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TEACHING, LEARNING AND EVALUATION

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Lesson No. : 1 **Unit : I**

CONCEPT OF PSYCHOLOGY, CHILD PSYCHOLOGY AND EDUCATIONAL PSYCHOLOGY

Structure

1.1 INTRODUCTION

Dear students, the purpose of this lesson is to familarise you with the growth and gradual evolution of the concept and meaning of the subject/discipline of psychology. We also propose to briefly dwell upon the meaning of the term 'education'. You may agree that educational psychology is the most important branch of psychology as it directly concerns the destiny of millions of students, teachers and parents. We shall further learn about the meaning, definitions and scope of this important branch of psychology. Educational Psychology is a subject of vital importance that helps the teachers in varied ways to work better with the children for the aims and objectives of education. Its scope is quite wide. Educational psychology is concerned in studying all aspects of life from infancy to adulthood so as to help learners to lead a meaningful life. In this lesson, you will study the concept of psychology, child psychology and educational psychology.

Educational Psychology, being a distinct discipline has its own theories, research methods, problems and techniques, is helpful in understanding the process of teaching and learning and also in developing the ways to improve upon these processes.

1.2 OBJECTIVES

After going through this lesson, you shall be able to:

- explain the concept of psychology,
- reproduce some definitions of psychology,
- describe the concept of educational psychology,
- state definitions of educational psychology, and
- explain the concept of child psychology.

1.3 MEANING AND NATURE OF PSYCHOLOGY DURING THE AGES

The status of Psychology as we see today is not the outcome of any sudden development. It has passed through various stages of evolution to attain its present

status i.e., science of behaviour. In the proceeding sub-sections we shall trace out the history of the development through the Ages.

Concept and Status of Psychology in Ancient Times

Psychology represents one of the most important fields of modern human knowledge. It is an age old discipline. However, it did not have a separate identity during ancient times. Both in India and Greece, it was studied as a part of the discipline of philosophy. Psychologists like Democritus, Plato and Aristotle in Greece and Kapil, Patanjali and Vyas in India tried to analyse the nature of soul as something different from human physical body. For example, Democritus believed that people are made of soul atoms and body atoms. Similarly Indian philosophers believed in separation of human soul from human body. It was on the basis of the subject matter concerning soul that Rudolph Goeckel, a sixteenth century European philosopher for the Ist time, coined the term 'Psychologea' or psychology for a separate discipline which has become so popular in the modern times.

Etymologically the term psychology is constituted of two Greek words 'Psyche' and 'Logos'. 'Psyche' stands for soul while 'Logos' basically, stands for discourse or talk which can be further interpreted to mean systematic discussion. In other words, in the literal sense, the term 'psychology' means study of soul. Even McDougall said that the soul is a vital Principle.....animating each human body".

Concept of Psychology During Medieval and Pre-Modern Times

However, with the passage of time, psychologists found that study of soul is a meta-physical concept based upon mere speculation. So, instead of defining as the study of soul, they preferred to call it the study of mind. According to them mind is a combination of various mental processes or faculties. Its direct concern is with the internal experiences of man at personal level such as the feelings of pleasure and pain and the phenomenon of desires and other mental traits. The study of mental processes gave a new shift to the meaning of psychology. Psychologists like James said that mind is nothing except the stream of consciousness. So psychology came to be known as science of consciousness.

However, psychologists led by Freud and Jung opined that consciousness is a small part of human mind like the tip of an iceberg which is visible to human eye. Just as a major portion of an iceberg remains hidden in water, similarly, a major portion of human mind constitutes of unconsciousness. They devised various techniques of analyzing and studying sub-conscious and unconscious human mind through a technique known as psycho-analysis.

Modern Concept of Psychology

In the preceding sub-sections, we discussed the concept and status of psychology during ancient, medieval and pre-modern times. Now we shall discuss the status and concept of psychology in modern times.

In the 20th century the rise of behaviourism swept, practically, all social sciences including psychology. Infact, it completely overhauled the thinking of psychologists who realized that objective study of both human and animal behaviour can enable psychology to assume the status of science. Accordingly, the study of human behaviour and animal behaviour became the dominant theme of psychology. In modern times psychology is considered the scientific study of all the activities of the organism in relation to his environment. Study of behaviour covers all the three aspects-cognitive, affective and conative. Behaviour includes the entire range of human activity- thoughts, feelings and actions. Psychology is concerned not with how we ought to behave but with how actually we do. It seeks only to describe behaviour as it is observed in the life of an adult, a child, an abnormal or a genius. It is a matter of common experience that people differ from others in many ways. They differ in likes and dislikes, tastes and temperaments, needs and interests, habits and skills, talents and abilities, ideals and values. What makes them so different? How do such differences arise? Why do people behave differently even under similar circumstances or with similar goals and purposes? Answers to such questions are given by the science of psychology. Psychology helps us to understand the behaviour of people around us to find out how and why they behave differently and what influences have worked to make them so different. It studies human nature and the manifold ways in which it expresses itself in the life of different individuals.

