychologists and educationists have proposed. Generally, learning is defined as **a process of behaviour modification through experiences, exercise and efforts**.

Before discussing further, let us have a look at the definitions of learning given by various psychologists/educationists:

Hurlock (1942) : Learning is development that <u>comes from exercise and effort</u>. Through learning, children acquire competence in using their hereditary resources.

Hilgard, Atkinson and Atkinson (1979): Learning may be defined as a <u>relatively permanent change in behaviour</u> that occurs <u>as the result of prior experience</u>.

Murphy (1968) : The term learning covers <u>every modification in behaviour to meet environmental requirements.</u>

Woodworth (1945) : Any activity can be called learning so far as <u>it develops the individual</u> (in any respect, good or bad) and <u>makes him alter behaviour and experiences different from what they would otherwise have been.</u>

If you examine these definitions carefully, particularly focusing on the underlined portion of the definitions, you may conclude that:

Every creature, including human beings, is born with certain capabilities. e.g.: a human baby can suck milk from its mother's breast as soon as it is born. These capabilities are known as **instinctive behaviour**. As an individual grows s/he has to make certain adjustments in various situations of life. Therefore, s/he has

to acquire various habits, knowledge, attitudes and skills, etc. The acquisition of all these things is called 'learning'. It means that:

- Learning is not acquired by birth, but it is the process of acquiring competence by using hereditary resources.

- Temporary change in behaviour is not learning.

- Not only the modification of behaviour by acquiring good things as per the social norms is learning but even behaviour modification by acquiring bad things comes under 'learning'. In other words, learning leads to change in behaviour but this does not necessarily mean that these changes always bring about improvement or positive development.

According to Smith (1962),'*learning is the acquisition of new behaviour or the strengthening or weakening of old behaviour as the result of experience'*. It means, instead of change in existing behaviour or acquisition of new behaviour, learning may also result in discontinuance or abandonment of existing behaviour. This 'unlearning' is also learning in itself.

According to Fagin (1958), learning is a sequence of mental events or conditions leading to changes in learner.

Fig. 1.1: The Learning Process

It can be concluded that learning is a process by which an individual, as a result of interactions in a situation, modifies his/her behaviour. It helps in bringing desirable changes in behaviour attaining proper adjustment, and attaining proper growth and development.

Behaviors not Attributable to Learning

In previous section, we have discussed that a modification or change in behavior is called 'learning'. However, there are some types of behavior which are due to one or other kind of modifications yet; these are not termed as 'learning'. e.g.: when a pin pricks our finger, we withdraw it from the pin. Similarly, when a very bright light falls on our eyes, we immediately close our eyelids. Such behavior is instant and we even do not feel that we are putting in any special effort. This behavior does not fall under the learning category; rather these are called '**reflex actions'**.

There is another category of behavior commonly known as '**biological instincts**'. e.g.: a child start crying when s/he feels hungry, we feel like resting when tired, we are attracted towards opposite sex, etc. Such behavior is natural and not learned; therefore we do not call it learned behavior.

Sometimes, modifications or change in behavior takes place due to accidents or psychological defects, for example, limping of a person after an accident or stammering in speech due to some defect in tongue. We again exclude such behavior from the category of learned behaviour. Similarly, there are some motor actions which a child can perform only at a certain age. For instance, to sit in a proper posture, to walk with steady steps, etc., are attained after a specific age. The behavior which is the outcome of maturity of the child, is not called learned behavior. However, in most of such cases, maturity and learning both play their role simultaneously and therefore, it becomes difficult to determine which of the two is responsible for the behavior.

Check Your Progress

Notes: a) Answer the following questions and write your answer in the space given below.

b) Compare your answer with those given at the end of unit.

1) "Learning is the development that comes from exercise and effort". Explain.

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2) What is not learning?

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1.4 NATURE OF LEARNING

Learning occupies a very important place in our life. It provides a key to the structure of our personality and behaviour. Experience, direct or indirect, plays a very important and dominating role in moulding and shaping the behaviour of the individual from the very beginning. When a child touches a hot pan and gets burnt, s/he immediately withdraws her/his hand and learns to touch such vessels carefully. S/he concludes that if one touches a hot vessel, one gets burnt. In the same way from other experiences, in her/his day to day life, s/he derives different conclusions and modifies her/his behaviour. These changes in behaviour brought about by experience are commonly known as learning and this process of gaining experiences, drawing conclusions, and changing behaviour goes on from womb to tomb.

This discussion and the definitions given in the first section 'What is learning?' of this unit, reveals the nature of learning as follows:

- **Learning is a process and not a product**: Learning is a fundamental and life-long process. Attitudes, fears, gestures, motor skills, language skills, etc. are the products of learning. They are not learning themselves.

  In a classroom, when learning is viewed as a product then it is viewed as something external. Something like shopping– people go out and buy knowledge and then it becomes their possession. Paulo Freire in his book 'Pedagogy of the Oppressed' criticizes this and says that education thus becomes an act of depositing, in which the students are the depositories and the teacher is the depositor. In this 'banking' concept of education, the teacher is the subject of the learning process, while the pupils are mere objects.

  Whereas, when learning is viewed as a process, it is viewed as something internal or personal. It is something that a child does in order to understand the real world and uses it as a tool for survival.

- **Learning is purposive or goal directed:** Learning is not an aimless activity. All true learning is based on purpose. We do not learn anything and everything that comes in our way in a haphazard manner. However, some experts argue that sometimes learning is unintended.

- **Learning generally involves some degree of permanence:** Activities bringing temporary change in behaviour and not lasting do not come under learning. For example, cramming the content matter by a learner for examination and forgetting it after sometime does not bring any change (to some extent to permanence) in the total behaviour pattern of the learner and thus this type of learning cannot be said as true learning.

- **Learning is universal and continuous:** Every creature till it lives, learns. In human beings it is not restricted to any particular age, sex, race or culture. It is a continuous never-ending process which starts from birth and continues till death.

- **Learning prepares for adjustment:** Learning helps the individual to adjust herself/himself adequately and adapt to the changes that may be necessary to the new situations. We meet with new situations which demand solutions. Repeated efforts are required react to them effectively. These experiences leave behind some effects in the mental structure and modify our behaviour.

- **Learning is comprehensive:** The scope of learning is spread over each and every dimension of life. It is a very comprehensive process which covers all domains – Cognitive, Affective and Psychomotor- of human behaviour.

- **Learning is change in response or behaviour may be favourable or unfavourable:** Learning leads to changes in behavior but this does not necessarily mean that these changes always bring about improvement or positive development. There are chances to drift to the negative side too.

- **Learning is organizing experience:** Learning involves all those experience and training of an individual (right from birth) which help her/him to produce changes in behaviour. It is not mere addition to knowledge or mere acquisition of facts. It is the reorganization of experience which may also include unlearning.

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- **Instincts and reflexes are not learning:** Changes in behaviour on the basis of native response tendencies like instincts and reflexes (e.g. infant's sucking behaviour, blinking at bright lights)cannot be attributed to learning.

- **Learning does not include changes in behaviour** on account of maturation, fatigue, illness, or drug etc.

Check Your Progress

Notes: a) Answer the following question and write your answer in the space given below.

b) Compare your answer with those given at the end of unit.

3) Whether learning is a process or a product?

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1.5 LEARNING AND RELATED CONCEPTS

1.5.1 Learning and Maturation

According to Hurlock (1942), maturation is the unfolding of characteristics potentially present in the individual that come from the individual's genetic endowment, while, learning is development that comes from exercise and effort.

Biggie and Hunt (1968) defined maturation as a developmental process within which a person, from time to time, manifests different traits, the 'blue-prints' of which have been carried in his cells from the time of his conception.

Thus, maturation is a natural process and it involves changes that are associated with normal growth. These changes are independent of activity, practice or experience. The resultant behaviour, thus, or account of the process of maturation does not fall in the category of acquired or learned behaviour. However, maturation is closely linked with results of learning and with the process of development. Before certain kinds of learning may take place, one has to have achieved a certain level of maturation. Infact, learning and maturation are so closely interrelated that sometimes it becomes difficult to say definitely, particularly in human beings, as to which of the behavioural changes the results of learning are and which the consequences of maturation are. Aggarwal (2008) has discussed it as follows,

"The swimming of tadpoles and the flying of birds can be attributed primarily to maturation. But in the case of human beings it is not easy to decide whether the activities result from maturation or learning. The simplest example is that of a child. The child learns to talk only when he reaches a certain stage or age of maturation. It is also equally true that he does not learn the language just because he attains that age. The language is taught to him. The language which he learns

is that which he hears. It is very clear that the two processes- maturation and learning – are closely related to each other. Maturation assists in the process of learning. Learning takes place only if the stage for that type of learning has been achieved through a process of maturation. A teacher would be effective if he understands the complexity of the changes that take place as a result of both processes and the interaction between the two. The reverse would be harmful. For instance, the normal development of speech in the child would be disrupted if a child is forced to learn certain speech patterns before a certain maturation has occurred. On the other hand, failure to provide specific training in speech at the appropriate time may be a great educational error."

1.5.2   Learning and Teaching

Teaching is a system of actions which induce learning through interpersonal relationships. It is a purposeful social and professional activity. The ultimate goal of teaching is to bring about development of a child.

Teaching is a complex phenomenon as its nature is scientific as well as artistic. Gage (1979) has discussed teaching as a science to describe 'the elements of predictability' in teaching and as an art to describe 'what constitutes good teaching'. When we consider teaching as an art, we consider it loaded with emotions, feelings, values, beliefs and excitement and difficult to derive rules, principles or generalizations. When we consider teaching as science, then pedagogy is predictable to the extent that it can be observed and measured with some accuracy and research can be applied to the practice of teaching.

The total task of teaching is to provide a conducive environment to child for learning and helping him in exploring his potential. That is why, Joyce, Weil and Calhoun (2009) say that models of teaching are really models of learning. As we help learners in acquiring information, ideas, skills values, ways of thinking, and means of expressing themselves, we are also teaching them how to learn. In fact, the most important long term outcome of teaching may be the learners' increased capabilities to learn more easily and effectively in the future.

'Any valid conception of teaching must be integrally related to a conception of learning. How human beings learn should provide much of the basis for our derivations of how teachers should teach' (Gage, 1967).

1.5.3   Learning and Imprinting

'Imprinting' as a term was first used in 1930s by the Austrian Ethologist Konrad Lorenz for describing the attachment behaviour of new born-birds to the first large moving objects in their environment. He conducted a series of experiments for studying such attachment behaviour. Like, in his initial experiments he demonstrated that ducklings and goslings follow the mother soon after hatching. Afterwards, Lorenz replaced the mother by a big object like football and found the new-borns following the new object.

In one of his later experiments he himself worked as a substitute for the object and the mother. He first hatched a group of goslings in an incubator and then presented himself as the first moving object they saw. He found that the new-born birds began to follow him wherever he went. Thus he concluded that imprinting represents an inborn perceptual process independent of any training or experience. It is a sense of strong connection or attachment that is made between

the new-born organism and the first object it may have initially responded to. This attachment behavior is a species-specific behaviour and is not exhibited by all species.

Imprinting is quite dissimilar and distinct from the actual process of learning. It depends on an instinctive and inborn species-specific behaviour mechanism rather than the experience and training carried out during specific critical periods of the species life time soon after birth.

Check Your Progress

Notes: a)   Write your answer in the space given below.

b)   Compare your answer with those given at the end of unit.

4)   Give an example of maturation.

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5)   What do you understand by the term imprinting?

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1.6   DIMENSIONS OF LEARNING*

According to Marzanoet al. (2006) dimensions of learning is a comprehensive model that uses what researchers and theorists know about learning to define the learning process. Their premise is that five types of thinking – i.e. five dimensions of learning- are essential to successful learning. These five dimensions of learning are:

a)   Attitudes and Perceptions

b)   Acquire and Integrate Knowledge

c)   Extend and Refine Knowledge

d)   Use Knowledge Meaningfully

e)   Habits of Mind

a)   Attitudes and Perceptions

A key element of effective teaching is helping learners to establish positive attitudes and perceptions about the classroom and about learning because these affect learners' abilities to learn.

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*The content under this section is broadly based on the 2nd edition of 'Dimensions of Learning-Teacher's manual' by Marzano et al. (2006)

If learners find the classroom as an unsafe and disorderly place, their learning will be negatively affected. Also, learners' positive attitude about classroom tasks helps in learning.

b) Acquire and Integrate Knowledge

Providing new knowledge by integrating the previous knowledge helps in learning. When learners are learning new information, they must be guided in relating the new knowledge to what they already know, organizing that information, and then making it part of their long-term memory.

c) Extend and Refine Knowledge

Learning does not stop with acquiring and integrating knowledge. Learners develop an in-depth understanding through the process of extending and refining their knowledge (e.g. by making new distinctions, clearing up misconceptions, and reaching conclusions). Various reasoning processes, like: comparing, classifying, abstracting, inductive reasoning, deductive reasoning, constructing support, analyzing errors, analyzing perspectives, etc. are used by learners to analyze for extending and refining their knowledge.

d) Use Knowledge Meaningfully

The most effective learning occurs when we use knowledge to perform meaningful tasks. So, making sure that learners have the opportunity to use knowledge meaningfully is one of the most important parts of planning a teaching activity. For this, reasoning processes, like: decision making, problem solving, invention, experimental inquiry, investigation, systems analysis, etc. may be used.

e) Habits of Mind

A learner becomes an effective learner by developing powerful habits of mind that enable her/him to think critically, do thing creatively, and regulate her/his behaviour. The mental habits for critical thinking are being accurate and seeking accuracy, being clear and seeking clarity, maintaining an open mind, restraining impulsivity, taking a position when the situation warrantsit and responding appropriately to others feeling and level of knowledge.

Habit of preserving, pushing the limits of own knowledge and abilities, generating, trusting and maintaining own standards of evaluation enable in thinking creatively. Self-regulated thinking is enabled by the habits of monitoring own thinking, planning appropriately, identifying and using necessary resources, responding appropriately to feedback and evaluating the effectiveness of own actions.

These five dimensions of learning do not operate in isolation but work together. All learning takes place against the back drop of learners' attitudes and perceptions and their use of productive habits of minds. Having positive attitudes and perceptions and using productive habits of mind makes learning easier and helps in learning more. When positive attitudes and perceptions are in place and productive habits of mind are being used, learners can more effectively do the thinking required in the other three dimensions- that is, acquiring and integrating knowledge, extending and refining knowledge, and using knowledge meaningfully.

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Thus, the dimensions of learning help a teacher achieve a major goal of education, i.e. 'to enhance learning'.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of unit.

6) Name the five dimensions of learning.

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7) Which reasoning processes are used by learners to analyze for extending and refining their knowledge?

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1.7 LEARNING AS A PSYCHOLOGICAL AND SOCIAL CONSTRUCT

The term 'construct' is commonly used for an attribute which cannot be measured directly like some other physical attributes (e.g. weight, height, etc.). The presence or absence of such an attribute is decided by the reflection of certain actions in an individual's behaviour. Learning is also a construct. It is characterized by certain behaviour.

Learning as a Psychological Construct

As a psychological construct, learning is defined as any activity that develops an individual, irrespective of being good or bad. Early schools of thought like behaviourist and cognitivist established learning as a psychological construct.

Behaviorist perspective focused on observable behavior whereas cognitivists concentrated on role of internal cognitive processes in learning. Behaviorists believed that education is a mean to train individuals for desired behavior. Cognitivists were concerned with internal processes of the brain and nervous system for learning. Internal mental processes include inputting, organizing, storing, retrieving, and finding relationships between information are important for learning. Their focus was on how information is processed. Gestaltists also emphasized on learning a psychological construct however they were of a different viewpoint. Gestalt theorists focus on role of perception, insight, and meaning as the key elements of learning. They perceived individual as a perceptual organism that organized, interpreted and gave meaning to the events.

Learning as a Social Construct

However, learning as a social construct is characterized by development of socially desired behaviour, generally developed in a social environment by observation and self-regulation.

Learning as a social construct is the outcome of interaction between people. These theorists believe that learning is based on observation of others in a social setting. In the 1960's, Bandura postulated that an observer can learn by observing without having to imitate what is being learned. He proposed four processes for observational learning i.e. attention, retention (memory), behavioral rehearsal, and motivation.

Vyogotsky also viewed learning as a social construct. We will discuss in details about these viewes in unit 2.

1.8   LEARNING STYLES

The term 'learning styles' corresponds to the understanding that every individual learns differently. Learning styles define the way how people learn and how they approach information. It is a pattern of behaviour that human beings use for new learning. You may recall that sometimes you feel like you cannot learn something important even if you use the same method which has been suggested by your parents, colleagues or teachers. But, then you tried to learn that in your own way and succeeded. It indicates that you may have different learning style.

An individual's learning style refers to the preferential way in which the learner absorbs processes, comprehends and retains information. Different learners learn in a variety of ways, by seeing and hearing, working alone and in groups, reasoning logically and intuitively and sometimes by memorizing or visualizing. Thus, since, everyone is different, it is important for teachers to understand the differences in learners' learning styles, so that they can implement best practice strategies into their daily activities, curriculum and assessments.

Fleming's VARK model of learning is a very commonly accepted model.

Fig.1.2: VARK Model of Learning

VARK is an acronym that refers to the four types of learning styles: Visual, Auditory, Reading/Writing Preference, and Kinesthetic.

- **Visual learners** prefer the use of images, maps and graphic organizers to access and understand new information.

- **Auditory learners** best understand new content through listening and speaking in situations such as lectures and group discussions.

- Learners with a strong **reading/writing preference** learn best through words. These learners are able to translate abstract concepts into words and essays.

- **Kinesthetic learners** best understand information through tactile representation of information. They learn best through figuring things out by hand.

Teachers should assess the learning styles of their learners and adapt their classroom method to best fit each learner's learning style. Thus, according to 'meshing hypothesis', they learn better. Meshing hypothesis means a learner/ learns better if taught in a method deemed appropriate for her/him.

Activity 1

Observe your classroom and try to identify your learners with different learning styles. It will help you to design your teaching-learning experiences more effectively.

1.9 PACE OF LEARNING

Concepts like 'Learning Styles', 'Pace of Learning', etc. are related to individuality. Considering these concepts indicates the understanding of individual differences by a teacher. Every individual is unique and has his own learning style and pace of learning. The general meaning of pace of learning reveals about at what rate an individual learns.

