DIPLOMA IN ELEMENTARY EDUCATION (D.El.Ed.)

Pedagogic Processes in Elementary Schools

Block -1
Learning and Teaching Process

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Credit Points (8=6+2)

Block	Unit	Name of Unit	Theory Study Hours		Practical Study
			Content	Activity	
Block-1: Learning and Teaching Process	**U1**	Learning and Teaching during Early Schooling	6	4	Identification of the role of a teacher as facilitator from your own experience
	U2	Approaches to Learning and Teaching	8	5	Identification of the characteristics of child centred approach from the behvaiour of your colleagues
	U3	Methods of Learning and Teaching	7	4	Differentiation amidst different methods (as mentioned) in the kdf of learning and teaching
	U4	Learning and Learner Centred Approaches and Methods	9	7	Seminar on classroom managerial problems in using different approaches mentioned in the unit
Block-2: Management of Learning-Teaching Process	**U5**	Management of Classroom Processes	6	3	Identification of material and demotivating actions taken in the classroom by teacher-colleagues
	U6	Teaching and Learning Materials	7	3	Separation of TLM in various concepts from different subject areas
	U7	Management of Multi-Grade and Multi-Level Situations	8	5	Development of activities in different subject areas in multigrade classes
	U8	Planning Learning Activities	5	3	Development of Anmial calendar of scholastic & co-scholastic activities, lesson class & lesson note
Block 3: Emerging	**U9**	Integrated Learning-Teaching Process	5	2	Development of activities integrating

Issues in Classroom Learning					concepts from different subject areas.
	U10	Contextualizing Learning Processes and Materials	5	2	Collection of folk-materials and its use in teaching-learning process
	U11	ICT in Learning	6	3	Development of ICT tools for transacting lessons
	U12	Computer-assisted Learning	6	3	Computerised analysis of learners' achievement in different subjects
Block-4: Learning Assessment	**U13**	Basics of Assessment and Evaluation	7	3	Conducting CCE in any one of the subject area
	U14	Tools and Strategies of Assessment	8	5	
	U15	Using the results of assessment for improving learning	7	3	Development unit test in different subject areas
	U16	Learning and Assessment	7	3	Analysis of question paper on different subject areas Study of different ways of sharing result of student performance with various stakeholders
		Tutoring	15		
		Total	122	58	60
Grand Total			**122+58+60=240 hrs.**		

Block 1

Learning and Teaching Process

Block Unit

BLOCK INTRODUCTION

As a learner, you will study block 1 : Learning and Teaching Process. This block consists four units related to learning teaching process. Every unit is divided into sections and subsections.

Unit-1 : This unit will provide you understanding about the concept and process of learning. It will detailed the factors which affect learning as every child is unique and learn in his/her own way. There are many ways to learn, for example imitation, observation, trial and error, participation, inquiry and learning through construction of experiences. This will empower you to understand the various dimensions of learning and teaching.

Unit-2 : This is the unit which will empower you to explain different approaches related to learning and teaching. Teachers centered approach and subject centered approach, both are considered as traditional approach. Competency based and child centered approaches are modern approaches of learning and teaching, NCF 2005 emphasis on constructivist approach as each and every child is the constructor of knowledge.

Unit-3 : This unit will make an attempt to provide you a thorough understanding of different methods of learning and teaching. There are some methods which are based on instructions for example lecture method, demonstration method, inductive and deductive method. There are also some methods which are learner friendly i.e. play way method, project method, problem solving method. For effective learning and teaching process, there is a need to choose the best combination.

Unit 4 : You will be able to understand the various approaches to learning which are as follows learner centered approach, cooperative learning, collaborative learning etc. Further you will be acquainted with activity based approach, the nature of learning activities and its elements activity based approach is considered as an important approach at elementary level.

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UNIT 1 LEARNING AND TEACHING DURING EARLY SCHOOLING

Structure

1.0 INTRODUCTION

Learning and teaching are two processes with which you, as a teacher, are very familiar, because you are engaged in teaching children to learn. You normally expect that all children in your class will excel in acquiring maximum learning experiences as per their potential. While all the teachers have similar expectations i.e. maximizing the students' efforts to acquire new experiences, each individual teacher does not approach this goal in the same manner.

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Let us consider the following two classroom situations in a primary school:

Situation 1: *In class V, Mr.Raman was teaching his pupils to learn the different parts of a plant. He was explaining various parts of the plant such as; root, stem, branch, leaf, flower, fruit, seed etc. with the help of a figure of a plant drawn on the black board. He was occasionally asking questions to ensure whether the students understood the concepts. Sometimes he was humorous with the students and sometimes he was calling on the inattentive students to focus on the figure drawn on the board. At the end, he concluded the class by asking some students to show different parts of a sample plant he had brought to the class.*

Situation 2: *In another class,Ms. Seema was teaching the same topic i.e. the identification of different parts of a plant in a different way. She had earlier instructed each student to bring a sample of a plant from home to the class. She divided the students into small groups of five and asked them to draw the figures of the five plants on a piece of paper, color them and label the different parts of the plants. After the groups completed the task, they displayed their sheets on the wall for others to see. At the end of the class, when Seema asked to label different parts of a diagram of a mango tree, there was competition among the student to perform the task.*

Can you identify the differences in the styles of teaching-learning process followed in the two classes?

The similarities in the two situations are :

(i) the teacher planned the activities, and
(ii) both used some materials to teach.

However, the differences are as follows:

- In the first situation, the class was entirely teacher dominated. The teacher planned the lesson, arranged teaching-learning materials, explained the concepts, asked questions and did other classroom activities. The students were passive and were expected to be obedient to teacher's instructions.
- In the second situation, the students in the class were actively engaged in learning activities than merely driven by the instruction of the teacher. They brought the materials with them, prepared charts, labelled the parts, displayed the chart and willingly took part in the evaluation task.

It seems that the differences between the two ways of teaching are due to attitudinal differences of the teachers towards the students. In fact the underlying belief in the

practices of teaching and learning was different. While Mr. Raman was guided by the belief that the students are young and inexperienced and the facts for learning have to be provided, Ms.Seema believed that the students have acquired experiences of the world around them before coming to the class and those can be utilized by the students themselves to build new experiences.

Thus beliefs and assumptions about students, the role of teachers, the processes of classroom interaction and the modes of evaluation influence the actual teaching learning processes and practices. Some teachers emphasize on teaching and learning for modifying observable behaviour of the students, some try to develop intellectual (cognitive) abilities while some others believe that the students can be helped to build their own knowledge. As a teacher you need to be aware of the various practices and their underlying beliefs and this is what you will learn in this unit. You will know about the nature and characteristics of the learning process, the ways children learn, and the different trends of teaching guided by the dominant beliefs. The theories and practices of teaching-learning processes following three dominant approaches, namely, teaching and learning for (i) behaviour modification, (ii) problem solving and (iii) construction of experience, will be discussed. For young children these methods have been found to be meaningful. It is believed that when learning becomes meaningful to a child, he/she loves learning and continues to learn. After all it is important to help children for lifelong learning.

While studying this unit you need to keep in mind such children, who are in the beginning grades of a primary school and to complete and comprehend different concepts in the unit, you will need 12 (twelve) hours of study.

1.1 LEARNING OBJECTIVES

After completing this unit you will be able to:

- Explain the concept and process of learning.
- Elucidate the factors influencing learning process.
- Describe different theories and modes of learning.
- Differentiate between traditional and modern approaches to learning and teaching.

1.2 LEARNING PROCESS

What is learning? How does a child learn? How can we facilitate children's learning? As a teacher these are some of the questions which need to be understood in order to fulfil the responsibility in shaping children's learning in school.

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1.2.1 Concept and Process of Learning

Given below are some statements about learning for you to read and ponder.

- Learning is the process of being modified, more or less permanently, by what happens in the world around us, by what we do, or by what we observe.
- Learning is the process by which behaviour is originated or changed through training procedure (whether in the natural environment or in the laboratory).
- Learning is a process by which the individual acquires various habits, knowledge and attitude that are necessary to meet the demands of the life in general.
- "Learning is relatively permanent change in personality (including cognitive, affective, attitudinal, motivational, behavioural, and experiential) and reflects a change in performance usually brought about by practice although it may arise from insight or other factors, including memory." (Sahakian, 1976 p.3)

These statements lead us to understand learning in three broad ways.

Learning can be considered as:

- the relatively permanent modification of behaviour.
- acquisition of habits, knowledge and attitude necessary to meet the demands of life.
- the relatively permanent change in personality(all possible dimensions).

The ***characteristics of learning process*** are:

- ***Learning is a continuous process***. From childhood every human being tries to change his/her behaviour, thinking, attitude, interest etc. continuously to fit himself/herself to the ever changing conditions of life.
- ***Learning is goal directed.*** Every human being aspires to achieve some goals in his/her life. These goals may be achieved through learning. If there is no goal to achieve, then there would be no necessity of learning.
- ***Learning is intentional.*** Since an individual sets a goal to achieve, he/she has to deliberately do some activity to attain the goal. If he/she does not have any intention to reach the goal or is quite casual about it, then it is difficult to reach the goal and in that sense learning is weak or may not take place at all.
- ***Learning is an active process.*** One has to perform some activity, may be physical or mental or both to learn something. Mind has to remain active to acquire new experience; otherwise no learning can take place.
- ***Learning is individualistic***. You might have observed that in a class there are some students who learn more quickly while others learn slowly. In fact, the pace of learning differs from person to person.

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- ***Learning is the outcome of the interaction of the individual with the environment***. As a teacher, you have to organize the environment carefully to motivate the students so as to interact with you, peer students and teaching-learning materials.
- ***Learning is transferable***. Learning in one situation can be used to solve problems in another situation. Learning of mathematics, science, social science and language helps the child to perform different activities in their real life.

E1. State any three characteristics of learning with examples.

1.2.2 Factors affecting Learning

You may have observed that some people learn driving or swimming or cooking easily, while some others do not. Why this happens? What could be the reasons for individuals to differ with respect to how and what they learn? To find answers to these questions, let us try to understand the various factors affecting learning.

- ***Learning and maturation*:** Maturation is related to the process of growth. It describes changes that are relatively independent of the environmental influence and are assumed to be closely related to the influence of heredity. Learning on the other hand is shaped primarily by individual's interaction with the immediate environment. For example, beginning to walk depends on the maturation of certain muscle groups and on increasing control over their movements (maturational developments). But, without the opportunity to practice various skills involved in walking (environment and learning), one may not walk at all. Similarly, although to start speaking is mostly influenced by maturation, one cannot speak fluently and meaningfully without proper practice and training which is essentially influenced by learning. We also know that it is impossible to make a six months old baby learn multiplication table until a certain level of mental maturation is reached.
- ***Readiness to learn:*** While transacting learning material in the classroom you must have come across a pupil to be non-attentive. You become annoyed with him/her when he/she does not respond to your questions. Why does this happen? Have you ever inquired about the pupil?

  Well, due to many reasons which maybe psycho-physical and/or social, the pupil may not be prepared to learn. There are various types of readiness, some relating to physical maturation (like one cannot join a race if he/she is not capable of

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walking), some to the development of intellectual skills and the acquisition of background information (like one cannot multiply if one does not know addition of numbers) and some to motivation.

Mental readiness of the pupil is essential for learning. For example in case of language learning it is not expected from a child to learn difficult words and sentences at early stage of learning. Similarly for physical activities like type writing, dancing etc. requires physical readiness of the pupil. Effective learning takes place when the pupil is ready to learn. Hence, to determine readiness, you need to have some knowledge of children's emotional and intellectual development.

- ***Learning Environment:*** For education in school to be effective, the environment needs to be conducive to learning, allowing the pupils space and time to interact within the learning and teaching process. Creating and maintaining stimulating learning environments can be achieved through effective classroom organisation, interactive and whole school displays and a climate of innovation.

Imagine the following two classroom situations:

Situation 3: *In one school the classroom is small where around 40 children are sitting without adequate space for free movement. The light and ventilation in the room is also not adequate. In the extreme heat and in the crowded room the children are sweating and making noise. Due to lack of space there is no trace of any teaching learning materials in the room. The teacher is literally shouting to maintain discipline in the class.*

Situation 4: *In another school, nearly same number of students is engaged in various activities in a spacious, clean and well ventilated classroom. The walls are tastefully decorated with learning materials; the teaching-learning materials are properly stored and are available in plenty to the children. The teacher is friendly and understanding.*

- Take a moment to think which of the above situations is conducive to effective learning and why? Also think of your own school days. What memories stand out? What activities gave you more satisfaction in the process of learning? Probably field trips, group activities/group work, project or learning activities outside the class room and in the community and society might have given you more satisfaction.
- In reality, conducive learning environments do not just happen, it needs to be created by considering the physical environment like the size of the class room, the colour of the wall, type of flooring, ventilation and light as well as effective classroom management that establish and maintain work systems for pupils to

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engage in their learning. Safe, attractive and comfortable child-friendly environment help children engage in the activities you offered.

- ***Learning and Motivation:*** Motivation refers to the force originated or generated in the individual which sustains, directs and controls the activities of the pupil till the goal is achieved. There are two types of motivation- intrinsic motivation and extrinsic motivation.

  Intrinsic Motivation refers to motivation that is driven by an interest or enjoyment in the task itself, and exists within the individual rather than relying on any external pressure. Intrinsic Motivation is based on taking pleasure in an activity rather working towards an external reward. Intrinsic motivation results in high-quality learning and creativity For example; preparing any project in science/ mathematics may give pleasure to the pupil as a result of which he/she is motivated to undertake similar activities on his/her own.

  Extrinsic Motivation: refers to the performance of an activity in order to attain an outcome, and comes from outside of the individual. For example, a student who does his homework only because he/she fears parental dissatisfaction for not doing it is extrinsically motivated because he/she is doing the work in order to attain the separable outcome of avoiding parental dissatisfaction. Common extrinsic motivations are rewards like money and grades. Parents and teachers often reward their child for successful completion of learning tasks.

However, proper motivation accelerates learning in the child. You as a teacher have to know various techniques to motivate the child. You have to be careful to draw the attention of the student by devising suitable mechanisms.

E2. State any two reasons as to why intrinsic motivation is better than extrinsic motivation for learning.

1.3 HOW CHILDREN LEARN

You must have seen several children coming to your school for the first time for enrolling themselves in class I. For these children who come to school for the first time formal learning begins with predesigned and prescribed curriculum. Do you think all these children have not learnt anything and are going to start learning?

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ACTIVITY-1

Prepare a list of activities a normal child aged 6 years and coming to the school for the first time usually performs.

Mr. Binay, a teacher like you in a primary school observed and interacted with a newly entrant child named Jhumpa and listed the following activities which she could perform with ease.

- She expresses her feelings in simple sentences.
- She speaks using proper tense of the verb appropriate to the subject.
- She answers simple questions like "What have you taken in your lunch?", "Which game do you like?", "Who came to your house yesterday?"
- She is curious and asks a lot of questions.
- She understands and obeys teacher's commands like "stand up", "move to your left", "close your eyes", "come to the black board" etc.
- She sings some songs according to her liking.
- She plays games with other children in the class strictly following the rules of the game.

Notice that the list is quite long. Every normal child can perform such activities. But how did Jhumpa learn to perform so many activities correctly and with ease? Although there were several individuals around her in the family and neighbourhood, no one deliberately taught her so many activities she is performing.

Clearly school is not the only place for learning, and one can acquire a wide range of experiences from the world around him/her. If we know the processes that help one to gather experiences in a natural way, we can use those processes in the classroom for making school learning more natural, meaningful and easier to adopt and internalize. Let us understand some of the basic processes of acquiring new experiences which are usually used by children and others as well for learning in a very informal way.

1.3.1 Imitation

Much of human learning is a function of imitating and observing the behaviour and action of others and these are also the main processes through which children acquire new experiences and behaviour. Imitation is copying or reproducing others' actions or behaviours. One does not imitate everybody one comes across. One chooses consciously or otherwise a person for imitating some of his/her behaviours or actions

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that attract him/her. Such a person becomes a model for imitation. The model can be a person with whom the child/individual has direct contact like the parents, siblings, teacher, or any other adult member with some quality to be imitated. There are other persons with whom the child has no direct contact but can be models for imitation. Examples of such models maybe great men from history and mythology like Ashoka, Shivaji, Akbar, Gandhi, Nehru, Mother Teresa or Sri Ram, Sri Krishna, Mirabai, Jesus or popular film stars, players, artists etc. Even the characters from popular comics are sometimes imitated by young children. Such models are called symbolic models. Very often, parents, siblings and teachers project before the child well-known persons of eminence. Such models either real or symbolic are called exemplary models.

It is to note that all imitations are not learning unless the imitated action becomes relatively permanent behaviour of the child. When you observe a child is imitating a positive and desirable action, how can you strengthen the recurrence of this imitated action to be learned behaviour? There are possibly three ways to strengthen imitations. These are:

- ***Providing direct praise or incentives***: Statements like *"He is solving the problem like an expert!"*, *"She is singing very well like Lata Mangeshkar*", or *"What a shot you played! It is just like the shot played by Sachin Tendulkar"* encourages the child to repeat the imitated action.

- ***Satisfying consequences:*** If through imitation the child acquires a socially acceptable behaviour or achieves a desired goal, then he/ she likes to repeat it. For example when a child imitates her mother saying "milk", she would like to repeat saying this word if in response she gets milk to drink.

- ***Vicarious reinforcement:*** Sometimes, a child imitates behaviour by observing that others are imitating it without getting any direct incentive or any satisfying consequence. It rests on the logic that others are imitating it as they might be getting some benefit/satisfaction out of it. Choosing a brand of dress or cosmetic, talking in a particular style or singing an odd tune are some such vicarious imitations.

Effects of imitation: Superficially, imitation is merely copying the behaviour of a model. A closer examination of the responses involved, suggests that there are three categories of imitative behaviour: the modelling effect, the inhibitory dis-inhibitory effect, and the eliciting effect.

- The *modelling effect* involves acquiring new behaviour as a result of observing a model.

- The *inhibitory effect* is concerned with suppression of deviant behaviour of the model usually as a result of seeing the model punished for engaging in the same behaviour. The *dis-inhibitory effet* is the opposite of it. It occurs when a child observes the model engaged in the previously learnt deviant behaviour being rewarded for it.

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- The *eliciting effect* is related to responses of the model not to his/her behavioural characteristics per states. An illustration of the eliciting effect is the mass behaviour. In any sporting event, one person's clapping or booing might elicit similar behaviour from others in the crowd. Sometimes, many in the crowd do not know why they behaved in the way they imitated.

As a teacher, what can you do in the classroom/school to use imitation for enabling young students to acquire positive and socially desirable behaviour? Well, you can do the following:

- Try to be a model for imitation by your students. Demonstrate positive aspects of your behaviour to your students. A teacher's positive practices like cleanliness, punctuality, truthfulness, and fairness to all have immense impact on the students to imitate. Nevertheless, do not expose your weaknesses to your students.
- While teaching history, social science, literature and telling stories to children, always highlight the positive aspects of the important characters for imitation by the students.
- When any student imitates positive behaviour, try to recognize it and provide verbal praise encouraging him/her to repeat it.

E3. What can you do to discourage your students to avoid imitating undesirable/deviant behaviour of a model?

1.3.2 Observation

Learning from observation is a common and natural method of human learning. Observational learning (also known as vicarious learning, social learning, or modelling) is a type of learning that occurs as a function of observing, retaining and replicating novel behaviour executed by others. Observational learning is a key learning method for children when acquiring basic tasks such as language and cultural norms. But it is different from imitation in which the observer copies and reproduces the behaviour of the model. In observational learning we think and judge and learn not only how to do certain things but also what the consequences of our action are likely to be. Therefore, learning through observation is not exact reproduction of the model's behaviour but developing behaviour based on the observed behaviour.

According to Bandura (1977), following four distinct processes are involved in observational learning:

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- ***Attention Process:*** We do not imitate the total behaviour of a model….rather we focus on specific aspects that we are interested to learn. We pay attention to significant features of the behaviour we want to learn. For example, a child learning to write in good hand writing watches her teacher and keenly observe the way she is holding the pen, moving her fingers, where she is using capital letters and does not pay attention to how the teacher is dressed or how she walks.

- ***Retention Process****:* The ability to store information is also an important part of the learning process. Retention can be affected by a number of factors, but the ability to pull up information later and act on it is vital to observational learning. We need to remember the things observed through some way of using symbols, understanding and organizing our observations. Usually we employ two processes for retention: first *storing* the things observed as visuals in our memory and then *rehearsing* the sequence of actions mentally. For example, if anyone is trying to bowl like Zahir Khan, then he should mentally rehearse the sequences of the bowling actions of Zahir after observing him in person or in TV telecasts and forming a visual image of the actions. Bandura (1977) suggests that the best way to learn from a model is to organize and rehearse the observed behaviour cognitively (mentally with proper thinking) and then act it out.

- ***Motor Reproduction Process***: After we have retained the observed behaviour through rehearsal of the visual images, the behaviour has to be transformed into physical actions. For this one needs two things. First, he/she must have basic requirements for the action to be performed by him/her. If one desires to be a batsman like Tendulkar, the basic requirement is the physical capability of a batsman. If one is too weak, no matter how perfectly one rehearse the sequences of batting of Tendulkar, one will not be able to perform because it would be difficult to lift and move the bat in the same manner..

- The second aspect for transforming the observed behaviour to action is to actually practice the sequence of actions. Having a perfect visual imagery and mental rehearsal of the actions will not help the observer to perform the act spontaneously. To perform effectively, repeated practice combined with continuous feedback on practice and making appropriate corrections after each practice are necessary.

- ***Motivational Process***: You must have come across some children who have learnt very well through observational learning as they can vividly describe the steps of action and can perform it perfectly. But often they do not perform as and when required. In such cases, what they lack is proper motivation to act. The child is required to be motivated especially self-motivated to act.

In summary we can say that observational learning begins with observation of a modelled event and undergoes following four processes before being transformed into a matching performance on the part of the observer.

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(i) the observer must pay attention;

(ii) the observer must represent the observed behaviour cognitively, store it and rehearse it;

(iii) the observer must reproduce and refine the observed behaviour if he/she has required capabilities; and

(iv) the observer must perform the learned behaviour under appropriate motivational conditions.

E4. State your role as a teacher in helping your students for observational learning.

E5. State any two ways to motivate your students to perform in observational learning.

1.3.3 TRIAL AND ERROR

Let us observe a child learning to ride a bicycle. Perfection in riding the bicycle is not achieved through one trial. The child makes many attempts to acquire mastery over the skill. At the initial stage, he/ she make errors and gradually the errors are minimized. The child makes a number of attempts for a particular task or problem and finds his/ her attempts ultimately rewarding.

When one is confronted with a difficult problem, for which he/she does not have any readymade solution, he/she will engage in a variety of different responses until one response produces a satisfying effect. In other words, it is through trial and error that problems are solved.

The theory of trial and error learning was developed by the American psychologist E.L.Thorndike as early as 1913 through a series of experiments conducted on different animals, mostly on cats. One of his famous experiments to illustrate the method of trial and error learning involved placing a hungry cat inside a cage and dangling a fish outside the cage. The cat had to press a lever and come out from the cage to grab the fish. In the initial attempts the cat made several unnecessary movements before pressing the lever of the cage. In subsequent trials, the random movements were gradually reduced and finally the cat could directly approach the lever, pressed it and escaped the cage. From this experiment Thorndike developed the following three laws of learning:

- ***Law of Exercise:*** Repetition of the activity makes the student to retain the activity for longer period. This essentially constituted of two laws: *law of use* and *the*

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law of disuse. The first relates to the strengthening of the connection of stimulus (cause) and response(the behaviour) by repetition and the second, the opposite of the first, relates to the weakening of connection when not used frequently.

- ***Law of Effect:*** Of the several responses, that occurs just before a satisfying state of affairs tends to be learned easily. Those that occur before an annoying state of affair tend to be forgotten or rejected. In other words if the consequence to a behaviour is satisfying, then the behaviour is likely to be learnt. In this connection the role of reward and praise have positive effects of strengthening the learned behaviour whereas punishment and rebuff have the opposite effect on the behaviour being learned.
- ***Law of Readiness:*** Effective learning takes place when the student is ready to learn. The educational implication of this law is quite clear. A child who is ready for a specific type of learning is far more likely to profit from such learning experiences than another who is not ready. Earlier in this unit, we have discussed about the importance of readiness to learn and the teacher's role in understanding children's readiness.