1.3.1 Definitions of Psychology

Psychologists have tried to define psychology as under:-

According to Woodworth, "Psychology deals with the activities of the individual in relation to his environment".

According to Crow and Crow, "Psychology is the study of human behaviour and human relationship".

According to N.L. Munn "Psychology today concerns itself with the scientific investigation of behaviour".

According to Skinner, "Psychology is the science of behaviour and experience".

According to Watson, "Psychology is the positive science of behaviour".

According to Murphy, "Psychology is the science which deals with the mutual interaction between an organism and environment".

According to Locke, "Psychology studies the inner nature of an individual organism on the basis of its overt behaviour".

S.K. Chatterjee defines psychology as "the positive science of experience and purposive behaviour of an individual".

On the basis of above discussion and opinions of experts we can say that psychology is an important component of totality of human knowledge. It is designed to study and analyse the process of adjustment of psycho-physical organisms, especially man, with the outside social and physical environment. This study is carried on mostly through empirical and objective techniques, making it to assume the title of a science on its own.

Check Your Progress-1

Note : (a) Answer the questions given below.

(b) Compare your answers with the above sub-section.

(A) (i) Describe the concept of psychology during ancient times. (answer in about 40 words)

_____

_____

_____

(ii) Distinguish between views of James and Freud regarding the meaning of psychology (three sentences)

_____

_____

_____

(iii) Discuss the modern concept of psychology (answer in about 50 words)

_____

_____

_____

(iv) Reproduce the definition of psychology given by Woodworth.

_____

_____

_____

(B) Fill in the blanks by making right choice from the alternatives in brackets:

Note: Compare your answer with those given at the end of the lesson:

(i) Faculty theory of mind was propounded by..... (Plato/Aristotle).

(ii) The term psychology was coined by.....(Plato/Aristotle)/Rudolph Goeckel/ Mc Dougall).

(iii) .....Catapulted psychology to the status of science. (Psycho-analysis/faculty theory/ Behaviuourism/Gestalt theory)

(iv) In modern times psychology is a science of .....(heart, mind, behaviour).

1.4 CONCEPT OF EDUCATIONAL PSYCHOLOGY

Dear Students, in the earlier section you must have got an idea of how human psychology got subdivided into a number of specific fields of study. Its proliferation into a large number of branches is a testimony to the fact that during the last few hundred years the subject psychology has registered tremendous increase in the totality of its subject matter. You must also have come to know that Educational psychology is the most important branch among all its applied branches. It is also the most popular and most widely used branch of General Psychology. It must be quite clear to you that the name of this branch is combination of two terms- ' Psychology' and 'Education'. The term education stands for the process and techniques of the development of the inborn potentialities and capacities of a child. It is a subject designed to help in the process of manifestation of natural talents of children within the limitations imposed by genetic factors. In other words education helps an individual in the development of intelligence, power of memory, capacity for imagination, sound and balanced emotional development, proper nurturing of sentiments, formation of useful habits and attitudes, and promotion of the process of learning in one's life. To state briefly, education is the name given to the use of various techniques, strategies and methods by society through the medium of teachers for ensuring optimum development of the hidden potential of children within the limits imposed by nature.

On the other hand, psychology is a branch of human knowledge which helps in proper understanding of potentials, talents, and capacities of the child as well as his desires, tastes, aptitudes, the process of learning and habit formation.

Educational Psychology is a branch of Psychology in which we try to apply the knowledge of psychology in various educational situations. It is a science of behaviour of the learner and the learning process in the learning situations. It tries to

study the educational needs and capacities of the educand. Educational psychology deals with questions of when to teach and how to teach. It opens up new horizons in the socialization of human organism and modification in his behaviour. It deals with the problems of education, learning, human relations, discipline and formulation of teaching learning strategies. It goes deep into various aspects of the process of modification of behaviour at group and individual level. Educational psychology provides guidelines to the teachers and educational administrators in providing infrastructural facilities and right social environment for optimum development of the potential of the children. Knowledge of educational psychology helps the teacher to make his/her teaching effective.