Every learner does not learn at the same pace. If you present any new concept and explain it in the classroom, some of your learners may grasp it immediately. For few of them, you may have to explain again with help of some examples. For some, you may design certain activities so that while doing those activities, learners can understand the concept, even for some, you may require repetitive drill and exercises and such learners can take mush time. In earlier days, we used terms like fast learners and slow learners but now days such words are not being used anymore. A learner is a learner; his/her pace may vary. Pace of learning is a kind of individual difference.

According to Khan (2012) "people learn at different rates. Some people seem to catch on to things in quick bursts of intuition; others grunt and grind their way towards comprehension. Quicker is not necessarily smarter and slower definitely is not dumber. Further, catching on quickly is not the same as understanding thoroughly. So, the pace of learning is a question of style, not relative intelligence".

In a class, learners learn in a different way, at a different pace and as a teacher in a face-to-face class, it is almost impossible to cater to everyone's learning need but understanding of these concepts will help us in accommodating diverse learning needs in the class.

With the advancement in e-learning and other ICT mediated learning, self-paced learning is gaining momentum. Philosophy of Open and distance learning (ODL) also believes in self-paced learning. It respects the individual differences and provides enough time to each learner to learn on his/her pace.

Role of a Teacher

As a teacher you must have realized that every learner learns on his/her own pace but you cannot teach on different pace. Sometimes you may find it challenging to match with the pace of learners. Here are few suggestions which you can try to facilitate learning for learners at different pace:

– Never present a lot of concepts at a time. Try to explain every concept and involve your learners to provide explanation of the concepts.

– Encourage learners to give examples based on their own experiences and observations; this will help the learners to link the concept with their own experiences and knowledge.

– Sometimes you may try time-limit or time-warning strategy to increase the pace of learners. For example, you can give 05 minutes to complete a task to all learner, which can be completed by an average learner in three minutes.

– If it is group work, you can assign time-keeper role to one of the learner who will encourage all to complete the task in given time.

– You should analyze the activity/task before assigning to learners in terms of time required to complete the task and plan accordingly.

– Design some additional activities/exercises for learners who learn at comparatively slow pace.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of unit.

8) How will you identify learners with different learning styles in your class?

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9) What strategies you can plan to deal with learners with different pace for learning?

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1.10 MODES OF LEARNING

Right from birth itself we learn many skills, like reaching for and grasping toys, standing up and stepping forward unfaltering and unaided, speaking, etc. Later, we learn more complex skills and acquire the ability of solving various types of problems. Thus, there is a gradual change from the simpler form of learning to the complex ones, like problem solving. There is no single way of acquiring all types of learning. However, here we shall discuss three important modes of learning. By understanding how each mode operates, you should be able to design your classroom teaching more effectively.

1.10.1 Learning by Observation

Observation is a basic requisite for all kinds of learning. By observation, here, we do not mean simply 'seeing' a thing, rather it refers to the act of perceiving or observing the stimulus. Thus in the process of observation we not only take the help of our eyes alone (as for 'seeing') but we also use all sense organs. The presence of a stimulus can be recorded with the help of our capability of perceiving, seeing, listening, smelling, tasting and touching.

It may amuse or take you by surprise if it is said that "we have eyes yet we are blind". Such a statement may confuse you unless it is clarified. The point of emphasis here is that there are so many objects around us, but we take notice of only a few of them. Just ponder upon this explanation and you will realize the underlying truth. In fact, we pay attention to the things of our interest only. But we can never be certain whether interest proceeds attention on it is attention which gives rise to interest. It is because the two are inseparable. Interest is the feeling side of attention.

By nature, all living beings are interested in something or the other. This interest is amused as a result of impulse evoked by instincts. The greater the impulse, the more is the amount of interest attached to it. And the greater the interest, the more the attention paid to the object. Therefore, it is said that interest is latent attention and attention is interest in action. However, the necessary conditions of both interest in and attention to any object is that the mind is so organized, either innate or through experience that it can think about the object and maintain a desire to know more and more about it. This type of mental or psychomotor activity leads us to learning about the object.

We often use 'attention' in order to achieve faster learning in our learners. We evoke interest in children by presenting concrete objects, illustration, pictures, modules etc. in class and relating the topic to them. However, this interest is of a primitive nature and we should not be satisfied with this kind of interest only. The interest can be sustained only if the learners are given the opportunity of observing new phenomena, and bring variety of our teaching. If we try to keep their attention and old objects for a long time, it becomes boring for them. If they are encouraged to observe various aspects of the concept to be learned, we can help them sustain their attention for a longer time and thus help them learn more about the concept.

The following steps can be followed in learning through observation:

i)   Grasping the meaning of the demonstration of an action.

ii) Trying to fix images of how the model looks in each step of the demonstration

iii) Formulating silent verbal directions for the step involved the in performance/demonstration.

iv) The learning may also derive some benefit of slight imitative movements of arms, legs and other parts of the body.

1.10.2 Learning By Imitation

Living beings can learn a great deal by observing but they should also try to emulate others for perfecting their performance and learning. Like observation, imitation is also an innate tendency of the child. Imitation is tendency to repeat the observed actions of others. In the beginning, the child learns his movements, action and gesture by imitation. The capacity of imitating is very much prominent in children and you must observe that they take delight in imitating. As they grow, they learn many athletic, industrial and professional skills by imitating moving picture demonstration of skilled performance. Modeling also has a great value in learning. Modeling includes imitation of special personalities such as a learner imitates the actions immediately of the well-known cricketer Sachin Tendulkar. Imitation also means the invention of new things or actions. Teachers should give opportunity to the learners for self-development. Their creative tendency should be exploited or highlighted.

Trevor has reduced all kinds of imitation into two broad categories: (a) unconscious and (b) deliberate. Under the first category, the individual imitates what he sees, quite unwillingly. In deliberate imitation, the individual copies an act with a definite deliberateness to imitate, because of his interest in the act itself, or due to result he expects to secure an account of imitation.

1.10.3 Learning By Trial And Error

In many situations we learn by trial and error. Here we make a number of attempts for a particular task or problem and find more attempts rewarding. The satisfying feeling of rewards strengthens particular stimulus - response connections while the unsuccessful attempts are stamped out through practice. This type of learning is based on Thorndike's theory of connectionism. It implies that through conditioning, specific responses are linked with specific stimuli. The connections between stimuli and responses are formed through random trial and error. The law of trial and error was formulated after experiments on a hungry cat imprisoned in a cage. When the cat could press the lever of the cage through several trials, it would get food as the reward. The number of unsuccessful attempts reduced through practice and successful attempts got strengthened. The law has significant implications in classroom learning. When used appropriately by the teacher, they can help in developing the skills vocabulary and memorizing abilities of children.

Thorndike conducted an experiment in which exercise was made the indecent variable while other factors were held constant. He experimented upon a college student who was asked to draw a 3-inch line while blind-folded. More repetition did not bring any change or improvement. Such subjects were given more than thousand trials. On an average, there was no improvement from the first to the final trial. Practice without knowledge of results failed to produce any result. Some of the laws underlying trial and error learning are: law of readiness, law of effect, law of exercise. As regards the law of exercise, Thorndike began to think

that reward and punishment were not equal and opposite in effect. Reward strengthens the connection considerably whereas punishment does not weaken the connection to the same degree. The intensity and speed of reward in influencing learning are greater than that of punishment. Reward also brings healthy and desirable improvement in the personality of the child. In this way, Thorndike began to give more importance to reward and praise in place of punishment and blame.

1.10.4 Learning By Insight

Most of the learning in human beings takes place not only through observation or imitation, but also by solving problem which they come across in their day-to-day life. While solving a problem if an individual reaches the solution all of a sudden, we say that he has learned by insight. In fact, the person reaches the solution by understanding the relation between different aspects of the problematic situation. In our daily life, we describe the mode of learning by using phrases like seeing the point, or getting the idea.

Learning by insight was introduced by Gestalt psychologists. Gestalt means shape, form or configuration. To understand the process of insight the learning, we describe here Kohler's famous experiment of chimpanzee and bananas.

A chimpanzee was placed in a cage. Outside the cage, on one side were put some bananas. The chimpanzee was hungry, it long arms could not reach the bunch of bananas. Some sticks were placed near the door inside the cage. The chimpanzee first tried to reach bananas with its hands. It did not get success. After several attempts and failures, it sat in a corner, seemingly brooding on the problem. Suddenly, it jumped, seized a stick and pulled the bananas toward itself.

Kohler repeated the experiment by bringing some variations in the design. On the basis of his experiments, he described the process of learning in insight as follows:

- The learning perceives the situation in its totality.

- He analyses the various aspects of the situation and tries to establish a meaningful relationship among them. On the basis of this new perception he redefines the situation.

- The process goes on till he solves the problematic situation all of a sudden. That is what we mean when we say that a learner suddenly gets an insight into the solution.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of the unit.

10) Give examples from classrooms' situation for the various modes of learning.

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1.11 TRANSFER OF LEARNING

One of the important characteristics of learning is that the acquisition of skills, habits, knowledge and attitudes, influences the acquisition of new learning due to some kind of carry-over effect. The carrying over of feelings, habits, skills, and knowledge from one learning area to another is called transfer of training or learning. Psychologists explained the nature of the transfer of learning process. We shall try to understand the nature of the transfer of learning with the help of various viewpoints of psychologists as reflected in their theories.

1.11.1 Meaning and Nature of Transfer of Learning

According to the older view, transfer of learning implies that training in one faculty of the mind may help in the functioning of older faculties as well various faculties of mind - memory, reasoning, judgment, observation etc. - are directed or trained through various academic subjects. Languages and mathematics give training to the mind which helps in learning other subjects. A person who possesses a good knack for language, can learning and retain any fact easily.

Thorndike by proposing the **theory of identical elements** took the stand that resemblance and similarity between situations has a considerable effect on the amount and kind of transfer of learning that can be carried over from one situation to the other. For instance, take memorization. When a learner practices memorization in one subject area, s/he becomes capable of memorizing other subjects as well, to some extent. And it is quite possible that s/he memorizes the content of some other subject areas quickly. According to this view point, this phenomenon is not due to an improved faculty of memory; rather it depends upon the extent to which the two situations share identical elements of content, attitude, method or aim.

Judd says that transfer of learning is nothing but a **generalization**. According to the principles of generalization proposed by Judd, the development of special skills, the mastery of specific facts, formulation of particular habits and attitudes in one situation have transfer value only if the skill, facts, habits, etc. are systematized and related to other situation in which they can be utilized.

In the opinion of Hilgard, transfer of learning is possible only when a person develops the ability of finding out the **identity of relationships** and using it to solve solutions in new situations and for this, insight is necessary.

An analysis of the above mentioned view of psychologists leads us to the following interferences in regard to the nature of transfer of learning:

* Transfer of learning can also be viewed as problem solving, in which experience in one task influences the performance of another.

* Transfer of learning comes from similarity of contents, similarity of techniques, similarity of principles, or a combination of these.

1.11.2 Types of Transfer of Learning

Transfer of learning may take place in three ways.

i) **Positive Transfer:** Positive transfer occurs when the acquisition of one type of performance facilitates another type. In the positive transfer, learning of

one activity makes learning of another activity easier. For instance, school children, who memorize poems, mathematical tables and other verbal material, show better learning of the similar new material as compared to the children who did not get previous training in memorization. It is also a common experience that learning to pedal of tricycles makes the pedaling of bicycles easier. In all these examples, we have noticed that previous learning of a related skill benefits the learner in subsequent learning.

ii) Negative transfer: Negative transfer occurs when the previous puts hindrances in the performance of the subsequent task. The content, techniques or principles which make for negative transfer are opposed to those required by the new situation. For instance, after the end of a year, most of us continue to write the previous year on our cheques for some time. If the telephone number of our friend changes, we often continue dialing their former number. When we switch over from riding a bicycle to driving a scooter, we often put the clutch lever for stopping the vehicle instead of using the foot brake. These types of habits' interference are example of negative transfer of learning.

iii) Zero transfer: The zero transfer refers to the fact that previous learning has no effect on the subsequent learning. e.g.: a cricketer who improves his bowling skills is not expected to transfer this skill to improve this batting skill.

1.11.3 Classroom Implications

Utility of transfer of learning should be discussed in the context of the assumption that knowledge, skills and methods of learning which learners use in relation to definite school tasks remain available in the future and also applies to solve new problems. With this assumption in mind, the knowledge of nature of transfer of learning helps you in finding answers to some crucial questions like - what type of learning in the school will help learners in solving problems in daily life. Which type of learning helps and which hinders in coping with day-to-day problems? And perhaps the most important and most neglected question - how best can we increase the transfer effect? Educationists have performed experiments for finding answers to the above mentioned questions. On the basis of the results of their investigations, they recommended that education must be life-centered to facilitate transfer of learning. School activities should have the tint and texture of the activities which the learners are expected to come across in his daily life. Problem-solving and discussion methods are more useful in promoting the power of transfer. Cramming should be replaced by meaningful learning. Learners should be trained to form generalization and they should be made self-reliant in solving new problems.

Check Your Progress

Notes: a) Write your answer in the space given below.

      b) Compare your answer with the one given at the end of the unit.

11) List three types of transfer of learning.

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1.12 LET US SUM UP

In this unit, we discussed about the concept of learning and understood various definition of learning. Along with nature of learning, we learnt the difference among learning and other related concepts like teaching, maturation and imprinting. We also came to know about various dimensions of learning and understood their role in enhancing learning. Lastly, the unit made us aware about the concepts like learning styles and pace of learning.

Understanding the nature of learning process helps us in solving the problems related to the educational processes. To understand as to how human beings learn is, therefore, important for attaining competence in teaching. Psychologists differ in opinion regarding the nature of learning process. However, they point towards the facts that learning if more or less a permanent modification of behaviour which results from activity training or observation. Learning directs goal and takes place when an individual interacts with the learning situation. There are certain conditions which influence learning of the learners. Types of curriculum teaching methods and maturity level of the learner are just a few of such influencing conditions.

Though maturation and learning are two different processes, both are important for proper development of child.

One of the important characteristics of learning is that it is transferable. But the amount of transfer varies. There is no complete transfer of learning from one subject to the other. The transfer is possible between two situations, if there is identity of the context, identity of procedure and identity of attitudes and ideals. The transfer of learning may take place from one subject to another and from the classroom situation to the situations in life. Thus transfer helps inoptimizing learning.

1.13 UNIT-END EXERCISES

* What is learning? Describe nature of learning.

* Differentiate among learning, maturation, teaching and imprinting.

* Which are the various dimensions of learning? How does the understanding of these dimensions by a teacher help in enhance learning?

* 'Pace of learning is a question of style, not relative intelligence.' Discuss.

* How will this unit help you in becoming a good teacher?

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1.15 ANSWERS TO CHECK YOUR PROGRESS

1) Answer in your own words.

2) Temporary change in behaviour is not learning. It alsodoes not include changes in behaviour on account of maturation, fatigue, illness, or drug etc.

3) Process

4) Maturation involves changes that are associated with normal growth. For example becoming old, etc.

5) Answer in your own words.

6) The five dimensions of learning are –Attitudes and Perceptions; Acquire and Integrate Knowledge; Extend and Refine Knowledge; Use Knowledge Meaningfully; Habits of Mind

7) Various reasoning processes like, comparing, classifying, abstracting, inductive reasoning, deductive reasoning, constructing support, analyzing errors, analyzing perspectives etc. are used by learners to analyze for extending and refining their knowledge.

8&9) Write the strategy, which you will adopt.

10) Answer based an your classroom experiences.

11) Positive, Negative and zero.

UNIT 2   APPROACHES TO LEARNING

Structure

2.1   INTRODUCTION

Course one, i.e. BES 121, has acquainted you with the development of the child in general as well as an unique individual. This acquaintance will help you in understanding the behaviour of your learner. As a teacher, you should not only know your leaner but also the process of learning. In this unit, you will study various approaches to learning. While dealing with various approaches, you will study the elements of behaviouristic, cognitive and humanistic approach to learning that have emerged in recent years. Characteristics and limitations of each approach have been discussed in the Unit. We present various classroom as well as educational implications of each approach.

2.2   OBJECTIVES

After going through this unit, you will be able to:

- examine various approaches to learning;

- explain the concept of the behaviouristic, cognitive and humanistic approaches to learning;

- delineate the chief characteristics of these approaches; and

- discuss critically the applicability of these approaches to your classroom teaching.

2.3   APPROACHES TO LEARNING

Approaches to learning describe and explain the conditions under which learning does and does not take place. This movement is towards theorising the process of learning. It attempts to provide a definite coherence to one particular subset of experimental findings in the field of learning.

Approaches to learning are concerned mainly with the modus operandi, procedure, style or technique of learning. These approaches apply to all learning tasks. Generally, there are two types of approaches prevailing in the world of learning. They are Surface approach, and Deep approach.

Surface approach: In this approach, the learner's intention is just to complete the task requirements. Instead of properly understanding the content, s/he just memorises information/answers to the anticipated questions. This task is treated as animposition on her/him.

Deep approach: Here, the learner's intention is to understand the meaning of learning object. S/he interacts actively with the content, relates new ideas to her/his previous knowledge and to her/his everyday experience. S/he examines the conclusions drawn by the author or the teacher and sometimes even seeks alternative solutions.

The two approaches cited earlier to learn give rise to an offshoot known as **strategic approach.** In this approach, the learner's intention is to get the highest possible marks or grades in the term-end examinations. To achieve this, s/he may choose either of the two approaches. But the most important characteristics of the strategic approach are well-planned and carefully organised study methods with the systematic management of time and efforts.

Learning theories that emerged during the twentieth century have been supported by experimentation. The theories may be classified into four major approaches/ faculties of learning or the schools of thoughts namely behaviouristic, cognitive, social and humanistic approaches. Here we will study them one by one.

2.4   BEHAVIOURISTIC APPROACH TO LEARNING

The approach which describes learning as a connection between stimulus and response is the behaviouristic school of thought. This approach to learning emphasizes that behaviour begins with reflexes i.e., natural responses and new behaviour results from the acquisition of new bonds of stimulus and response

through experiences. Behaviourism has its roots in what is called the **associationistic school of psychology.** The school believes that recollection of an item of knowledge is facilitated by associating that idea with another when the individual learned it. For example, an aroma of flowers is associated with some occurrence in life which generates good or bad feelings later in life.