These laws of learning drawn by Thorndike from his experiments have influenced classroom practices even though several researchers found limitations of these laws in their practical uses.

E6. Considering trial and error method of learning, give an example that you have experienced as a teacher.

1.3.4 Participation/Doing

Learning by doing or through participation is considered as effective means for meaningful learning. Doing gives the real experience of solving real life problems. It is a way of combining thinking and reasoning with the practical act of manipulating objects for solving a problem. Undoubtedly it promotes self-learning and self-assessment which are the ultimate goal of learning process. But, in classroom situations, individual work cannot always be conducted. Therefore, encouraging students for participation in small group work always proves beneficial for learning. Research findings consistently show that the more pupils are involved as active participants in small group activities, the better they do. The more provisions for group activities are arranged in the classroom situation, the more participation is expected from the students. What are the benefits of participation in enhancing learning? Well , it promotes:

- Active and meaningful learning in a contextual situation;

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- Sharing of experience among each other;
- Pooling combined resources for successful completion of the task;
- Searching, debating and coming out with innovative and alternative ways of solving problem;
- Developing social qualities like helping, sharing, fellow feeling, and accepting responsibility;
- Developing personal qualities like self-confidence, self-esteem, courage to ask questions.

Considering participation in group tasks has positive effect on learning, it seen that in actual situation all the students cannot participate in equal degree in all group works. What can you do then to increase the level of participation in students in the classroom activities? You may consider the following points:

- Ideally, the goal of increasing participation is not to have every student participate in the same way or at the same rate. Instead, it is to create an environment in which all participants have the opportunity to learn and in which the class explores issues and ideas in depth, from a variety of viewpoints.
- There are always different types of students. For example, some students who do not speak often in class are reflective students who typically develop ideas and questions in their minds before speaking; others are shy students who feel uncomfortable speaking in front of groups (at least initially). Many students who frequently volunteer to contribute are active students, who typically think while they speak. Therefore it is necessary to create conditions that enable students of various learning preferences and personalities to contribute. For this you will need to take extra steps to encourage quiet students to speak up and, occasionally, ask the more vocal students to hold back from commenting in order to give others a chance.
- There is a need to provide pupils with training and support for group discussion. For this you need to:
  - model the way you want pupils to interact with each other,
  - elicit ground rules for talking in pupils' own words, and
  - provide the kind of collaborative activities that promote active involvement of all pupils.
- Collaborative group work is important for enhancing pupil participation. The key features of effective group work discussions include pupils:
  - asking questions,

- actively and persistently seeking help from peers,
- providing help that is detailed, and
- checking that the help given is understood by the recipient.

E7. State the two basic qualities of an active student.

1.3.5 Learning Through Discovery/Inquiry

Discovery learning is a method of inquiry-based instruction. Jerome Bruner is often credited with originating discovery learning in the 1960s. He argues that *"practice in discovery for oneself teaches one to acquire information in a way that makes that information more readily viable in problem solving"*. Discovery learning takes place in problem solving situation where the student draws on his/her own experience and prior knowledge. It is a method of instruction through which students interact with their environment by exploring and manipulating objects and performing experiments. In this approach the students are actively involved to find out rules, principle and hence develop their minds by using insight and intuition to go beyond the data to find relationship and organizing structures. The method is based on the following principles:

- Principles of activity
- Principle of logical thinking
- Principle of proceeding from known to unknown
- Principle of purposeful experiences
- Principle of searching for alternatives.

Learning through enquiry involves the teacher posing the problem(s) and giving assistance, but making it possible for pupils to achieve discoveries collectively for themselves. For example, in a whole class enquiry situation pupils took on the role of scientists to enhance the size and quality of flowers in the school garden. They approached the local horticulturist to educate them on the scientific ways of enhancing the quality and size of flowers. Some collected brochures on growing flowers from different sources. They collected information on organic and inorganic fertilizers and went to shop for procuring the required fertilizers in appropriate measures. Then they thought of varying different combination of organic and inorganic fertilizers on selected flowering plants and studied the result and found a unique combination of fertilizers to produce large size flowers which they tried on other flowering plants and found positive results.

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In this example the discovery learning was a group effort. Discovery learning can also be individualistic.

How can you encourage discovery learning?

- You should not tell your students about what they ought to know. Always pose a problem before them or considering any issue encourage students to identify problems. When you tell them the problem and the methods to solve it, you are depriving students of the excitement of doing their own finding and the opportunity for increasing their power as students.
- Your main goal of teaching for inquiry is to engage students in those activities which promote the process of defining, questioning, observing, classifying, generalizing, verifying and applying. The outcome of these processes is 'knowledge'.
- Your lessons should develop from the responses of the students and not from a previously determined, so called, logical structure. The 'content' of your lesson plan should be the responses of the students. Therefore, do not get frustrated by their 'wrong answers', false starts, irrelevant directions.
- Your basic mode of interaction with the students should be questioning, using both convergent (single/fixed correct answer) or divergent (multiple correct answer) questions. But the latter is more preferred as it encourages inquiry and acts as a means to engage young minds to probe unsuspected possibilities.
- You should encourage multiple responses from students. Do not ask for *'the reason'* but for *'reasons'*, not for *'the cause'* but for *'causes'*, and never *'the meaning'* but 'meanings'. When you insist on a single and definite answer, the students would stop searching for other possibilities and their mind would stop enquiring further.
- You should encourage 'student-student' interaction more than the 'student-teacher' interaction. In the traditional classroom interaction, students look for the teacher for the ultimate correct answer. When they seek teacher's response, they stop further searching for possible answers thus blocking their inquiry mind.
- You should measure the success of your lesson in terms of the changes in the inquiry behaviour of your students like the frequency with which they ask questions, the increase in relevance of questions, conviction in challenging opinions of other students, teacher and textbooks, the relevance and clarity of their challenges, the willingness to modify or change their position when data warrants it, increase in tolerance for diverse answers, increase in their skill in observing, classifying, generalizing etc.; their ability to apply generalizations, attitudes and information to novel situations.

- You should never try to conclude the lesson by summarizing the findings of the students. Any form of conclusion tends to have the effect of ending further thought. You may summarize the findings without closing the issue. You may say, *"We have arrived at this position which has further possible extensions which you may search for in next class."*
- Whether you like to promote discovery/inquiry mind in your students is entirely up to you. If you want it then you have to demonstrate it through your actions and beliefs. You need to be a student with an inquiring mind working along with your students.

E8. What are the principles of discovery learning?

1.3.6 Problem Solving

Let us consider a situation:

Situation 5: *Ms.Geeta, the mathematics teacher, taught the concept of a triangle in the elementary class. She asked the students about different types of triangle. Students were not able to answer this question and this became a problem for them. They carried this assignment home. They thought over the problem and drew different types of triangles taking into consideration of sides and angles. They formulated hypotheses as follows:*

- *Sides are unequal,*
- *Two sides are equal,*
- *Three sides are equal,*
- *One angle is 90° and other two angles together are 90°*
- *One angle is more than 90°and other two are less together than 90°*
- *Each angle is 60°*

For each of the hypothesis the students named the triangle differently. Thus the students were able to solve the problem.

From the above situation it can be inferred that problem challenges students to find a solution using previous knowledge. The problem should be put forward in clear words and should be according to the understanding and experiences of the students. The student does analysis and synthesis of the problem with the help of the teacher and tries to find out the solution.

Thus we can say that problem solving involves the following features:

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- A goal to be reached;
- A felt difficulty / need to reach the goal;
- Challenging the felt difficulty through conscious, planned and purposeful attack;
- Reaching the goal or arriving at satisfactory solution to the problem at hand.

Problem solving has the following *steps*:

- *Identifying and defining the problem:* Problem arises out of felt need and out of existing students' activities and environmental activities. The students should be able to identify and clearly define the problem.
- *Analysis of the problem* – The problem should be properly analysed.
- *Stating clearly the relationships* between different concepts.
- *Formulating hypotheses:* Possible solution may be formulated basing on the nature of the problem
- *Testing the hypotheses* – Each hypothesis is to be tested to solve the problem.
- *Verification of the result* – The solution of the problem is to be verified number of times to test the validity of the hypotheses.

The teacher plays a vital role in presenting the problem and solving the problem by the students. The following are ***the roles of the teacher***:

- Create the problem situation.
- Create fear-free atmosphere in the class.
- Assist the student in perceiving, defining and stating the problem.
- Help the student in analysing the problem.
- Encourage the student to formulate and to test the hypotheses
- Help the student to develop critical thinking, open mindedness and spirit of enquiry and discovery.

E9. State the steps of problem solving.

1.3.7 Learning as Meaning Making

Read the following situation.

Situation 6: *Ms. Sushmita, the English teacher, was helping her students in Class VI to write an essay on 'The Rainy Season'. To initiate it, she asked a simple question to the students to react, "What comes to your mind when I say 'It is raining'?" Everyone in the class was eager to respond. Some of the responses are as follows: "I love to dance in the rain."*

"It's muddy and nasty everywhere."

"Rain brings flood and misery."

"It's green all around in the field."

"When rain drops fall on our tin roof, it is music for me and I begin to hum with it."

"Mosquitoes, flies, insects are all around along with several diseases. I only wish rain is not there."

"It's so cool and comfortable after the heats and sweats of summer."

"Can see colourful umbrellas in my street, I love to have one."

"Can see variety of colourful flowers, little frogs and paper boats; what a fun when it rains!!"

"Cold with running nose, fever, head ache come with rain."

"Cloudy sky with sun not visible, it is very gloomy."

The list of responses is never ending. Do you notice any incorrect or irrelevant response in all these statements? Each statement is about rain and reflects the perception of the individual child. If you try to draw a meaning of rain, you will surely fail. You can ask for the meaning of anything and you will receive as many responses as the number of respondents but all different responses. What are the reasons for such differences in meaning of an object or a concept?

Well it is perception which varies from person to person. Perception of an individual can be understood from the way he/she acts. When it is raining, some people will run for the shelter while others will enjoy walking in it. Although, there is no disagreement on *'It is raining'*, their actions indicate differences in their perceptions, and the meanings they make of the incident. Thus different people perceive different things about the same situation. But more than that, we assign different meanings to what we perceive. What we perceive is largely a function of our previous experiences, our assumptions and our purposes (needs). We do not change our perceptions until and unless we are frustrated in our attempts to do something based on them. If our purposes are met by

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our meaning (perception) of things and processes, we do not change those even if others tell those to be "incorrect". Only when the meanings or perceptions we hold about something do not help us to understand new things or to solve new problems, then we search for alternative meanings which work for achieving our purposes. The ability to learn is seen as the ability to change or reject inappropriate perceptions and to develop new and more workable meaning. In short, learning is meaning making – changing old ones in favour of workable alternative meanings. When learning is meaning making, students are the meaning makers. The learning process in this context is student centred entirely dependent on the student.

In the traditional teacher-centred, syllabus-driven teaching, we consider all the students in a class to be of same or similar ability level and have nearly similar meaning of objects and events. Hence, the belief with which we teach in the class is that all learning in the class occurs in the same way. This is not true when we consider learning as meaning making. The meaning maker has no end to his/her educative process. He/she continues to create new meanings, to make new transactions with his environment.

To facilitate meaning making learning, your ***role as a teacher*** is as follows:

- Before initiating any learning activity in the class you should have a clear knowledge of the previous experience of each student relating to the activity.
- Besides the previous knowledge, you should have intimate knowledge of the interests, attitudes and typical personality characteristics of the students which have bearing on their perception.
- You need to create a congenial environment in the classroom and school in which the students would feel free to express their viewpoints on the issues being discussed.
- You should record each student's perceptions on the issue on the black board so that all the statements are visible to all students.
- You need to create opportunity for each student to explain his/her viewpoints so that in the process everyone could understand the perception of others and would get chance to assess his/her own position on the issue and may like to modify or change the meaning so far held by him/her.

E10. State the importance of perception in meaning making.

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1.4 PROCESS OF TEACHING

All of us have experienced teaching in different forms from our school days. But if somebody asks, *"What is teaching?"* the most common and simple answer would be, *"what a teacher does in the classroom is teaching"*. And since there are different types of teachers, there are different types of teaching. Traditionally, our classroom practices are teacher dominated and hence teacher-centric. Everything that happens in the classroom are determined, transacted and assessed by the teacher. The student has no say in the teaching – learning processes that are transacted in the classroom. The teacher is instructing and directing the students to do what he/she desired. Teaching meant transmitting information, facts, and concepts, as prescribed in the syllabus, to the students. However, with the shift from teacher-centred classroom practices to student-centred practices, student and learning are more focused where the roles of teachers and the practices of teaching have undergone modification. There is no single way of learning and therefore there are a variety of teaching models to suit to the desired way of learning.

In this section three approaches of teaching that have importance in to-day's classroom practices have been discussed.

1.4.1 Teaching for Behaviour Modification

We have learnt that learning is a relatively permanent change in behaviour. Behaviour means different for different persons. Some are of the belief that behaviour is sum total of all the personality traits or characteristics that an individual possesses, while some others believe behaviour to be the observable actions that an individual demonstrates. The behaviour modification approach to teaching is based on the second belief. When we change or modify the observable behaviour of a child, we are directly or indirectly trying to help child to learn.

Observable behaviours are mainly of two types: *elicited behaviour* and *emitted behaviour*. When we make a child to behave in a desired way by adopting some means, we are trying to elicit or draw out the behaviour from the child. For example, when we make child run by offering a chocolate, we are trying to elicit or draw out the behaviour of running from the child. On some occasions you might have experienced that an individual without any visible external cause demonstrates a particular behaviour normally you had not noticed earlier in him/her. We categorize such behaviour as emitted behaviour. A little child humming an unknown sweet tune, a student solves a difficult problem in an unusual method, or a girl demonstrates a dance pose which was not taught in her dance class are some examples of emitted behaviour.

When a child is made to demonstrate these two observable behaviours, i.e. elicited and emitted, as normal occurring behaviours, then we say that the behaviour modification has taken place in the child. There are two phases of behaviour

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modification: the first phase is concerned with making sure the elicited or emitted behaviours occur again and again as and when required and the second is to continue the process of modification to refine the existing and acquired behaviours to acquire more and more new behaviours. The process of habituating the child (or for that matter any organism, human being, or animal) to repeat and modify both the types of behaviours is called *conditioning* by the psychologists. There are two major types of conditioning depending on the two types of behaviours: *Classical conditioning* i.e. conditioning of elicited behaviours, and *Operant conditioning* for conditioning the emitted behaviours.

Classical conditioning: Ivan Pavlov, a Russian physiologist, did pioneering work on classical conditioning (around 1890s). He noticed that in his laboratory, hungry dogs began to salivate when they were about to be fed, even before they could see or smell the food. Strangely, they seemed to be salivating at the mere sight of their keeper or even when they heard his footsteps. This simple observation led Pavlov to a series of carefully designed experiments involving ringing of a bell or sounding a buzzer – neither of which ordinarily leads to salivation - and immediately presenting dogs with food, a stimulus that does lead to salivation. After considerable number of such combined presentations of sounding of bell and then food, the dogs salivated with sounding of the bell even if food is not presented.

In Pavlov's experiments, the bell is referred to as a *conditioned stimulus* (CS), the food is a natural or an *unconditioned stimulus* (UCS); and salivation in response to food is an *unconditioned response* (UCR), whereas salivation in response to the bell or buzzer is a *conditioned response* (CR). Initially, ringing of the bell or sounding of the buzzer is a *neutral stimulus* (one that does not lead to a response) for salivation.

In general terms, a stimulus or situation that readily leads to a response can be paired with a neutral stimulus to bring about classical conditioning. This is also called respondent conditioning because the elicited behaviour occurs in response to a stimulus.

Classical conditioning is very much perceptible in classroom practices, virtually at all times, irrespective of the other kinds of learning going on at the same time. And it is largely through these unconscious processes that students come to like or dislike schools, subjects, and teachers. For example, a school subject is a neutral stimulus that evokes little emotional response in the beginning assuming that it is new to students. The teacher, the classroom, or some other distinctive stimulus in the student's immediate environment may act as a conditioning stimulus. This conditioning stimulus might be pleasant (like well-ventilated and comfortable classroom, a friendly teacher) or unpleasant (like dark and hot room, a hard teacher with threatening voice). Following successive pairing of subject matter with the distinctive stimulus, the emotions and attitudes associated with conditioning stimulus becomes classically conditioned to some aspects of school. Learning to dislike mathematics is a typical case of adverse case of classroom processes, and an example of classical conditioning. Love for mathematics learning (at least the emotional part) can also be created with similar process of classical conditioning.

Operant conditioning: Operant conditioning is the outcome of a series of elaborately designed experiments by B.F. Skinner (around 1940s) with rats and pigeons. In general terms, operant conditioning is to strengthen (Skinner calls 'reinforce') the behaviour emitted by an organism (Emitted behaviour is called operant) so that the probability of its occurrence increases. This increase is the result of reinforcement. The key concern of Skinner was to discover the relationship between reinforcement and behaviour and to clarify how behaviour is affected by its consequences.

Skinner differentiated between two of his most important terms: *reinforces* and *reinforcement*. For example, a reward or food is the reinforces and presenting food when a response is emitted is the reinforcement. The occurrence of the emitted behaviour and also shaping behaviour by modification of emitted behaviour can be possible through variations in the schedule of reinforcement. Reinforcement always strengthens the occurrence of the emitted behaviour. However, there are two types of reinforcements – positive and negative. *Positive reinforcement* (reward) involves the presentation of pleasant stimulus followed by an emitted behaviour which strengthens the occurrence of the behaviour. Whenever a teacher smiles at the students, says something pleasant to them, praises for their work, assigns high grades he/she is using positive reinforcement.

Negative reinforcement (Relief) occurs when removal of an aversive or unpleasant stimulus following an emitted behaviour strengthens the occurrence of the behaviour. Threats of punishment, failure, detention, humiliation, ridicule and several others are examples of aversive stimuli given by teachers in the classroom which when removed provide relief to the students followed by the occurrence of the desired behaviour emitted by the students.

You have to realise that *punishment* is not reinforcement. Punishment is inflicted either by presenting a painful stimulus or by removing a pleasant stimulus which invariably causes painful feelings, both physical and emotional, in students. Giving physical punishments, scolding or threatening in the class, and detaining after class hours are some examples of punishments given in schools.

Operant conditioning has been applied in developing several technology of teaching. Prominent among them are programmed learning or programmed instruction and recently in the computer assisted learning.

Relevance of Behaviour modification approach:

Behaviour modification approach has made us aware of relevance of several common classroom practices as given below.

- *Repetition is important for learning* follows from all theories of behaviour modification.
- *Repetition without reinforcement* does not enhance learning.

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- *Variations in presenting the reinforcers help modification of behaviour.*
- *Punishment is not very effective for eliminating undesirable behaviour.*
- *Interest in work and in improvement is conducive to learning.*

The major criticism against the behaviour modification approach is that it only considers the observable behaviour for modification and hence for learning. It might be quite suitable for animals and for very young children. But with the advance in age there is mental development, and the observable behaviour may not reflect the actual intention of the individual. A school age child demonstrates some behaviour only to attract the attention of others and to avoid punishment. Hence, any modification of manifest behaviour may not actually result in learning.

E11. What is the way of modifying behaviour through operant conditioning?

E12. What is the difference between negative reinforcement and punishment?

1.4.2 Teaching for Development of Cognition

The dictionary meaning of cognition is the art of knowing. Usually it is concerned with knowing, understanding, processing and using information and these are considered as mental abilities or components of intelligence. Cognitive development refers to the stages and processes involved in child's intellectual development.

There are several theories of development of cognition. Among all the theories, Piaget's theory provides a comprehensive picture of cognitive development from birth to the age of 14 or 15 when cognitive development attains the peak. Piaget conceives of cognitive development as consisting of a series of stages, each characterized by certain kinds of behaviours and certain ways of thinking and solving problems. All the age specific stages have been grouped under four broad stages:

- Sensori-motor (0 – 2 years of age),
- Pre-operational (2 – 7 years),
- Concrete operational (7 – 11 or 12 years) and
- Formal operational (11or 12 – 14 or 15 years)

The descriptions of the characteristics of the child's behaviour at each stage can be valuable in helping you as a teacher to understand your students' level of cognition. Knowing the cognitive status is important as any form of learning is greatly influenced

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by the way a student thinks, reasons and processes information. Some major characteristics at the four stages of cognitive development are provided in Table 1.

Table 1 Piaget's Stages of Cognitive Development

Stage	Approximate Age	Some Major Characteristics
Sensorimotor	**0 – 2 years**	• Intelligence related motor activities, • Concerned with present and nearby incidents and objects, • No language and no thought, • No idea of objective reality,
Preoperational	**2 – 7 years**	• Egocentric thought,
• ***Pre-conceptual***	2 – 4 years	• Reason dominated by perception,
• ***Intuitive***	4 – 7years	• Intuitive rather than logical solutions • Inability to conserve,
Concrete Operations	**7 – 11 or 12years**	• Ability to conserve, • Logic of class and relations, • Understanding of numbers, • Thinking bound to concrete objects and experiences • Development of reversibility in thought.
Formal Operations	**11 or 12 – 14 or 15 years**	• Complete generality of thought, • Propositional thinking, • Ability to deal with hypothetical ideas and situations, • Development of strong idealism.

(Source: Lefrancois, 1994 p.60)

Piaget's theory tells us that the child is born with a mental/cognitive structure which develops and attains maximum growth around the age 14 or 15 years. The major trends of the cognitive development during the four stages are as follows:

- During the first two years of life, the child performs activities mostly driven by sense organs and some motor activities. For an infant at this stage, objects exist

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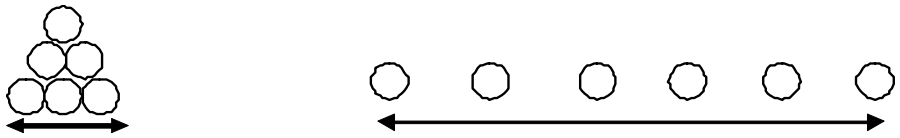
when they can be seen, heard, touched, tasted or smelled and when they are removed from the infant's immediate sensory experience, they cease to exist.

- Towards the end of this sensorimotor period, the child can identify the objects around him/her and can imitate several actions of others. And at a later stage, the child can imitate the actions in absence of the actions or objects (called deferred imitation). This indicates that the child can observe the action minutely, internalize the actions and reproduce it signifying the early form of intentional action. Intentional actions are also part of intelligent activity.

- Piaget defines 'operations' as mental activities subject to certain rules of logic. According to him, operations in true form do not appear before 7 years of age. But with development of language ability, the child tries to reason out in a crude way during the pre-operation period. These reasoning are mostly pre-logical – egocentric (everything moving around the self), and intuitive, mostly driven by emotion and passion.

- The intelligence as is commonly understood begins to appear towards the end of the pre-operation stage i.e., around age of 6 or 7 years (incidentally this is the beginning of schooling). It is during the concrete operation period i.e. from 7 – 11 or 12 years of age, children make a fundamentally important transition from a pre-logical form of thought to logical thinking that apply to real, concrete objects and events. Three important mental abilities develop during this period with manipulation of concrete objects and events. They are *conservation, classification and seriation*.

Conservation is the realization that quantity or amount does not change when nothing has been added to or taken away from and object or collection of objects, despite changes in form or arrangement in space. For example, to test the conservation of number, expose the children to two collections of marbles/beads as shown below.



(a) (b)

Fig. 1 Arrangements of Marbles

If these two arrangements of marbles are shown to children in pre-operation stage, almost all would say that the collection (b) has more marbles because they have not yet developed the ability of conservation of numbers. Similar conservation tasks in area, volume and mass have revealed that it is during the concrete operation stage, children develop this ability.