1.4.1 A brief History of Educational Psychology

Educational Psychology is as old as human race. It started its operation when a father or a mother must have guided his or her child for the first time to face some environmental hazards. However, in the West, educational psychology started acquiring concrete ideas during the time of Plato and Aristotle. They were able to enunciate psychological principles in the educational context. Aristotle expounded his theory of Faculties of mind as independent powers-(i) Reasoning or understanding (ii) desires, feelings and appetites (iii) the Will. Later, Descrates, Rousseau and Locke made their respective contributions in this sphere. It was Pestalozzi who psychologised education by emphasizing upon training programmes for teachers.

Still later, Francis Galton, William Wundt, William James, Sigmund Freud, Stanley Hall, Watson, Pavlov made their respective contributions to the growth and development of Educational psychology. Binet, Terman, Stern, Spearman, Thorndike and a host of other psychologists developed the concept of Intelligence tests and I.Q. which proved to be a harbinger of a new era in the history of educational psychology. Froebel, Montessori, Dewey, Gandhi and Tagore also laid emphasis on understanding and respecting the individuality of children along with their interests and tastes. It is because of their profound vision and insight into the personality, and behaviour of the child that educational psychology has become an indispensable discipline in the field of teacher education.

The nature of educational psychology should basically be understood as an applied behavioural science. It makes use of fundamentals of human behaviour in teaching learning situations. Its prime area of operation concerns the study of the behaviour of the learners in different learning situations. It defines cause and effect relationship in analyzing the behaviour of the learner. The nature of educational psychology is scientific (i.e. it has organized and systematic approach).

1.4.2 Definitions of Educational Psychology

Various educationists and experts in Educational Psychology have given their views regarding the nature and meaning of educational psychology which can be treated as its definitions as under:-

According to Kolesnik, "Educational psychology is the application of findings and theories of psychology in the field of education".

According to Stephen, "Educational psychology is a systematic study of educational growth and development".

According to Crow and Crow, "Educational Psychology describes and explains the learning experiences of an individual from birth to death".

In the words of Skinner, "Educational Psychology is that branch of Psychology which deals with teaching and learning".

In the opinion of Peel, "Educational Psychology is the science of education that helps the teachers to understand the development of pupils, the range and limits of their capacities, the processes by which they learn and their social relationships".

According to S.S. Chauhan, "Educational Psychology is the systematic study of the development of individual with in the educational settings".

According to Judd, "Educational Psychology is the science which describes and explains the changes that take place in individuals as they pass through various stages of development from birth to maturity."

According to S.K. Chatterjee, "Educational Psychology deals with behaviour and experience which are related to education of the child".

The Encyclopaedia of Educational Research defines educational psychology, "as the study of the learner and of the teaching learning process in its various ramifications, directed towards helping the child to come in terms with society with a maximum security and satisfaction".

In short, educational psychology primarily deals with 'what', 'how' and 'when' of education. An analytical study of the views of psychologists given in definitions above would clearly show that educational psychology is a positive science of human behaviour. It deals with conditions that are likely to contribute to the onward march of the learners during various developmental stages. It is field of study having a bearing upon teaching-learning activity. The major focus of educational psychology is in understanding of the nature of the child in educational situations. It also tries to investigate and discover methods and techniques of imparting new knowledge and skills to the learners so as to ensure their all-round and multi-dimensional development.

Check Your Progress-2

Note: (a) Answer the questions as directed.

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

(A) Tick the right choice :-

(a) The process of education helps in (getting degree/defeating enemies/manifestations of inborn talents/climbing mountains)

(b) Educational Psychology is applied in (business/improving handwriting/learning cycling/ educational situations)

(c) It was (Descartes/Freud/Shakespeare/Pestalozzi) who applied knowledge of psychology in training of teachers.

(d) Major focus of educational psychology is on (Physical development/agricultural training/cultivating sportsman spirit/ all-round development of the child).

(e) Teacher must know both John and Latin was stated by (Rousseau/John Adams/ Pestalozzi/Watson)

(f) When psychological principles are applied to teaching-learning process, this is called.....(industrial psychology/clinical psychology/educational psychology)

(g) Nature of Educational Psychology is (normative/unorganized/positive and scientific)