The major tenets of the behaviouristic approach are as follows:

- Learning brings about changes in behaviour.

- Learning takes place if environmental conditions are arranged appropriately with general changes.

- Learning is the result of continual interaction of the individual with the environment.

- The resultant behavioural changes are objectively observable.

2.4.1   Concept of Behaviouristic Approach to Learning

Behaviourists were strongly influenced by the work of the Russian Psychologist Ivan Pavlov. They devoted themselves to study the overt (directly observable) behaviour. They believed that overt behaviour was determined by a complex system of independent stimulus-response connection made more complex through learning. Thorndike, Watson and Skinner, gave more emphasis on objectivity in behaviour. Pavlov's experiment with the salivating dog is a famous one.

2.4.2   Characteristic of Behaviouristic Approach to Learning

The behaviouristic approach has the following important characteristics:

- Behaviourists believe in the objective study of behaviour - animal and human being both (objectively observable behaviour).

- Its chief emphasis is on environment. This approach considers environment more important than heredity in the determination of behaviour.

- Conditioning is the key to the understanding of behaviour, which is composed of stimulus and response links and can be successfully analysed by the objective scientific method.

- The chief method of learning is condition.

- Behaviourists believe that one unit of knowledge gets associated with a new unit of knowledge by virtue of similarity, contrast or contiguity (closeness of occurrence in time or situation).

2.4.3   Pavlov's Classical Conditioning

Pavlov was basically a physiologist. While working on digestive system, he proposed a theory of learning which propagates stimulus-response conditioning. This theory is known as 'classical' as it was first theory of conditioning, later Watson and Skinner worked on its different dimensions.
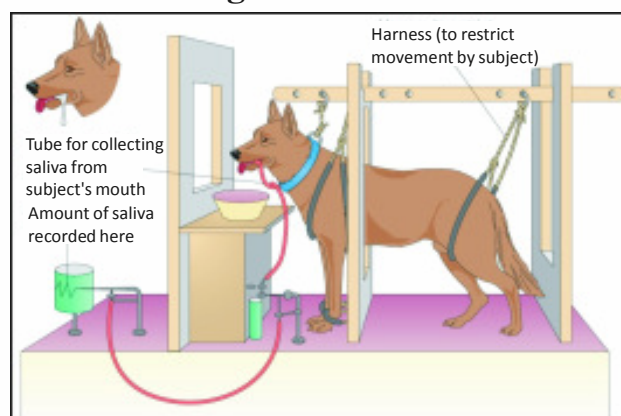
This learning theory of Pavlov is based on his famous experiment of dog.

This theory explains learning by associations and focuses on learning of involuntary emotions or psychological responses such as fear, increased muscle tension, salivation or sweating. (Woolfolk, 2013, p. 235)

During the salivation experiment, Pavlov proposed few concepts, which are very important to know, if one wants to understand classical conditioning.

Neutral Stimulus: It is a stimulus which is not responsible directly for desired response in neutral condition, e.g.: a tuning fork or a bell has nothing to do with salivation, if it is being used without association with food.

Unconditioned Stimulus: It is a stimulus which does not require any conditioning for desired behaviour. Sometimes it is known as natural stimulus also, e.g. Food is an unconditioned stimulus for salivation.

Conditioned Stimulus: When a neutral stimulus is conditioned with an unconditioned stimulus for bringing desired behaviour change, it becomes a conditioned stimulus. A bell or a tuning fork when presented as stimulus along with food, and get conditioned for salivation, it is conditioned stimulus.

Unconditioned Response: The behaviour which does not require any training or conditioning for association with an unconditioned stimulus, e.g. salivation is unconditioned response for food as unconditioned stimulus.

Conditioned Response: The behaviour or response occurred due to conditioned stimulus, is known as conditioned response, e.g. salivation after ringing the bell or tuning fork is a conditioned response.

He further identified few important processes in classical conditioning:

Generalization: If behaviour occurs in presence of other stimulus similar to the conditioned one, this is called generalization, e.g. salivation after hearing the sounds similar to bell (sometimes may be in higher or lower tone also), is called process of generalization.

Discrimination: Pavlov proved that at higher level of conditioning, dog learnt to distinguish the sounds and stopped salivation on sounds other than the bell. This is called discrimination.

Extinction: If only conditioned stimulus is being presented repeatedly without associating with the unconditioned one, the desired behaviour (salivation in this context) faded and stopped to occur.

Spontaneous Recovery: Pavlov observed, if after extinction, the unconditioned stimulus is being associated again with conditioned stimulus, the behaviour re-occurs immediately.

These are few concepts as outcome of Pavlov's experiment.

Classical conditioning helps a teacher to associate positive events with learning. It helps in avoiding undesired behaviour also and helps learners in recognizing the situations to discriminate and generalize properly.

2.4.4 Skinner's Operant Conditioning

Behaviour refers to an activity of an organism that can be observed and measured by another person/organism or by experimenter. It includes activities like pressing a key or a lever, or a button, uttering a word, answering a question correctly, solving problems, and so on. Skinner, as distinct from Pavlov and other behaviourists, used the operant conditioning approach to the study of learning (operant is the response made by an organism to the surrounding environment). When a dog, for example, is taught a trick, it is usually rewarded by food or by patting after it makes the appropriate behaviour. Operant behaviour can be evoked by a wide range of stimuli. This can be brought under stimulus control through the process of discrimination. The basic operation in a Skinnerian experiment is to determine the rate at which a given operant (e.g. pulling a level or pecking a key) is emitted under a given set of conditions.

Operant Conditioning is also known as reinforcement conditioning. Here, the **reinforcement is correlated with the response rather than with the stimuli**. In this type of conditioning, reward or reinforcement is not possible unless the response is emitted. In other words, reinforcement becomes contingent upon the stimulus.

According to Skinner, the basic law underlying this type of conditioning is that if the occurrence of an operant is followed by a reinforcing stimulus then the conditioning is strengthened. In other words, what gets strengthened is the response, or operant and not an S-R connection as in Thorndike's **law of effect**.

Skinner demonstrated his theory of learning his theory of learning by the simple experiment of putting a hungry rat in a box (known as Skinner Box). When the rat after fretting about, presses a lever accidentally, food is released. Every time Rat does this, it gets food. After several repetitions, the rat learns that if he is hungry, he can get food after pressing the lever and he goes straight to the lever, presses it and gets good. In other words, food reinforces that rat's activity of pressing lever. Here behaviour and appropriate response are important factors. If reward is withheld repeatedly, the behaviour extinguishes.

Operant conditioning is a learning force which affects desired response more frequently by providing a reinforcing stimulus immediately following the response. The most important principle of this type of learning is that behaviour changes according to its immediate consequences. Pleasurable consequences strengthen behaviour while unpleasant consequences weaken it. For example, a pigeon pecks the red ball and gets food in Skinner's famous experiment. Because of food (reinforcement), the pigeon is likely to peck the same ball again and again.

In operant conditioning, learning objectives are divided into many small steps/ tasks and reinforced one by one. The operant - the response/behaviour of act - is strengthened so as to increase the probability of their reoccurrence in the future. Three external conditions - reinforcement contiguity and practice - must be provided in operant conditioning.

Reinforcement: The most important aspect of Skinner's theory of learning relates to the role of reinforcement. An organism is presented with a particular stimulus - reinforcer - after it makes a response. In a given situation, the organism will tend to repeat responses for which is reinforced.

Skinner distinguished between positive and negative reinforcements. Positive reinforcement is a stimulus which increases the probability of desired response. The positive reinforcement is a positive reward. Praise, smiles, prize, money, a funny television programme, etc. are the example of positive reinforcement. In negative reinforcement, the desired behaviour is more likely to occur if such stimulus reinforcement is removed. For example, we can close windows and doors to avoid hearing loud noise; we can avoid wrong answers by giving right answers. Here noise and wrong answers are negative reinforcers. Thus a negative reinforcer is negative reward - the avoidance of which gives us relief from unpleasant status of affairs. Skinner did not equate negative reinforcement with punishment.

2.4.5 Educational Implications

The behaviouristic approach is one of the most important contributions to learning which throws light on habit formation, habit breaking and the role of incentives in learning. This approach is helpful in shaping the behaviour of students in the desired direction. Skinner has demonstrated in a number of ways how operant behaviour is shaped. The approach also helps the teacher in increasing the vocabulary of his students.

The most significant contribution to this theory in educational practice is the concept of programmed learning and introduction of teaching machines in teaching-learning. Let us elaborate both the concepts.

Programmed instruction: It is a system of teaching-learning within which pre-established subject matter is broken down into small discrete steps which are carefully organised into a logical sequence and which can be rapidly learned by the students. Each step builds upon the previous one. Reinforcement is given after each step. There is a provision for checking the progress. If the response is correct, the student can go ahead, if not then he can proceed to the next step after registering the correct response.

Programmed Instruction is highly individualized instructional strategy and is an effective innovation in the teaching process. It is found quite useful for classroom as well as self-learning.

Teaching machine: It is another application of the behavioural approach to learning. Teaching machines present items in an essentially predetermined sequence, permit the students to respond and give them immediate feedback. Teaching machines are automatic devices which present a question or other stimulus to a stimulus, provide a means of response, and then inform him/her of the correctness of his/her response immediately after he had responded. They are of two types (i) constructed-response and (ii) multiple-choice machines.

Skinner's theory suggests the great potentiality of the shaping procedure for behaviour modification. According to this theory the following procedure is applied to ensure effective learning in students:

- Learning objectives should be defined very specifically in terms of behaviour

- Objectives should be arranged in order of simple to complex.

- For developing motivation among the students, the classroom reinforcers like praise, blames, grades, etc., should be used.

- Proper use of positive and negative gestures also serves as reinforcers to work.

- Reinforcers should be used periodically so that the possibility of extinction of the desired behaviour is resisted.

- In the classroom, the principle of immediacy of reinforcement is very important. Praise for a job done well given immediately can be stronger reinforcer or motivator than a grade given much later.

Skinner's principles of learning focus attention on the individual's pace of learning.

Check Your Progress 1

Notes: a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of the unit.

1) What is the role of conditioning in programmed instruction?

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2.4.6 Limitations of Behaviouristic Approach

The behaviouristic approach to learning has certain limitations. Important among them are as follows:

- The approach considers human being as a machine which may not be true.

- This approach explains emotions, thoughts and actions entirely with reference to only this over behaviour.

- It is doubtful if the results derived from controlled experimental studies on animals would yield the same results on human beings insocial learning situations.

- It is argued that the behaviourists have ignored the structural and hereditary factors which are very important in the development of psychological process of language.

- The operant reinforcement system does not adequately take into account the elements of creativity, curiosity and spontaneity in the human beings.

- Behaviourists argue that all human behaviour is acquired during the lifetime of the individual. Thus this theory gives no place to the importance of genetic inheritance.

- Skinner's theory of learning dehumanises the learning process on account of its emphasis on the mechanisation of the mental process.

- Operant theory of learning does not deal with the depth of mind and thus it is artificial in nature.

2.5 COGNITIVE APPORACH TO LEARNING

In the behaviouristic approach, learning is seen as the overt behaviours of learners, while in the cognitive approach, learning is considered as inner psychological functioning such as perception, concept formation, attention, memory and problem-solving. In this approach the learner first perceives the total situation in the problem field, finds a relationship between the elements of the object or the problem, and deduces a strategy for solving the problem.

The major tenets of this approach are as follows:

- Learning is an active process involving change in the cognitive structure.

- Learning requires cognitive effort and accurate conceptual understanding.

2.5.1 Concept of Cognitive Approach to Learning

The word 'cognition' is derived from the Latin word '*cognoscrere*' which means to know, or to perceive. Cognitive theories discuss how people gain an understanding of themselves and their environment and how, in using this, they act in relation to their environment.

According to cognitive theorists, teaching is a process of developing understanding or insight in the learner. Learning is the organization of precepts and purposes by the learner. Classroom experiences are related to the individual goals of learners. These experiences are encouraged to discover relationship to create the consequences of their efforts.

Cognitive approach emphasizes and gives importance to cognition (perception) in learning. According to this approach, learning is a complex process and it is viewed as acquiring changes in the cognitive structure. In other words, learning is the change in the cognitive structure. These changes (learning) take generally in basically three ways. They are:

- Differentiation
- Generalisation, and
- Restructuration

Let us elaborate each of these.

In **differentiation,** learning begins by differentiating specific aspects of oneself and of one's environment. For example, an infant perceives every woman as his/her mother. Later on s/he differentiates between mother, aunt, sister, etc. Thus the cognitive structure becomes more specific.

In **generalisation,** concrete and particular instances are given and the children reach general conclusion or generalisation. After differentiating the concept, the child gradually categories the differentiated concepts on the basis of specific unifying characteristics known as generalisation. For example, the child first learns to differentiate between various things as men, women, animals, birds, etc. and later on s/he unifies these differentiated concepts to form a single concept - **living things** and thus generalisation is reached.

Restructuration, as the processes of differentiation and generalisation take place, the individual restructures his cognitive structure to accommodate these

differentiated and generalized concepts to gain control of him/her and the world. The child learns that all living things do not behave as human beings do. Thus, the concept of living things is restructured.

2.5.2 Characteristics of Cognitive Approach

The main characteristics of the cognitive approach are as follows:

- Earlier cognitivists gave more emphasis to **insight** while the modern cognitivists place more importance on the **human mental process,** similar to a computer system in operation.

- In the cognitive approach, learning is considered as an active and dynamic process

- In this approach the perceptions of learner are processed through differentiation, generalisation and restructuration which help the learner in reacting to the specific cognitive structure to get a clear picture of the environment.

- The cognitive approach is represented by a dynamic system.

- The learner is purposive and interacting within the field of his/her goals.

- It is the most suited for concept formation, problem solving and other higher mental processes.

2.5.3 Jean Piaget's Cognitive Approach to Learning

In recent times, the work of Piaget has received a lot of attention. Piaget's work has influenced a lot of thinking.

Piaget studied the growth and development of the child. The main objective of Piaget has been to describe the process of human thinking from infancy to adulthood.

Jean Piaget's theory of cognitive development redefines intelligence, knowledge and the relationship of the learner to the environment. Intelligence, like a biological system is a continuing process that creates structures. In continuing interactions with the environment, s/he needs intelligence. Similarly, knowledge is an interactive process between the learner and the environment. Knowledge is highly subjective in infancy and early childhood and becomes more objective in early adulthood.

He believes that learning is a function of certain processes. They are: **assimilation, accommodation, adaptation and equilibration**. Let us discuss each process in detail so that Piaget's cognitive approach to learning is understood properly.

Assimilation: It is a process of incorporating new objects and experiences into the existing schema (here, schema refers to well-defined sequences of actions). As soon as the schema of action is developed, it is applied to every new object and in every new situation. Assimilation of experiences into a succession of cognitive scheme takes place. Later, representation of words and actions using symbols takes place resulting in representational schema. The observation of surroundings and process leads to assimilation in the early stages of learning. This assimilation accounts for the children's ability to act on and understand something new in terms of what is already familiar. Assimilation is followed by accommodation.

Accommodation: In the individual's encounters with the environment, accommodation accompanies assimilation. Accommodation is the adjustment of internal structures to the particular characteristics of specific situations. For example, biological structures accommodate the type and quantity of food at the same time so that the food is being assimilated. Similarly, in cognitive functioning, internal structures adjust to the particular characteristics of new objects and evens. Accommodation also refers to the modification of the individual's internal cognitive structures. When the learner realizes that his or her ways of thinking are contradicted by events in the environment, the previous ways of thinking are reorganized. This reorganization, which results in a higher level of thinking, is **accommodation.**

As the child continues to confront experiences in the environment, the schema is so formed so as to not remain permanent. S/he has either to combine her/his previous schemata or to modify them as per new experiences. The process of combining/modifying existing schemata and the arrival at new schemata is known as accommodation. Here, the child remains active and explores questions, experiments, etc.

Equilibration: In cognitive development, equilibration is the continuing self-regulation that permits the individual to grow, develop and change while maintaining stability. Equilibration, however, is not a balance of forces but it is a dynamic process that continuously regulates behaviour. It indicates the balance between assimilation and accommodation. Equilibration is the factor that maintains stability during the process of continuous interaction and continuous change. Without equilibration, cognitive development would lack continuity and cohesiveness but instead would become fragmented and disorganized.

Equilibrium is the balancing act between the old and the new, between perceptions and experiences. It is a dynamic process that attempts to reduce dissonance.

Adaptation: Assimilation helps in getting new experiences into existing schema, while accommodation helps in combining/expanding/changing the new schema based on new experiences. Thus, the individual is helped in adjusting to new environment. This adjustment to a new environment is known as adaption. This adaption is also not the permanent one. S/he develops many new or modified schemata as s/he alters or extends her/his range of action. Adaption results from the interactionist process between the organism and environment--which helps the individual to organise her/his life experiences from the environment. In adapting to events in life the person tries to assimilate all experiences and information into existing cognitive structures. If this is possible, s/he accommodates by changing the cognitive structure. By assimilating the new to the old and by accommodating the old to the new, the person learns. The process of adaptation continues throughout life.

Based on his characterization of cognitive functioning as consisting of organization and adaptation, Piaget has presented a definition of intelligence. He believes that intelligence is not a fixed trait set for life but rather a process of adapting to the environment. The environment makes demands from the person. These demands are reacted to when the person assimilates aspects of the environment into existing cognitive structures and accommodates the cognitive structures to environmental demands. In the first case, the person's behaviour is

determined by existing cognitive structures. In the second case, the person's cognitive structures are modified by the environment. The result is adaptive behaviour or intelligence. Adaptation is a process through which a person seeks an equilibration or balance between what s/he presently perceives, knows and understands and what s/he sees in any new phenomena, experiences or problems.

Adaptation is the human tendency to survive for equilibrium or balance between self and environment. The equilibrium is conceptualised by Piaget as a dynamic and growth-producing process which would be achieved at each intellectual stage, before a person reaches the next level of cognitive functioning. Therefore, the adaptation and the growth of organisms provide an explanation of the problems and processes involved in the adaptation of intelligence or knowledge (Piaget 1980).