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Classification is to group objects according to their similarities and differences. Classification involves comparing and contrasting the objects on different characteristics like size, shape, colour, weight, use, material etc. A child in pre-operation stage is not capable of classifying objects and cannot compare more than two objects at a time.

Seriation is the ability to arrange similar objects in a definite order (increasing or decreasing).

Besides these three, the ability to deal with numbers, a direct product of classification and seriation, develops during the stage of concrete operations.

- The stage of formal operation is the final stage of cognitive development. It is formal because the subject matters with which children can now deal are mostly imaginary or hypothetical, abstract and free from concrete objects and events. The thinking process at this stage involves propositional reasoning following the *"If, then..."* logic like *"If A>B and B>C, then what is the relation between A and C?"* Such problems involving abstract and propositional logic cannot be solved by children in concrete operation stage.

Lev Vygotsky, the famous Russian psychologist, adds two elements in his theory of cognitive development. He stresses the impact of *culture* and *language* on the cognitive development. According to him, without culture, our intellectual functioning is limited to apelike, elementary mental functions. With intensive interaction with the elements of culture and a healthy language development, we become capable of higher mental functions involved in thinking, reasoning, remembering and so on.

Further Vygotsky states that a child progresses through three stages in developing language functions:

i. ***Social (External) Speech (before age 3 or 4 years),*** used largely to control others or to express simple concepts;

ii. ***Egocentric Speech (3 – 7 years)*** is mostly talking about self and is usually spoken out loud. It has a role in controlling and directing the child's own behaviour;

iii. ***Inner Speech (above 7 years)*** is marked by unspoken verbalizations that control thought and behaviour.

Vygotsky argues strongly for language related activities in schools and inclusion of cultural elements in the curricular interactions in and outside of the classroom.

Considering the children in primary schools most of them are in the concrete operation period while those in the upper primary school are in formal operation period. As discussed these two periods, especially the concrete operation stage is very crucial for cognitive development. Therefore you need to develop your teaching strategies for development of cognition of children. Following are some points to note.

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- In your strategy of teaching you have to strike an optimal balance (in Piaget's language *'equilibration'*) between using previous experience, old learning and behaviour (*assimilation*), and making new changes (*accommodation*). Striking balance or equilibration helps the child in adapting the change in behaviour and action.
- While providing learning experiences, maturation levels of the children have to be recognized. Maturation unfolds the hereditary characteristics which helps us to make appropriate learning provisions. You cannot ask a child to sing a song loudly when she has not developed full control over her speech-producing organs which develops in course of maturation.
- Cognitive development depends directly on the child's day to day activities and experiences with real objects and events. Provision should be made for a relatively large amount of activities, both physical and mental, relating learning to real objects and events, especially before the formal operations stage.
- Social interaction i.e. interaction with others is fundamental to the development of notions about others, about things and about self. Such interactions, predominantly verbal in nature, help in development of language abilities and understanding relations both of which are crucial for cognitive development.
- Understanding children is important on the part of a teacher. When a child responding to the task shown in Fig1 earlier states that in Fig.1 (b) there are more number of marbles, we cannot understand the child's intention clearly if we just conclude that he/she has committed an error. Rather, if we probe as to why the child thinks it to be correct, then perhaps we can understand his/her capabilities better than suggesting the correct response directly. In this way we can know the strengths and limitations of the students and make appropriate strategies for development of their cognition.
- Language is the primary symbolic expression of our thought. Therefore, giving children more chance to speak freely is not only helping to develop his/her cognition, but also to understand the child better through his/her expressions.

E13. Why should we provide more teaching-learning materials for children reading in primary schools?

E14. What is the importance of group learning for cognitive development of children?

1.4.3 Teaching for Construction of Experience

A student constructs his/her own knowledge on the basis of interaction with his/her environment. The following two assumptions are basis of constructivist learning:

- Knowledge is actively constructed by the student, not passively received from the environment.
- Coming to know is a process of adaptation based on and constantly modified by student's experience of the world.

Put simply, the experience of a student is more important in learning new things. He/she alone can modify his/her previous experience in order to solve a problematic situation and thereby constructing new experience or acquiring new knowledge. But how does the process of construction of knowledge take place?

The construction of knowledge takes place in the following ways:

- *Connecting new idea with the previous knowledge/experience* helps in constructing new knowledge. If one knows counting the objects, one can connect it to learn addition, but at this stage cannot directly learn percentage. By manipulating various objects and events in the immediate environment, one develops mental images and when one comes across a new object, one tries to interpret the new object in terms of the known objects.
- *Focusing on the interrelationships among concepts,* new ideas/knowledge is constructed. If we can establish connections of similarity and dissimilarity among the related concepts, learning new things would be easier and more meaningful.
- *Forming mental images both at the initial stage of learning and mental representations of interrelationships* is the key process in construction of knowledge. Suppose a child encounters a new object with similarity with an orange that he/she had known earlier. If after seeing it he/she fails to relate it with orange and form its mental representation, then at a subsequent time the same object (say apple) shall be a new one for him/her. In other words forming mental representations is the construction of knowledge.
- *Interacting in social groups or on social themes help* to make learning more meaningful. Social interaction makes the student realize the different real world problems. He/she asks questions, responds to others, reflects on the problem, gains multiple interpretations of the problem and finally has an overall mental representation of the problem which he/she tries to solve mentally. As a result of the mental representations of the different aspects of the problem, solution emerges signifying new construction of knowledge.

What then are your roles as a teacher in the construction of knowledge of your students?

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The ***roles of a teacher*** are as follows:

- Facilitating students in their efforts to learn without directly instructing them on any new concepts.
- Being sensitive to the previous experiences of each and every student in the class.
- Providing authentic (real-world and contextual) tasks.
- Providing as many materials and experiences from the immediate environment as possible. Manipulating materials and events so that the students can gather more experience.
- Providing real-world, context-based learning environments rather than predetermined instructional sequences for making learning more realistic, relevant and contextual.
- Focussing on realistic approaches to solve real-world problems.
- Providing or/and encouraging the students to come out with multiple representations or alternative solutions when engaged in solving a problem.
- Allowing students to ask questions and encouraging them to raise intelligent questions.
- Fostering reflective practice. By encouraging raising intelligent questions, indirectly put pressure to think reflectively.
- Supporting cooperative and collaborative learning in the classroom.
- Connecting the activities in the school with those outside the school.
- Encouraging self-analysis and self-assessment of their learning progress.

E15. What is the role of previous experience in constructing new knowledge?

1.5 LET US SUM UP

- Learning is a process which causes relatively permanent change in human behaviour, knowledge, habits and those aspects of personality that are necessary to meet the demands of life.
- Learning is continuous, intentional, goal directed and active process that results as the interaction of the individual with his/her environment.

- Maturation, environment, readiness to learn, and motivation are some of the factors that affect learning.
- Children learn through various methods like imitation, observation, trial and error, participation, discovery, and problem solving. Meaning making through perceiving objects is also a powerful method of learning.
- Besides the traditional instructional process of teaching, behaviour modification approach has several impacts on the classroom teaching-learning processes.
- Learning for cognitive development and learning to construct knowledge have lot of potentials towards learning of children specifically for those in the primary schools.

1.6 MODEL ANSWERS TO CHECK YOUR PROGRESS

E1. Any three from the list given;

E2. (i) Intrinsic motivation comes from within whereas extrinsic motivation is dependent on others to provide. (ii) Intrinsic motivation is longer lasting than the extrinsic motivation.

E3. By showing the model is punished for the deviant behaviour.

E4. (i) help the student to focus attention on the specific aspects, (ii) encourage mental rehearsal of the actions, (iii) provide scope/activities to practice the observed actions, (iv) motivate the student to learn from observation.

E5. (i) providing reward and (ii) Discussing with student and encouraging for self-assessment.

E6. Law of exercise, Law of effect, and Law of readiness.

E7. (i)Actively participating in all activities, and (ii) Asking probing questions.

E8. Principles of activity, Principle of logical thinking, Principle of proceeding from known to unknown, Principle of purposeful experiences, Principle of searching for alternatives.

E9. Identifying and defining the problem, Analysis of the problem, Formulating hypothesis,

Testing the hypothesis, and Verification of the result.

E10. Meaning of an object or an event comes from our perceptions, When we change or modify our perceptions we change or modify the meaning earlier

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formed thus we also modify our experience or gather new experience. Thus perception shapes our learning.

E11. By variation of providing reinforcements.

E12. Negative reinforcement provides relief as the unpleasant stimuli is removed and thus strengthen the occurrence of the desired behaviour. On the other hand punishment is unpleasant and hinders in occurrence of the desired behaviour.

E13. Concrete operations are strengthened by manipulation of variety of concrete objects, hence during the primary school years (age 7 – 11 years) provision of more teaching-learning materials is necessary.

E14. Group learning provides scope for more social interactions which is necessary for healthy cognitive development.

E15. Previous experience connects similar elements/concepts from the new situation and helps in new construction.

1.7 SUGGESTED READINGS AND REFERENCES

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1.8 UNIT-END EXERCISE

1. Give a definition of learning process and explain its characteristics.
2. Explain with suitable examples the four processes of observational learning. How does imitation help in observational learning?
3. Describe the processes of modifying the emitted behaviour with examples from classroom practices.
4. State the role of a primary school teacher in development of cognition of her students.
5. Examine the relationship between learning for meaning making and teaching for construction of knowledge.

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UNIT 2 APPROACHES TO LEARNING AND TEACHING

Structure

2.0 INTRODUCTION

In the first unit of this course, you have studied the concepts, processes and factors associated with learning and teaching. From your experience as a teacher, as well as what you have learnt in the earlier unit you will agree that every child is different from another child and has his/her own ways of learning. Depending on the place and time, the child may adopt different methods of learning. Hence, to teach a group of children in a classroom taking into consideration their diverse ways of learning, is a very challenging task which you might have experienced. No single method of teaching can equally facilitate learning of each and every child in a group. To overcome this challenge, you need to know how to combine different methods and make suitable variations for fulfilling the learning needs of every child in your class. In other words there are various approaches of learning and teaching like Teacher-Centered Approach, Subject-Centered Approach, Competency-Based Approach and Constructivist Approach. In this unit these approaches will be explained so that you can adopt appropriate methods

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and approaches in your classroom transactions for effective learning of your students by addressing to their learning needs.

For understanding the concepts dealt in this Unit, you may need approximately *14 (fourteen) study hours.*

2.1 LEARNING OBJECTIVES

After completing this unit you will be able to:

- Explain the characteristics of Teacher-Centered, Subject-Centered and Learner-Centered Approaches respectively.
- State their respective uses in teaching-learning situations.
- Explain Activity Based Learning with an example.
- Differentiate between skill and competency.
- State the characteristics and usefulness of Competency-Based Approach in learning and teaching.
- Explain the characteristics and usefulness of Constructivist Approach in teaching and learning.
- Compare the different approaches of learning and teaching in terms of their characteristics, usefulness for learning, strengths and weaknesses.

2.2 APPROACHES TO LEARNING AND TEACHING

As a student and also as a teacher you have various experiences of classroom activities. Let us think for a while about the structure of a classroom and what goes on in the classroom. A class is a group of students, nearly of same age, controlled by a teacher, and accommodated within a specified place - may be a room or an open space. Usually, the teacher in a classroom teaches a particular topic from a subject within a specified period of time. Thus there are three key aspects of a classroom: students, teacher and a subject matter. The ultimate aim is to enable the students acquire the knowledge and understanding of the concepts taught in the class. You will agree that this is the simplest description of all types of classroom activities.Again, let us relook into a teacher's ways of teaching.

Think of the ways in which you were taught by your teachers or the ways you teach in a class and answer the following questions:

- Does a teacher always teach following a single method while teaching different topics or in different periods/classes?

- How does a teacher select a method or combination of methods to make his teaching effective?

Now read the following Situation 1:

Situation 1: *Ms. Sushmita who teaches mathematics in primary classes uses several methods and techniques of teaching like explaining through demonstrating pictures and models, asking students to solve problems, telling a story in a class while teaching a mathematical concept within a period. When asked why she combines all these methods, her reply invariably is "to keep up the interest level of all students on the topic taught". But how does she select a method or combination of methods? "Depending on the situation," she tells. She further says " Looking into whether the students are ready to learn, whether they understand the concepts as expected, whether they retain their interest when the lesson progresses. I decide the method(s) to be employed and sometimes I have to change the method on the spot also".*

You might have similar experience like Ms.Sushmita that although you plan your daily lesson to teach a particular topic using one definite method of teaching, sometimes you change it depending on the situation prevailing in the classroom during that period.

Considering the three major aspects of classroom activities, there are broadly three major categories of approaches: Teacher-centered, Subject-centered and Learner-centered approaches. Apart from these there are two other approaches i.e. Competency-based approach, and Constructivist approach which are increasingly been used in recent times particularly in primary schools.

Try to visualize the following three classroom situations 2, 3, and 4:

Situation 2: *The students of grade 4 are sitting in rows according to their height. Boys and girls are sitting separately. They are listening to the teacher Ms.Reba who is showing a picture of human digestive system and explaining the function of different organs. The students are listening silently and taking down notes when Ms.Reba is dictating. In case Reba notices anybody to be unmindful or talking to another student, she shouts at them. She reminds them, "Sit silently and listen to me". If any student asks a question in course of teaching, he/she is asked to wait till the teaching is over. After the explanation and dictation of notes are overMs.Reba spends sometime in question and answer activity. She corrects the mistakes of the students and praises those who give correct responses.*

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Situation 3: *Mr. Amir is teaching language in class V. His only source is the language text book prescribed for the class. He is holding the text book in one hand and a piece of chalk in the other. He is reading out loudly a portion from the topic he intends to cover in that period. He made the students to repeat reading loudly exactly the way in which he was reading. . He explained the main points of the topic and then asked questions given at the end of the chapter. When any student asked any question, Mr. Amir advised them to refer to the related paragraphs to find the answer. At the end of the class he gave assignments from the exercises given in the textbook. He never went beyond the prescribed text.*

Situation 4: Ms.*Seema is engaged with children of class III in planning activities in the class for observing Independence Day. She planned the arrangements encouraging ideas from the children. The children divided themselves into groups and assigned different tasks. One group was for decorating the classroom; one group chose to sing different patriotic songs, while another for collecting pictures of great leaders and the like. Ms.Seema was all the time helping the groups and the total class to proceed properly completing different tasks in time.*

Reflect on these **situations,** and try to answer the following questions:

E1. Which of the above three situations is/are more controlled by the teacher?

E2. In which situation the students feel free to act with a purpose?

In the first **situation**, the teacher is in full control of the class. Literally, she is either conducting the activities or directing students to perform the activities. Everything in this class depends on the teacher and the students have little say in any matter. This is an example of a classroom where *teacher-centered approach* is adopted.

In the second s**ituation** both the teacher and the students perform activities strictly confined to the prescribed contents/ textbooks in the subject being taught demonstrating a *subject-centric approach.*

The last situation demonstrates a situation where the children were driven by a purpose and willingly associated themselves in choosing to perform different activities from which they could learn several things. This is an example of child-centered or *learner-centered approach.*

Let us discuss each of these three approaches in detail.

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2.2.1 Teacher-centered Approach

From our experience as students and otherwise most of us believe that the teacher is the dominant factor in all classroom activities. Everything that is done in the class, beginning from the sitting arrangements, fixing what and when to teach, maintaining discipline, asking questions, and the time and type of student evaluation is to be determined by the teacher.

The major belief on which this approach rests is that the *teacher knows all that a learner is required to know*. Therefore, the teacher can transmit bits of knowledge and skills to the children. A so called 'good' student stores most of these bits of knowledge in his/her memory and reproduces whenever it is demanded. On the other hand a 'poor' student lacks the capability in storing and reproducing. In other words, the processes of memorizing and recalling from memory are the two key processes of this approach. Paulo Friere, the great educational thinker designated this process as "***Banking Education***"

Activity 2.1:

Observe at least five classes when the teacher is teaching and list the characteristics of these classes in terms of what the teacher and students are doing. List the advantages of this type of teaching by asking the teacher teaching in the class following this approach.

If you have completed your activity compare your observations with the list given below.

Characteristics of Teacher Centered Approach:

Some of the important characteristics of the teacher-centered approach of teaching-learning are:

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- Knowledge is transmitted from the teacher to the students.
- The focus is on teaching/instructing/directing rather than on learning.
- The content and methods of teaching are decided by the teacher targeting the average students. The needs and interests of the individual students are rarely taken into account while teaching.
- Emphasis is given on passive listening, reading and writing and reproducing things taught by or as directed by the teacher.
- Students' participation in classroom activities is dictated by the teacher. In most of the cases, the teacher gives little scope for debate and discussion and sharing of ideas.
- Teacher is mostly concerned with completion of the course contents.
- The teacher concentrates on the right answer.
- The classroom management is entirely dependent on teachers, on his/her experience capability and sometimes on his/her whims and caprices.
- The principles of classroom discipline and their enforcement in the class are entirely controlled by the teacher.
- The hallmark of classroom/school discipline is students' absolute obedience to teachers.
- Extrinsic modes of motivation like praise and repbuff, reward and punishment are generally used by the teachers.

If you analyze the characteristics of the teacher-centered approach, you can list more such characteristics of this approach. Now answer the following question:

E3. Which of the following is NOT a characteristic of a teacher-centered approach?

A. The students are writing down the dictation given by the teacher.

B. The students are developing different models using clay and paper in groups.

C. The students are doing mass drill in the field. Give at least one reason for your answer.

Usefulness of Teacher-Centred Approach:

This approach is entirely dependent on the teacher. If a teacher has a positive mind he can keep up the spirit of learning new things and help his/her students with a vast range of experiences.

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- Transferring knowledge, information and skills from the matured and experienced persons (teachers) to the younger generation (students) is very often argued to be beneficial for students as many successful students who have come out of traditional settings, have also proved their talents.
- There are quite a large number of new, unfamiliar or abstract concepts for the learner which cannot be learnt easily when left to the students themselves. Direct explanation of these concepts by the teacher is a better way to facilitate understanding of the students.
- There are materials, instruments and situations which might be harmful or dangerous for the young students to handle. In such cases, it is always advisable that the teacher demonstrate the experiments or activities using such materials or instruments.
- In a large size classroom where there is large number of students, teaching in mass becomes the only feasible method.

Limitation of Teacher Centred Approach: This approach has large number of limitations. Some of them are:

- Since the teaching is very often imposing facts and ideas by the teacher, children do not like and tend to loose interest.
- If the knowledge of the teacher is limited, then he/she cannot meet the needs of individual children.
- There is no scope for debate and discussion among the students.
- Individual attention is hardly taken into account in large sized classes and in multi-grade situations.
- The teacher never gives room for developing the thinking skill of the students. Thus it retards the creativity of the children.
- Evaluation is mostly summative in nature. There is no scope for continuous and comprehensive evaluation which is the call of the present times.
- The teacher is confined to completion of the course.It matters little if the children do not understand the concepts.

Now check your progress and answer the following:

E4. Which of the following statements is/are TRUE for the teacher-centered approach?

A. Courses prescribed for a class can be completed in time.

B. Students can develop proper reading ability.

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C. Students taught in this approach are better disciplined.

Give at least one reason for your response to each statement.

2.2.2 Subject-centered Approach

In the subject-centered approach, the focus is on the delivery of the subject contents by the teacher for students to acquire i.e. importance is laid on topics/concepts included in the subject, around which all the teaching and learning activities revolve. It is a common practice in most of the schools to strictly follow the syllabus and textbooks both for teaching and learning. The textbook in the subject is considered as the storehouse of all the required concepts, examples and exercises that are required for the teaching- learning process. The means and methods of acquisition of the prescribed concepts may be anything.

> *"The text book becomes an embodiment of syllabus; all that is in it has to be taught. It becomes a methodical guide which has to be read and substantial portions memorized through repeated reading. It also becomes the evaluation systems. Questions at end of each chapter which have to be answered orally and in writing reproducing the text itself".*

Let us consider the comments made in the National Curricular Framework, (2005):

This highlights the following in the context of subject-centred approach :

- Text book is the only source and main source for the teacher.
- Word by word, phrase by phrase the matters are presented before the students.
- The content/subject matter of the text book is itself a guide to the teachers to decide his/her methodology.
- Insistence on the students to memorize the facts by repeated reading.
- Questions given at the end of the chapter are to be asked to the students for assessment of learning.
- The students answer the questions both orally and in written form by copying from the book.
- They may produce their answers orally or in written form by reproducing the exact content.

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Characteristics of Subject-Centered Approach:

The major characteristics of this approach are:

- The focus is on the content / subject matter and hence transaction of the textbooks in the class is 'be all and end all' of the classroom activities.
- The teacher projects himself as a model for the students as he has the mastery over the subject matter.
- The learning needs of these students are supposed to be fulfilled through the text book.
- Real life situations are rarely taken into account while presenting the subject matters in the classroom.
- All classroom interactions are textbook centered.
- There is stress on quantity oriented output rather than quality.
- Textual questions are used for evaluation which lacks variety.

This approach however, provides the learner an exposure to a plenty of content matter within a limited time. As the course is completed within the prescribed time, the learner can plan their practice exercises elaborately and can learn the subject matter thoroughly.

On the flip side, the knowledge acquired by the students is bookish. There is no novelty in the teaching-learning process. Time is mostly utilized for memorizing and reproducing and not for meaningful learning. So there is little scope for developing questioning skill on the part of the teacher and the students as they are expected to confine to the textual question given at the end of each chapter. Continuous and comprehensive evaluation is limited to assess the acquisition of all the concepts in the textbook rather than assessing all the aspects of personality growth as a result of learning.

Before proceeding further, check your progress.

E5. Some statements are given below. Indicate which is/are appropriate for the Subject Centered Approach:

a) Teacher rarely uses the textbook in the class.

b) Questions given at the end of the chapter are answered by the students.

c) Emphasis is given on the real life experiences.

d) Students always try to memorize the content.

e) Textbook is considered as the main source of learning.

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2.2.3 Learner Centered Approach

In the preceding sections you have studied the teacher centered and subject centered approaches. Both the approaches are traditional and more or less similar to each other to a large extent. There is a saying, 'the teacher teaches John Latin'. Here neither the teacher nor Latin is important. But John is important .John is the learner and he is at the center of the teaching-learning activities. Hence the approach directed towards the learner often known as learner centered approach is important which will be discussed in this section.

Read the following situations. You will find how learner centered approach is very different from the two approaches discussed in the previous sections.

Situation 5: *Mr.Salil, the language teacher used the Language textbook as his primary teaching materials in class V. He held the text book in one hand and a piece of chalk in the other. He read out the topic. He used the black board as and when required. He explained the main points of the topic and asked questions given at the end of the chapter. When any student asked any question, he advised them to read the related paragraphs to find the answer. He never cited any example for easy understanding of the students beyond the text book. In the examination most of the students could not answer the comprehension question as they were not directly from the text.*

Situation 6: *Ms.Mishra, the science teacher, entered class V with some teaching learning materials (TLMs). She held the science book in her hand but she wrote some concepts on the black board, cited examples from her own mind. In case, the learner did not understand she cited other examples. She used teaching learning materials and allowed the students to use them also. She asked questions from her mind. She gave some group activities to the students. She guided the students when they asked for her help. She rarely asked questions given in the text. She also presented some content outside the text book for comprehension. In the examination the students attempted all the comprehension questions and answered correctly.*

If you compare the above two situations, you will be able to tell which one refers to learner-centred approach. Now read the characteristics to have a clear idea about the learner centred approach.

Characteristics of learner-centred approach:

- The needs of individual students form the basis of all learning methods and strategies under this approach.

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- The teacher tries to motivate the learner before he/she starts teaching-learning process.
- Teacher is a facilitator in the teaching-learning process and not an instructor.
- Situation is created for facilitating learning process.
- Students work both individually and in groups.
- Students learn from interaction with their peers.
- Opportunities are provided to the students for questioning, exploration and experimentation.
- Seating arrangement is guided according to the activities of the students in the class room.
- Assessment is a part of teaching-learning process and children are assessed in course of doing the activities. So learning process and assessment go together.
- A variety of teaching-learning materials are used which are manipulated by the teacher and the students.
- The learning climate is democratic.
- Students often ask questions to the teachers for clarity of the concepts

You can add more points to the list given above.