Piaget has mapped out in detail the stages by which cognitive functions develop and the times at which given concepts may be expected to appear.

Piaget has propounded the four stages thus - probably the clearest version of his classification as sensory-motor, preoperational, concrete operations and formal operations. Each stage represents an increase over the previous one in the child's ability to think abstractly, predict the world correctly, explain reasons for things accurately, and generally deal intellectually with the world.

i) **Sensory-motor stage:** This is known as the first stage. It extends roughly from birth to the age two. As the names implies, the schema that develops during this stage are those involving the child's perception of the world and the coordination by which s/he deals with the world. It is during this period that the child forms his/her most basic conceptions about the nature of material world. He learns that an object that has disappeared can reappear. S/he learns that is the same object even though it looks very different when seen from different angles or in different illuminations. S/he relates the appearances, sound and touch of the object to one another. S/he discovers ways in which her/his own actions affect objects, and acquires a primitive sense of causality. Thus, her/his world becomes increasingly an orderly arrangement of more or less permanent objects, related casually to each other and to her/his own behaviour.

ii) **Proportional stage:** It is known as the second stage and extends roughly from about age 2 to 7. In this stage, the child begins to exhibit the effect of having learned language. S/he is able to represent objects and events symbolically: not just to act towards them, but to think about them. The children have internal representations of objects before has words to express them. These internal representations give the child greater flexibility for dealing adaptively with the world, and attaching words to them gives him/her much greater power of communication. However, his/her intellectual abilities are still very limited compared with those of an adult. His/her thinking is still decidedly concrete by an adult standard. S/he tends to focus on one aspect of a situation to the exclusion of others, a process that Piaget calls cantering. His/her reasoning can be a logician's nightmare, and s/he finds it difficult to understand how anyone else can see things from a point of view other than his/her own. S/he is thus, as the name of the stage implies, still early in the process of acquiring a logical, adult intellectual structure.

iii) **Concrete operation stage:** The third stage extends from age 7 to 11. Again, this represents an increase in flexibility. In this case, over the preoperational. The sort of operations to which the name of the stage refers includes classifying, combining and comparing. The child in the stage of concrete operations can deal with the relationships among hierarchies of terms such as robin, bird and creature. S/he is aware as the preoperational child is not, of the reversibility of operations. What is added can be subtracted, and a substance that has been changed in shape can be restored to its original shape. A girl at this stage will not fall into the fallacy that a preoperational girl may of saying, "I have a sister, but she doesn't have any sister".

Again, however, Piaget pointed out this is not the whole story. One child may have learned arithmetical operations by role fail to supply them when appropriate, while another child may deal effectively with problems without ever having been exposed to arithmetic. Learning of symbolic manipulations may be helpful to the child in going from the wide variety of concrete situations is more important.
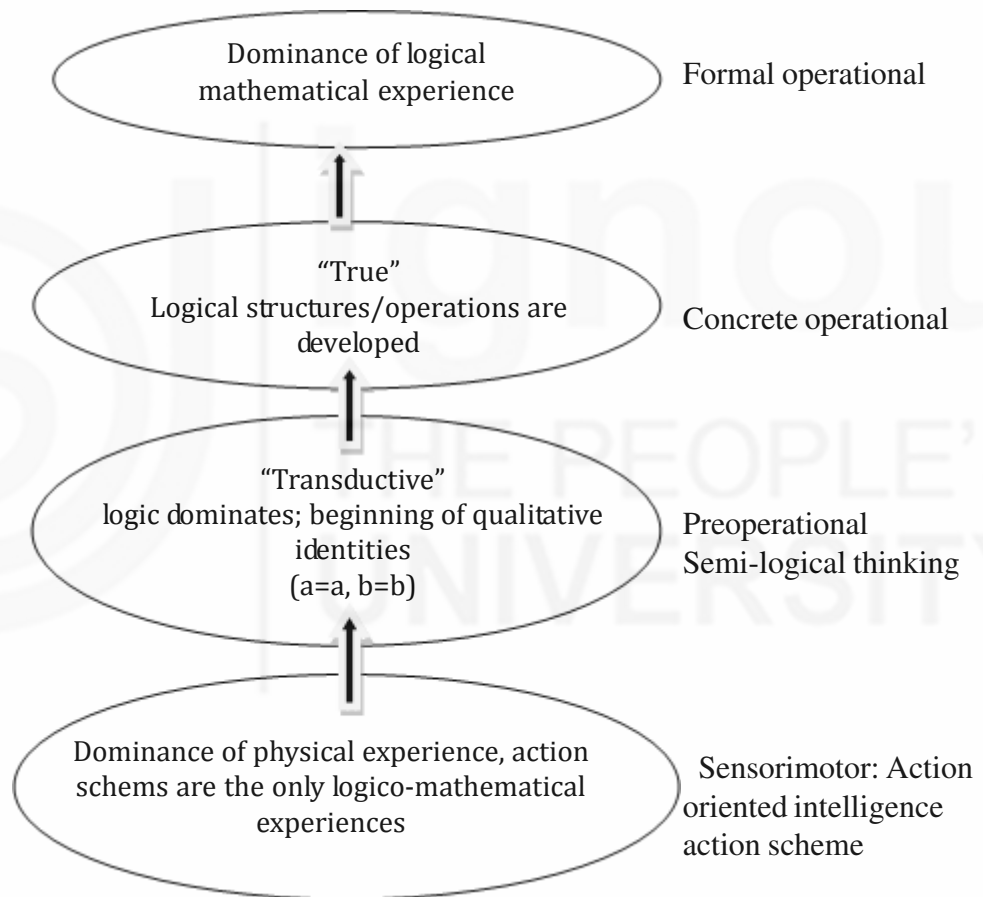
Fig 10.1: Cycle of Cognitive Development

iv) **Formal operations stage:** The fourth stage and final stage around age 11 years. It involves improvements in abstract thinking, continuing to about age 16. In this stage, the capacity for symbolic manipulation reaches its peak. Though children in the previous stage have been able to perform a number of logical operations, they haved one so within the context of a concrete situation. Now, the person intellectuality, because s/he is no longer a child, can view the issues abstractly. They can judge the validity of logical argument in terms of their formal structure, independent of content. S/he can explore

different ways of formulating a problem and see what their logical consequences are. S/he is at least ready to think in terms of a realm of abstract propositions that fit in varying degrees in the real world that s/he observes. S/he may not demonstrate all the tendencies in every possible situation, but s/he has reached the stage at which he is capable of doing so. The intellectual apparatus of formal reasoning that provides the basis for so much human achievement is at least potentiality at his/her disposal.

Children may not show those stages within the age-ranges specified above, because of differing home and school environments. But what Piaget insists on, is that the sequence of these stages in intellectual development remains the same for all children.

At the higher education level, we are concerned with learners who are at the fourth stage i.e. formal operation stage. Therefore, we should know more about this stage. (learners at undergraduate level are expected to beat this stage).

The important characteristics of the formal operation period/stage are listed below:

- Learner at this stage survey many possibilities

- They design a system of what is hypothetically possible, is structured and followed by empirical verification.

- They can conceive of an imaginary world.

- They become critical of their own standards and look objectively at the assumptions in hand

- They accept assumptions for the sake of argument

- They generate hypotheses, discuss and proceed them to test

- They try to generalize things

- They become conscious of their own thinking and provide rational/ justification for their thinking, judgement and actions.

- The older adolescents or adults are sufficiently detached from their ego and from their inner world to be objective one. They are also detached enough from external things to be objective observers and to be able to reason about the assumptions and the hypotheses and as such they can establish general laws.

- They go even to the extent of finding empirical and mathematical proofs for their observations.

- At this stage, thinking goes beyond the immediate present and attempts are made by them to establish as many vertical relationships as possible.

- Notions, ideas and concepts are formal which belong to the present and future.

2.5.4 Educational Implications

The following important direct/indirect educational implications of Piaget's approach to cognitive development are given below:

- Piaget's description of cognition (as a result of interaction of the individual with environment, accompanies by the process of assimilation and accommodation) includes that cognitive development is a continuous process

from birth to adulthood. This theory believes in gradual progression from one stage to another. Therefore, the teacher should try to determine the levels/stages of development of learners and accordingly s/he should plan his instruction/teaching.

- The relationship between the educational system and the child will be a unilateral and reciprocal one.

- Childhood is accepted as a necessary and important phase in the development of logical thinking.

- Science and mathematics are taught with actions and operations. Such instructions should begin in nursery school with concrete exercises.

- Experimental procedures and free activity through training should be introduced for both liberal arts and science students.

- Active methods that require the learners to rediscover or reconstruct the truths to be learned should be used. The teacher also provides counter examples to the learner that lead to reflection of their often hasty solutions.

- Audio-visual aids can serve only as accessories in the learner's personal investigations of truth.

- Give-and-take can be developed in the group.

- Spontaneous activity with small group of learners brought together by means of their mutual interest in a particular activity should be the major feature of classroom learning. The classroom should be a centre of real activities carried out in common so that logical intelligence may be elaborated through action and social change.

- Learners must be permitted to make their own mistakes and to correct these errors themselves. Therefore, classroom instruction must be planned to facilitate the process of construction, assimilation and accommodation through which physical/empirical abstraction and reflective abstraction can occur.

- The process of experimentation by learner at all ages is important. Only through experimentation the learner can acquire the skills that are necessary for formal operational thought. More importantly, experimentation often gives birth to new ideas. For young children, their first new ideas may not seem so original to adults. But such a practice in which children are encouraged to develop new ideas can lead to original discoveries. The more we can help children to have their own wonderful ideas and feel good about themselves for having them, the more likely it is that they will someday happen upon wonderful ideas that no one else happened upon before.

- The cognitive activity that is generated by experimentation is essential. A child can be mentally active without physical manipulation just as s/he can be mentally passive while actually manipulating objects.

- Many activities in pre-school curricula can provide opportunities for cognitive development. Block painting, finger painting, musical games, cooking, dramatic plays etc. engage the children in empirical and logical-mathematical abstraction.

- The classroom should provide situations to children in constructing their own knowledge so that the children can comprehend the world in new ways at different cognitive levels.

- Classroom activities should maximize the child's opportunities to construct and coordinate many relationships that he or she is capable of exercising.

- At the pre-school level, the child is more interested in the observable effects or his or her actions than in relating the result to an organized cognitive structure.

- The implications of educational practice are important. First, a variety of activities games and experiences should be provided to that the learner can exercise his or her developing subsystems. One suggestion is to use individualized mathematics laboratories that utilize a variety of materials for measurement and experimentation. Examples include blocks, dried peas, matchboxes, drinking straws, pipe cleaners and so on.

- Games and activities that can provide experience with classification and serration are also needed. Classification games can be developed using blocks or pieces of plastic or felt that vary in two properties, such as colour and shape. Circles, squares and triangles in red, blue, yellow and green for example may be used in a variety of ways. Card games in which shapes and/or colours are to be matched is one example.

- Drill and practice should be given in the classroom to make teaching-learning effective.

2.5.5 Limitations of Piaget's Approach

Piaget's approach to learning has some limitations also. The important limitations are as follows:

- Piaget does not seem to make his terminology very clear to his readers.

- He is too preoccupied with numerous epistemological considerations.

- Piaget's entire work lacks scientific methodology as conventionally understood.

- His emphasis is on concepts of relationships and he does not investigate nominal concepts.

- It's lengthy and time consuming.

- No direct teaching is involved.

- Mathematics and Science cannot be applied in early childhood.

- Tailoring narrow exercises for individual children is both impractical and unnecessary.

- The child does not notice the contradictions in his or her own explanations.

- Children may lose confidence in their ability to figure things out.

- a child cannot engage in abstract thought and cannot perform any useful scientific activity.

- The preoperational child or even the concrete operational child is not yet ready for reading since his thought structures are as yet primitive.

2.6 SOCIAL LEARNING APPROACHES

In contrast to behaviourist and cognitivist thinker, there were few who proposed that role of social interaction is very important in learning. Bruner (1986) said "**I have come increasingly to recognize that learning in most settings as a communal activity, a sharing of culture**."

Social perspective to understand learning was considered as important one by Bandura in his **social learning theory** as well as by Lev Vygotsky in his **social constructivist approach**. We will discuss in brief about these theories here.

2.6.1 Social Learning Theory

In his social learning theory, Bandura distinguishes **acquisition of knowledge (learning)** with **observable performance based on that knowledge (behaviour).** His theory emphasised on learner through observing others' behaviour and actions, this he called observational learning. We will discuss in details about observational learning in unit 4 on this block.

2.6.2 Social-constructivist Approach

Vygotsky advocated socio-cultural perspective of learning. According to him, social and cultural interactions for a learner are very important. He assumed that "**every function in a child's cultural development appears twice: first, on the social level and later of the individual level; first between the people and then inside the child.**" (1978, p. 57)

Vygotsky had a belief that a child learn better if s/he receives the support from a more learned individual. **Zone of Proximal Development (ZPD)** and **scaffolding**

are the key concepts as outcome of his theory. We will discuss in detail about all these in unit 3.

2.7 HUMANISTIC APPROACH TO LEARNING

Humanists think learning as the way in which the individuals develop a unique way of controlling their environment and attaining the best potential. Humanistic approach is based on humanism, which is a philosophy of **Man-ism or Human being-ism**, concerned with human and humane interests, characteristically human, not supernatural belonging to human beings and not to external nature, raising a human being to his/her greatest potential or giving him/her as a human being, the greatest satisfaction.

The major tenets of the humanistic approach are given below:

* Humanistic psychologists view learning as a process that is inevitable and unique for every individual

* Human beings concerns -what a human being ought to be

* An individual can distinguish between herself/himself and her/his environment and is inherently capable of taking responsible decision and learning effectively

* A child is capable of learning. Let it learn with love and peace (without any external pressure).

* Human beings possess the power or potential of solving problems through reasons courage, reason vision and human virtues.

2.7.1 Concept of Humanistic Approach to Learning

The term 'humanistic' originates from 'humanism' which has been derived from the Latin word 'Homo' means 'human being'. Thus, literally speaking humanism is the philosophy in which the human being occupies a central place. The humanistic approach makes use of creativity, belongingness, self-development, co-existence, mental health, values, etc. It is comparatively a new approach to learning.

2.7.2 Characteristics of Humanistic Approach to Learning

The important characteristics of the humanistic approach are given below:

* It is concerned with the welfare of all human beings.

* This approach emphasises on learning in natural environment of human love, peace cooperation, freedom, equality rather than of physical values, money, wealth, etc.

* It believes in co-existence.

* It considers the best learning as based on truth, good and beautiful.

* It believes that learning becomes effective when is need-based.

* Its emphasis is on learning at the higher level i.e. self-transcendence and self-actualization.

* Learning is experience-based.

* It emphasises on self-motivation for better learning.

- To increase the learner's self-direction and independence.

- It helps learners take more responsibility for determining what they are learning.

- It increases learner's reactivity.

- It develops an interest in the arts.

- It fosters curiosity.

2.7.3 Contribution of Psychologists Towards Humanistic Psychology

In the latter half of the twentieth century, it was felt that both psycho-analysis and behaviourism tried to describe the human being to their best, however, both have failed to study the human being as 'human being'. In the year 1961, **a Journal of Humanistic Psychology** was published which made it clear that humanistic psychology addresses such issues as individual's needs, creativity, belongingness, self-development, self-actualization, freedom, mental health, values, responsibilities, etc. Individualism, existentialism, empiricism and culturalism, etc. are different landmarks inn this approach. Thus, humanistic psychology includes human beings as well as their total capacities, characteristics and potentialities.

Maslow has described the existentialist psychology, which indicates that the lacunae and shortcomings of an individual succeed in maintaining its existence. He named these lacunae and shortcomings '**needs'** and listed different types of needs, on the fulfillment of which the individual exists.

Maslow has analyzed five types of needs as given below:

Fig. 2.1: Maslow's Hierarchy of Needs

These needs are presented in a sequential order, known as the hierarchical model of needs. According to Maslow, people learn to satisfy these needs depending upon the individual's experience, exposure, etc.

According to him, a highly developed person (self-actualized person) develops the following characteristics:

- S/he understands the relationship between natural and realities. Identifies his/her responsibilities and work accordingly.

- S/he believes in the present and not in the past or future.

- S/he loves others and has faith in democratic principles.

- S/he makes use of his/her creativity for the welfare of society.

Moslow advocated three methods of learning - subjective, objective, and interpersonal. The subjective method includes self-experiences or internal experiences, the objective method includes external experiences based on reasoning and logic and the interpersonal method includes the description of other people based on observation. All the three methods are linked to each other. However, humanistic psychology puts more weight on the third approach i.e. interpersonal.

Carl Rogers was another humanistic psychologist who has described 'self', 'becoming', ' experiencing' and 'concepts of humanistic approach' on the basis of subjective as well as objective factors. We can divide his theory into two parts: concept and process.

Concept: The main concept in his theory are - experience field, self-ego-ideal, real ego, congruence, incongruence and self-actualization.

Process: The process includes - barriers in the psychological development, relationship between individual and society, emotions and learning.

According to Roger's theory, learning in an individual takes place through its interactions with the external environment based on its internal experiences. Therefore, different individuals have different types of interactions and learning. This type of reaction goes on between activity and it aims the human being and his/her values, the human being and his/her previous experiences the human being and his/her self, etc. When this reaction remains positive as per his/her internal self, assimilation takes place and relationship exists. S/he becomes a better learner, a better human being and a well-adjusted person.

2.7.4 Educational Implications

This approach recommends such educational reforms like open schools, ungraded classes, free schools, etc. The following are the main implications of the humanistic approach to the learning process.

Place of the child in teaching-learning: This approach believes in 'child-centered-education'. Therefore, it emphasizes on **reach, touch** and **teach** the child according to his nature, interests, aptitudes, etc. The teacher should assess a student's attitude, aptitude, potentialities, abilities, level of aspiration, his/her social, emotional, intellectual, physical, aesthetic development and mental health and should plan his teaching activities accordingly.

Emphasis on individuality: According to this approach, a human being is a wonderful creation. S/he has his/her own individuality, which should be respected and developed through education. Individual differences should be respected and internal virtues of individual be developed.

Understanding the child: According to the humanistic approach, we should know our learner: their interest, personality, capabilities and background

environment and use teaching methods and contents accordingly. The important humanistic principle of education given by this approach is 'first, understand the child and then teach'.

Method of teaching: In this approach, the methods of teaching are developed based on psychological principles. Active learning is more emphasised. Learner's readiness, mental set and motivation are considered as basis for deciding the method of teaching to be used.

Discipline: This approach emphasises on self-discipline and self-control.

Place and role of Teacher: This humanistic approach recognizes the teacher as a guide, friend and helper of the learners in their learning. The teacher is considered as the milestone in the journey of total development of the child.

Humanistic approach is a democratic approach, which recognizes 'child' and advocates the providing of a rich environment with a view to have its all-round development.

Besides, there are some more strong points in favour of this approach to learning:

• Teachers should thoroughly understand their subject-matter and make wise use of research-demonstrated principles of motivational learning. They must understand themselves as an important teaching aid.

• Teachers should keep in mind that learners bring their total selves to class. They bring heads that think, They bring values that help them to filter what they see and hear. This brings the unique learning styles among the students.

• Teachers must know that learners may be different in learning experiences.

• To encourage the learners to think and get involved in abstract discussion.

• A series of questions should be brought up and discussions should be started actively or passively in the classroom. So that learners may give suggestions freely and run the classroom democratically.

• The teachers should help the learners to decide for themselves who they are and what they want to be. The learners can decide for themselves. They have a conscious mind that enables them to make choices. Through their capacity to make choices they can at least have a change at developing the sense of self-necessary for productive lives.

• Teachers should understand the learner's point of view. The attempt is to see the world as the student sees it, accept it as truth for him/her and not to force him/her into changing.

• Good teaching is best done through a process of helping learners explore and understand the personal meanings.

2.7.5 Limitations of Humanistic Approach

Like other approaches to learning, the humanistic approach to learning has been limitations. Important of them are as follows:

• It seems like too much commonsense and too little like science.

• It makes hard to identify humanists and non-humanists.

• It totally depends upon the thinking of one's individual not others.

• It does not believe in passive listening.

- It is based upon a native type of phenomenology only.

- It is impossible to recognize an authentic person.

- It is difficult in verifying conceptual conclusions.

- It is known as open rather than a closed system of education.

- It is difficult to define simple religious optimism or emphasizing the power of positive thinking.

- It is difficult to accumulate objectively verified knowledge.

Check Your Progress 3

Notes: a) Write your answer in the space given below.

        b) Compare your answer with the one given at the end of the unit.

1) What is the role of 'needs' in the humanistic approach?

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2) How is 'self' important in the humanistic approach?

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3) How is 'child-centred education' an epitome of the humanistic approach?

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2.8 LET US SUM UP

In this unit, we have discussed in brief the meaning of approaches to learning, and distinguished it from method and mode. Then, we tried to describe two types of approaches – deep approach and surface- approach.

Under the behaviouristic approach we have studied its basic tenets, characteristics and the concept of behaviourism. Pavlov's classical conditioning and Skinner's

operant conditioning theories have been described in brief to understand its main concepts and limitations. You have also studied educational implications of the behaviouristic approach to learning.

Under the cognitive approach to learning, you have studied tenets, important concepts like differentiation, generalisation and restructuration. You have also studied the Jean Piaget's cognitive approach to learning and its process like assimilation, accommodation, equilibration and adaptation. A brief introduction of social learning theories is also given. Details are in next units.

Similarly, under the humanistic approach, we discussed its basic tenets and described the meaning of humanism in relation to the humanistic approach. In the latter part the important characteristics of the humanistic approach have also been presented. We have also tried to present the contributions of various psychologists towards humanistic psychology and described the main theme of theories given by various humanistic psychologists like Maslow, Carl Rogers. At the end of the unit, we have given the limitations of this approach and also discussed the important educational implications which can be drawn from the humanistic approach to learning.

2.9   UNIT-END EXERCISES

1) Give an article from any journal to two groups of learners and ask them read and be ready to answer the questions on it. When they complete the reading, ask some specific questions on the content discussed in the article. On the basis of answers, analyse, categorise and classify students as the deep learners and the surface learners.

2) Take any topic of your interest and try to identify the process of differentiation integration and restructuration of the cognitive approach.

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2.11 ANSWERS TO CHECK YOUR PROGRESS

1) Programmed instruction is based on the concept of "immediate feedback". Immediate feedback is a form of response which is rewarding. Thus by rewarding, a learner is motivated to attempt a question. Therefore, the instruction of a learner is programmed on the basis of her/his pace to learn for immediate feedback.

2) i) The cognitive approach shall be useful in problem solving. The perception of the problem involves observation, identification, assimilation, and restructuring. The cognitive approach involves all these and much more.

   ii) Perceptions are vital in forming mental maps and links between problems and their solutions. The perception of the learner is processed through differentiation, generalisation and restrcuturation. This is useful in developing clear learning of the environment in order to solve problems and develop understanding about reality.

3) i) The humanistic approach is based on the individual's specific learning conditions and requirements. Understanding the need of individuals is the first step towards fulfilment of learning objectives. The humanistic approach focuses an individuality of the learner and hence considers individual learners' need in designing instructional activities.

   ii) In the humanistic approach, self is important in understanding the relationship between nature and realities. It identifies learner's responsibilities and work accordingly. A person becomes a better learner, a better human being and a well-adjusted personality.

   iii) The learner according to this approach is always at the receiving end. There is rather a dynamic interaction between the learner and the teacher. The focus always remains on the method and patterns that are most suitable to learner.

UNIT 3   LEARNING FOR CONSTRUCTION OF KNOWLEDGE

Structure

3.1   INTRODUCTION

In Unit two, we have discussed about various approaches to learning. After going through the comparative perspective of various approaches, you must have realized that constructivism has its distinguished relevance in learning. In last one decade, Indian school education has transformed a lot and there is major emphasis on constructivist teaching learning or we can say, promoting learning for construction of knowledge by learners themselves. In present unit, we will discuss various constructivist approaches and identify the essential elements for creating a conducive learning environment. We will also discuss characteristics of a constructivist classroom, which will help you to transform your class into a constructivist class. The unit will end with reflections on how learning takes place in a constructivist classroom.

3.2   OBJECTIVES

After going through this unit, you will be able to:

- understand various constructivist ideas towards learning;

- identify the essential elements from various constructivist's ideas,

- create a constructive learning environment in your class, and

- practice teaching-learning in constructivist discourse.

3.3 CONSTRUCTIVISM: AN INTRODUCTION

Learning for construction of knowledge is the basic presumption of constructivism which is a paradigm contrary to traditional objectivist approach. National Curriculum Framework-2005 emphasized that there is a 'need to recognize the child as a natural learner, and knowledge as the outcome of the child's own activity.' (p. 12). The emphasis is on such learning environment where children can construct their own knowledge, develop their capacities and remain an active learner.

In order to facilitate such learning, you as teacher need to be in tune with constructivist approach of learning.

Constructivism is not a single theory of learning. It is based on ideas proposed by various philosophers, psychologists, anthropologists and educationists. You must have heard of names like Piaget, Vygotsky, Novok or sometimes Dewey as contributors to this new paradigm of learning.

This approach is contrary to traditional objectivist approach which establishes knowledge as something to be imparted into learners by some means like teacher. Objectivists assume knowledge as complete, real, objective and external to the learner. This basic assumption was being questioned by a new approach which believes that knowledge "is a function of how the individual creates meaning from his or her own experiences". Thus constructivism has emerged.

Let us a start with an activity to identify the basic presumptions of objectivists i.e. behaviorist and cognitivist:

Read the following statements and put a √ mark in front of those, which you feel are presumptions of behaviorists or congnitivist approach of learning.	
Knowledge is already available and should be given to the children.	
Knowledge is transmitted by more knowledgeable to less knowledgeable person.	
Teacher should built stimulus-response associations by using cues, examples, cases and rewards.	
Pre-assessment is important to decide, what should be taught to learner.	
It is important to concentrate on what learners know and not on what they do.	
Knowledge acquisition is a mental activity that takes place through internal coding and structuring by the learner.	
Suitable learning strategies should be used to change the learner to acquire desired knowledge.	
Knowledge can be analyzed, compartmentalized and present in small chunks.	
Emphasis on structuring, organizing, and sequencing information to facilitate optimal processing.	

This activity will help to understand basic presumptions of constructivism and differentiate it from objectivist view point.

Constructivism is not altogether different approach but it has its distinguished characteristics to place it in a different domain.

The basic characteristics of constructivism, to which most constructivists agree, are:

- Knowledge is an active meaning making process, in which learners construct their own meaning. It is not something which is imposed by the teacher on the learner.

- Learners have their own ideas about a situation, which may be incomplete but they play an important role in building meaning and understanding the situation.

- Learner's social and cultural background has its significant impact on learners' ideas.

- Learners construct their knowledge through interaction, perception and experience.

Can you define constructivism by keeping these basic presumptions in mind?

Activity 1

Define constructivism in your own words, keeping the basic assumptions in your mind.

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From above discussion, you must have understood that constructivism emphasizes on the active role of the learner in developing understanding and making their own meaning based on their previous knowledge and experiences in a new situation.

Let us now try to understand various viewpoints of constructivist which will help you to develop your perspective of constructivism as per your understanding.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of the unit.

1) What are basic assumptions of constructivist learning?

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3.4 VARIOUS CONSTRUCTIVISTS' IDEAS

In previous section, basic assumptions of constructivism have been discussed. It was clarified that constructivism is not a single theory and various constructivists have their own vision about it. Major contributors to constructivism are Piaget, Vygotsky, Bruner, Novek, etc. though it has its roots in the views of Dewey.

3.4.1 Dewey's Contribution

Though at the time of Dewey, there was no term like constructivism but he is often referred to as philosophical founder of this approach. If you analyze his vision of learning, you will be able to draw few conclusions like:

- He proposed that learners should engage in real-world and not in a pre-planned environment.

- Learners should demonstrate their knowledge through creativity and collaboration.

- Learners should be provided with opportunities to think from themselves and articulate their thoughts.

He emphasized that education should be based on real life experiences. He wrote, *"If you have doubts about how learning happens, engage in sustained inquiry: study, ponder, consider alternative possibilities and arrive at your belief grounded in evidence."*

3.4.2 Piaget's Cognitive Constructivism

Piaget has a firm belief that learning is influenced by the developmental stages of learner. He is of the view that learning is a constructive process. In his own words:

Knowledge is not a copy of reality. To know an object, to know an event, is not simply to look at it and make a mental copy or image of it. To know an object is to act on it. To know is to modify, to transform the object, and to understand the process of this transformation, and as a consequence to understand the way the object is constructed. (Piaget, 1964, p. 8)

Thus, Piaget emphasized on an active learner who can observe, act, modify, manipulate, transform and construct own meaning of an object or event. But it is possible when learner is in appropriate developmental stage. You must have got an idea of all the four developmental stages of children as proposed by Piaget, i.e. *sensorimotor, preoperational, concrete operational and formal operational* in Unit 2.

Piaget proposed that learning takes place through some basic tendencies. He named these tendencies as **Organization, Adaptation** and **Equilibrium**. He proposed that some mental structures 'schema' develops based on perception and experience, these 'schema' are organized through the processes of **assimilation** and **accommodation** and **equilibrium** emerges.

Let us try to understand these terms in a classroom situation.

Ms. Neha is a science teacher in a secondary school of Uttarakhand. In her class of classification and characteristics of leaves, following has happened.

The moment Ms. Neha entered in the class, children were playing and they saw their teacher with various types of branches and twigs with leaves in her hand. She handed over all branches and twigs to children and asked them to do something interesting.

Children distributed those amongst them by making six groups and tried many things like placing them in form of a garden, few tried to collect leaves from branches and arranged according to size, shapes, etc. One group decides to identify the name on plants, which have those different leaves.

After 15 minutes, she asked children to tell, what they have done and why. Following were the responses:

Group 1 : Ma'am, we made a garden where plants of short height and small leaves are on sides while plants with long leaves and higher are in middle. We do so because all leaves need proper light and if we place big plants/tress on side, it will difficult to smaller plants to get proper light.

Group 2 : Ma'am, we tried to identify plants and from where these leaves have been taken, because different kind of plants has different types of leaves.

Group 3 : Ma'am, we made different groups of leaves based on their size and shapes.

Group 4 : We arranged leaves in the way these are attached to the branch. We found few leaves are directly linked to main branch while few leaves are in a group of three or five or more on a single strand and this strand is attached to the branch. We also noted that few have a base while few directly emerge from branches.

Group 5 : Ma'am, we tried to identify the leaves and linked it with the knowledge givenby our grandparents and parents about the uses of these leaves. We found few are used as vegetables; few as medicine while few as decorative.

Group 6 : We arranged the leaves based on the distribution of veins in leaves. In few leaves it is like a matrix while in some it is like parallel lines.

She was very impressed with the variety of thoughts presented by children. Though she was aware that they don't know the technicalities of classification of leaves based on various parameters but they knew many things which she wanted to explain.

She put few cards in front of class having some terms like: usage, shape, venation, size, adaptation, etc. and asked groups to choose one card which suits their work. She was amazed to note that most of groups have chosen the appropriate card. It has helped her to introduce the concept of classification of leaves.

Let us try to analyze and find out how the terms proposed by Piaget are fit in this context.

Schema: Colour, size, use, shape, place in garden are certain schemas, which different children have in their mind based on their observation, perception and experience.

They tried to organize their knowledge and used their existing schema to fit in the situation given to them; this is called *assimilation, i.e. the process of explaining and understanding new information with the help of already existing schemas*.

When few of them found the leaves they were not aware of and they used their knowledge to understand and fit in new leaves in an articulate group i.e. *they adopted, modified or adjust their already existing schema to understand new things/information/situation, this is called accommodation*.

When Ms. Neha gave them some cards and they chose one, which was most appropriate to their way of classifying the leaves, they were satisfied. *Getting satisfactory understanding of information by using process of assimilation and/or accommodation is equilibrium*.

Piaget also proposed that if satisfaction does not occur by applying schema through process of assimilation or accommodation, it results in *disequilibrium*, which motivates the learner to search and find the solution which can give satisfaction.

Activity 2

Identify a real classroom situation in your class. Analyze it in relation to following terms:

Schema(s) ....
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Assimilation ....
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Accommodation ....
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Situation of equilibrium: ....
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Situation of disequilibrium:
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3.4.3 Vygotsky's Social Constructivism

Vygotsky is known as the proposer of social constructivism. Social Constructivism approach talks of importance of social interaction and context in learning. He believes that learning is social in nature. Through interactions children shared their views and make their own meaning. It does not focus much on individual

learning rather it emphasized on social context; knowledge is mutually built and constructed.

Knowledge is distributed among people and environments, which could be developed best by cooperation and interaction with others. Opportunity to children to interact with elders at home or in community, other children in class or in playground helps them to refine their own thoughts and they develop a shared vision or understanding of a situation/event or object.

Vygotsky is of the view that teacher should provide an environment to children to construct knowledge with peers and teacher i.e. **co-construction** of knowledge. He emphasized on the role of culture on learning. Culture helps in acquiring appropriate skills. Here culture is not only classroom culture rather culture as a social culture where children live, grow and learn, which includes family, neighborhood, community and society as a whole.

Vygotsky's idea of **Zone of Proximal Development (ZPD)** has explained the role of interaction in learning. It is an area where a child cannot solve a problem alone but can do successful if an opportunity to interact with a more experienced peer is given.

Here are few examples, similar examples you can also observe in classroom situation:

Example 1: Rahul, a 10th class student was trying to solve some mathematics problems related to trigonometry. He tried many times but failed. His teacher asked questions to him, which lead him to follow right approach and he succeeded to solve the problem.

Example 2: Jasmine in her chemistry practical class was trying to use pipette during titration practical. She used a 5 ml pipette but her readings were not correct. When she got frustrated, her friend Ranjita came to her. Ranjita guided her to hold and drop chemical properly, she got succeeded and got desired results.

In above example, you can see how the child move from lower limit to upper limit in ZPD and enjoy successful learning with the help of more experienced person.

To use the concept of zone of proximal development, you can follow a step by step process, which will help learners to construct their knowledge:

- You should identify the already known to the learners. After knowing about it, you should plan the situation where a new concept can be developed by linking it with learners' prior knowledge.

- While planning the less, you should design such situation and activities, where most of learners can reach success. You should also identify few points, where the learners need your support or peer interaction.

- Design variety of situations based on various realistic contexts, because all learners will not learn in same way as well as their prior knowledge is not similar.

- Ask learners to compare what they learnt and what was already known before the task. Encourage them to enjoy their new learning and express their feelings.

Tharpe & Gallimore (1988) also expressed that ZPD is a four-stage process:

Stage 1 : Assistance provided by More Knowledgeable Others (MKO's) or capable peers

Stage2 : Assistance provided by self

Stage 3 : Automatization through practice

Stage 4 : De-automatization; recursiveness through the previous three stages

Vygotsky is of the view that it is possible through any social interaction i.e. interaction with teacher, interaction with peer, interaction with parents, friends or people in community. He called these the 'buds' or 'flowers' of development, to distinguish them from 'fruits' of development, which the child already can accomplish independently. (Vygotsky, 1978). One more concept linked with ZPD is of *Scaffolding, i.e. a technique to provide right kind of support in right amount at right time to increase child's competence.* It will be discussed in details in section 3.5.1.

In contrast to Piaget, Vygotsky emphasized on role of language in learning. In Piaget's constructivism, child's language was ecocentric and nonsocial speech, but for Vygotsky, children use a lot of private speech not only from social communication but also to plan, guide and regulate their behavior in self-regulatory fashion. He has a firm belief that the children who use a lot of private speech are more socially competent than those who don't.

Vygotsky argued that there is a need to assess child's ZPD in place of IQ. Before beginning instruction, more experienced person should assess a child's ZPD through giving tasks with varying difficulties to assess, from where teaching-learning should begin.

Check Your Progress

Notes: a) Write your answer in the space given below.

      b) Compare your answer with the one given at the end of the unit.

1) Till now, you have gone through the views of Piaget and Vygotsky, Identify few points in both views which are contrasting, and compare them.