Doing activities with students in the class is considered very essential for learning. As such ***Activity- Based Learning (ABL)*** is now being increasingly adopted in primary schools across the country particularly in lower grades.

Activity- based Learning

Activity-Based Learning (ABL) is essentially a form of learner-centered approach. Activity or a learning activity is one in which the learner willingly and spontaneously participates with delight and acquires the desired learning outcomes. Both the process of learning and learning outcomes are taken care of in this approach.

For detailed discussion please see Unit 4 of this course.

Let us consider an e***xample of an Activity in a Learner Centered Approach:***

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Activity – Map reading Class-V

Two students are going on a journey to Agra to visit Taj. After reaching Agra, a tourist offered them a map to locate different spots of Agra. Now think yourself to be there and the children asked you to help them read the map. Instead of showing them the places and telling the things directly you have to do the following.

- *Give them the map*
- *Acquaint them with the symbol that shows the railway line.*
- *Help them to get an idea about relative distance.*

Ask them to find the following from the map.

1. Which is far thest from Agra Cant.:
   Railway Station; The Taj Mahal or Fatepur Sikri?
2. Which is nearer to the railway line:
   - *Babarpur forest or Taj forest ?*
   - *Agra forest or Taj Mahal ?*
3. Which is closer to the river Yamuna
   - *The Taj Mahal or the Railway station?*

(*Source*: Book on Assessment in Enviornmental Studies,P- by NCERT, New Delhi)

Do you think, that the activity is different from that of a teacher centered class?. Whose involvement is more: the teachers or the students?

On the basis of the above discussion let us discuss the usefulness of learner centered approach.

Usefulness of the Learner Centered Approach:

- It places students at the centre of teaching-learning process.
- The process of planning and transaction is organized minutely and systematically by the teacher for the students to learn in a meaningful way.
- It nurtures the creativity of the students.
- Students get scope for enhancing their level of achievement due to prevailing climate for competition among the students.
- Students performance is given due recognition.

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But, the learner centred approach is not free from criticism. Even if this approach is used, it is difficult to increase the achievement level of all the students on average within a limited period of time. Without competent and committed teachers the approach will not work. It requires teachers who are very sensitive to the needs of the students. Unless proper learning climate is created in the schools, use of learner- centred approach is not possible.

A brief comparison between the two major approaches to teaching and learning is given in the following table.

Table 2.1 Comparison between Teacher Centered Approach and Learner Centered Approach

Indicators	Teacher Centered Approach	Learner Centered Approach
Course objectives	• Teachers cover topics as per the syllabus.	• Students achieve learning objectives as fixed by the teacher.
How students learn	• Students learn passively by listening and reading.	• Students learn by integrating new learning into what they already learnt before.
	• They take to independent learning, for securing good scores.	• Learning by doing is the base.
Pedagogy	• Based on delivery of information.	• Learning by doing based on engagement of students through different activities.
Course delivery	• Lecture method is applied.	• Active learning
	• Assignments and exams are based for summative purpose.	• Cooperative learning and Problem based learning is in practice.
	• No unit planning and unit test.	
Role of the teacher	• Sage on the stage and what is dictated must be followed.	• Assignment is given for practice. Unit test is administered.
Effectiveness of teaching	• Teacher pass information and students learn by rote memorization.	• Teacher is a facilitator and he/ she works with the students.
	• As students learn by rote, effectiveness of methodology cannot be judged rationally.	• Teacher engages students through learning activities.
		• Teachet helps all students achieve learning objectives.
		• Performance indicates mastery of learning objectives.
		• Assessment is done to improve standard of the students.

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Now answer the following questions:

E6. Why most of the teachers do not follow the learner centred approach? Which of the following is/are the answer(s) to the above question?

i) They lack required knowledge and skill competencies to plan for classroom transaction following the approach.

ii) They are not willing to give up the habit of traditional approach.

iii) Learner centred approach is difficult to follow.

2.2.4 Competency Based Approach

When you are transacting any topic in the classroom, you may ask yourself, "Have the students acquired the knowledge, understanding and the skills that are expected from learning the concepts from the topic?" Well if the expected learning outcomes are spelled out in concrete terms, then we can not only plan how to teach or facilitate students' learning in order to attain the goal but also assess and find the answer to the above question.. Such outcome based approach to education is often called '***competency based education'***.

But what is '**competency**'?

– There is no unique definition of the term. Given below are some statements. Read them carefully.

– Competency is the essential skill, knowledge, attitude, and behavior required for effective performance of a real-world task or activity.

– Competencies are essential skills that one needs to be a successful learner.

– Competency is a skill performed to a specific standard under specific conditions.

– A "competency" in its most generic form is any underlying characteristic an individual possesses and uses which leads to successful performance.

– A 'competency' is a clearly defined and measurable activity (cluster of related knowledge and skills) accomplished by an individual.

From these statements what can be concluded regarding the nature of competency?

- Competency refers to some specific essential skill, knowledge, attitude and behaviour which one can achieve. It is some characteristic or ability an individual can possess for successful performance (*achievability*).
- It is clearly defined and hence, can be measured (*measurability*).

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- The wording of the statement of competency is such that it can be clearly understood by everyone concerned including the teacher and the learner (*communicability*).
- It can have different standard or level depending on the characteristic levels of the learner (*appropriateness*).

Here are some examples of the competencies at the primary school level:

Language competencies:

– 'Speak with correct pronunciation.' (Cl.III)

– 'Read print and handwriting freely.'(Cl.V)

– 'Take dictation with all punctuation marks.'(Cl.V)

– 'After reading a text, be able to answer questions using 'because' and/or 'since'.' (Cl.IV)

Mathematics competencies:

– 'Counts from 1-20 using objects and pictures.' (Cl.I)

– 'Uses unitary method to solve simple daily life problems.' (Cl.V)

– 'Finds average height from the given data.' (Cl.V)

– 'Draws angles of different measures with the help of a protractor.' (Cl.IV)

Environmental Studies competencies:

– 'Shows due courtesy to elders, peers, etc. in the family and among the relatives and neighbours.' (Cl.I)

– 'Lists the occupations engaged in producing various articles of daily need.' (Cl.III)

– 'Identifies distribution of main physical features on map and describes them.' (Cl.V)

– 'Conducts simple experiments to purify drinking water.' (Cl.IV)

Are you confused by the two key terms used in competency-based education namely *'skill'* and *'competency'*? .

Well, *skill* refers to a task or group of tasks performed to a specific level of proficiency which often use motor functions and typically require the manipulation of instruments and equipment. Some skills, however, such as *'adding correctly and quickly'* and *'appreciating the need for orderly behaviour at home, school, and public places'* are knowledge- and attitude-based.

For attaining *competency*, mere acquisition of skill in not sufficient, one has to perform at a prescribed level of efficiency. In other words one has to attain mastery (high

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standard of performance) in the skill in order to acquire competency in the respective skill. For example, we may fix a standard for attaining mastery in adding two 2-digit numbers for class III students like *"can accurately add two 2-digit numbers without carrying over in at least 80 percent of tasks within a stipulated period of time."* If a test of such addition with 20 items(each carrying 1mark) is given to the students of that class, then students answering more than 16 items (or acquiring 16 marks) shall be deemed to have attained mastery level (or competency) in the particular skill.

Unlike the traditional teacher-centered approach where coverage of course within the stipulated time is given importance, in a competency-based approach, the unit of progression is mastery of specific knowledge and skills. It is nearer to the learner-centered approach since it aims at attainment of mastery by nearly all individual students in a particular class.

If you decide to adopt competency based approach, you need to take care of the following:

- Prepare the list of statements of competencies to be achieved (for a specific class and in a particular subject) much before you start any lesson. The statements are to be carefully constructed so as to make the teaching-learning procedures and the assessment more definite.
- Arrange these competencies which are interrelated in order of increasing difficulty. Learning is seen as a continuum in which the learning units are sequenced hierarchically and a student has to progress step by step and cover the cluster of competencies. Unless a student achieves one competency he/she cannot move to the next competency.
- Decide the criteria to be used in assessing achievement and the conditions under which achievement will be assessed along with the levels of mastery.
- Use a variety of instructional techniques and group activities that would facilitate the students to attain the competencies. Such an instructional program provides for the individual development and evaluation of each of the competencies specified. Here the target is the attainment of competency. Therefore, multiple methods or materials suitable for the students to attain the mastery are to be employed.
- Use texts, media, other sources and real life materials geared to targeted competencies.
- Always take into account the participant's knowledge and attitudes while you are assessing any competency but remember that actual performance of the learner on the competency is the primary source of evidence for assessment.
- Allow the students to progress through the instructional program at their own pace by demonstrating the attainment of the specified competencies.

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- Provide students with immediate feedback on assessment performance thus enabling them to take corrective measures or additional efforts to attain the competencies at the mastery level based on the feedback.
- Have student demonstrate mastery of specified competency statements and allow the student to continue in the program until he/she demonstrates mastery.

Minimum Levels of Learning

As a follow up of the recommendation of the National Policy on Education 1986, ***Minimum Levels of Learning (MLLs)*** *were laid down for primary school level in three school subjects i.e. Language, Mathematics and Environmental Studies for the grades I to V. The MLLs were spelled out in terms of competencies arranged in a hierarchical manner linking the subject areas across the grades. The mastery on each competency was required from each student before moving to the next competency in the hierarchy. Therefore, mastery learning strategies employing various methods were recommended with the aim of attaining the minimum level as defined by the competencies. For attainment of each competency, the cyclical method of 'Plan-Teach-Test-Reteach-Retest' is followed till the child attains the competency at the mastery level.*

The MLL programme continued in 1990s and subsequently lost its importance for several reasons. But, the use of competencies in classroom learning and competency based assessment still continues (NCERT, 1991).

On the basis of what you have read so far answer the following:

E7. State at *least* three differences between teacher centred approach and Competency Based Approach?

E8. Which of the following is NOT a characteristic of Competency Based Approach?

A) The students are practicing the multiplication table chart.

B) Individual students are learning at their own pace.

C) They are taking peer assistance in the group.

Give at least one reason in support of your answer.

Usefulness of Competency Based Approach

– The competency based approach keeps the learner away from rote memorization.

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– What the students learn today cannot be forgotten tomorrow as competencies are achieved by the students at the level of mastery under your guidance.

– The assessments of competencies are directly linked with the objectives of learning experience and are expected to be continuous and competence based.

– The assessment results can be used for further improvement of the students. Remedial coaching is helpful for the low achievers and enrichment programme for the high achievers. Since, it aims at mastery of skills by each individual it caters to the learning needs of all categories of students.

– Suitable activities like storytelling, role playing, dialogue, practice riddle, word play, magic, quiz and puzzle help the students to achieve the competencies in a learner friendly ways.

– Teaching-learning process is joyful and interesting in this approach.

Limitations

- The content knowledge of the teacher is very important to help the students achieve the competencies. If the teacher is not proficient the approach may not work.
- The learning climates in all schools are not equally conducive for optimizing learning and as such not equally effective for attainment of competencies within the stipulated time.
- As pace of learning varies from student to student, it is very difficult on the part of the teacher to help the students to achieve the competencies within the stipulated time.
- All teachers are not equally competent enough to provide remedial treatment to the low achieving students. Achieving competencies at the level of mastery is a crucial task for the students and especially for the first generation students.
- As competencies are broken into detailed sub-competencies, it is observed that all the details do not find places in the assessment.
- Designing activities and test items for the detailed list of competencies/sub-competencies may not be always practicable.

Now check your progress before moving ahead:

E8. Indicate which of the following statements are correct and which are wrong:

a. Competency is a learning objective.

b. All the competencies are not achievable.

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c. Competencies can be evaluated.

d. In Competency Based Teaching the teacher uses varieties of TLMs and conduct activities.

e. There is no need of remedial teaching in competency based approach to learning.

f. Competencies are achieved at the level of mastery.

g. Activities are key to achieving competencies.

E9. Give four examples of competency statements on any subject in primary classes.

2.2.5 Constructivist Approach

Do you think children start learning only in the school? If you believe that learning starts in the school, then do the following activity.

ACTIVITY – 2

Prepare a list of activities a child of 6 years of age usually does just before coming to school.

How does he/she learn all these activities? Does anyone teach him/her to learn all these things or he/she learns by himself/herself? How could he/she learn without anybody's help?

Let us consider a situation:

Situation7: *Once Mr.Rabin, the english teacher told a story in the class and then he repeated it for the second time. When he asked the students to reproduce it, seventy five percent of the total students could do that. Is there any newness? Does it encourage thinking?*

But when he asked the students if they can tell a story, hardly two or three students raised their hands. Then he showed them a picture and hung it on the wall so that all could see it very clearly. He then asked them to write a story using the picture. After 15 minutes some students could write stories. But no two stories were alike. All the stories were different

Then he gave some key words and asked the students to write a story using the words.

Again the students wrote different stories by themselves.

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How was it possible to write different stories based on the same elements (picture or key words)? The students have heard stories from their grandparents, parents and uncle. When they started to write a story, they recalled their previous experience. They made a link of the prior knowledge, with the new knowledge, tried to make sense of it to reformulate new ideas.

In a teacher centered class room the students are passive listeners. But it does not happen in a constructivist class room. Constructivist learning and teaching considers student as an active learner and teacher facilitates the process of knowledge construction by the students.

As the constructivist class room is learner-centred, maximum freedom is given to the students.

On the basis of the above discussions answer the following questions.

E10. Which one of the following is not based on the constructivist approach?

i) Learner's previous knowledge plays an important role in the construction of knowledge.

ii) Learning is an active meaning making process.

iii) A learner's strong memory power is the basis of his construction of knowledge.

As a teacher you use your own style and methodology in your class. You also tell stories to the students. Have you ever tried to develop a story with the help of your students?

Here is an example to illustrate how students can also develop stories.

Once in the class room the teacher wrote some words on the black board. His purpose was to build a story with the help of students. He wanted the students to tell a story using the words. He asked if any one of them can start the first sentence. When the first sentence was stated by a student, the teacher asked individual students to speak out a sentence which links to the previous sentence. Within a very short time twenty sentences were written on the black board. Then the teacher changed the direction of the story and added two sentences of his own. Again he asked the students to continue. After five sentences were added to the story he asked the students if they wanted to conclude the story. When the students agreed to stop there, then he asked the individual students to give a title to the story. Interestingly there was not a single title, but the students came out with a number of titles.

Now answer the questions on the basis of above example.

Who started the story?

What did he do to extend the story?

How was the story built?

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When twenty sentences were written, what the teacher did ?

Who mostly contributed in the story development exercise?

Who gave support to the students?

Did the teacher assist the students from beginning to the end?

Have you any experience like this?

Is this exercise interesting?

Doesn't it differ from telling a story from memory or reading a story from a book?

ACTIVITY -3

Here is a story. Use it in your classroom and discuss in the following manner.

Lalita was a little girl. She was studying in class V. She was not very clever, but she was sweet and good. Everyone loved her. One day Lalita's school teacher said. "I am going to give a special prize this year". "What is the prize for" asked all the pupils? "I am not going to tell you" said the teacher; "you must try to do your best at everything. At the end of the year I shall tell you what the prize is for".

Then the story will be extended in form of conversation among the students. At last the teacher declares the reason for giving the special prize. (Last sentence of the story)

After the story is told the following questions will be asked and further activities will be taken up.

1. *Which characters do you like and why?*
2. *Identify yourself with the character you like and prepare dialogue taking another characters.*
3. *Let the student deliver the dialogue in the class.*
4. *Alternate dialogues in the group.*

From the above activity, you will observe that it is a class room where students work in groups, interact among themselves and the role of the teacher is a facilitator. The students connect their past experiences with the new experiences. Since they worked in groups, there is exchange of ideas. The students under this situation pass through the following stages:

I. Relate their previous experiences to the new situation.

II. Make sense of the story.

III. Contribute their own ideas.(new)

IV. Ask questions to one another.(inquire)

V. Think why they liked the character.(judgment).

Notes

All these processes are aimed at construction of knowledge and hence the approach adopted is known as *Constructivist Approach.*

Constructivist Approach to teaching and learning is based on a theory called *constructivist learning theory*. According to this knowledge is built upon the prior knowledge of the learner. *Students actively construct their own knowledge by connecting new ideas to the existing ideas* on the basis of materials or activities presented to the students.

Constructivism

Constructivism is a school of philosophy whose genesis is traced to Giambattista Vico an Italian philosopher of early eighteenth century. In recent times it has emerged as a philosophy of education largely due to the contributions by the Swiss psychologist Jean Piaget (1896-1980) and the Russian psychologist Lev Vygotsky (1896-1934).

Radical Constructivism based on Piaget's Theory of Cognitive Development stresses that knowledge is actively constructed by the learner, not passively received from the environment. 'Coming to know' is a process of adaptation based on and constantly modified by the learner's experience of the world.

Vygotsky's work on cognitive development inspired the Social Constructivism which emphasizes on the construction of knowledge through individual adaptation of environment supported by the social interaction. This social interaction may be in the form of peer activity, interaction with teachers, parents, and other adults.

Here are some activities encouraged in constructivist classrooms:

- *Experimentation*: Students individually perform an experiment and then come together to discuss the results in the group.
- *Project Work*: Students choose a topic as a project and complete the project and present their findings to the class.
- *Field Trips*: This allows students to put the concepts and ideas discussed in class in a real-world context. Field trips are followed by classroom discussions.
- *Visuals*: These provide visual context and thus bring another sense into the learning experience.
- *Class Discussion*: This technique is used in all of the methods described above. It is one of the most important aspects of constructivist teaching methods.

On the basis of the above characteristics answer the following question:

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E11. Which of the following does not come under constructivist approach?

a. Students make meaning from their own experiences.

b. Assessment of outcome of learning is more important than the learning process.

c. Teacher facilitates learning rather than instructing children to learn.

Give reasons for your answer

In the constructive class room, students work primarily in groups where learning and knowledge are interactive and dynamic. One cannot find it in a traditional class room in which students work alone. In that situation learning takes place through repeated practice and the students mostly depend on the text book. But in constructivist class room students conduct experiments and do some projects work. They start the work individually but come together in a group to discuss the results. They also go outside the class room to observe something in the school garden or in a museum. After recording observation they come with their individual observations which they discuss in the group. Group discussions play a very important role. The activities are based on debate, intellectual participation and drawing conclusion.

Another example of learning task:

Language: English, Class: IV

Problem: *Take a passage from the text book or supplementary reading materials. Ask the students to extend the paragraph by connecting meaningful sentences to it.*

Method: *the problem is to be solved by each individual. The students would then present their completed passage in the class. It will be discussed. The composition skill of the students will be evaluated.*

Paragraph

Once there was a lion who was the king of the forest. He was a very powerful animal. All the animals were afraid of him. They sent a new animal to him for his daily food. One morning the lion decided to hold a royal court. So he asked the jackal to be his minister. He selected the old leopard as his body guard. In the meeting the lion agreed to behave with all the animals like friend.

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(Ask the students, one after another, go on adding one sentence each extending the story.

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After the completion of the story, ask the students to enact the story and continue discussion among the student on the role play according to the characters. Teacher may help the students to prepare dialogue cards. At the end ask some open ended questions.

Observe the performance of the students. Among the students whose performance is satisfactory praise them.

Do you notice the ways through which students construct knowledge?

Characteristics of Constructivist Approach:

If one observes a constructivist class room she/he shall see the following things.

- The students are actively involved in learning.
  - The environment is democratic.
  - The activities are interactive and student centred.
  - The teacher facilitates a process of learning in which the students are encouraged to do the task actively as responsible members.
  - Opinion, ideas given by the students are accepted and honoured.
  - Students make meaning from their own experience.
  - Process is as important as product
  - Focus is on learning, not teaching.

Constructivist Assessment: In a traditional class room after completing the teaching and learning, the teacher presents some questions to answer and he/she always expect correct answers. In a constructivist learning situation the process is as important as product. The assessment is not only based on tests but also observation of students work, how they interact, how they draw conclusions on a subject. Some of the assessment strategies include the following:

- *Oral discussion*: The teacher writes a focus question on the black board for open discussion on the topic. When the students take part in the discussion he/she observes the performance of individual students.
- *Mind mapping:* In this activity the students list out and categorize the concepts and ideas relating to a topic.
- *Through hands on activities* the students are encouraged to interact with the environment or manipulate a material. Teacher records the students' performance using a check list or an observation schedule.
- *Pre-testing* is done by the teacher to know where the student is in respect of learning lessons before he is exposed to new-learning.

Relevance: Children learn more and enjoy learning more as they are actively engaged in the teaching-learning process. They are not passive listeners in the class room. Stress is given on thinking and understanding instead of allowing them to learn by role. In a constructivist class room each learner thinks to be a part and parcel of the learning

activity. It is because each one contributes his/her idea to the learning activity. So, students have ownership what they learn. Now think do such things take place in a traditional class room?

Limitations: The teachers are not competent enough to structure a class room based on constructivist principles. In absence of proper guidance it will not work. If the teacher is not proficient, it will not work and if the teacher is proficient but students are at a lower level, the purpose of the constructivist class room may be defeated.

2.3 COMPARISON OF APPROACHES

A brief comparison has been made on the three major approaches to learning and teaching in the table given below:

Indicators	Teacher Centered Approach	Learner Centered Approach	Constructivist Approach
Purpose	The teacher's approach is to complete the course in time.	Each and every child should learn by doing a task.	Student empowerment is the central point. Constructivist class rooms help the students to construct knowledge on their own.
Style of learning and teaching	Only one style of learning prevails. The teacher passes the information and students cram the same.	Teacher provides learning situations that give children an opportunity to learn through observation, exploration and question.	Learning task is completed by their own ways. Collaborative learning works there.
Practice work	The textual questions are answered and learnt by rote.	Children participate in different activities.	The class is fully interactive. Interaction takes place among teacher and student, students and teacher, students and students.
Transactional modality	One-way transmission is done; students passively sit and listen to the teacher.	Children interact with the teacher and with the peers in course of learning and teaching process.	The students perform tasks in groups and the teacher acts as facilitator.
Sharing	There is no sharing of ideas among the students. The students rotate round the ideas given by the teacher. Group work is rarely done.	Children work both individually and also in groups through discussing, sharing and co-operation.	The students do learning tasks individually and present in the group through sharing of ideas they construct knowledge.
Classroom environment	There is little freedom to raise advice and the students are suppressed.	The class room environment is democratic.	The class room environment is democratic.
Questioning	They never ask question as they are not allowed to do.	The students are free to ask questions.	Students are encouraged to ask questions and they are given a paragraph to frame questions.
Project work	The students are not acquainted with project work.	The students are given project work to perform with help of the teacher.	Individually the students do project work given by the teacher.

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2.4 LET US SUM UP

In a classroom situation, the total learning and teaching processes involving students, teachers and subject matters constitutes an approach to teaching and learning. Each approach has its usefulness and limitations and is dependent on how we think the approach fit best to our requirements. In this unit four such approaches viz., Teacher-Centered Approach, Subject-Centered Approach, Learner-Centred approach, Activity Based Approach, Competency Based Approach and Constructivist Approach to learning and teaching have been discussed.

- The traditional teacher-centered approach is entirely dominated by the teacher who has a decisive role in framing curriculum, transacting in the class and determining every aspect of the teaching learning process.
- The completion of the subject, especially those prescribed and included in the text books are paramount in the subject-centered approach. This approach very often encourages rote learning in order to complete the course in time neglecting all other learning outcomes.
- All round development of students especially learning is the ultimate goal of the learner centered approaches. Activity based learning is one example of this approach which is now being adopted in large number of schools.
- Attainment of competencies or the learning outcomes is targeted through multiple modes and methods through competency based approaches.
- Constructivist approach is based on the belief that the student as a learner can construct his/her own knowledge with the help of his/her previous experiences and through interaction with the social environment around him/her. The teacher has the important role as the facilitator of learning.
- All the approaches have relative strengths and limitations. The teacher has to judge the appropriateness of the approach to be adopted considering the requirements of the students and the prevailing climate of learning.

2.5 MODEL ANSWERS TO CHECK YOUR PROGRESS

E1. Situations 1 and 2.