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3.4.4 Bruner's Constructivism

Jerome Bruner is a 20th century constructivist. If you go through Bruner's ideas on constructivism in his book **'The Process of Education'**, published in 1960, you will find him an extension of Vygotsky. His work is much influenced by Vygotsky's idea of social constructivism, which resulted in the famous theory of **scaffolding,** i.e. providing support to learners in their initial phase of learning, which is in right amount and gradually decreases as learner progresses.

Basic assumptions in Bruner's social Constructivism are:

- Children construct their own new ideas and concepts based on their existing knowledge.

- Learning is an active process. Process of learning takes place thorough selection and transformation of information, decision making, generating hypotheses, and making meaning from information and experiences.

- Comprehension of a subject is always better if a learner has understood its fundamental structure. For this, he emphasized on the significance of categorization in learning. *"To perceive is to categorize, to conceptualize is to categorize, to learn is to form categories, to make decisions is to categorize." Interpreting information and experiences by similarities and differences is a key concept.*

- Interest in a subject is best stimulus for learning.

Bruner also proposed an idea called **spiral curriculum** or readiness for learning, where children are given basic idea about various concepts initially according to their cognitive abilities, around which they develop their understanding and construct knowledge more deeply, as progress in school years. He also emphasized on the role of social environment in the acquisition of language.

Another significant contribution of Bruner is in form of three stages of intellectual development. He proposed in **"Enactive"** phase a child learns through action on physical objects and the outcomes of these actions. The Second phase he named as **"Iconic"**, where learning takes place with the help of models and pictures. In third stage i.e. **"Symbolic",** child develops the capacity to think in abstract terms. On the basis of these three stages' idea, he proposed that for effective learning, a combination of concrete, pictorial then symbolic activities should be used.

Bruner's contribution as proposer of '**discovery learning'** is also very significant. In discovery learning, learners actively construct the meaning of structures and identify the principles on their own. We will discuss about it details in section 3.6.4 of the unit.

Check Your Progress

Notes: a) Write your answer in the space given below.

   b) Compare your answer with the one given at the end of the unit.

3) What are the similarities in the views of Bruner and Vygotsky?

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4) What are three stages of Intellectual development according to Bruner?

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3.4.5 Novak's Humanistic Constructivism

Joseph. D. Novak's ideas of learning are highly influenced by Ausubel's assimilation theory. He proposed construction of knowledge through **meaningful learning**. In his words, *'Meaningful learning underlies the constructive integration of thinking, feeling and acting leading to empowerment for commitment and responsibility.'* He argued that the process of meaning making begins when a child observe or record any object or event. Child tries to identify a relationship between his previous experiences and what is observed, this facilitates construction of new knowledge. According to him, "*Significant new insights may occur when concepts and propositions in one domain of knowledge can be related in some important way to concepts and propositions in another domain of knowledge.*" His idea is that learner should be incharge of his/her learning. He is also of the view that in acquisition of new knowledge, emotions also play an important role. He called his views on constructivism as '**Human Constructivism**'.

His one more significant contribution to understand learning process is in form of '**concept maps**'. We will discuss in detail about concept maps in unit 9 of block two. He said that concept maps are the tools, which can help in meaningful construction of new knowledge by examining the existing relationships and deriving new relationships. Concept maps help a learner to organize the scattered views at one place and establish relationships. These maps help learners to learn how to think critically and more creatively. Concept map can also be used as assessment tool, which can help in improving the quality of learning.

He said that a teacher should create an environment and help learners in sharing the materials. Learners should develop their own meaning from material. A teacher should appreciate what a learner is learning and tell them that their understanding is never complete. Learning should be an interactive process. He defined learning as:

Learning is also an affective experience; it is the pain and anxiety of confusion, and the joy and excitement when one recognizes that new meanings have been acquired. In my view, the construction of new knowledge in any field is no more than a special kind of meaningful learning.

Activity 3

Go through the above discussion about Novak's view of learning and identify five key points which are establishing him as constructivist thinker.

3.5 CONSTRUCTIVE LEARNING ENVIRONMENT

Till now we have discussed about constructivist's view, which will help you in understanding the basic epistemology of constructivism, but the real challenge for you as teacher is to create a suitable teaching-learning environment. In present section, we will discuss about constructive learning environment and what can we do to develop such environment?

What is constructive learning environment?
A learning environment facilitating learning through construction of meaning and development of understanding among children on their own may be viewed as a constructive learning environment.

Maor (August 1999), identified five key practices of constructive learning environments, which are:

- **Personal constructions of reality** i.e. whatever children construct within their own mind, is their own reality. They construct their own meaning based on their experiences. Knowledge comes from their experience. It does not come from someone else.

- **Simulated authentic learning environments** i.e. the learning environment designed and developed on the basis of real life experiences. A teacher has to simulate the real life situations, problems and complexities for learners to give them an opportunity to find their solutions. Authentic learning does not mean providing ample of information; rather they should porvide opportunities to develop their deep understanding. Children construct their knowledge in such an environment and relate their prior knowledge with the context. Contextualization of learning is also an important characteristic of authentic learning.

- **Multiple Perspectives** i.e. providing opportunity to experience various dimensions. As you are aware, constructivism does not support sequential and linear approach of learning, as a teacher, you should provide your learners opportunity, where they can gather information with various perspectives. There should be opportunity to see the same concept in various ways and develop understanding with varying objectives and expectations. You should also keep in mind that all children don't learn in same way. They have different ideas, different experiences, different learning styles and different way to look on a problem/situation. Learners should create knowledge, not reproduce it. It should be your concern.

- **Active learning** is a situation where children construct their knowledge by their active engagement in learning process. It is in contrast to objectivist, where knowledge was supplied by teacher or more learned person to a young learner or less knowledgeable person. Learning does not mean only passive receiving or acquiring of information or only listening. You should understand that knowledge transmission is not knowledge creation. You should provide a learning environment where learners actively create their meaning and develop their understanding through their active engagement in various contexts. A learning environment promoting participation, cooperation, collaboration for construction of knowledge is basically an active learning environment. There are strategies like simulations, role-playing, multimedia supported learning environments, games, intentional learning environments, storytelling, case studies, dialogues, scaffolding, learning by design, group cooperation, collaborative learning, etc., which promotes active learning.

- **Collaboration** is another key practice of a constructive learning environment. As a constructivist teacher you should be clear that collaboration is not a means to acquire knowledge from someone else, rather it is a means to create individual meaning with the help of others. It is a key learning tool in Vygotsky's social constructivism.

Jonassen (1995) have stated that:

Groups don't learn, individuals learn. While learners may be part of a group while learning, while learners may learn from one another, and while the social

context of a learning environment may provide support for its members; the change in cognitive structure, the acquisition of knowledge and skill is an individual event.

Hence, collaboration should be used as a learning strategy in a constructivist classroom.

Who will create it?

Answer to this question is you, i.e. teacher. A teacher will create such environment to facilitate construction of knowledge in classroom. You have to create such a learning environment where learners can collaborate, create, discuss and develop their own understanding, where they are free to experiment with existing ideas and get opportunity to explore on their own. Your role will be of a facilitator only.

Brooks and Brooks (1993) identified few characteristics of a constructivist teacher. According to him, a constructivist teacher is someone who will:

• encourage and accept learner's autonomy and initiative;

• use a wide variety of materials, including raw data, primary sources, and interactive materials and encourage learners to use them;

• inquire about learner's understandings of concepts before sharing his/her own understanding of those concepts;

• encourage them to engage in dialogue with the teacher and with one another;

• encourage learner inquiry by asking thoughtful, open-ended questions and encourage learners to ask questions to each other and seek elaboration of learners' initial responses;

• engage learners in experiences that show contradictions to initial understandings and then encourage discussion;

• provide time for learners to construct relationships and create metaphors;

• assess learner's understanding through application and performance of open-structured tasks.

These points indicate you have an important role in developing constructive learning environment.

Can you reflect for a moment?

Activity 4

Observe a class of your colleague for continuously one week and discuss your observations with your colleague. Suggest the ways to create a constructive learning environment in his/her class.

(You can do same practice for you also. Ask any colleague to observe your class and give you suggestions.).

3.6   HOW LEARNING TAKES PLACE

Till now, we have discussed about various constructivist ideas and how a constructive learning environment can be created. During discussion, you must have identified few concepts, proposed or discussed by various thinkers, which have their role in the process of learning. There are discussions about scaffolding, cognitive apprenticeship, tutoring, active learning, meaningful learning, concept mapping. Few of them will be discussed in coming units of the course, but few are important to be discussed here as these have their direct linkage with the way learning takes place in a constructive learning environment.

3.6.1   Scaffolding

We have already discussed a little about scaffolding while discussing about ZPD in section 3.4.3 as well as in 3.4.4 while discussing ideas of Bruner. Idea of scaffolding is a key concept in social constructivism.

Scaffolding can be defined in simpler terms as "*a technique to provide right kind of support in right amount at right time to increase child's competence.*" It helps a learner to move from a Zone of Actual Development to Zone of Proximal Development and finally reach to Zone of Desired Development, with the help of a more experienced person like, peers, elders in family, or teachers.

When a teacher starts supporting learner initially for learning, and gradually reduce the support till the learner reachesa situation, where s/he can develop his/her own meaning and understanding independently. Teacher is scaffolding the learner.

Let us read the following case, and try to develop a clear understanding about scaffolding.

Read and analyze the following case and try to answer the questions.

John, a Geography teacher in a rural school of Kerala, was in a class of mapping. Learners were expected to read maps as well as draw a geographical map and indicate important places, rivers, etc., in the map. It is a class with learners from diverse backgrounds, so he tried following strategies:

1) *For one group of learners coming from same village, he asked to draw the path from their home to school on a sheet and mark important places, or something can be used to describe right path.*

2) *For second group, he gave the map of Kerala state and asked to identify, which they felt was interesting in the map and should be the part of their map.*

3) *In third group, he asked to discuss about various important places, rivers, etc. known to them and use their knowledge to develop a map.*

Can you reflect on following questions?

- *Why John gave three different tasks in same class?*

- *Why to one group John gave map of Kerala but not to the other group?*

- *Do you think all groups need similar support from John?*

- *Which group needs more scaffolding then others?*

From above case, you can draw a conclusion that scaffolding is not only a technique to support learner to achieve their goals but it also helps in filling the 'learning gaps' i.e. what a learner has learnt and what was expected to learn. Here are few common examples of scaffolding, which various teachers practiced in their classrooms:

The teacher gives students a simplified version of a lesson, assignment, or reading, and then gradually increases the complexity, difficulty, or sophistication over time.

The teacher describes or illustrates a concept, problem, or process in multiple ways to ensure understanding.

Students are given an exemplar or model of an assignment they will be asked to complete.

Students are given a vocabulary lesson before they read a difficult text.

The teacher clearly describes the purpose of a learning activity, the directions students need to follow, and the learning goals they are expected to achieve.

The teacher explicitly describes how the new lesson builds on the knowledge and skills students were taught in a previous lesson.

Source: http://edglossary.org/scaffolding/

Activity 5

Identify few situations from your classroom, where you think scaffolding is required. Write down these situations and plan a scaffolding strategy, which is best suited to the situation. Apply it and see the results. Prepare a report on this activity.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of the unit.

6) Define scaffolding in your words.

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3.6.2 Cognitive Apprenticeship

Cognitive apprenticeship is a constructivist tool to develop higher order skills among learners. Before understanding cognitive apprenticeship, let us reflect on following situation:

> *Ramesh is a young boy from a remote village of Uttar Pradesh. He came to Delhi in the search of some work. One of his childhood friends, Mohit is running a bakery shop in South Delhi. Mohit asked Ramesh to join his shop and assist him. Ramesh started assisting Mohit in preparation of various bakery products like cakes, pastries, etc. While assisting, Ramesh closely observed all the processes adopted by Mohit and also slowly learnt about various ingredients. After sometime, Ramesh started making initial preparations ready for Mohit. Sometimes, Mohit crosschecked the ingredients mixed by Ramesh and found that Ramesh is learning the processes involved in baking. Occasionally, Mohit intervened on demand from Ramesh or just to check. As workload increased, Mohit started giving freehand to Ramesh to prepare some products like Pastries. After few months of practice and guidance from Mohit, Ramesh learned the processes of bakery and opened his own shop in his area.*

On analyzing above case, you can notice three types of activities i.e. observation, coaching and practice. Acquiring a particular skill under guidance of a skilled master in a specific domain is an example of traditional apprenticeship. An apprentice first observes the master executing the process (this is called **modeling**). The apprentice then tries to execute the process with the guidance and help from master (this is called **coaching**). Once apprentice acquires the required skills, master minimizes his interventions (this is called **fading**) and provides only reinforcement and feedback to apprentice. This is the process of apprenticeship. Researchers like Collins, Brown and Newman (1987) established the relevance of this concept in teaching and learning and proposed the concept called 'cognitive apprenticeship'.

Activity 6

Before moving further, analyze the case of Ramesh and Mohit and identify the steps where you have observed modeling, coaching and fading.

Modeling ....

Coaching ....

Fading ....

Collins, Brown and Newman (1987) proposed that *through process of observation, scaffolding and increasingly independent practice, a learner can advanced towards expertise*. This is one of the best constructivist ways to acquire complex skills. In acquiring language skills and in mathematics, this tool is very helpful. Cognitive apprenticeship concentrates on using complex skills in solving problems and completing the tasks. It promotes authentic learning as well as applying the skill in various contexts. This is also considered as **'situated learning'** as learner learns the specific skills in a particular situation, where those particular skills are required. This is basically learning through guided-experience. In higher classes, where in various subjects some specific complex skills are required; this model is quite helpful for learners. Cognitive apprenticeship also encourages the development of self-correction and self-monitoring skills.
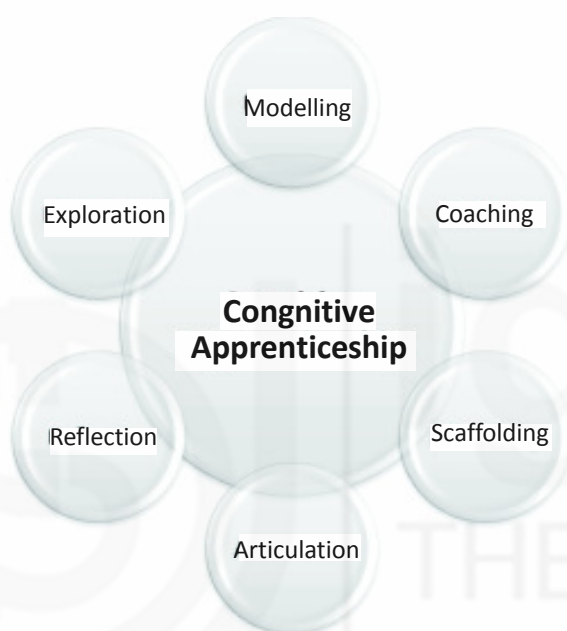
It basically takes place through following models:

Fig. 3.1: Models of Cognitive Apprenticeship

Let us try to understand these models with examples from classroom situation.

Table 3.1: How to Use Cognitive Apprenticeship in Classroom

S. No.	Models	Meaning	Examples
1	Modelling	Observing the performance of an expert (teacher or more experienced peer)	Reading of various types of poems with modulation of voice and using body language.
2	Coaching	Giving external support to learner in form of hints, feedback, reminders, etc.	Observing learners while they are summarizing any historical description or essay and giving them appropriate hints or feedback to bring out best from them.
3	Scaffolding	Helping learner in starting and gradually fading the support	Helping learner in learning how to use a chemical balance and slowing reducing support while progressing.

4	Articulation	Giving words to their understanding of the process and content	Asking learners to act as critic or moderator in a debate on some contemporary issue.
5	Reflection	Comparing their performance with expectations, reflecting on progress, improving their own performance	Recording the learner's activities in some role play or classroom leadership assignment and reply in front of him with comments from peers/teachers.
6	Exploration	Searching for new information, verifying to accept it as authentic knowledge	Asking learners to test the authenticity of a story on an historical event published in a news paper through visiting a library and verifying with original authentic records.

If, we try to analyze cognitive apprenticeship with constructivist perspective, we can find many similarities like:

• Every individual learn on their own as per their observations and skills,

• Scaffolding plays an important role in acquiring skills.

• Learning is contextual and authentic.

• It encourages self-correction and self-monitoring.

• It promotes situated learning.

Can you identify any situation from your teaching subject, where cognitive apprenticeship can work as a tool for learning?

Activity 7

Analyze a classroom situation, where you can use cognitive apprenticeship as a tool for learning. Also reflect, which method will be useful in this situation and why?

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of the unit.

7) How is cognitive apprenticeship different from traditional apprenticeship? Explain.

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3.6.3 Tutoring

Tutoring is a kind of cognitive apprenticeship to be provided to individual learner. You must have observed few learners in your class, who do not learn with the pace of class. Learning pace generally varies among different learners in the class but there are few who need extra support and attention from teacher.

Tutoring takes place between an adult and a child or between a more skilled child and a less skilled child. Tutoring may be of many kinds:

Mentor-Tutoring: In some schools, some teachers are designated as mentors of few learners. Learners share their thoughts, views, problems, achievements with them. Mentoring is not only the task to be performed by teachers. Senior learners, retired teachers, some volunteer parents, can act as mentors for the learners, who need individual attention.

Peer-Tutoring: Classmates are best tutors. Children feel comfortable to share their problems and concerns with peers. A more experience peer or a peer having better understanding of a concept or process can act as a tutor. It has been observed that peer tutoring helps both i.e. tutor and tutee.

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of the unit.

8) How do you explain tutoring as constructivist learning?

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3.6.4 Discovery Learning

As mentioned in section 3.4.4, Discovery learning was proposed by Bruner as "*learning by discovery of concept and principles by the learners on their own.*"

Discovery learning is not a teacher centered approach. Teachers do not instruct learners rather learners are motivated to search on their own the meaning of concepts, or relationship between concepts and principles. Your role as a teacher is to create such situation, where learners can activate their natural curiosity and inquiry to construct their meaning.

You can act as a person who facilitates learners in generating questions and searching answers. Discovery learning can be promoted as an individual as well as group learning strategy.

In subjects like science, history, geography, etc. it is very good tool for learning. It may be further developed as '**guided discovery learning**', in which you can encourage learners to construct their understanding with your assistance and guidance.

There are few important processes associated with discovery learning. Let us have a brief discussion about these processes:

Inductive Reasoning: Bruner was of the opinion that in classroom, general principles should be formulated by the learners with the help of various examples in different contexts. Connections between different concepts can be established through this process.

Intuitive Thinking: Bruner suggested that teachers should encourage learners to think and guess with the help of some incomplete sentences, tasks or situations. Guesses of learners may be right or wrong but it should be promoted. Teachers should not discourage wrong guesses, because through guessing only you can develop intuitive thinking among learners.

Guided Discovery: Guided discovery is an approach in which learners develop their understanding with the support of their mentor or teacher. Teacher provides some directions, which help learners to formulate hypotheses, to develop connections, and to draw conclusions.

Activity 8

Identify a situation of each process of discovery learning and explain, how will you use it?

Process	Situation	How will you use it?
Inductive Reasoning		
Intuitive Thinking		
Guided Discovery		

Check Your Progress

Notes: a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of the unit.

9) Which process of discovery learning is more appropriate for secondary classes? Justify your Answer.

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3.7 LET US SUM UP

Constructivism believes that knowledge is a function of how the individual creates meaning from his or her own experiences. Various views of constructivism have presented its different dimensions. Piaget's cognitive constructivist, Vygotsky's and Bruner's social constructivism, Novak's human constructivism are the prominent ones. Concept of constructive learning environment and role of teacher in developing constructive learning environment was highlighted in the unit. Unit discussed in details about role of Zone of Proximal Development (ZPD), Scaffolding, Active Learning, Situated Learning, Cognitive Apprenticeship, Tutoring and Discovery learning in facilitating constructivist learning among learners.

3.8   UNIT END EXERCISES

1) What are the basic presumptions of constructivism? How will you ensure it in your classroom?

2) Compare the cognitive constructivism and social constructivism practices?

3) How will you create constructive learning environment in your class?

4) What are various models of cognitive apprenticeship? Explain each with one example from real classroom situation based on your experience?

3.9   REFERENCES AND SUGGESTED READING

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3.10   ANSWERS TO CHECK YOUR PROGRESS

1) Answer in your words.

2) Piaget focused on individual learning while Vygotsky's focus is on social learning. . In Piaget's constructivism, child's language was ecocentric and nonsocial speech, but for Vygotsky, children use a lot of private speech not only from social communication but also to plan, guide and regulate their behavior in self-regulatory fashion.

3) Answer based on readings of section 3.5.

4) Enactive, Iconic and Symbolic

5) Answer on the basis of your own experiences.

6) Define in your own words.

7) Cognitive apprenticeship talks of scaffolding and situated learning.

8) Tutoring allows construction of meaning and development of understanding by the learner himself, in this way it is near to constructivism.

9) Answer as per your understanding.

UNIT 4 LEARNING IN VARIOUS CONTEXTS

Structure

4.1 INTRODUCTION

Human is curious by nature. Human has a basic tendency to always learn something new. Thus, learning remains a lifelong process. School is such a place, where new knowledge, skills and aptitude are developing in many learners through teaching learning process. But due to excess interference of these institutions in learning environment, the knowledge given there is being accepted as ultimate knowledge, which has resulted into a distance of knowledge and skills from that which exists in the society, nature and folk traditions. A farmer, who does the agriculture work efficiently; a sculptor, who makes statues efficiently, atribe, who knows the optimum use of trees, their knowledge has no place in the definition of "knowledge" in our educational system. This distance between public knowledge and school knowledge has transformed schools into a machine. In consequence, school started providing only knowledge of theoretical subjects. This distance of school from the social activities has impacted on methods of imparting subject knowledge. Gradually, teaching process became passive and slowly lost its liveliness.

After various researches, debates and experiments, many thoughts and models have emerged. Lev Vygotsky, Jean Piaget, J.S. Bruna, Albert Bandura, John Dewey are the few famous, who propounded the thoughts of learning by doing, learning by self-experience, learning in real situation, knowledge creation by self, etc. These theories influenced the school environment. Learning methods and dimensions of learning have changed accordingly.

Many concepts were introduced as the outcome of these debates. In this unit, concept of active learning, situated learning, cooperative learning and learning in school and beyond the school are introduced. These concepts are not recently introduced. These have been used in every tradition. There is an example of Vedic version,*"Sangachhdhvam Samvadadhavam, sam vo`manansi jaantaam" (Rigved 10-9-2)*, which means move together, speak together and think together. This verse basically pronounces cooperative learning. There are similar examples in other traditions also. Scholars have explained these concepts according to needs of modern era, in present day contexts. We will also discuss the same.

4.2 OBJECTIVES

After going through this unit, you will be able to:-

- understand the concept of active learning,

- identity the main techniques and strategies for active learning in classroom,

- devise appropriate strategy to use observational learning in your class,

- explain the concept and main elements of situational learning,

- understand the concept of cooperative learning,

- apply cooperative learning inside the school as well as outside the school, and

- explain ideas related to learning outside of the school.

4.3 ACTIVE LEARNING

Probably, you may agree that the teacher may teach by using any method or create any learning environment, learning takes place in the mind of learner. So, it is not a hyperbola that learner is active in the learning process necessarily. Thus, you may say that all learning is simply active learning. But active learning is something different. Active learning is not merely the active involvement of learner, but also leadership and initiative should be present in the learner. It is more than listening and following teacher's instructions. Active learning involves self-study, discussion, problem solving, comprehension and cooperation within the group, development of skills and sensibility, higher order of thinking and reflection like analysis, synthesis, evaluation, construction, etc. Thus, active learning "**is anything that involves students in doing things and thinking about the things they are doing**".*(Banwell and Eisan, 1991,p.2).*

In active learning environment, learners give more importance to construction of the knowledge by self, in place of accepting the knowledge given by teachers. Thus, learners are not only the transporter of knowledge.

There are ample evidence of active learning in the traditional Indian Literature during *Upanishad* era. There are so many verses that reflect the learner's initiation

and activeness is needed in acquisition of knowledge. Statement of *Uddalak-Shwetketu in Chhandyogya Upanishada and Yam-Nachiketa Samwad in Khathopanishada* are prominent examples of this. Following Shubhasita in Indian tradition also supporting this:

Acharyat Padmadatte paadam Shishya Swamedhaya!
Sarahmcharibhaya paadam paadam kalkramn cha !!

It means, learning takes place one fourth with the help of Acharya (Teacher), one fourth by talent and self-attempts, one fourth from peers and one fourth by situation as it emerges on time. Above mentioned verse indicates active learning, Pragmatism, Naturalism and thoughts of other Western Philosophies advocate active learning. Constructivism has established active learning systematically in modern education system. Learning by doing, learning by self-experience, playway method, technology based education, activities based learning, group work, project method, heuristic method, etc. are the terms used as an alternative of active learning. Covering all of the above concepts in modern contexts, systematic debate on the conception of active learning as a model of instruction began since 1991. When higher education report was published in 1991 entitled "Active Learning" created excitement in the classroom by association for the study of higher education and educational resources information centre (ASHE-ERIC) in USA. It was prepared by Banwell and Eisan.

This report discussed in details the concept of active learning and its various dimensions, methods to include it in classroom. Addition strategies required hindering factors, recommendations related to teacher, trainer, administrators and researchers. We will discuss few of these here.

4.3.1 Active Learning in Classroom

Banwell and Eisan (1991) quoted a reference written by Creed (1988) in their report. "***When asked why he lectures, one professor responded: It is tradition, it was part of my training and seems like what I should be doing. I feel somehow guilty when I am not lecturing***", (cited in Banwell and Eisan, 1991, p. 7).

Whenever we teach, this dilemma appears before us because lecture has become synonymous to teaching. When we talk about using active learning or any such optional approach or method, maximum teachers do not accept it due to their prejudices, although, active learning is not entirely different in approach. The methods of learning in which learners get opportunities of reading, writing, discussion, problem solving, analysis, synthesis, evaluation, creativity, etc. rather than listening come under Active Learning. Thus, Active learning modifies lecture method and includes active elements of learner. Thus, Lecture method can be modified with the help of main techniques of active learning. Following are the few technologies being used for modification of lecture:-

Pausing: According to Rowe (1980), Pausing enhances the understanding and retention. In this method, during lecture, pausing can be used three times of two minutes duration. There should be the interval of 12-18 minutes between two pausing. Learners are asked to divide themselves among two groups and note down the main points of lecture in these two minutes. Teacher does not interfere during this time. At the end of the lecture, three minutes are given to learners for nothing down the main points of lecture on the basis of memory.

Tests and Quizzes: Informal Tests and Quizzes can help in keeping learners active during the lecture. Verity of Quizzes can be used in the classroom on any topic, which not only helps in retention of knowledge, but also motivates learners to remain participative.

Demonstration: Active learning environment can be created through demonstration. It is more common in science classroom. Options may be explored in other subjects too. A teacher can involve learner activily in experiments as well as demonstration, which can result in better understanding and more retention of content.

Alternatives of Lecture Method

Researchers have suggested few alternatives to lecture method, like Feedback Lecture, Guided Lecture, Learner Generated Questions and Responsive Lecture, etc. Let us discuss all these in brief:

Feedback Lecture: This lecture is conducted through supplementary study guide in which study materials, pre and post the test, aims of study and format of comments for lectures are already given. This includes two small lectures of 20 minutes of each, which are divided into small group study sessions. During these sessions, learners respond to questions for discussion in two divided groups on the basis of lecture materials provided by teachers.

Guided Lecture: Another alternate is Guided Lecture. Teacher spells out the aim of the lecture, makes instruction likes stop writing and listen carefully, which are being stated, so that you can keep maximum concepts and provided matters in your memory. This follows a lecture of 25-30 minutes. Learners are asked to write the points from the lecture in 5 minutes on the basis of their memory. It is followed by small group discussion through which they elaborate all the points. They can take help from teacher for detailed explanation of any point during this time. Then, the learners are asked for thinking and at the same day, they are suggested to describe the main points of lecture without reference. Thus, this method develops listening and information synthesis skills.

Learner Generated Questions and Responsive Lecture: The responsive lecture was designed to provide feedback about the study material as per the needs of each learner. There should be one class assigned in every week for such lecture, in which self-made open ended questions on any aspect of textbook can be asked by learners and responded to by the teachers. There are certain conditions associated with this lecture, i.e. inclusion of all aspects of textbook, all learners should ask question necessarily and explain the importance of the particular question.

Active Learning in Large Classes

Creating active learning environment in a large classroom is very difficult. Assuring active participation of all learners is more challenging, when numbers is 100 or more in one class. Researches have shown that when active learning environment is created in large classroom, then the achievement of learners is more in small group presentations, written report, oral presentation, etc. as compared to learners from a small class. In our Indian schools, many a times you have to create active learning environment in large classroom. Arrangements in class should facilitate teacher's interaction with learners. Active learning

environment can be created easily group discussion by making group of 5 to 10 learners in each group, followed by presentation the learners.

4.3.2 Strategies for Promoting Active Learning

Here are few strategies, which can be used to promote active learning environment your class.

Visual-Based Instruction: Under this method, instructions are planned, Assisted/based on stagnant projection (slide, overhead transparencies) film, multimedia presentation, TV, Video, etc. to create an active learning environment. You may have experience in your classroom that such visual based instructions enhance interest in learning and make them more active during the class.

Creative Writing: Creating supportive environment for critical and creative writing comes under it. Writing related works, like writing comments on sides of research journals, writing thoughts on any specific title, writing summary of a lecture, writing summary on any given study material, essay writing and other creative like writing for all magazines, newspapers etc. can help in developing active learning environment. Writing and creative writing play a very effective role in developing deep understanding on any subject.

Problem Solving: We offen try providing solutions to problem of learners in our classroom; due to this, learners do not get opportunities for searching new and different solution of problems. Consequently, they do not get enough opportunities for developing high order thinking ability. So, we should train learners to use problem solving method in order to find out the solutions of various problems, so that they actively find out the way to solve their problem on their own. You can use the technique based on Decision Making Model of John Dewey (1924), which have four steps: (i) defining the problem; (ii) find out the main reasons the problem; (iii) find out all possible solutions; (iv) evaluation all possible solutions and selecting most appropriate solution. Popular instructional approaches being used for problem solving are case study and Guided designs.

Computer–Based Instruction: In this individualized instructions are given through computer. Learners learn according to their pace. Present day initiatives like MOODLE (Modular Object Oriented Dynamic Learning Environment) and MOOCs (Massive Open Online Courses) are mainly computer based instructions. You can also develop your own computer based instructions to make active learners active.

Co-operative Learning: You will agree that learners have different kinds of abilities and characteristics. If they develop understanding on any subject and find out solution of any problem together with the help of each other, they achieve the best result. They get opportunities to develop social skill as well like decision making ability and communication etc.

Drama: Drama is also a very interesting method, in which learners are active and involved. Remember your childhood days when story with dialogue retained itself for long time in memory. If drama is used as a medium of instruction to develop understanding of the subject, then surely learners will participate actively in the learning process.

Role Playing, Simulations and Games: These are also very interesting methods, where learners get involved with interest. These methods will be very beneficial in instruction subjects like History, Mathematics, Science; Languages can integrate these methods very easily.

4.3.3 Obstacles in Active Learning

There are many obstacles in creating active learning environment in the classroom. Teacher generally does not want to change the traditional teaching learning process. Attachment with lecture method may be one of the reasons. Sometimes teacher wants an escape from the burden of learning a new method and practice it, because it may be time consuming and hard to learn. Teacher may not have a strong belief in possible outcomes of a new technique. Commercial and management systems may not be ready to accept these new changes at teacher's work place. At some places learner and their parents also oppose these changes as there is a natural interest against the new system, which may cause strain. Lack of any incentive for adopting any new system also a reason, due to which teachers do not want to take the risk.

Sometimes teachers may feel that they cannot discuss a fair section of the curriculum with new approach as they are used to traditional method. Development of facilities required for the new system needs labour and money. There is also a scarcity of required resources and additional mechanism for active learning. Developing active learning environment in large classrooms is more challenging.

4.3.4 Roles of Stakeholders in Active Learning

Change in conceptual understanding assistance, initiations and systematic attempt by teachers, teacher trainers, researchers, policy makers, management and administrators of schools are very important in eliminating the mentioned obstacles in the part of active learning. Roles of all stakeholders related to education process needs to be ascertained for the development of environment, teachers needs to understand deeply the study and training of new strategies and techniques for creating active learning environment.

They should be free from prejudice and old concepts. They should practice low risk techniques initially followed by other techniques. Teacher-trainers should train teachers in all strategies, methods and techniques as well as collect experience based data related to concerned experiments, so that a confidence can be developed. This training may be given as pre-service and in-service. The role of researchers should be for collecting experience based data through research related to various aspects of active learning environment. Policy makers should create positive environment towards these innovative experiments and give appropriate place in curriculum. Campus managers and administrators should provide patronage for experiments of these innovations in their institutions as well assure the arrangement of needful resources.

Activity 2

Organize a small group discussion with your colleagues on importance of active learning and identity few strategies, which you all can adopt for creating an active learning environment.

Check Your Progress

Notes: a) Write your answers in the space given below.

b) Compare your answers with those given at the end of the unit.

1) Discuss importance of Active Learning.

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2) How would you overcome the obstacles in creating Active Learning Environment at your school?

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4.4 OBSERVATIONAL LEARNING

Observational learning is one of the outcomes of Bhandura's social cognitive theory of learning. In simpler terms, observational learning means "learning by observation or imitation". Bhandura was of the view that if a person observe someone doing some act in a particular situation, s/he observe the actions and tries to imitate it when fall in similar situation.

Bhandura's Experiment

Bhandura's "Bobo doll" experiment is a classical example. In this experiment, he divided a class of kindergarten students into three groups and showed them three films of beating a toy called "Bobo doll" by three persons. In one film, the person was rewarded with some candy and praising words for beating the doll. In the second film, beating of doll by the person as criticized and in third film, there was neither any reward nor criticism for the bahaviour of the person.

Later he left some children from all three groups alone in the room filled with toys including "Bobo doll". He observed their behavior from the other side of a mirror wall. He observed that children from Group 1 and 3 imitated the behavior more as compared to the second group.

He concluded that children imitate that behavior which they feel is good or being rewarded or praised.

4.4.1 Elements of Observational Learning

Observational Learning has four major processes or elements.

Fig. 4.1: Elements of Observational Learning

Let us discuss all these one by one.

Attention: Bhandura was of the view that attention is the first step of observational learning. To learn anything, learner has to pay attention on what is being said or acted. In this step, a teacher's role is also very important. As a teacher, you have to present the things in such a way that you can attract learners to pay attention. Clear, precise, simple and interesting presentation by teachers helps in observational learning. Teacher's behavior towards learners is also an important factor here as a warm and welcoming gesture attracts learners more as compared to cold or rude one.

Retention: to imitate any behavior, it is important that learners should retain it as much as possible. If a teacher is explaining to learners to handle any apparatus in a chemistry laboratory, the steps demonstrated by the teacher should be clear, step wise and easily visible to learner so that they can retain it as such in their memory. Verbal instruction along with demonstration helps in better retention. Repetition and practice also helps in retention.

Production: Attention and retention is not enough to reproduce or imitate nay behavior. Many times, learners observe a behavior but they are not able to imitate it as such due to lack of practice or coaching. Bhandura was of the view that teachers should provide ample opportunities to learner to practice, or to coach them in improving their performance at desired level.

Motivation: A learner may learn something by imitation but it is not necessary that s/he practice it or show it. If there is motivation or reinforcement for a particular act/skill, learner will demonstrate it. Role of motivation and rewards is highly appreciated by Bhandura in learning. Desired skill/behavior needs to be reinforced and learner should be encouraged in right direction.

4.4.2   Significance of Observational Learning

- As a teacher you can use observational learning in the subjects like mathematics, science, geography, etc. very effectively as in these subjects many concept are introduced with the help of observation.

- Observational learning is helpful in introduction of new behavior.

- Selection of model (i.e. the person or instrument) to represent the skill or behavior is very important. Appropriateness of model is the key of success in observational learning.

- Teachers himself/herself could be a good model. Many behavior/skills a learner learn through imitating his/her teachers.