E2. Situation 3.

E3. B

E4. A and C

E5. b and e

E6. i and iii.

E8. A

E9. a,c, d,f,and g are correct and b,e are wrong.

E10. iii

E11. B

2.6 SUGGESTED READINGS AND REFERENCES

- Department of Education (2004). *Learning without Burden: Report of the National Advisory Committee appointed by the MHRD, Govt. of India*. New Delhi:
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2.7 UNIT-END EXERCISES

1. Compare the Subject-Centered Approach and Competency-Based Approach.
3. Compare the Teacher-Centered Approach and Constructivist Approach.
4. What are the advantages of the Learner-Centered approach? What are its limitations?
5. What are the major types of assessment in the constructive approach?

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UNIT 3 METHODS OF LEARNING AND TEACHING

STRUCTURE

3.0 INTRODUCTION

In the previous unit you have learnt the concept, process and different approaches to teaching and learning. However, to make the teaching-learning effective in classroom transaction process there are several means and techniques which being a teacher you may be familiar with. In this Unit different techniques and methods used in classroom teaching-learning process are discussed with a view to highlight how these can be made contextually appropriate and relevant.

For understanding the concepts and methods discussed in this Unit, you will need approximately *14 study hours*.

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3.1 LEARNING OBJECTIVES

After completing this unit you will be able to:

- List the characteristics of effective methods used in teaching-learning situation.
- Categorise methods of classroom transaction from a set of given situations.
- Describe procedure and steps of instructional methods and student-centered methods in detail.
- Use/adopt different methods appropriate to specific teaching-learning situations.

3.2 EFFECTIVE METHOD OF TEACHING-LEARNING

A specific teaching-learning situation is narrated below. Please go through it and try to find answers yourself to the questions that follow it.

Situation 1: *Mr. Subir is a science teacher. He was teaching Science in Class VI for the last three months. On different occasions, he tried his best to make his lessons interesting to the students. He brought different types of materials to the classroom, conducted several experiments, encouraged students to observe the natural phenomena and used several such other activities to make students learn effectively. He was curious to know how far he has been successful in his efforts. He was not sure whether the methods he was employing were really beneficial to the students. A number of queries as given below came in his mind:*

- *Was he able to:*
  - *generate students' interest in learning Science spontaneously?*
  - *cater to the individual needs of the students?*
  - *match the mental ability of the students?*
  - *develop students' self confidence and self discipline?*
  - *encourage creative thinking of the students?*
  - *help the students to organise their knowledge ?*
  - *encourage students to participate more in the learning process?*
- *Whether the students learn better by doing something?*

You may have used several methods in your classes. With respect to any method that you have used recently, reflect on the above questions and judge the effectiveness of

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your teaching. This will help you to have an idea about the ***characteristics of an effective method of teaching and learning*** which are as follows:

- Creates interest in children so that they will participate actively in the teaching learning process and can continue to learn more.
- Matches the mental ability and needs of the students.
- Gives emphasis on students' experiences.
- Provides a scope for peer learning.
- Provides a scope for learning something by doing.
- Encourages students to think independently and construct knowledge of their own.
- Develops creative thinking of the children.
- Provides a scope for development of life skills in children.
- Flexible i.e., instead of following a single method for teaching of all topics, different methods may be followed during the teaching learning process.
- Inexpensive.

3.2.1 Classification of Methods

Let us consider two different classroom situations.

Situation-2: *Mr. Ramesh was teaching Science in class -III .The topic was on 'Pollution of water'. The students were sitting in rows in the classroom. Mr. Ramesh was standing in front of the students and explaining the causes of pollution of water. While explaining, he showed different pictures to indicate the causes of water pollution at different sources. He never tried to find out whether the students could make any sense out of that. Then he asked some questions to the students. Some of the students were able to answer the questions. At the end of the class he gave homework from the exercise given in the textbook.*

Situation-3: *Ms. Sarita was teaching the same topic in other section altogether in a different way. She divided the students in different groups and asked each group to sit in circle. She provided pictures to each group indicating causes of pollution of water at different sources. Then she instructed to the students to observe the pictures and write down the causes of pollution of water at different sources by discussing among themselves in groups. Ms. Sarita was watching whether each student was participating in the discussion or not. Then the group leader of each group presented the theme assigned to them. While one group was presenting, the other groups were listening to them and after presentation they were giving their opinion. Finally, Ms. Sarita consolidated the theme with the help of the students.*

Write down the role of the teacher and the role of the students in both the situations.

Situation 2		Situation 3	
Role of the teacher	Role of the students	Role of the teacher	Role of the students

Now answer the following questions:

- In which situation is the teacher's participation more focused?
- In which situation is the students' participation more emphasized?

In the first situation, the teacher performs everything such as: explaining the theme, using the teaching learning material i.e. pictures, asking questions etc. Less importance is given on students' participation. On the other hand, in the second situation, the teacher acts as a facilitator of learning. She guides and helps the students at the time of their need. The students are active participants in the teaching-learning process.

So, on the basis of the role of the teacher and the student in the teaching-learning process the methods can be classified into two major categories, i.e. ***Instructional Methods and Student Friendly Methods***. The first situation is the example of instructional method and the second situation is the example of student-friendly method. Further, these two methods can be classified as shown in the tree diagram given below:

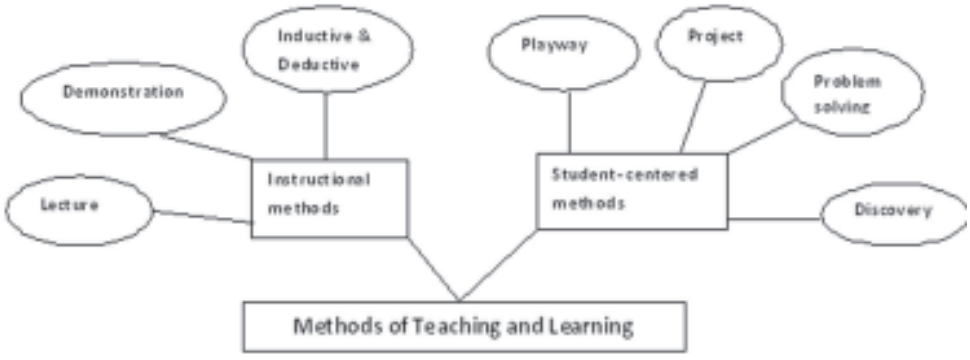

Fig 3.1 Two Categories of Methods of Classroom Transaction

3.3 INSTRUCTIONAL METHODS

We all have experience about instructional methods as very often we teach or instruct the students in the class. These methods are very common to us. Sometimes we explain

facts, concepts, theories and principles. Sometimes we explain with demonstration of certain pictures, charts, models, and experiments and sometimes instruct our students to perform some activity like respond verbally or in writing to question we pose to them. In these methods as a teacher, we are more active in teaching and instructing while the students are more passive and acting in a limited way only when they are directed by us. Some of the examples of instructional methods are:

Lecture method, Inductive-deductive method, Discussion method, Lecture-demonstration method.

3.3.1 Lecture Method

Read the following situation.

Situation 4: *Ms. Lilima is teaching a Science topic i.e. 'Our Food' in class IV. She is explaining different types of food we eat and their components .She is writing the main points such as protein, carbohydrates, and fats on the blackboard. The students are listening with attention and writing down the main points written on the blackboard. After explaining the topic she starts asking some questions to the students. Some students answers the questions while some remain quiet. She corrects the wrong answers of the students where necessary and praises those who give correct answers.*

What method is Ms. Lilima following?

Well, she is following the *'Lecture Method'*.

As a student you have such experiences in your school and college. As a teacher you also have some classroom experiences where you teach your students by this method. Reflect on your experience and list the activities of the teacher and the students in a lecture method in a classroom situation.

1. ……..
2. ……..
3. ……..

C***haracteristics of lecture method***:

- The teacher instructs or gives lecture on a topic for all most the complete time in the period.
- The teacher provides information, concepts, facts, events, theories, laws, principles etc.
- Sometimes he/she uses blackboard during his / her lecture and asks questions to the students.

- Students are passive listeners. Their activities during the lecture period, at best, is taking down some notes and responding to occasional questions of the teacher.
- Within a single period, the teacher may unwittingly present more information than students can absorb, and the method provides no accurate means of checking student progress. Teacher presents the subject matter at his own speed.
- Content is presented as a whole and the students learn through listening and memorization.

ACTIVITY-1

Write the merits and demerits of lecture method. Discuss and share the same with your fellow students and tutor at the study centre.

This method can be successfully used in imparting factual information, explaining the theoretical points which cannot be demonstrated, summarizing and recapitulating certain topics etc. in higher classes. But this method seems to be not relevant for teachers and students of elementary classes.

3.3.2 Demonstration Method

Recall the situation of a practical class in a science laboratory and write down what you do there from beginning to end.

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It is evident that you demonstrate some experiments using some apparatus and materials while simultaneously discussing about the experiment with the students.

As a teacher you know that various simple experiments have been presented / written in the science textbooks for elementary level. These experiments can also be done in the classroom and explained simultaneously. This way of teaching is known as *'Demonstration method'* or *'Demonstration-cum-discussion method'* or sometimes *'Lecture-cum-Demonstration method'*.

Demonstration method is a teacher- centred method as the teacher demonstrates the pictures/ charts/models/experiments and explains the principles, concepts involved in these demonstrated materials or processes. The students observe the demonstration shown by the teacher and some of them participate in answering the questions asked by the teacher and draw conclusions.

Let us consider another situation.

Situation 5: *Ms. Sheela, the science teacher, was to teach 'Absorption of Water by Root' in Class V. For this, Ms. Sheela thought of doing a simple experiment and collected the required materials like flowering twigs (e.g. balsam plants), glass tumbler, water in the tumbler, and ingredient for colouring water. She demonstrated the experiment by inserting the root of the flowering twig in red coloured water kept in the glass tumbler. She did the experiment by explaining its process simultaneously. During her demonstration, she wrote some key words and drew a labeled diagram of the experiment on the blackboard. Then she asked the students about what they observed when the roots of the twig was dipped into red coloured water for some time and what conclusion they arrived at from this experiment.*

ACTIVITY-2

From the above example list the steps involved in the Lecture-cum-Demonstration method. What do you think is the criteria for good demonstration in the classroom?

Steps involved in the demonstration method :

a. Planning

b. Introduction

c. Demonstration

d. Blackboard usage

e. Concepts compilation

For successful demonstration, several criteria are to be followed in each of these steps.

- ***Planning:***
  - Ensure whether the lesson is suitable for this method.
  - Collect necessary tools, equipments, and materials for demonstration.
  - Rehearse the experiment before demonstrating before the class as it will help to build confidence to demonstrate.
  - Be ready with explanatory notes and questions to be used during and after the demonstration.

Notes

- ***Introduction:***
  - Motivate the students to arouse interest in observing the experiment keenly and to accept new concepts after the demonstration.
  - Introduce the lesson as a 'problem' or an issue, so that the students understand the importance of the lesson.
- ***Demonstration:***
  - Keep the curiosity of the students alive during the demonstration.
  - Take care to ensure that the students are able to follow the demonstration.
  - Relate the demonstration with the life experiences of the students.
  - Handle the instruments safely, and arrange them in their respective places for the demonstration.
- ***Blackboard Usage:***
  - Write the objectives clearly on the black board to make the students understand the significance of the demonstration method
  - Draw relevant pictures and write the key concepts and the results of the demonstration immediately on the black board.
  - Ask the students to write the key points, draw the diagram and finally the results in their notebooks.
  - Check their notebooks while they are writing.

Besides the above mentioned points, you need to take care of the following aspects:

- Do tell the purpose of the demonstration to the students but do not tell the inferences or conclusions in advance.
- Seek the help of students in arranging, and performing the experiment. Quality of demonstration is better when you along with your students actively participate in it.
- Be well versed in the handling of apparatus and arrange those for the demonstration in a definite order which the students can clearly observe.
- Check that the demonstration is clearly visible to all students in the class.
- Ensure that the demonstration is simple and according to the mental level of the students.
- Supplement the demonstration with other teaching aids to make it more real and interesting.
- Ask reflective questions to stimulate the interest of the students.

Think for a while and answer the following:

E1. Under what conditions the demonstration method is suitable?

Usefulness of Demonstration Method:

Demonstration method is one of the most preferable methods of teaching because of its multiple benefits.

- It is cost effective. As the teacher demonstrates, it becomes more economical and time saving.
- The teacher explains the concepts during the experiment and so the students clearly understand the concepts of the lesson.
- During the demonstration the doubts of the students are cleared by the teacher then and there.
- During the demonstration, students get opportunities for the following:
  - Observation
  - Note making
  - Questioning
  - Drawing
  - Involving in Experiments
- It reduces distraction and promotes sustained attention among the students and paves way for useful learning.
- It stimulates learning and attempts to retain student interest.

ACTIVITY - 3

(a) Go through the elementary level science text book for any one class and list out the concepts which can be taught by using lecture-cum – demonstration method effectively.

(b) From your list take any one concept or a few concepts and describe how you will teach those by adopting this method

3.3.3 Inductive and Deductive Method

All of us learnt some basic formulae in mathematics in our school. Do you remember some of those formulae? Look at some of the formulae given below and add more formulae that you remember to the list.

- The formula for calculating the perimeter of a rectangle is $2(a+b)$ where a and b are the length and breadth of the rectangle respectively.
- The sum of the angles measures of a triangle is equal to two right angles.
- $V=s/t$ where V =speed , s = distance covered, t= time taken to cover the distance.

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As a teacher you or your colleagues might have been teaching these formulae in elementary classes. How do you teach these formulae? Find out from your colleagues who teach mathematics and how they teach these formulae.

There are some methods for teaching these formulae /rules / principles. Let us discuss these methods with examples.

Consider a classroom situation as given below.

Situation 6: *Mr. Manoj teaches Mathematics in class-VI. One day he taught the geometrical concept that 'if two sides of a triangle are equal then their opposite angles are also equal'. For this at first he asked each students to draw three isosceles triangles ABC in their note book such that AB=AC. For first triangle AB=AC=6cm, for second triangle 'AB'='AC'=8cm and "AB"="AC"=10cm. The students were then asked to measure the opposite angles of the equal sides of each triangle respectively and to write down the measurement of each angle in a table given below.*

Name of the triangle	*Angle B*	*Angle C*	*Remarks*
1st triangle ABC *2nd triangle A'B'C'* *3rd triangle A"b"c"*			

On measurement the students found the opposite angles of equal sides are equal in each triangle. From this they concluded that if the lengths of two sides of a triangle are equal then the measures of their opposite angles are also equal.

This method of teaching which Mr. Manoj followed to teach a mathematical concept is known as *Inductive method*, or *Method of Induction*. In this method one proceeds from particular events to generalized conclusions. A formula or generalization is arrived at through a convincing process of identifying the similar elements and the conditions

of these similarities in a number of concrete cases. In the above example, the elements of similarities are the measures of opposite angles in a triangle and the condition is that the triangle is an isosceles triangle and the concerned angles are the opposite angles of the two sides of equal length.

Let us consider another situation:

Situation 7: *Ms.Meena was teaching the same concept in geometry as Mr.Manoj. At first she stated the mathematical relationship – "if two sides of a triangle are equal then their opposite angles are also equal". Then she explained the relationship between the measures of the two angles opposite to the equal sides of an isosceles triangle with the help of certain examples. When the students got the idea of the relationship then she gave the following problems to the students to solve using the relationship just explained to them.*

1. *If in a triangle ABC, AB =AC and $\angle A=70°$ then find out $\angle B$ and $\angle C$.*
2. *In a triangle PQR, PQ =PR, and $\angle Q = 65°$, then find out $\angle P$ and $\angle R$.*

The students applied the formula and solved the problems.

This method of teaching which Meena followed is known as *Deductive Method* or *Method of Deduction*.

In this method, the teacher uses the established formula, principle, or generalizations to solve the problem. The students proceed from general to particular, from abstract to concrete. In other words the facts are deduced or analyzed by the application of the established formula. Hence, the formula is accepted by the students as duly established fact.

ACTIVITY - 4

Select any one concept from the elementary Mathematics textbook and describe how it can be taught through both inductive and deductive methods.

Before continuing, answer the following:

E2. What are the differences between Inductive and Deductive methods of teaching?

E3. Some statements about inductive and deductive methods are given below. Read the statements carefully and write 'I' for Inductive Method and 'D' for Deductive Method against the statement concerned.

a) It starts with formulae / rules / concepts etc and ends in solution of the problem.

b) It starts with examples and ends in formulae /rules / concept.

c) It encourages actual observation particular instances and thinking

d) The method is suitable for lower classes of primary education

e) This method is applicable in solving problems

f) It is more time consuming.

From the above discussion, we can conclude that induction method leads the student to draw a conclusion after generalizing the relations observed in the concrete events/ objects or statements. Whether the conclusion drawn through induction is correct or valid cannot be verified by employing induction again. Rather it can only be ascertained by deduction. Through induction you help your students to discover the relationships or new concepts and through deduction you help them to verify the truth of the discovered relationship or concepts. Thus for effective learning both the methods should be used together as one is not complete without the other.

3.4 STUDENT FRIENDLY METHODS

Have you ever attended any teachers' training programme on joyful learning or activity based learning? If yes, do you remember what was focused most in these programmes?

In these training programmes the emphasis is given on the child-centered teaching-learning processes which intend to develop skills and abilities in individual or self-learning and problem solving in the students. In these methods the students learn by solving some real problems they confront in their day-to-day life. The teacher's role is to create a situation in which a problem may develop and help the students to identify issues, come up with tentative solutions, try those solutions and come out with the best possible solution to the problem. Play way, project, problem solving and discovery methods are some examples of student friendly methods. Let us discuss each of these methods in detail.

3.4.1 Play Way Method

All of us irrespective of our age enjoy playing games but a child's world of work is full of play. All children love to play. Play is a natural instinct of children. It is the natural expression of their needs. It develops physical, cognitive, social and emotional growth of a child. But what is the difference between play and work?

Work and play are different. What is 'work' for one person may be a 'play' for another. Maintaining a garden is the work of a gardener for his livelihood; whereas the same work becomes a hobby for a young student to satisfy his/her creative urge. Given below is the differentiation between work and play.

Work	Play
It is considered difficult.	It gives pleasure.
It is imposed by others.	Voluntary acceptance with involvement.
Physical work brings tiredness.	Physical work turns into an enjoyable experience.
More concentration on work makes tired.	More concentration but no tiredness.
It is controlled.	There is freedom.

Here are two activities for you to do:

ACTIVITY - 5

Write down the name of a game you had played during your childhood. List out the rules involved in that particular game. Describe the process of playing that game stepwise. State the points that you learnt from playing the game.

ACTIVITY - 6

List out the concepts in different subjects which children can learn by way of playing. Discuss this with your fellow students in the study centre to add more points to the list.

Concept in Mathematics	*Concept in Language*	*Concepts in Environmental studies*

You can analyze any familiar game and think individually or in groups with other teachers regarding curricular concepts that can be integrated in the game so that the students

can enjoy playing the game and can simultaneously learn the concepts. This way of teaching is known as *"play way method"*.

What elements are there in a game due to which children learn many concepts easily even in your absence? Reflect and list the elements.

……

……

……

……

Compare your list with the elements shown in Fig 3.2 below:

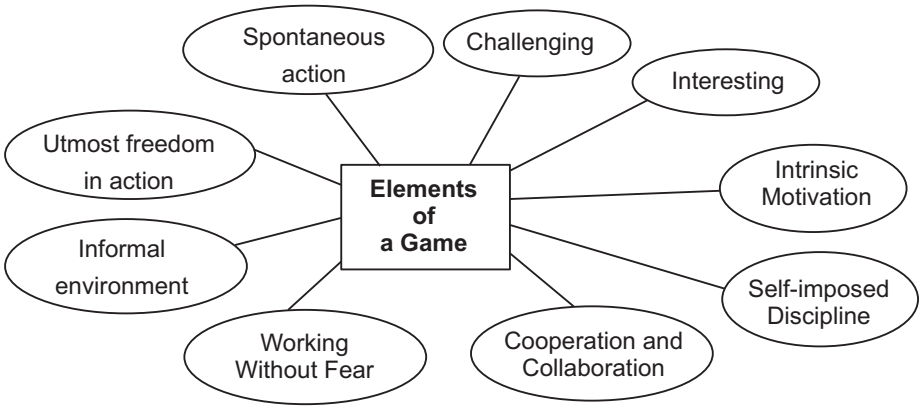


Fig. 3.2 Elements of a Game

Thus we can say that play way method has the following ***advantages:***

- Playing games is a natural instinct with the young children. They not only participate in the games spontaneously, given freedom, they can organize the game effectively.
- Children can create new game; they devise the rules for playing the game and observe strictly the self-created discipline.
- This helps to nurture the creative skills of children along with the development of several life skills like problem solving, leadership, rational thinking, self-expression, communication skills, cooperative learning, group living etc.
- Learning becomes natural, joyful and energizing experience.
- It provides sufficient scope to the children to fulfill their physical, emotional and cognitive needs.
- It helps to build healthy student-teacher and student-student relationships.

Principles of Play-way Method:

Play way method is based on the following principles:

- ***Principle of unfolding innate potentials:*** It is an established fact that a child is born with some innate potentials which unfold as the child grows up provided favourable conditions are available for unfolding of the potentials. If unlikeable conditions are imposed on a child, the growth of such potentials slows down or in most adverse conditions they may not grow at all. Play way method aims primarily at identifying, nurturing and unfolding of the innate potentials of a child.
- ***Principle of natural instincts:*** Everyone is guided by his/her natural instincts. Play is the natural instinct of every child. Anything learnt through play appears natural to the child and he/she internalizes those experiences quickly and effectively. Play way method, therefore, recognizes this natural instinct and is used especially for young students for acquiring new experiences.
- ***Principle of complete freedom:*** A child unfolds his/her potentials and gathers more experience in less time when provided complete freedom in his/her actions. Any restriction imposed on the activity of the child curbs the natural growth. Providing complete freedom to the child is the cardinal principle of the play way method.
- ***Principle of activity:*** Research in education and psychology has established the fact that a child learns better when he/she is actively involved in doing something. Passive listening without any action only promotes rote learning. Through play the child can become spontaneously active.
- ***Principle of fulfillment of desires:*** Every child is driven by his/her inner desires and intentions which he/she may not always be able to describe. When he/she gets sufficient freedom and flexibility, he/she gets unlimited opportunities to act for fulfilling his/her intentions. On the contrary, any external imposition in terms of learning objectives may hinder the natural growth. Play way provides such freedom from any such external imposition.
- ***Principle of pleasure:*** Anything that gives pleasure is easily learnt. Moreover, all the actions of children are driven by the principle of pleasure and pain which means that a child loves to engage in activities that are pleasurable and avoids those which are painful. Therefore, learning through play way is easier, pleasurable and sustainable for longer duration.
- ***Principle of creativity:*** Children love to play but at the same time they get easily bored to play the same game for a prolonged period and look for alternatives and innovations. This desire for change propels them to devise innovations in their play. Thus the early development of the creative potentials of a child comes

Notes

through play and play way method employed imaginatively promotes growth of creativity in children.

- ***Principle of responsibility:*** Play enhances the sense of responsibility among children. In course of play children realize that playing randomly without any rules and discipline is not satisfying whether playing individually or in groups. Therefore, the child seeks others help in devising rules or develop in group and assume responsibility for adhering to rules during play. Thus, through play way method the children learn to be more responsible than through obeying any direct instruction.

Therefore, if you are going to use this method in your class, you have to plan in the initial stage to fulfil the needs of every child of your class and act accordingly in the classroom.

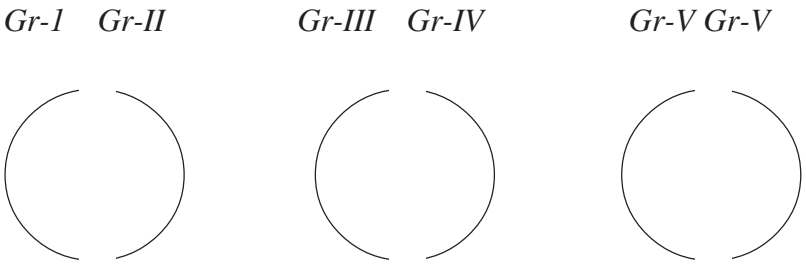
Visualize the two classroom situations given below:

Situation 8: *Ms.Sarmistha, the science teacher was teaching the concept of living and non-living things in class-III. She transacted the lesson step wise in the following manner.*

- *She divided the students into small groups. Each group consists of 4-6 students. Each group was instructed to sit in a circle.*
- *She supplied the picture cards of various living and non living things (teaching learning material) to each group. Children of each group observed the picture cards carefully.*
- *She instructed the students to find out the living things that can move from one place to another by themselves. The students of each group found as many picture cards of living things as they could and handed over the same to the teacher.*
- *With the help of students she counted the correct picture cards identified by each group separately and awarded them points for the correct responses, i.e., one point for each correct response. The total points awarded to each group were written against the respective groups in the blackboard.*
- *She returned the picture cards to respective groups and asked them to continue the game. She instructed them to identify other characteristics of living things in course of playing with cards. The game continued till all the characteristics of living things are identified.*
- *At last she consolidated the characteristics of living and non- living things with the help of the students.*

Situation 9: *Saroj tried to develop the map reading skills in students of class-IV.*

– *For this he divided the students into 6-8 groups. The students of each group were asked to seat in half-circle as shown in the diagram given below.*



Seating arrangements

– *He supplied the atlas and some flash cards which contain the names of some places of India to each pair of groups.*

– *He gave the following instructions:*

– *One group of each pair will show one of the flash cards to opposite group and the opposite group will locate the place in the Atlas in a limited time.*

– *Again the 2nd group of each pair will show a flash card and the other group will locate the place in the Atlas. The game will continue in this way.*

– *He gave one point for each correct item and total points of each group were calculated. The winning group was congratulated.*

Now reflect on the two situations and do the following activity

ACTIVITY - 7

i) *Take any concept of mathematics of any class describe how you will teach that concept in play way method. Discuss with your tutor/ peers at the study centre for feedback and improvement.*

ii) *List the role of teacher in the use of play way method.*

Notes

Compare your list with the list given below:

Role of Teachers in Play way Method:

The teachers

- Help the students to initiate games suggested by them or in developing new games with the involvement of students.
- Create a learning environment to make the children feel that learning is a joyful experience.
- Prepare relevant teaching learning materials after designing the learning activities.
- Arrange the learning activities from simple concept to complex.
- Be a guide, supervisor and a leader for the students during the learning process.
- Evaluate the students through play way activities. Evaluation should not be ignored.

Note that Montessori, Kindergarten teaching methods were developed based on the play way Method. However there are some limitations too as mentioned below.

Limitations of Play way Method:

- This method is considered to be more suitable to the pre-primary and primary level students,
- The contents and concepts of all subjects cannot be introduced through this method.
- Sometimes a few children may give more importance to playing games than learning through play way method.

Answer the following to check your progress:

E4. Which principle of play way method helps in cultivating self-discipline?

E5. Why play-way is considered more suitable for early stage of school education?

3.4.2 Project Method

Have you ever done any project work in your school? How did you do it? As a teacher do you also assign project work to your students? How do the students do that?

Do you know what a project is?

According to John Alford Stevenson, *"A project is a problematic act carried to the completion in its natural settling"*. Ballord defines, *"A project is a bit of real life that has been imported into the school"*, while Dr. William Head Kilpatrick defines that, *"A project is a whole hearted purposeful activity proceeding in a social environment"*. In other words we can say that:

A project is an educational method where students working individually or in small groups analyze and develop "real-life" problem or tackle a present day theme within a preset time limit, working independently and with the division of tasks clearly defined.

From these definitions you can observe that

- A project is a task or an activity.
- It has some purpose.
- It is conducted in social and natural situation.

Characteristics of Project Method:

The project method has the following characteristics:

Problematic: Every project is intended to solve at least one problem which is perceived by the student(s). Becoming aware of the problem is the beginning of the formulation of the project.

Objective: The success of Project Method lies in the students understanding of its objectives. The objectives with which the students pursue the project are intimately associated with their real life situation and would be fulfilling some of their cherished desires.

Activity: After defining the objectives, it is your duty to create a learning environment. Students begin to learn through self planning, group discussion and group activities.

Reality: It is necessary to create real life activities for effective learning.

Liberty: In Project Method, learning takes place naturally. So, students perform activities freely.

Utility: The learned knowledge must serve the immediate needs of the students in their present life. It is necessary that the project method must be useful to the present needs.

Integration: Since a project is based on the real life problems, real experiences for carrying out the project and no real experience involves the knowledge of only one subject. One has to combine the knowledge of many subjects appropriately for successful completion of the project. Integration of subjects learnt in the classroom is the basic requirement in a project work.

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Democratic values: While conducting a project, the students working in a group need to cooperate with each other, respect each other, value others opinion, assume and share responsibility. Inculcation of such characteristics leads to development of democratic values. According to Kilpatrick, this is the best method in a democracy.

Now read the following Situation.

Situation 10: *In a class the students and Mr. Santosh, their teacher, enjoyed developing and using variety of colourful teaching learning materials (TLMs). After some months they felt total disorder in storing and selecting TLMs which also slowed down their activities of preparing TLMs. Then they decided to do something and planned to install a TLM corner in the class. For this Santosh took the students to a school where TLMs were prepared and kept in TLM corners in each class. The students interacted with the students of the visited school and observed the processes of preparation, collection and the use of TLM. They were happy by this interaction and felt the need of a TLM corner in their school. After coming back, Mr.Santosh sat with the students and discussed how to go about to create a TLM corner in the classroom. During the discussion, the following questions were raised:*

- *Which place is suitable in the classroom for creating the TLM corner?*
- *What type of TLMs can be prepared for different subjects?*
- *What type of TLMs can be collected?*
- *What are the materials needed for preparation?*
- *What is the required budget for such preparation?*
- *What is the source of funds for this purpose?*
- *What is the time frame of the project?*

After a prolonged discussion, they developed a plan to their satisfaction. Then, they divided themselves into different groups, different work was assigned to each group and different materials were supplied. The students started to work.

After preparation and collection of different types of TLM like flash cards, number cards, clay models of different internal organs, different seeds, different types of soil etc., they arranged the material in a proper order in a rack placed in a corner of the room which could easily be accessed. At the end Santosh and the students sat together to evaluate their work on the basis of the following questions:

- *Are the TLMs appropriate for teaching different topics of different subjects?*

- *Are they usable and durable?*
- *Can one TLM be used for teaching different subjects, and for teaching different concepts?*
- *Can these be handled by the students easily?*

Then the students prepared a report on the project, taking into account how they planned, the discussion held, the duties assigned and the evaluation of the project. They also wrote the use of each TLM for teaching different topics for future reference.

From the above example, you can deduce the steps of conducting a project. The steps are

1. Providing a situation
2. Selecting a problem
3. Planning the project
4. Executing
5. Evaluating

Some examples of Project:

- By visiting various public institutions the students can prepare a report on various functions of those institutions i.e. Post Office, Hospital, Bank. Police Station etc.
- They can prepare a report on the occupations of the people in their locality.
- They can prepare a report on the food habits of the people in their locality.

ACTIVITY -8

Select any one project and describe step-wise how you would organize the students to conduct it.

Advantages of Project Method

- The project method is based on the principles of active learning. The student gets totally involved in the activity which helps in enhancing his/her knowledge, understanding and skills in real life situation and ultimately in developing a holistic personality.
- Since all the activities of a project are related to the real life experiences, each of such activities is meaningful to the student. Therefore, meaningful learning is always associated with the project method.

Notes

- The student enjoys full freedom in conducting a project. This develops self-confidence to act and also promotes a sense of responsibilities among the students.
- The student gets acquainted with the types of work which he/she is expected to perform in future. Thus, the project method helps the student in his/her preparation for a future life.
- The student gets the scope to imbibe several social qualities like cooperation, and team work, group affinity, and sacrifice through project work.
- Interest and motivation for the project activities are spontaneously created and no external persuasion or force is needed to attract the students toward learning.
- Completion of the project gives individuals a sense of accomplishment which in turn encourages the student for further learning.

E6. State any three limitations of the project method.

3.4.3 Problem Solving Method

All of us face and solve a number of problems in our day-to-day life. When do you feel that a situation is problematic? How do you solve such problems?

ACTIVITY-9

List out some problems you have solved recently faced. Write down how you have solved one of those problems specifying the steps of solving it in a proper order.

Let us start from a very common problem given below:

Suppose, to reach your school on time you travel by bus. Your school is 30 km from your home. Every day you go to school by the same bus. One day, the bus breaks down on the way to your school. You are stranded. But you have to reach the school in time. What are you going to do?

What is the problem in this case?	You have to reach your school on time. You are stranded and you do not know, at the moment, how to reach the school in time.
What are the ways to solve it?	You may list different possible ways to reach the school in time. Possibly (i) you can walk down to the school, (ii) you can wait for the next bus, (iii) you can request a person in his

own vehicle to give you a lift, (iv) you can hire a cycle from a nearby shop and go to the school and so on.

Which of these ways you will select? After analysing the feasibilities of each of the alternative solutions, you have to select the mode of transport so that you can reach the school in time.

Let us try to answer the question that we had raised at the beginning. When do you feel to be in a problematic situation? The answer may be like this. You are in a problematic situation, *when you know what to do? but do not know how to do it?*

In other words, we are clear about the goal or objective to achieve, but we are not sure about the way to achieve it. In the context of learning, therefore, problem solving method is all about searching for the most appropriate way to achieve a learning objective.

The children also solve many problems that they face in their day to day life in the same way as you do. They can learn by solving the problems.

Let us go through an example from a classroom situation.

Situation 11: *Mr. Saumya was teaching "Different parts of a plant" in class-VI. First he divided the whole class into small groups, gave a piece of ginger to each group and put a question to the whole class which was a problem for the students to solve.*

Q – "Which part of a plant is ginger"?

The students understood the problem as ginger being a part of a plant and they have to find the part. Some ideas about ginger came to their mind such as:

- *Its colour is brown,*
- *It grows under the soil.*
- *We take ginger as food,*
- *New ginger plants are grown from a piece of ginger etc.*

The students could have collected this information from different sources (books, by asking question to others etc.) also. From this information they might have anticipated that:

Ginger may be

- *a root*
- *a fruit*
- *a stem*

Then the students collected the information about the characteristics of root, fruit and stem and compared with that of ginger and found that ginger has the same characteristics as that of stem (presence of nodes and internodes, leaves grow from its nodes etc..). The students hence concluded that ginger is the stem of a plant and it grows under the soil. They were able to give other examples of stems which grow under the soil like onion, potatoes etc.

Steps of Problem Solving Method:

From the above situation you might have some ideas of the steps of problem solving method. However, there are many models of problem solving.. One such model for general problem solving is **the IDEAL model** of Bransford (Bransford & Stein, 1984) which is:

1) **I**dentify the problem

2) **D**efine the problem through thinking about it and sorting out the relevant information

3) **E**xplore solutions through looking at alternatives, brainstorming, and checking out different points of view

4) **A**ct on the strategies

5) **L**ook back and evaluate the effects of your activity

Models of this type were mostly developed on the assumption that by learning abstract (not based on any content) problem solving skills, one could transfer these skills to any situation (learning any concept). This assumption does not take into account the past experiences of the student. But since 1980s researches on problem solving have inclined to be more context-based. That means the problem a student faces while studying content is always specific to a context or a situation. Therefore, the solution to that problem has to be sought within that context or situation. The nature of the problem might be different from another problem faced in another context. In 1983, Mayer defined problem solving as a multiple step process where the problem solver must find relationships between past experiences and the problem at hand and then act upon a solution.

One frequently-used model of the problem solving process is shown in figure below:

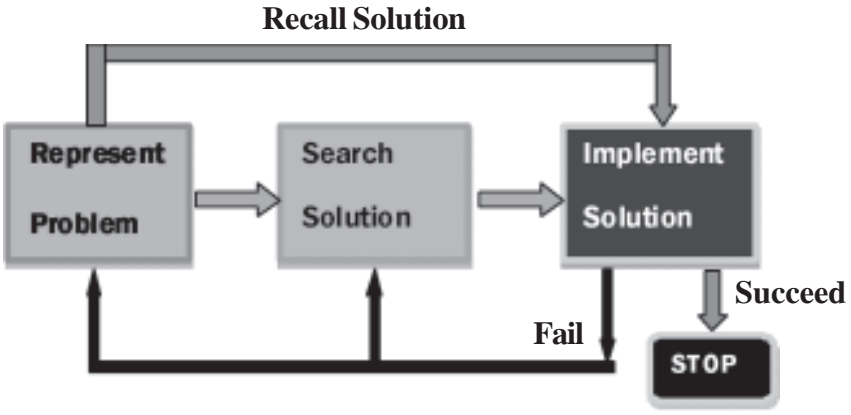

Fig.3.3: A model of the problem solving process (Source: Gick, 1986)

This model identifies a basic sequence of *three cognitive activities* in problem solving:

- *Representing the problem* includes (i) calling up the appropriate context knowledge (previous knowledge), and (ii) identifying the goal and the relevant starting conditions for the problem (Introduction).
- *Solution search* includes refining the goal (alternative solutions/hypotheses) and developing a plan of action to reach the goal.
- *Implementing the Solution* includes (i) executing the plan of action and (ii) evaluating the results.

As a classroom teacher, while following the problem solving method, you are advised to consider the following steps:

- Anticipate or identify problems.
- Use information from diverse sources to arrive at a clearer understanding of the problem and its root causes.
- Generate alternative solutions.
- Evaluate strengths and weaknesses of alternatives, including potential risks and benefits and short- and long-term consequences.
- Select an alternative that is most appropriate to goal, context, and available resources.
- Establish criteria for evaluating effectiveness of solution or decision.

ACTIVITY - 10

Select any topic from the subject you are teaching and develop a plan following the problem solving method.

Problem solving method involves reflective thinking reasoning and results from the achievement of certain abilities, skills and attitude. You should provide such situations and activities from which a problem emerges. It involves a definite procedure of confroning the problem, finding out its solution inductively and lastly testing the adequacy of the generalization by deductive approach. As this method involves reflective thinking and reasoning it is not usually used for lower classes.

3.4.4 Discovery Method

This method is otherwise known as *'Heuristic Method*'. The word Heuristic is derived from the Greek word *'Heurisca'* which means 'to find out'. It is also known as the *'Inquiry Method'*.

According to Prof. Henry Edward Armstrong who introduced this method for teaching science, *"Heuristic method is a method of teaching which involves our placing of children as far as possible in the attitude of a discoverer"*. It is a method in which children discover and find things by themselves. They are placed in the position of discoverers or inventors. You need to involve your students in finding out the solutions to a problem by themselves instead of telling or lecturing them. Problems are provided to the students. The students are expected to take observations and conduct experiments as per the instructions. Conclusions are drawn by the students and hence they are introduced to reasoning skill from their own observation and experiments.

The ***Stages of Discovery Method*** are as follows*;*

1. Identification of a problem
2. Experimentation and observation
3. Problem solving
4. Evaluation

Let us observe one instance of classroom transaction following this method:

Situation 12: *Ms. Minakshi was to teach the 'change in the state of matter' in Environment Studies in class IV. The objective of the lesson was: "The students learn that a solid changes into liquid and liquid changes into gaseous state when heated".*

She proceeded as follows:

- *Preparations for the lesson: She collected lac, candle, sugar, rock salt, aluminium plate, water, kerosene, petrol, incense sticks, camphor, piece of wood and butter. She asked each student to select any one of the above things, and to note the name of the thing and its present state.*

- *Identifying the Problem: She posed the question whether the selected material would change its present state to other state or not.*
- *Pupils Activity: (Experiment and Observation) - A candle was lighted on the table to heat the selected material with the help of the necessary instrument. Every student heated the material, observed the changes and noted down the results. For example,*
  - *Rima heated lac in the candle flame and observed that the solid lac turned into liquid state and when withdrawn from the candle flame the liquid lac again became solid.*
  - *Mr. Santosh placed a few drops water on an aluminum plate and heated in the candle flame to observe that the water on the plate changed to gaseous state.*
  - *Ms. Rama with the lighting the incense stick observed that it turns into gaseous state directly.*
- *Drawing Conclusions (Problem Solving): Ms. Minakshi, asked each student to read out their noted results/observations and noted regarding the change in the state of different matters when heated. She drew a table on the black board/ on a drawing sheets as shown below and entered each student's observation in it.*

Sl.No.	Name of the Material	State of the Material before Heating	State of the Material after Heating	Change in State

Then she asked the students to draw conclusions regarding the change of state of different kinds of material when heated by observing the entries in the table.

From the above table, students learnt that heat is necessary for a material to change its existent state to another state.

- *Evaluation: Ms. Minakshi then wrote the names of different materials in small bits of paper. She neatly rolled the paper sheets and placed it on the table. Each student was called to select one paper placed on the table. And to read the name of the material aloud and tell the existent state of the material and its changed state when heated.*

From the above situation, recognize some characteristics of the Discovery (Heuristic) method.

Notes

Characteristics of Discovery Method:

- A problem with its objective mentioned clearly is assigned to the class and each child is made to feel responsible for finding out something for himself/herself.
- Each child tries to acquire information about the problem from different sources. He/she is free to go about and discuss the problems with the classmates and teacher.
- The students can seek guidance from the teacher.
- Help is provided whenever the students feel the need. However, the teacher should try to get everything out of the students by inductive method.
- As many questions as possible should be allowed to arise from child's own observation and at times the teacher should also put questions which will stimulate the pupils to know more about a particular problem

In this way, the power of observation, experimentation, reasoning etc. are developed in the students. They learn how to gather data, interpret data, formulate tentative solution and to arrive at desired conclusions. This method can be applied where the children have to find out a cause.

E-7 State any four advantages of the Discovery method.

However you may face certain difficulties in classroom transaction using discovery method such as:

- All the students may not participate in the teaching learning situation.
- Very few of them may ask questions related to the problem given.
- Sometime the students may stop questioning.
- Sometime the students would need some reference materials.
- Sometime the students would need some apparatus / equipments to conduct an experiment.
- Sometime the students may not formulate hypotheses relating to the problem.

E8. Some statements about the Discovery Method are given below. Tick against the statements as True (T) or False (F), giving reason for your choice.

1. In discovery method emphasis is given on observation and reasoning power.
2. This method is suitable for the students of lower classes.

3. The teacher acts as co-student.
4. There is no need of homework.
5. Students learn formally in this method.
6. Learning becomes permanent.
7. The habits of self activity and self – dependence are fostered.

3.5 LET US SUM UP

- Methods are the ways of teaching. Effective learning of children depends on the method the teacher adopts.
- The methods of learning and teaching can be of two types: instructional methods and student friendly methods.
- Instructional methods are mostly teacher directed, whereas the student friendly methods are dominantly student-centric.
- Lecture, demonstration, and induction- deduction are some of the examples of instructional methods.
- Play-way, project, problem-solving, and discovery are some of the examples of student friendly methods.
- In the lecture method the teacher explains facts, information concepts laws etc. at his own pace. There is no assurance whether the students are attentive and understanding all what the teacher is saying.
- Inductive method proceeds from specific to general, concrete to abstract, whereas deductive method proceeds from general to specific, from abstract to concrete.
- In demonstration method the teacher performs an experiment or shows the chart, models etc. in the class and goes on explaining what he does.
- Children learn various concepts through playing games. Teacher has to organise the concepts in such a manner that the children learn those concepts informally by playing the game so that learning becomes permanent.
- In project method the teacher provides a situation so that the children choose a project from that situation and they plan, execute, evaluate the project themselves and lastly they prepare a report on the project.
- In problem solving method the teacher asks a question which is a problem for the students to solve. They solve the problem by collecting relevant data, formulating hypotheses, testing the hypotheses and drawing conclusion. As this method involves reflective thinking and reasoning it is useful for students of upper primary level.

- Discovery method can be applied where the students have to find out a scientific cause. The teacher assigns a problem to the students and the students find out the cause by collecting data through putting questions or by going through reference materials, then interpreting the data, formulating tentative hypotheses and arriving at conclusion.
- A concept can be taught by folowing different methods individually. Some concepts can be taught by the combination of different methods simultaneously.

3.6 MODEL ANSWERS TO CHECK YOUR PROGRESS

E1. When materials are insufficient for individual experimentation, experiment is hazardous to handle, experiment is time consuming.

E2.

INDUCTIVE METHOD	DEDUCTIVE METHOD
• It proceeds from particular to general, from concrete to abstract.	• It proceeds from general to particular, from abstract to concrete.
• It takes care of the needs and interest of the children. It is a developmental process.	• The child is provided with information of facts principles and theories.
• It encourages discovery and stimulates thinking.	• It establishes linkage with real life observation and knowledge already gained.

You may go through the method described in the text and write down other differences.

E3. (a) D, (b) I, (c) I, (d) I, (e) D , (f) I.

E4. Principle of responsibility.

E5. Play is the natural instinct of children; play provides pleasure to young children,

E6. (i) It is not always possible to employ it in all subject areas of the curriculum.

(ii) It is difficult for an average teacher to plan a project and ensure the participation of all students in it.

(iii) There is a lack of proper coordination in the experience/knowledge acquired through project method.

E7. Any four of the following:

- It develops a scientific and critical attitude in the students
- It fosters the art of testing patiently, observing keenly, and conducting experiments neatly, cleanly and responsibly.
- It develops self effort, self-confidence, self-reliance and self-determination.
- This method provides enough training to prepare them for life.
- As the students learn facts through their own labour, learning becomes more effective and permanent.

3.7 SUGGESTED READINGS AND REFERENCES

1. Modern science teaching by R.C. Sharma , Dhanpat Rai & Sons New Delhi.
2. Teaching of Science – M.S. Yadav, Anmol Pulbications New Delhi.
3. Teaching of mathematics –Chitrangada Singh, R.P. Rohatgi, Dominant Publishers and Distributors, New Delhi.
4. In-service Teacher Education Package Vol – 1 for Primary School Teachers, NCERT.
5. Mayer, R. (1983). Thinking, Problem Solving, Cognition. W.H. Freeman and Company, New York.

3.8 UNIT- END EXERCISE

1. Name the Method:
   a) The method in which the students find a cause by asking questions.
   b) The method in which the students do a purposeful task in a natural environment.
   c) The method in which one proceeds from examples to generalization.
   d) The method in which teacher performs an experiment and explains it.
   e) The method in which teacher explains the facts, events etc. at his own speed.
2. Write down the role of the teacher and the students both in instructional method and in student friendly method.
3. Suppose you have to teach a topic through lecture method. How will you prepare yourselves to make your teaching more interesting and effective?
4. Write down the advantages and limitations of project method.

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UNIT 4 LEARNER AND LEARNING-CENTRED APPROACHES

STRUCTURE

4.0 INTRODUCTION

In the earlier two units, different methods and approaches for learning and teaching process were discussed. You might have observed that in all classroom interactions more emphasis is given on learning than on teaching. As a teacher you are to facilitate the child to learn. In other words, learner and his/her learning would be the centre of your entire endeavour as a teacher.

In order to focus on learner, this unit elaborates on learner-centred approaches like collaborative and cooperative learning methods which provide better opportunities and more scope for learner's involvement and facility in the teaching-learning process.

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Further activity-based approach which you may be acquainted with will also be discussed to strengthen your knowledge of the nature of learning activity its elements and characteristics along with the principles of practicing activity-based methods in your classes.

For completing this unit you may need 20 hours of study time.

4.1 LEARNING OBJECTIVES

After completing this unit, you will be able to:

- distinguish between the learner and learning-centered approaches.
- explain and use cooperative and collaborative methods.
- identify the elements of a learning activity.
- design learning activities for classroom use.
- organize the activity-based approach in classroom situation.

4.2 APPROACHES TO LEARNING

Let us consider the following situation.