- Peers can also be used as an effective model. Especially rewarding desired behavior of a learner can motivate other to imitate him/her.

- You can identify the models from community, who can be good learning resources for learners. For example, you can organize a visit of skilled person in painting/drawing/dancing to demonstrate his/her skill or you can arrange a visit of learner to his/her workplace.

- You can identify the people to whom most learners assume their models. Their good acts, movies, videos, etc. can be used in your class.

Activity 3

Identify a behaviour of each of the following, which you can use as a tool for observational learning:

A politician   :   ....

A sports person :   ....

An Actor/Actress :   ....

A Parent   :   ....

A Social Worker :   ....

Also mention what will you do to demonstrate their skills/behaviour to your learnrs.

Check Your Progress

Notes: a) Write your answers in the space given below.

        b) Compare your answers with those given at the end of the unit.

3) Define Observational Learning.

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4.5 SITUATED LEARNING

Situated learning is the method in which learning takes place in the circumstances for which learning is required. Hence, real or virtual situations are created to provide opportunity. Jean Lave and Etiene Wenger (1991) propounded this concept as a model of learning for '**Community of Practice'**. Although, situated learning has been used earlier for various arts (war skills, cooking, sculpture, architecture, music, etc.) and in service sector like medical teaching, administrations, etc. but, Jean Lave and Etiene Wenger (1992) have suggested it as systematic approach in modern context.

Lave stated that a trainee can develop better as a member of "Community of Practice" COP by legitimate peripheral participation or apprenticeship in real situation. S/he also earns the rituals and believes as well as gains other practical knowledge through interaction and participation during this time. Social situation, context, social involvement and participation are very important for a learner in this technique, because knowledge can be introduced in authentic situations and its practical aspects can be learnt through social participation. Lave believed that learning should not be observed as abstract concepts and communication of non-contextual knowledge rather it should be observed as a social process in a specific social and physical environment, where knowledge should be created by circulative efforts. Lave and Wenger have explained situated learning as a pedagogical strategy.

Fig. 4.1: Situated Learning

*Source: **http://hlwiki.slais.ubc.ca/index.php/File:Situated.jpg***

You can observe so many examples of situated learning in your surroundings, e.g.: mechanics at a motor workshop, cooking in kitchen, training of gardening with gardener, training of recruits in pseudo situation in army, participatory observation in a new situation, training of an apprentice in a factory, players who are getting training or practicing a game, student of music, etc. These examples facilitate in understanding the importance and effectiveness of situated learning techniques. Hence, creating real or virtual situation for situated learning is an important element as well as the presence of expert is also necessary, so that proper assistance can be provided, when needed.

4.5.1 Components of Situated Learning

Major components of situated learning are:

1) **Content:** Facts to be learnt and process of a task come under it. Reflection and higher order thinking ability about the subject, knowledge which is used in solving various problems are emphasized more than retention or memory of subject knowledge. Focus is on applications of content.

2) **Context:** Context implies the situation of learning, value of situation and signals from environments. We should observe learning in the context including social, physical and psychological environment, where it takes place and also the place and the situation.

3) **Community:** Community implies the group where learner begins to learn and create knowledge. This community plays a very important role for learning.

4) **Participation:** Group participation is a very important element for situated learning as learners work together for solving the problem. Interaction takes place among thoughts, views and suggested method of problem solving by all in specific social fabric through participation. Thinking lecture and process of consensus continues when higher order thinking abilities develop.

4.5.2 Conceptions About Situated Learning

1) Knowledge is not a thing and memory is not a place, rather it is created socially.

2) So, knowledge reflects through behavior and work of individual or group of individuals. Knowledge develops naturally through participation of individuals and adaptation with new situation.

3) Learning, knowing and cognition develop socially through tasks performed by person or other interaction with others. There it takes shape and get expressed.

4) Meanings are developed through affiliation with specific context and objectives.

5) Cultural model does not exist within person rather is alive in social practices. The way people are associated, the instruments they use and the specific cultural context in which they work, cultural model develops in that. Learning takes place within this cultural model.

6) *"As situation shapes human's cognition and thinking similarly a person's actions create the situation"* (Wilson & Myers, 2000). Situated learning is very important for the betterment of our school education. You can make a visit with your learners to the post office, police station, railway station, airport, power grid, bank, judiciary, etc. where they get opportunities in real situations and learning becomes effective and interesting.

4.6 COLLABORATIVE LEARNING

4.6.1 Concept of Collaborative Learning

Collaborative Learning is a situation in which two or more persons try to learn together. They use the skills and resources of each other during this period, share the knowledge and criticize others' views and guide each other to learn thus, knowledge, understanding, solving of a problem or cumulative effort by a group people for creating something new, is called Collaborative learning. This collaborative learning is possible in face to face situations or with the help of modern techniques of information technology like, online forum, chat room, video conferencing, etc. Collaborative writing, group project, cumulative problem solving, debate, discussion, study group, etc. come under Collaborative learning.

Idea of Collaborative learning has developed on the basis of the concept of 'Zone of Proximal Development –ZPD propounded by Lev Vygotsky (1896-1934). Vygotsky has proposed theory about learning possibilities among learners.

According to him, learner does some work without help and some with help while learning, but s/he does not do some besides help and if s/he is provided guidance then s/he is able to do this. Hence, there are three categories: - First, work done without any help; Second, work may possible if guidance and counseling provided; Third, work is not possible ever after help. If learner is able to do something after providing help and guidance, it falls under 'Zone Proximal Development' (ZPD). It builds the basis for collaborative learning. It can be said on the basis of it that if collaborative learning environment is created, then works can be performed under ZPD and knowledge, skills and aptitude acquisition can be ensured.
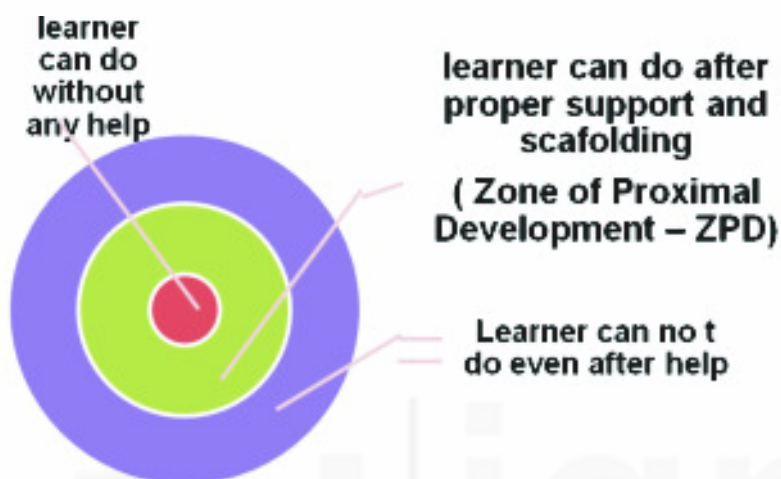
Fig. 4.2: Zone of Proximal Development

There is a similar concept called cooperative learning. Sometimes, both are used interchangeably. Some people find these concepts different where as many other same. They are different on the basis of different work division. In collaborative learning, solution of problem is found out by mutual co-operation, involvement and cumulative effort, whereas in co-operative learning members take responsibilities for different aspects of problem and problem is solved by integrating all the aspects. Cooperative learning is the philosophy of interaction and collaborative learning is the structure of interaction.

4.6.2 Strategies for Collaborative Learning

Collaborative Learning can be practiced in classroom and at workplace in many ways. Some are being given as following:-

Think-Pair–Share: Teacher introduces a problem related to higher order thinking ability like analysis, synthesis, evaluation and construction etc. before learners. All learners are provided five minutes so that they can respond properly to the solution of problem. After it, they are given time for sharing their thinking with peers in small groups. Also, they have to listen to others and discuss with other classmates. At least, they have to have a consensus on appropriate method for solution of problem. At the end of the class, all groups share related processes and outcomes of discussion during follow-up discussion.

Catch Up: Teacher stops suddenly during the lecture and ask learners to compare their notes with other classmates and to ask questions on doubtful points to clarify. Teacher should start question- answers session after sometime and motivate the learners from another group to answer.

Fishbowl debate: You can make three groups of learners. Those who are sitting on the right side may be in support and the left side group may be in opposition or vice-versa. The group which is sitting in the middle row is asked to note down the thoughts of both groups and determine who has put facts, strong reasons effectively etc. In the end they are asked to present the report before the class.

Case Study: Teacher should prepare four to five case study proposals of same difficulty level. These may be assigned to learners dividing them in groups. Groups should be provided time for analysis, teacher may ask for progress report during this period. After completion of work, it should be presented before class.

Team Based Learning: L.K. Michaelser (2000) suggested this method. Learners are divided in groups by teacher and assigned some specific work i.e. a book for study, a laboratory work or to find out solution of some specific problems. Learners are asked to appear in a group examination after completion of the work. Quiz is very popular for it. They have to answer on the basis of consensus in the group and also name the member who has suggested the answer. At last, teacher needs to explain the difficulties and resolve the misconceptions among learners. After many such settings, learners may be assigned some challenging problems also to find out the solution.

You can practice above methods in your classroom and make the class interesting. For example, modern means of transportation can be a topic for fishbowl debate. Make three groups of learners. One group will be the supporter and one will oppose and third will write down the points of discuss. Teacher will work as an observer. Such practice help in improving the logical reasoning ability of learners.

4.6.3 Significance of Collaborative Learning

This method is being used at many places other than the classroom. Collaborative learning is very effective in imparting training of skills. Many institutions have emphasized on collaborative learning as a method of training for the development of technical and managerial skills at work place. Providing opportunities to the group of trainees for learning among experienced persons and in real situation is more effective as compared to other methods. After such type of learning, learners may be deployed in real situations and higher order thinking abilities, like, analysis, synthesis, evaluation, construction, etc. can be developed among learners in such an environment and also problem solving ability develops due to their place and encounters with real situation. There are some problems at workplace, which learners may face like difference of cultural background, lack of awareness about cultural norms, generation gap and age gap, etc. But there, problems are improved during training and counseling session and new knowledge and skills can be developed through concerted effort.

- New dimensions of collaborative learning have emerged in this new age of modern information and communication technology. People living in remote areas can work together through technology at virtual platforms and solve the problems. Very effective and attractive learning environment can be created for classroom and workplace through it. Some ways are as follows:

  - **Collaborative Networked Learning (CLN):** Creating a learning environment with the help of electronic equipments.

  - **Computer Supported Collaborative Learning (CSCL):** Creating an environment with the help of Computer and Internet.

- **Wikipedia Supported Collaborative Learning (WSCL):** Wikipedia is a good example of collaborative learning, where many people are involved together in knowledge creation and problem solving.

- **Collaborative Learning in Virtual World:** Skype, 3D model, Mind mapping tools etc.

- Understanding the cultural diversities and modification of behavior should be emphasized in collaborative learning. It should be taught in various ways in the context of different learning situations in different cultural backgrounds. Resources should be used according to cultural background at in classroom. One method may be effective in one cultural situation, but it may not be effective in another cultural situation. There may be a need of another method. It should be considered carefully.

Activity 3

Use any Collaborative Learning strategy of your school for one topic. Prepare a report highlighting the strategy, your role, learner's perception and participation and outcomes.

Check Your Progress

Notes: a) Write your answers in the space given below.

      b) Compare your answers with those given at the end of the unit.

4) What do you understand by Zone of Proximal Development?

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4.7 LEARNING OUT OF SCHOOLS

4.7.1 Conceptual Understanding

Schools are working as an institutional center in modern society for the learning of various knowledge, skills and attitude. But the people attached with educational process and various social activities believe that opportunity for the preparation of life and society, life skills education is decreasing continuously. Life of a learner is like a prisoner with in the boundaries of school. Burden of subject knowledge is diverting them from practical life, i.e.: social issues, essential life skills, ambition for the preparation of better civil society and knowledge society, reflection on future challenges of life, as they have to do with social concerns, etc. School and Institutions are like islands in the society. It is not good to be dependent on schools or institutions in this situation and it is necessary to look out of the school for construction of knowledge. So that it could be related with the needs of society and nature.

Behavior can be modified along with people of society. Education was never bounded with in schools or gurukuls. In traditional Indian education, rather a large section of education was with in the society. Excursion, *Bhikshatan* and other social activities were the means for development of social relationships in the society. It was also the means of life skill development. These days, learners are deprived of experience related to real world, which are out of school and more emphasis is on subject knowledge. Learners should be provided with the opportunities for experiencing the social life outside the school.

In 1987, Lauren B. Resmick proposed this concept of 'Learning in school and out' in his presidential address in AERA. Resmick stated that the 'school intelligence' that is being developed by learning in our school has minimal relation with required intelligence and wisdom for the real world. So, it is difficult to access wisdom on the basis of school knowledge and achievement. An efficient school learner is not efficient in essential skill of real situations as per our norms. Providing opportunities for knowledge outside of school are essential to fill the gap. Evaluation of learners in most of the schools is individualistic and learning is also individualistic. But when we work in society then success or failure is observed as group. So, it seems essential to acquire learning experience in the social situations, where one has to work in real.

There are various learning situations out of school. Resmick accepted that there is a difference between learning inside the school and outside of school in following ways:

1) Learning takes place individually in school but develops as shared cognition outside the school.

2) Schools motivate to work with pure consciousness without help of equipment (book, note, calculator and other tools) followed by examination. (For example, you must have felt that minimum tools are allowed to use during examination) but in real situations, you have to accomplish any task with the help of many such tools and help of others.

3) Due to lack of real situations in school, maximum learning happen in form of symbols, outside of school, whereas opportunities are available more for learning and discussion in specific context.

4) Generalized learning takes place in schools, whereas skills related to a specific situation develop outside of it.

You can practice such experiments in your school. Plan for an excursion and say that locally available resources will be used. Opportunities to learn to live in nature may be provided to learners. You will see that learners will develop relationship with trees, river, animal and birds, soil, mountain, etc. They will learn there for living and using natural resources.

4.7.2 Theories/Dimensions of Learning Out of the School

Following theories have been proposed about learning out of school in the book 'Learning in and out of school' by James A. Bank, et. al. (1997) which are quite pertinent to our discussion:

1) Learning takes place in socio-economical and historical contexts according to local culture, customs and perspective.

2) Learning does not take place in school only, but it continues in many contexts, activities and social behaviors,

3) There is a need to provide help to every child for personal intellectual development in every institution.

4) Learning will be more effective, when learners are motivated to use their language of home and community, culture and society. This extends their language and understanding.

Bank et. al. (1997) discussed about learning in and out of school apart from subject teaching and suggested that it is essential for a development of better individual and society. These three dimensions are as follows:

1) **Life –long Learning:** Curiosity of learning new knowledge and skills useful for life through situation and events and communication and interactions in relation to it needed lifelong. It begins at childhood and continues till death.

2) **Life – wide Learning**: Developing skills to adjust and accommodate according to time, place and situation comes under it. Living with equivalence in human relationship despite various favorable as well as bitter experiences is also a part of it. It is basically the preparation of life and future.

3) **Life–deep Learning**: Religion, values, morality, ethics-these control our faith, behavior and belongingness and help in decision making for self and others are part of it.

Opportunity should be provided to learners out of school, like community organization and civil society for experiencing various aspects of life as well. School may also create such an environment for example:

- Community based homework and home work club for assistance.

- Study club: It should not be bound by curriculum rather extends it.

- Appointment of experienced counselor and mentor for learners outside of school with the help of guardian.

- Residential activities: Weekend residential meet for extensive learning, residential study week, residential summer workshop and excursion (museum, zoo, library, historical place, natural diversities).

- Social meeting for various communities and groups.

Activity 4

Organize an out of school activity with the help of parents for the learners in your class. Prepare a report of it.

Check Your Progress

Notes: a) Write your answers in the space given below.

b) Compare your answers with those given at the end of the unit.

5) Discuss importance of out of school learning at secondary level.

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4.8   LET US SUM UP

Present unit, describes that active learning process is more than listening to teachers. It is introspection, discussion, problem solving, understanding by group study and self-study. Development of skills and sensitivity, high order thinking abilities like, synthesis, analyze, evaluation, creation etc. comes under it. Active learning is the initiation by learner for construction of knowledge by self. Unit discussed in details the types and methods to be adopted for active learning. Strategies like visual-based instruction, writing in class, problem solving, computer based instruction, cooperative learning, debates, drama, role playing, simulation and games, peer teaching will help to create active learning environment in the classroom.

Unit also discusses about situated learning, concept proposed by Lave and Wenger (1991). Learning takes place according to needs and circumstances. Virtual situation may be created for this method. Unit also explains the concepts like legitimate peripheral participation, apprenticeship and community of practice (COP).

Collaborative learning is a situation, where two or more try to learn together. They used and shared resources and knowledge of each other, guided and criticized too. Collaborative learning is the concerted effort for knowledge, understanding, problem solving etc. Unit discussed about importance of zone of proximal development, in collaborative learning. The conceptual difference between cooperative and collaborative learning is also explained. Means of collaborative learning, like collaborative network learning, computer supported collaborative learning are suggested which you can use in your classroom.

Out of school experiences are essential for knowledge and skills development. Certain activities like homework club, study club, experience guide, residential activities, social interaction etc. were suggested to you to use in your class.

4.9   UNIT AND EXERCISES

1) Write note on feedback lecture, guided lecture and responsive lecture.

2) Describe the main obstacles for active learning in classroom. How will you eliminate these obstacles in your classroom?

3) How will you use observational learning in your teaching subject? Devise on stretegy.

4) "Situation shapes the cognition and thinking of person" Give your comments on this statement.

5) Differentiate between collaborative learning and cooperative learning.

6) To understand the role of social interaction in situated learning, make a report on discussion with stakeholders of 'Community Practice'.

7) Organize a debate on learning out of school and it focuses on various aspects with teacher, guardian and citizens. Make a report on it.

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4.11 ANSWERS TO CHECK YOUR PROGRESS

1) In active learning, learners get opportunities of reading, writing, discussion, problem solving, analysis, synthesis, evaluation, creativity etc.

2) Answer on the basis of your own classroom experiences.

3) Observational learning means "learning by observation or imitation".

4) ZPD is an area where a child cannot solve a problem alone but can do successful if an opportunity to interact with a more experienced peer is given.

5) Answer based on your understanding f the section 4.7.