Situation 1:*When Mr.Binaya takes a class, he narrates, explains different concepts and ideas, and asks questions to selected few students. All his efforts are focused on finishing the course in time. Therefore, he finds very little time to take care of the needs and interests of the students; rather he is worried about his teaching. The students are observed to be passive listener to the teacher and sometimes some of them ask a few questions. Mr.Binaya tries to maintain discipline in the class so that he could go on uninterrupted in his teaching. His efforts for making the class interesting to the students are limited as he is constrained by time. At the end of teaching the lesson, he asks two to three questions for evaluating students' learning.*

In such a teacher-centred classroom situation, the students are less interested in what the teacher is doing in the classroom.

E1. Give any three characteristics of a teacher-centered classroom.

Let us, analyse another situation.

Situation 2 : *Ms.Samita is taking a Science class at the elementary level. She is:*

- *not reading the text,*
- *dividing the whole class into 5-6 groups,*
- *asking students to bring a plant and observe it in each group,*
- *encouraging them to discuss about the plant in detail in their group,*
- *facilitating group discussion and ensuring participation of each student,*
- *giving opportunity to each student to explore and utilize his/her rich experience,*
- *asking each student to draw and label a picture of a plant in their note book,*
- *asking each student to share their work and promoting discussions among the students.*

In this situation Ms.Samita is a facilitator than a traditional teacher and demonstrated different roles to play.

E2. Given below are few statements. In which, the need of the learner(s) is given more importance? Put (?) mark.

a) Teacher explains difficult words to the students by using dictionary.

b) Students ask questions to the teacher to clarify their doubts.

c) Teacher asks the students to come in front of the class individually and point out different places on the map hung on the wall.

d) Teacher conducts an experiment in the laboratory and asks the students to watch.

e) Students are allowed to go outside the classroom for some time, observe the nature and narrate any three things they have observed in their own language.

4.2.1 Learner-centred Approach

Learner is at the centre of all activities in learner- centred approach. The teacher plays the role of a facilitator of the learning process and an organizer of the learning situation to *"stimulate curiosity and independent thinking, develop problem-solving skills, promote planning and execution of projects and develop self- learning involving acquisition of knowledge through observation of phenomena, creative thinking*

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and activities." (National Curriculum for Elementary and Secondary Education-A Framework ,1987,p-6). As you know that the learner brings with him/her previous knowledge and experiences which influence classroom learning process. In the learner-centred approach, focus is given on developmental stages, maturity, learning strategies, prior-knowledge and experiences, interests, social context and culture of the learner. As a teacher, for implementation of the learner-centred approaches, you must understand the learner and their learning styles. It is essential that you know in details the characteristics of each and every learner in our classroom.

Understanding the Learner: In order to adopt the learner-centred approaches you have to understand various aspects of a student, the learner in your class, such as:

a) Health and Physical Development
b) Mental abilities
c) Personality
d) Learning Styles
e) Motivation
f) Home and cultural background

a) Health and Physical Development: Learner's ability to learn depends upon their health and stage of physical development. You must take into consideration differential rates of development of learners while selecting the learning experiences. Regular medical check-up may provide some feedback to teachers about learners' health and physical development.

***b) Mental Abilities*:** You can meet the specific needs of learners by knowing their specific mental abilities i.e. their qualities of being able to perform facilitating achievement or accomplishment. In general mental abilities are considered with intelligence of a person. A picture of mental abilities of the learner can be drawn following the seven types of intelligence elaborated by Gardener (1985) which are:

- *Linguistic* - enables individuals to communicate and make sure of the world through language.
- *Logic Mathematics*- allows individuals to use abstract mathematical relations.
- *Visual Spatial* - makes it possible for individuals to visualize, transform and use spatial information.
- *Bodily Kinaesthetic* - enables individuals to use high levels of physical movement, control and expression.
- *Musical* - allows individuals to create, communicate and understand meanings made from sound.
- *Intra-personal* - helps individuals to recognize and make distinction about others feelings, intentions and respond accordingly.
- *Inter-personal* - enables individuals the capacity for reflective understanding of others and oneself.

Gardener's analysis of specific mental abilities suggests that learners have different kind of abilities and potentials and accordingly you have to select diverse learning tasks to develop these abilities. You can influence the quality of learning of learners and can enhance the intellectual capacities of learners. Read the following situation:

Situation 3: *When Gutty was two years old, she used to call all kites as birds. Her total perception and understanding (schema) of kite was essentially influenced by her previous experience (assimilation) 'a small thing that flies in the air.' Later on, she gradually observed that the shape of a kite is more regular than that of a bird; a kite flies in a different way from a bird; sometimes she could hear a rustling sound when it flies and make out a string attached to it, which seems to control it. Her schema , which so far had only the feature "small things that fly" ,now added these new features which helped her distinguish between kites and birds.With this change ,she now had two different objects in her schema of small flying things: 'birds' and 'kites'. In short, she was accommodating a new concept by modifying her earlier schema.*

Now Gutty is about eight years old and you can imagine how much more complex her schema for flying objects has become. She knows about all kinds of planes, parachutes, rockets, satellites, flying lizards and bats. She also knows that there are birds that don't fly.

ACTIVITY -1

Considering the above situation,try mapping all that in a schema! You will need a very large piece of paper and coloured pencils.

c) ***Personality:*** Understanding the personality of the learners will help you in recognizing patterns of individual differences and in selecting the teaching strategies according to the individual's personality and learning style.

d) ***Learning Style:*** The way one learns is always unique to himself/herself. The learning styles, depending on the learner may have wide ranging variations. There are different models of learning styles. One most accepted model is that of David Kolb's which is based on experiential learning.

According to this ***Kolb's model,*** there are four major types of learning styles depending on the two approaches toward grasping experience viz.*Concrete Experience(CE)* and *Abstract Conceptualization(AC)*, as well as two related approaches toward

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transforming experience viz. *Reflective Observation(RO)* and *Active Experimentation(AO)*. These four learning styles are:

– *Diverging (feeling and watching - CE/RO)* - Learners with the diverging style are sensitive and are able to look at things from different (divergent) perspectives. They prefer to watch rather than do, tending to gather information and use imagination to solve problems. They choose to work in groups, to listen with an open mind and to receive personal feedback.

– *Assimilating (watching and thinking - AC/RO)* - Learners with an assimilating learning style are less focused on people and more interested in ideas and abstract concepts. They are more attracted to logically sound theories than approaches based on practical value. They prefer readings, lectures, exploring analytical models, and having time to think things through.

– *Converging (doing and thinking - AC/AE)* - Learners with a converging learning style can solve problems and will use their learning to find solutions to practical issues. They prefer technical tasks, and are less concerned with people and interpersonal aspects. They can solve problems and make decisions by finding solutions to questions and problems. They like to experiment with new ideas, to simulate, and to work with practical applications.

– *Accommodating (doing and feeling - CE/AE)* - The accommodating learning style is 'hands-on', and relies on intuition rather than logic. These learners use other people's analysis, and prefer to take a practical, experiential approach. They are attracted to new challenges and experiences, and to carrying out plans. They prefer to work in teams to complete tasks. They set targets and actively work in the field trying different ways to achieve an objective.

Learning style is influenced by learning situation, experiences and motivation and may be regarded as a link between the personality and cognitive behaviour of the learner.

E3. Give any two reasons why understanding the learner is considered important in the learner-centred approach.

E4. State any two differences between the divergent and convergent learning styles.

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e) ***Motivation****:* It is related to whether the learning experiences provided to the learners match with their personality and learning styles or not. If learners are provided with learning tasks that challenge the existing skills, knowledge and understanding, then learners may feel motivated to do the task. But if the learning task provides too little or too great a challenge to the existing skills, knowledge and understanding, then the learner is likely to be little interested in performing

the task. Therefore, teachers require understanding of each learner's capabilities, capacities, interest and also considerable skill and knowledge of the subject in order to provide effective learning experiences to motivate the students.

f) ***Home and Cultural Background*:** The culture of school, home, peer and social environment as a whole influence how children learn. The cultural influences on learning can be due to *cultural experiences, the mediation of language* and *learning dispositions*.

Cultural Experience: The previous experiences of the learner are strongly influenced by the culture, knowledge, values and ideas of the social group in which the learner is situated. These provide the initial framework for understanding the new concept and thus influence the new learning

Language: The medium of thinking and learning is language. Language also embodies the cultural tools through which new experiences are interpreted and mediated when learners interact in their communities and societies. Language as a 'cultural tool' and medium of learning influences the new learning, i.e. the process of making sense.

Learning dispositions: are acquired from and affected by interactive experiences with the environment, significant adults and peers. It is noticed that when a child understand the purpose of an activity, he/she takes active participation in it and the rules and the logic of the activity begin to make sense to him/her. This helps him/her to learn the concepts involved. For example, for Shakeel, calculating profit, loss and the prices of newspapers is not just a 'mental' exercise which comes out of a textbook. He is in the street, participating in the buying of the newspapers from the agent and then trying to ensure that he can sell as many as possible because the money is needed for his family. On the contrary when Neetu, a 12-year-old child, studying in Class 5, was asked by her teacher to solve the following problem from a school textbook:

"A shopkeeper buys ten pencils for 1 rupee and 50 paise each. What will be his profit if he sells them for 2 rupees each?",her response after a lot of thinking was, *"Do I add or multiply? If you tell me then I can solve."*

It is evident that Shakeel and Neetu have different cultural circumstances affecting their learning disposition. The characteristic of children's dispositions is that they are environmentally sensitive—meaning they are acquired, supported, or weakened by interactive experiences in an environment with significant adults and peers. Influence of family in terms of 'emotional capital' is the most significant factor in influencing learning. The learner's cultural circumstances due to the family structure and support vary widely.

Peers: In designing learning experience it is most important to consider the influence of peers in school settings. Peer group culture is important to learners as a way of

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learning, enjoying and adopting to school life. All secondary stage boys and girls tend to form separate social groups. Within a school or even a class, sub-cultural groups based on language, region, religion, caste, social class and educational achievements are also formed. Such peer group influence achievement and self-esteem of students. Some peer cultures favour school attainment and are likely to reinforce teacher efforts towards a positive approach to learning. Other peer cultures derive meaning from alternative values and students influence by such cultures approach school with minimum expectations.These students still construct understanding and make sense of learning material but it may not be of the type the teacher would have aimed at.

The School: Each school has its own distinctive culture but a closer inspection of school culture would reveal that there are many sub-cultures in the school. These cultural groupings among teacher and students may be based on region, language, religion, caste, socio-economic status which influences the classroom practices and learning achievement of learners.

E5. What are the two dimensions of Kolb's model of learning styles?

E6. State the importance of peer groups in acquiring new experiences.

Role of the Teacher in Learner-Centred Approach:

In the learner-centred approach, we consider the following assumptions:

- Pupils have different learning styles (that instruction should accommodate)
- Children's innate curiosity and self-perpetuating exploratory behaviour should form the basis of their learning in school. That means they should have the opportunity to pursue their interests as deeply and as long as they find the pursuit satisfying.
- Individual child often learn in unpredictable ways (and instruction should accommodate such eventualities)
- Children are capable of making intelligent decisions in significant areas of their own learning.
- The function of school is to help children develop learning to learn in order to become lifelong learners.
- Learning is facilitated by relationship of openness, trust and mutual respect; and school should provide an accepting and warm emotional climate.

Therefore in learner-centred approach, as a teacher, you have the following three critical roles to play.

Observer and diagnostician of learner: You must constantly watch the behaviour and activities of learners in and out of the classroom so as to estimate and diagnose strengths, weaknesses, learning needs, and learning dispositions. This would help you in shaping and providing appropriate learning environments and learning activities for the learners.

Provider of the environment for learning: Once you diagnose the various learning needs of the learners, it becomes your primary duty to plan a learning environment that is conducive so that each learner would find enough scope and opportunity to fulfil his/her needs.

Facilitator of learning: You always need to look out for occasions to help the learners while they are engaged in learning. This is more challenging than directly teaching. As we know that each learner has a distinct learning style, variations in learning dispositions, we have to provide support at the appropriate situations during their period of learning. Further, you need to encourage the learners to be engaged in learning activities whenever you find them remaining inactive.

E7. State the three roles of a teacher in a learner- centred classroom.

4.2.2 Learning-centred Approach

Learning-centred education focuses on the learning process. Although, its primary concern is on the learning of the students, all those involved in the education of students such as teachers are also co-learners with the students in the learning-centred education. It is basically learner-centred, but includes teachers in the process of learning in a classroom situation. Research has shown that a learning-centred education helps students acquire competency in skill areas and creates lifelong learners.

For example, when you take your students on a field trip to a new place like a dam or a factory, the students not only learn a great deal from observation and interaction with technical experts and workers, you also learn several aspects of construction, operation and utility of the organization which you can further use in developing your understanding and that of your students through mutual discussion.

Learning-centred education places the student at the centre of education. It begins with understanding the educational contexts from which a student comes. It continues with the teacher evaluating the student's progress towards learning objectives. By helping the student to acquire the basic skills to learn, it ultimately provides a basis for learning throughout life. It therefore places the responsibility for learning on the student, while the teacher assumes the responsibility for facilitating the student's education. This approach strives to be individualistic, flexible, competency-based, varied in methodology and not always constrained by time or place. In other words, learning-

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centred education advocates a student-focused teaching and learning environment facilitating the exploration of meaning and content knowledge through personal and interpersonal inquiry. The teachers attempt to maximize student productivity, knowledge acquisition and increasing skills and development of personal and professional abilities. The teachers may hence use a variety of instructional tools and methods, as well as flexible arrangements of time and place. Learners assume primary responsibility for their choices and have opportunities to exercise control over their learning. As a result there are collaborative partnerships among all those who are the stakeholders of children's learning.

Some examples of learning-centred educational practices are:

- Collaborative group learning, both inside and outside the classroom
- Individual student inquiry and discovery
- Inquiry and discovery by students and teachers together
- Problem-based inquiry learning
- Synchronous interactive distance learning
- Hands-on, experiential learning activities
- On-site field experiences
- Self-paced performance on contextual tasks.

Characteristicsof the learning-centred education:

The major characteristics are the following:

- Students construct knowledge through gathering and synthesizing information and integrating it with the general skills of inquiry, communication, critical thinking, problem solving, and so on.
- Emphasis is on using communicating knowledge effectively to address enduring and emerging issues and problems in real-life contexts.
- The teacher's role is to coach and facilitate.
- The teacher and students evaluate learning together.
- Teaching and assessing are intertwvoen.
- Assessment is used to promote and diagnose learning.
- Emphasis is on generating better questions and learning from errors.
- Desired learning is assessed directly through papers, projects, performances, portfolios etc.

- Approach is compatible with interdisciplinary investigation.
- Culture is cooperative, and supportive.
- Teacher and students learn together.

According to Weimer (2002) there are ***five practices that need to change to achieve learning centred teaching:***

i) *The functions of content*: In addition to building a knowledge base, the content facilitates students in this approach to:

- Practice using inquiry or ways of thinking in the discipline,
- Learn to solve real problems,
- Understand the function of the content, why it is learned,
- Build content/discipline-specific learning methodologies,
- Build an appreciation for value of content,
- Help students develop a way to learn through the contentand make meaning out of the content.

ii) *The role of the teacher:* The teacher creates an environment that:

- Fosters students learning,
- Accommodates different learning styles,
- Motivates students to accept responsibility for learning,
- Explicitly aligns objectives, teaching methods and assessment consistently,
- Utilizes multiple teaching techniques appropriate for student learning goals,
- Designs activities in which students interact with the material, the teacher and each other,
- Inspires and encourages student ownership of learning.

iii) *The responsibility for learning:* Although the responsibility of learning is shared between the teacher and the students, it is expected that the students take the overall responsibility for learning and assessment. As a consequence, students:

- develop learning skills for further learning,
- become self-directed lifelong learners,

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- can and do assess their own learning,
- become proficient at self-assessment,
- become proficient with all information literacy skills

iv) *The processes and purposes of evaluation*: Assessment in learning-centred education is more holistic and integrated with learning. It comprises of:

- Integrated assessment,
- Formative assessment with constructive feedback,
- Peer and self-assessment,
- Multiple opportunities to learn and demonstrate mastery,
- Students encouraged to justify their answers,
- Students and teachers agree on feedback timeframes,
- Authentic assessment is used throughout.

iv) *The balance of power:* It is the students, more than the teacher, who has the control over their own learning. Therefore, the teacher needs to make deliberate efforts to empower the students to assume control over their learning.

- Students are encouraged to explore additional content,
- Students are encouraged to express alternative perspectives whenever appropriate,
- Use of mastery or contract grading,
- Assignments are open ended,
- Students take advantage of opportunities to learn

E8. If we are to change over to the learning-centred classroom transactions then what are the changes to be incorporated in the existing teacher-centred practices? (State any three practices)

A comparative picture on some major aspect of the three approaches to education viz, Teacher-centred, Learner-centred and Learning-centred Education is presented below:

Table 4.1 Comparison among Three Approaches of Education

Aspects	Teacher-centred	Learner-centred	Learning-centred
Nature of Knowledge	Knowledge exist prior to the learner	Knowledge is discovered by the learner	Knowledge is constructed by the learner
Roles of teacher and learner	Teacher active and learner passive	Teacher makes learner active	Learner acts and teacher facilitating learning
Dominant Teacher function	Instruction, Direction	Designing learning tasks and teaching	Facilitating learning supporting
Situation	Not situation specific (situation independent)	Lerner friendly	Natural and contextual to learning
Control	Entirely teacher controlled (Rigid and totalitarian)	Shared teacher and learner control (Partially flexible)	Dominantly learner controlled(Flexible and democratic)
Inputs	Bits of facts and knowledge	Competencies and experiences	Techniques and strategies of learning
Methods and approach	Mostly lecturing and demonstration, Authoritarian approach	Play-way and joyful methods	Activity-based scaffolding
Curriculum	Prescribed	Developmental	Emergent
Evaluation	Objective-based summative	Activity-based formative	Authentic assessment and self-analytical
Discipline	Imposed	Shared, Participatory	Self-controlled

4.2.3 Cooperative Learning

The cooperative learning model was developed to achieve at least three important instructional goals: *academic achievement*, *acceptance of diversity and social skill development*. This is a specific small group approach that incorporates democratic processes, individual accountability, equal opportunity and group rewards. A number of types of cooperative learning activities and models are frequently used in today's classroom such as student teams achievement divisions, jigsaw and group investigation. All cooperative learning lessons, however, have following key features:

- Students work in groups to master academic materials
- Groups are heterogeneous consisting of high, average and low achievers
- Whenever possible teams include a mix of racial, cultural and gender of students
- Reward systems are group-oriented rather than individually oriented.

Studies have shown that cooperative approach has positive effects on academic achievement, collaborative behaviour, cross-cultural understanding and relationships and attitudes towards disabled students. There are five basic and essential elements to cooperative learning (Brown &Ciuffetelli Parker, 2009):

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1. ***Positive interdependence:***
   - Students must fully participate and put forth effort within their group
   - Each group member has a task/role/responsibility therefore must believe that they are responsible for their learning and that of their group
2. ***Promoting Face-to-Face Interactions:***
   - Members promote each other's success.
   - Students explain to one another what they have or are learning and assist other with understanding and completion of assignments.
3. ***Individual Accountability***
   - Each student demonstrates master of the content being studied.
   - Each student is accountable for their learning and work.
4. ***Social Skills***
   - Social skills are necessary for successful cooperative learning to occur.
   - Social skills include effective communication, interpersonal and group skills like

     (i) Leadership (ii) Decision-making (iii) Trust-building (iv) Communication (v). Conflict-management skills
5. ***Group Processing***

Every group must assess their effectiveness and decide how it can be improved.

For student achievement to improve considerably, two characteristics must be present

a) Students are working towards a group goal or recognition, and

b) success is reliant on each individual's learning.

When designing cooperative learning tasks and reward structures, individual responsibility and accountability must be identified. Individuals must know exactly what their responsibilities are and what they are accountable to the group in order to reach their goal. Positive interdependence among students in the group for the task should be there and visible for effective learning. All group members must be involved in order for the group to complete the task. For this to occur each member must have a task that they are responsible for which cannot be completed by any other group members.

Guidelines for Using Cooperative Learning:

- Limit group size to three to five students.
- Compose groups heterogeneously by mixing students considering academic achievement, sex and race.

- Give each student in the group a specific role, responsibility or task that contributes to the success of group.
- Use cooperative learning as a supplemental activity for review, enrichment or practice, allowing student in the group to help one another master material. Groups can also complete project such as reports, presentations, experiments and art work.
- Consider room arrangement, task materials and time frame as you plan cooperative activities.
- Grade individual students' contributions.
- Consider providing a group reward to students in the group.
- Vary group composition so that no student feels labelled by being in a 'slow' group and all students have an opportunity during the school year to work with every other student in the class.
- For cooperating learning groups to function effectively, collaborative social skills must be taught, modelled and reinforced regularly.

The roles of a teacher at different phases of the cooperative learning are summarized in the Table 4.2.below:

Table 4.2 Teacher's Role in the Cooperative Learning Model

Phases	Role of the Teacher
Phase 1 : Present goals and learning set	Teacher goes over objectives for the lesson and establishes the learning set.
Phase 2 : Present information	Teacher presents information to students either verbally or with a text material.
Phase 3 : Organize students into learning teams	Teacher explains to students how to form learning teams and helps to groups make efficient transition
Phase 4 : Assist team work and study	Teacher assists learning teams as to do their work
Phase 5 : Test on the materials	Teacher lists knowledge of learning materials or groups present results of their work
Phase 6 : Provide recognition	Teacher finds ways to recognize both individual and group effort and achievement

Advantages and Limitations of Cooperative Learning:Research on cooperative learning demonstrates overwhelmingly positive results. Cooperative learning requires students to engage in group activities that increase learning and adds other important dimensions. The positive outcomes include: *academic gains, improved interpersonal relations and increased personal and social development*. Some of the prominent advantages of the approach that emerged from the extensive research are:

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- Students demonstrate academic achievement.
- Cooperative learning methods are usually equally effective for all ability levels.
- Cooperative learning is effective for all ethnic groups.
- Student perceptions of one another are enhanced when given the opportunity to work with one another.
- Cooperative learning increases self-esteem and self-concept of the learners.
- Differences among learners arising out of gender, social category and physically/ mentally challenged barriers are broken down allowing for positive interactions and friendships to occur.

However, cooperative learning has many *limitations* that could cause the process to be more complicated than perceived. Due to the fact that cooperative learning is constantly changing, there is the possibility that teachers may become confused and lack complete understanding of the method. Teachers implementing cooperative learning may also be challenged with resistance and hostility from students who believe that they are being held back by their slower teammates or by students who are less confident and feel that they are being ignored or demeaned by their team.

E9. How does cooperative learning enhance self-confidence of the learner?

4.2.4 Collaborative Learning

Collaborative learning is a more generalized approach than the cooperative learning approach. This approach provides a situation in which two or more people learn or attempt to learn together. Unlike individual learning, people engaged in collaborative learning capitalize one another's resources and skills (asking one another for information, evaluating one another ideas and monitoring one another's work) etc. More specifically, collaborative learning based on the fact that knowledge can be created within a population where members actively interact by sharing experience and take nearly equal roles. Thus, collaborative learning is a method of teaching and learning in which students and teachers team together to explore a significant question or create a meaningful project. A group of students discussing a lecture or students from different schools working together over the Internet on a shared assignment are both examples of collaborative learning.

In other words we can say that collaborative learning refers to methodologies and environments in which learners engage in a common task where each individual finds out and is accountable to each other. This method allows face-to-face conversation and discussions using the computers also (like online forums, chat rooms etc.). Methods

for examining collaborative learning processes hence include conversation analysis and statistical discourse analysis.

Cooperative and collaborative learning differ from traditional teaching approaches where students work together rather than compete with each other individually. The subtle *differences between the collaborative and cooperative approaches* would demonstrate the nature of the collaborative learning.

- Collaborative learning can take place any time students' work together, for example, when they help each other with homework. Cooperative learning takes place when students work together in the same place on a structured project in a small group.
- Collaborative learning is more a qualitative approach, analyzing student's talk in response to a place in literature or a primary source in history. The cooperative learning on the other hand tends to use quantitative methods which look at achievement (the product of learning).
- In the collaborative learning approach, once the task is set which is always open-ended, the teacher transfers all authority to the group. It is up to the group to plan and perform the task as per their combined effort. In the cooperative learning approach, the authority remains with the teacher who retains ownership of the task, and he/she continuously monitor, guide and suggest modifications to keep the group on the track of solving the problem.
- Collaborative learning truly empowers students whereas cooperative learning does not. Instead cooperative learning employs them to serve the teacher's ends and produces a 'right' or acceptable answer.
- Collaboration in education is a dialogue between the student, teacher and the curriculum. Students are viewed as problem solvers, and problem solving and inquiry approaches are employed for emphasising cognitive skills. This views teaching as a 'conversation' in which teachers and students learn together through a process of negotiation with the curriculum to develop a shared view of the world. Cooperation on the other hand, represents the best means to approach mastery of fundamental knowledge. Once students become reasonably conversant, they are ready for collaborative, ready to discuss and assess.

Benefits of Collaborative Learning:

The benefits of small-group learning in a collaborative environment include:

- *Celebration of diversity*: Students learn to work with all types of people. During small-group interactions, they find many opportunities to reflect upon and reply to the diverse responses fellow students bring to the questions raised. Small groups also allow students to add their perspectives to an issue based on their differences. Such exchange inevitably helps students to better understand other cultures and points of view.

- *Acknowledgment of individual differences:* When questions are raised, different students will have a variety of responses. Each of these can help the group to create a product that reflects a wide range of perspectives and is thus more complete and comprehensive.
- *Interpersonal development*: Students learn to relate to their peers and other learners as they work together in group enterprises. This can be especially helpful for students who have difficulty with social skills. They can benefit from structured interactions with others.
- *Actively involving students in learning*: Each member has opportunities to contribute in small groups. Students take more ownership of their material and think critically about related issues when they work as a team
- *More opportunities for personal feedback:* Because there are more exchanges among students in small groups, students receive more personal feedback about their ideas and responses. This feedback is often not possible in large-group instruction, in which one or two students exchange ideas and the rest of the class listens.

E10. State any two differences between cooperative and collaborative learning.

4.3 ACTIVITY-BASED APPROACH

What is an Activity?Is it all work to be done by the student? As a teacher will you have fewer roles in comparison to students in the Activity based classroom? Such questions must be in your mind.

We know that three important element of classroom teaching-learning process are - teacher, learners, subjects or experiences incorporated in curriculum. We have discussed that the learner – centred approach is more appropriate in the teaching learning process. In learner-centred approach, need, interest, mental ability and social context of the learner are taken into account. In the activity based approach importance is given to the learner who gets new knowledge by doing activity in his/her own environment.

4.3.1 Learning Activity And Its Elements

Although all of us are acquainted with teaching process, we do have different views regarding activity. Some general views regarding 'activity' are:

- Singing a song, dancing, role playing, story telling, mono action etc.
- Work which is pleasurable is an activity.
- Activity involves some form of physical work.
- Each activity must require some teaching material.

Let us observe the two classroom situations where some activities are being done.

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Situation 4: *Ms.Vidya, a teacher in a school had requested the children to bring some paper, match box, gum and scissor. On the day of her class, Ms.Vidya checked whether each child brought materials or not. She drew a picture of a chair on the blackboard, and told the children to prepare a model of chair as drawn on the black board by using the material they have brought. While students are engaged in preparing the model she facilitated and helped them to complete the work. She requested all to maintain discipline in the classroom and to concentrate on the work without talking or disturbing others. She praised those who have prepared the model in time.*

Situation 5: *Ms.Vinoya, mathematics teacher came to class well prepared and ready to teach Mathematics. He found that the outside environment was very favourable and children were looking outside. The tree and flowers outside was attracting the students. He changed his plan and allowed the students to go outside for five minutes to collect at least one object from the environment. All children went outside cheerfully and came back collecting objects like flowers, leaves, sticks, small stones etc. Then he divided the class into two groups and asked the two groups to sit in semi-circles facing each other and started a game 'Vastu pehchaan'(Identify the object). The collected materials were kept in the middle in front of the two groups. A member of one group wrote a name of a material kept in front of them on a slip of paper and gave it to the teacher. The other group then asked questions to identify the name of the material. The students of the second group were allowed to ask a maximum of ten questions in order to identify the material which was answered in either "yes" or "no" by the first group. The questions were related to identifying features of the material. Whenever the group succeeded in identifying the material by asking only one question they got ten points. For each additional question asked, the score reduced by one point successively. All children in their respective groups discussed the question they put forth. After five rounds, the children clapped and danced with enjoyment as they were able to tell the name of the material. The game went on like this. Finally the group who secured more points was declared the winner of the game. Meanwhile the period was over and nobody was conscious or waited for the bell to ring.*

In the above two situations, the teacher tried to engage the children. The first situation was totally controlled by the teacher, without considering why the child did the work and whether the child had interest in it or not. The students did the work as directed by the teacher.

The second situation was different in the following ways.

- The teacher changed the plan looking into the interest of the student.

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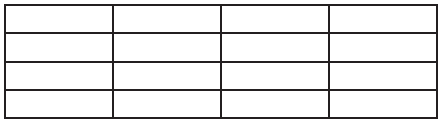
- Group work was planned in such a manner that children interacted freely among themselves.
- Children have adopted the skill of questioning by discussing among them.
- Children cooperated with each other.
- Children enjoyed achieving the goal.

You may notice that in this activity neither physical work was done nor song, dance, and storytelling were done. Still children were involved actively and achieved the objective deriving pleasure.

Observe and go through the activities given below in Table 4.3.

Table 4.3 Examples of Activities

Objectives	Activity	Process
To know animals living in forest. To develop the ability of recitation.	Singing the song with action	Children/Students will stand in a circle. Teacher recites the first two lines in middle of the circle and students go round with action. One student will make sound of a animal in the middle and other will move according making sound and action. The student who doesn't do will go out, observeand then rejoin the group.
To recognize the geometrical shape of known objects.	Drawing of pictures using geometricalshapes	Teacher will draw some geometrical shapes in blackboard like  Students are instructed to draw picture by using the above shapes. For example:  Students are asked to draw as many figures as they could able to draw within 15 minutes.
Formation of number	Grid game	Draw a 4x4 square. ((3x3)or(5x5) can also be drawn)  Students are instructed to write one number in one cell They are instructed to write numbers using at least 3 adjacent cells. They also may write alphabets to frame word. After 10 minutes each child is able to write/frame how many numbers. The student who will make maximum number he/she is to be declared the first winner.

From these examples, we observe that:

- Activity can be in the form of a game, story, role play or song. These are how ever not the only ways. Activities can also be performed in several other ways as shown above.
- Activity can provide scope for each child to participate.
- Activity may be both individual and/or group.
- Every activity may or may not need physical exercise but needs mental exercise like thinking, discrimination, arranging in serial, developing problem solving skills, etc.
- Involvement and participation in each activity gives a sense of satisfaction to a student.
- By making small changes, one activity may be used for achieving other objectives.

Thus **a*ctivity is an objective oriented task in which learner gets spontaneously involved and derives pleasure in achieving the learning objectives.***

ACTIVITY - 1

Prepare at least two learning activities from Language, Mathematics and Environmental Studies choosing the concepts of any particular class of your choice.

Elements of Activity: When you enter into activity based classroom, what are the aspects that convince you that activity is going on properly? Well you ought to notice the following:

- Children are totally involved in doing work without being disturbed by your presence.
- They are talking among themselves, manipulating materials, trying different arrangements and ways of solving the problem.
- If you asked about what they are doing, they could clearly state the objectives and cause of doing that activity.

In other words activities are engaging and encourage students to achieve the learning objectives. However, should the activity be too hard or too easy for the student?

If the activity is too easy, the student loses interest in it and if the activity is too hard the student avoid getting involved in the work. The students engage in such activities where they are able to perform the work. The activity is designed in such a manner that the student individually or discussing among themselves or taking help of teacher tries to

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finish the work. Creating spontaneous involvement in work is an important element of a learning activity.

It is found that if a student gets pleasure in an activity he/ she performs it and he/she gets more and more involved in it taking it as a challenge. If he/she does not derive pleasure and take the work as a load, he /she repeat the work mechanically resulting in failure.So activity should be a type of work in which the learner must derive pleasure.

Hence, there are ***four major elements of an effective learning activity***. These elements of an effective learning activity are:

- *Focused:* Activity for learning is always goal directed and is so designed that the participating students are focused to solve the problem or reach the target and are not easily distracted.
- *Challenging:* An effective activity poses a challenge before the students. It is neither too easy to neglect nor too difficult to attempt for solving. It is moderately

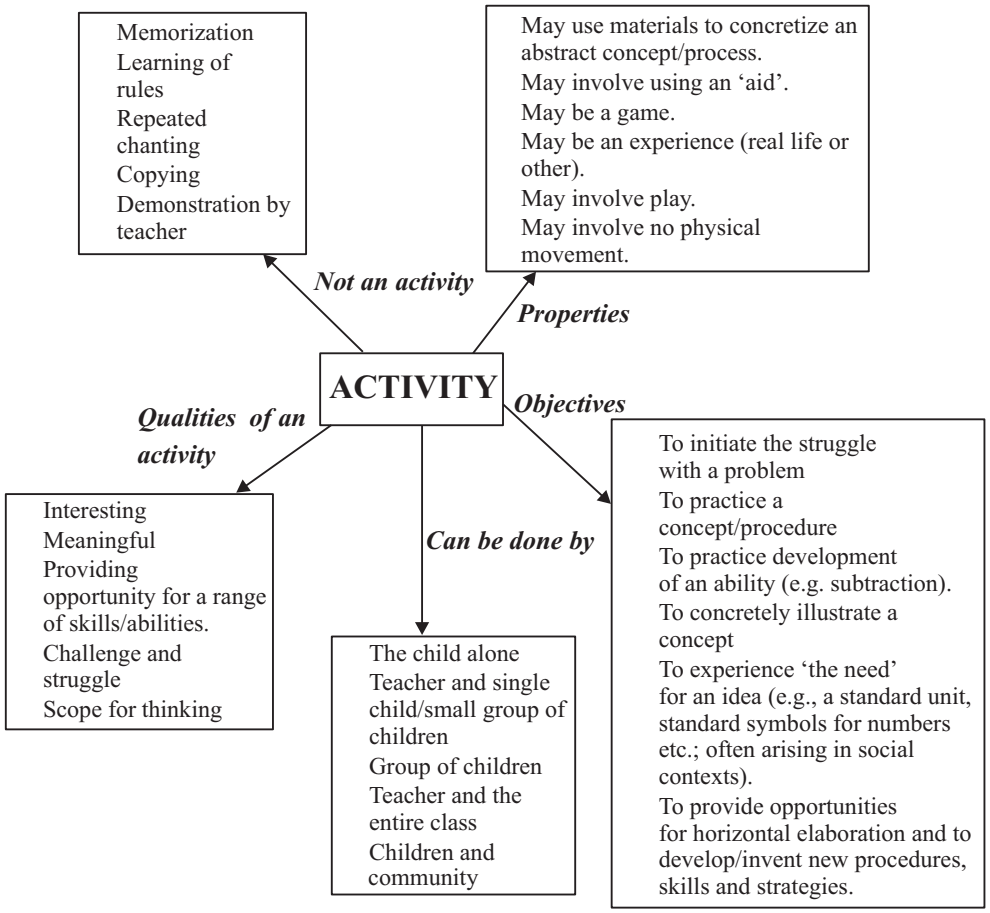

Fig 1. A schema for 'activity'

(*Source*: IGNOU- LMT-01 Block 2, 2000 p.63)

difficult which is within the capability of the students to solve but with concentration and with a little more effort.

- *Spontaneous Involvement:* A good activity is such that it attracts the students immediately when it starts and they join in it out of their own interest without anypersuation or compulsion.
- *Joyful:* The test of the efficacy of the activity is when the studentderives a sense of satisfaction after its completion. The very nature of a good activity is that it is interesting for the students to conduct and it brings a sense of achievement, provides joy, which ultimately becomes the source of intrinsic motivation for the students to go for the next activity which might be more challenging.

These elements are not independent of each other, they are mutually interdependent. A schema for 'activity' is given in Fig 1.

E11.1What are the main qualities of an activity?

E12. Why memorization is not considered as an activity?

4.3.2 Classroom Management Of Learning Activities

By this time you must have noted some differences between the classroom organization and practices in a normal class with which we are familiar and a class where activity-based practices are going on.

ACTIVITY - 2

List the differences between the classroom practices of a teacher-centred classroom and an activity-based classroom.

One important difference is in planning activity-based classroom transactions are to be clear about the objectives. For example, do you want to introduce a new concept or desire to improve the understanding of a concept already introduced to the children earlier, or provide some more challenging tasks? Once your objective is clear, you would need to plan for appropriate activities. Some may be new activities while others are extensions of previous activities you have introduced earlier. Some may be directly related to your objective, while others are indirectly related. But on both occasions, the activities have to provide a great deal of interesting investigations. You need to ensure the essential characteristics of the activity to make it more effective in facilitating learning.

After you decide the activities to be conducted in your classroom, you need to take note of planning other aspects of classroom management for efficient and effective

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conduct of activities. Some important points which are a must for successfully using an activity as a learning task are:

- ***Management of available space***: Space available in the classroom has to be planned properly for conducting activities. Some space is to be marked for storing teaching-learning materials, placing and using black board(s) and display boards, some for placing racks/shelves to keep records and portfolios of the students. For students to sit, move freely and perform activities in groups, quite a larger portion of the classroom space is needed. Specifically, you need to plan in advance the minimum space required for group activities and accordingly you have to decide about the number of groups to be formed, the space for movement of students as well as for your movement in the classroom.

- ***Material management:*** Sufficiently ahead of the commencement of the activities, you need to have quite a large stock of materials in the Teaching Learning Material (TLM) corner in each class. You might be aware that the TLMs are mainly of two categories: i) basic materials like dice, marbles, sticks, flash cards, seeds, pebbles etc. which have multiple uses in various activities and ii) specific materials for use in particular activities. You need to have sufficient (TLMs) of the first category stored separately and required number of TLMs appropriate to the specific activities for different subject areas. Selection, collection and proper storing of materials should be done much in advance, preferably at the beginning of the academic session. You need to review the activity in advance to make sure you have the materials needed for the class. The students may be involved in the selection of materials so that they can bring the materials from the TLM corners at the appropriate time. This helps in spontaneously introducing relevant activities. Simple games may be kept handy to be used by those students who finish their work earlier and get bored sitting around. It should be made a regular practice to reassemble the materialsafter use in each period and to keep them back in their appropriate places in the corner. The students should be given full charge of doing this job.

- ***Students' involvement in activities***: Learning is facilitated through the involvement of students in the activity. Therefore, the following points need to be taken care of at the time of conducting activity.

  – *Nature of activity:* While selecting an activity fora topic,decide the nature of activity considering its relevance and appropriateness in the context of the topic as well as the cognitive levels of the students. You have to decide whether it should be individual or group or whole class activity, whether it is a warm up activity, or a relaxing activity, or an activity dominated by physical actions, or an activity for thinking and reflecting.

  – *Presentation of activities:* The activity must be introduced with clear instruction on how to proceed. Instead of using long verbal explanations, a simple illustration or example conveys the idea more clearly. Additional rules

could be introduced as the activity proceeds, either by you or by the children.Different activities are to be conducted at appropriate time during a period. But preferably small group activities may be conducted during the early part of the period after the warm up activity. It may be followed by open class discussion reflecting on the different important events/points of the activity. If required, individual activities may be conducted during the mid-period. During the end of the period, whole class reflection on what has been done need to be organized for summarizing the outcomes. Without such an ending, the activity may generate a lot of involvement, but fail to focus on specific aspects that you wanted students to learn.

– *Ensuring involvement of each student:* It is important that each and every student participate in the activity. It is not always possible that all students in the class/group participate equally in an activity. There are variations in their degree of involvement, but you must ensure more involvement of each learner. Whenever required, you may make small changes in the activity to increase the degree of involvement of the students. You must keep a close watch on the students when they are engaged in the activity and try to motivate the students who seem to be remaining inactive in the class. You will need to make sure you are available for clarifications, at least in the beginning of the activity. If the activity involves students working in small groups, you must try to find time to go around, sit with and talk to each group. You would need to discuss the results with each group during the activity to ensure that all the students are involved and engaged in the activity. By going around you may also be able to facilitate the social interactions in the groups and give the students feedback on what they are doing. You would also be able to judge the efficacy of the activity in terms of what the students are learning.

– *Community involvement in activity*: Several community resources can be utilised to make the activity more meaningful and contextual. Locally available materials, folk lore, folk songs, games, riddles and puzzles can be used in different classroom activities in which the student can effortlessly get involved. Further, community members can act as resource persons like the local artisans, farmers, craftsmen, etc. can bring their experience to the classroom to enrich the quality of activities and to make them socio-culturally contextual and relevant. Even the old ladies of the community can tell stories to children, and young women can teach children to dance and sing.

- ***Process of assessment:*** In an activity approach of learning, the process of assessment of learning specifically during the formative stage, involves self-assessment, peer-assessment and/or group assessment which need to be carried out on continuous basis so that the students get to know about their progress in learning at the right moment and can be able to improve their learning based on the feedback they get from time to time. Of course, assessment by peers is inbuilt in the small group activities and that is one reason why it is considered as an

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effective method of learning. Besides informal assessment of student's learning need to be carried out also.

- ***Time management:*** The available time in a class period is fixed and this need to be kept in mind while planning an activity. Time allotment for each activity to be conducted during the period is essential. Usually, it is advisable to allot less time for introductory or warm up activities (5 to 10 minutes) and for closure activities (around 5 to 10 minutes), while most of the time may be utilized for conducting activities. Before commencing each activity, the students need to be intimated specifically regarding the time allocation.

In an activity-based class, one period of 40 to 50 minutes may not be always adequate to conduct activities properly. Therefore, at the time of preparing time table for the class more time allocation (preferably combining 2 periods before or after lunch break), without disturbing the proportionate time allotment for each subject per week, is advisable.

4.3.3 Advantages Of Activity

Some advantages of activities are:

- ***Activities provide enough scope*** for learning in one's own style and own pace of learning. It develops the ability of self- learning. While performing activities one develops the abilities of enquiry, assessing one's own knowledge and construction of new knowledge.

  The nature of activity is such that the learners get totally involved in it therebycreating interest in learner to learn more and more.

- ***Learning to know, learning to do, learning to live together, learning to be***-the four pillars of learning is possible through activity-based approach.

  By modifying an activity, it is easier to transact in multi-grade and multilevel situations.

  While participating in an activity, either in group, or individual or peer- learning situations, a student is required to perform different tasks using multiple methods which require several abilities at the same time like, thinking, reasoning, searching for alternatives, responding in a socially desirable ways, emotion control, cooperation etc. Therefore, performing activities as a regular classroom practice develops several cognitive, socio-emotional and psycho-motor aspects in the children ensuring the development of a holistic personality.

4.3.4 Issues And Concerns Associated With Activity Based Approach

We are so much used to teach in a teacher-centred approach that it is difficult for most of us to accept the activity-based approach or learner-centred approach as a viable

approach. Some of the issues often raised by the teachers are worth considering. Think about them and try to answer the questions following them.

1. For a teacher it is a difficult and time consuming task to prepare an activity.

   Suggest what a teacher may do to overcome the difficulty?

2. To design an activity from a particular concept is easier in case of experienced and expert teacher rather than a fresher in teaching.

   State the steps to be taken by a teacher to develop an activity based approach on a concept or a group of concepts.

3. Time management is a pertinent problem associated with activity to be transacted in a classroom. Generally a period is meant for 40 to 45 minutes. It is difficult to conduct an activity during this period .Also the syllabus cannot be completed within the stipulated time.

   What can a teacher do to follow activity based learning?

4. It is quite impossible on the part of a teacher to sing a song, to dance, to role play, to tell story, to draw diagram and pictures and to prepare a model.

   Suggest the ways to deal with such a problem.

5. A large number of TLMs are required for conducting an activity in the classroom and preparation or collection of TLMs is very time consuming.

   Suggest ways to overcome the issue.

It is believed that the Activity-based Approach is a great approach in learner-centred teaching- learning process. The teacher who is familiar with teacher- centred approach requires an attitudinal change to practice activity based approach. When a teacher adopts activity based approach regularly in the classroom, he/she will be convinced of its advantages for providing adequate scope and opportunities to students for learning in a meaningful manner which can be sustained for a longer period of time. Moreover, by promoting peer and self-learning, this approach helps the teacher to focus his/her time for developing more interesting and challenging tasks for enhancing the quality of learning.

4.4 LET US SUM UP

- Since learner is at the centre of all educational endeavours, it is essential that we know in details the characteristics of each and every learner in the class.
- In order to adopt the learner-centred approaches we need to understand various aspects of the learners such as health and physical development, mental abilities, personality attributes, learning styles, motivation, and their home and cultural background.

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- The teacher has three critical roles in learner-centred approaches which are:

  (i)an observer and diagnostician, (ii) provider of the environment of learning, and (iii) facilitator of learning.

- Learning-centred education focuses on the learning process with its primary concern on the learning of the students. It is basically learner-centred, but includes teachers in the process of learning in a classroom situation.
- Cooperative learning is a specific small group approach that incorporates democratic processes, individual accountability, equal opportunity and group rewards. The cooperative learning model aims at achieving at least three important instructional goals: academic achievement, acceptance of diversity and social skill development.
- Collaborative learning is a method of teaching and learning in which students and teachers team together to explore a significant question or create a meaningful project. Collaborative learning refers to methodologies and environments in which learners engage in a common task where each individual finds on and is accountable to each other.
- Activity is a goal oriented task in which learner gets spontaneously involved and derives pleasure in achieving the learning objectives. There are four major elements of an activity, namely, focused, challenging, spontaneous involvement, and joyful.
- If managed properly in the classroom, activity has several advantages in facilitating students learning in a more contextual, relevant and meaningful manner.

4.5 MODEL ANSWERS TO CHECK YOUR PROGRESS

E1. Any three of the following:

- Teacher is more active,
- Students are mostly passive,
- Discipline in the class is as dictated by the teacher,
- Students demonstrate very limited interest in what the teacher is doing

E2. (b), (c), and (e).

E3. (i) Learner is at the centre of all educational practices, and (ii) Knowing status on different aspects of the learner shall help in providing appropriate learning experiences.

E4. (i) Use information and imagination to solve problems in divergent learning styles whereas those using convergent learning style use practical experience

to solve problems, (ii) those with divergent learning style look at things from various perspectives while those with convergent learning style are more focused on practical values.

E5. (a) observer and diagnostician of learners, (b) provider of environment for learning, and (c) facilitator of learning.

E6. (i) Grasping experience and (ii) transforming experience.

E7. (i) construct understanding through mutual interaction, and (ii) derive contextual meaning from alternative values.

E8. Any three for Weimer's five practices

E9. With the mutual help in the group and positive outlook of cooperation than competition one builds self-confidence.

E10. Any two differences may be stated.

E11. Focused, challenging, spontaneous involvement, and joyful.

E12. Memorization is a way mechanical repetition which has none of the four characteristics of an activity.

4.6 SUGGESTED READINGS AND REFERENCES

1. Brown, H., and Ciuffetelli, D.C. (Eds.). (2009). Foundational methods: Understanding teaching and learning. Toronto: Pearson Education.
2. Cooper, James M. Classroom teaching skills. Boston, New York: Houghton Mifflin Company.
3. IGONU (2000). Learning Mathematics: Encouraging Learning in the Classroom (LMT-01). New Delhi: School of Sciences, IGONU.
4. Weimer, M. (2002). Learner-centered teaching. San Francisco: Jossey-Bass.

4.7 UNIT-END EXERCISE

1. Differentiate between the learner- centred and learning –centred approaches.
2. State the characteristics of collaborative learning. Why is it considered as a method of learning-cantered approach?
3. Elaborate the characteristics of an activity with suitable examples from different subjects of primary school curriculum. State the advantages and limitations of this approach.
4. State the different aspects of management of activity in the classroom.