1.5 CONCEPT OF CHILD PSYCHOLOGY

During the 19th century the psychologists gradually realized the importance of the study of child behaviour in isolation from the adult behaviour. The stage between birth and early adolescence is called childhood. The child psychology studies human behaviour belonging to this category. Child psychology deals with fundamental as well as applied concepts of psychological findings. It studies the development of the behaviour of the child on the basis of it multifaceted personality. The study of the process of growth and development of the child during infancy, early childhood and late childhood is an important area of child psychology. Along with it, child psychology tries to understand the process of development of emotions, perception, intelligence, sentiments, imagination, desires, aptitudes, attitudes, etc. in the child. It also tries to analyse how the child learns to speak and how he attains social development. In short, child psychology tries to promote the understanding of the multi-dimensional personality of the human organism covering the first 13 or 14 years of its life. The need for acquainted with child psychology has been stressed by modern psychologists. A teacher must be well versed with child's needs, the base of his behaviour, mental level, interests, abilities and personality etc. so that he can adjust the curriculum according to his requirements. Child psychology gives the teacher information about the process of learning, methods of teaching, conditions which facilitate or impede the process of child's learning. Kindergarten and Montessori methods are based on child psychology. Child psychology has done away with the concept of 'spare the rod and spoil the child'. It stress that discipline has to be on

democratic principles and from within. Keeping into view many facets of child's personality, it emphasizes on co-curricular activities as well. In the words of Crow & Crow, " the science of child psychology deals with (i) stages of growth and maturation, (ii) the effect of environmental influences on patterns of development and (iii) the psychological and social interactions between the child and members of the society in which he is born and brought up. The knowledge of child psychology is of immense help for the teacher, for making teaching learning process effective."

1.5.1 Definitions of Child Psychology

According to Crow & Crow, "Child Psychology is the scientific study of the individual from the prenatal beginnings through the early stages of his adolescent development."

According to Watson, "Child Psychology came into being from the scientific study of the child"

1.6 LET US SUM UP

Students, here we are at the end of the first lesson titled psychology, child psychology and educational psychology. In it, we have tried to give you an eye view of this most interesting subject. It is so vast an area that it is very difficult to decide what to include and what not to include. You must have got an insight into the historical background and phases in the process of evolution of psychology. You must also have understood how this discipline has been able to attain its present status and relevance in the field of education. You have also learnt about branches of psychology like child psychology and educational psychology, which have sprung up with the passage of time. Child psychology is a positive science which studies the behaviour of the child in context of his environment, treating the child as an individual. Educational psychology is a positive science. It is a scientific study of learner's behaviour which can be understood, controlled and predicted. Educational psychology tells us how learning can be made more effective, how students' attention can be secured in the class, how discipline can be maintained and how teaching can become effective. It would have been quite interesting for you to know that education, in absence of

modern psychology, is something unimaginable.

1.7 LESSON END EXERCISE

1. Critically examine the meaning and definitions of psychology. Discuss the history of development of psychology.
2. State how the discipline of psychology came to acquire its present concept since ancient times.
3. "Psychology is the science of behaviour". Discuss and substantiate your answer with concrete examples.
4. Explain the following branches of psychology:

   (a) Educational Psychology (b) Child Psychology
5. What is educational psychology? Discuss any of its two definitions.

1.8 SUGGESTED FURTHER READINGS

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1.9 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

B. (i) Aristotle

(ii) Rudolph Goeckel

(iii) Behaviourism

(iv) Behaviour

Check Your Progress-2

A. (a) Manifestation of inborn talents

(b) Educational situations

(c) Pestalozzi

(d) All round development of the child

(e) John Adams

(f) Educational Psychology

(g) Positive and Scientific

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Lesson No. : 2 **Unit : I**

METHODS OF STUDYING BEHAVIOUR

Structure

2.1 INTRODUCTION

In lesson no 1, we have discussed about the meaning and nature of psychology, child psychology and educational psychology. You have also come to know that psychology has emerged as an independent science of behaviour from science of soul, science of mind, science of consciousness to the systematic and objective science of behaviour. You have come to know that educational psychology is an applied branch of psychology as it uses the research findings and laws developed by psychologist to improve the teaching-learning process. The principal objective of educational psychology is to develop necessary skills and competencies among the teachers to develop an understanding about the behaviour of learners and to control and predict their behaviour in teaching-learning process. In order to achieve this objective, educational psychology employs various methods and techniques to collect information on problems of behaviour of the learners. In this lesson, we shall briefly discuss the important methods which can be used to collect data on the various behavioural aspects of learners behaviour.

2.2 OBJECTIVES

After going through this lesson, you shall be able to:

- explain the meaning of observation method,
- delineate the process or steps involved in the observations method,
- enumerate the merits and limitations of observation method,
- explain the meaning of case study method,
- delineate the process or steps involved in the case study method,
- enumerate the merits and limitations of case study method,
- explain the meaning of experimental method,
- delineate the process or steps involved in the experimental method, and
- enumerate the merits and limitations of experimental method.

2.3 OBSERVATION METHOD

With the application of scientific approach to psychology, speculation on human behaviour is given up. Observation is one of the most commonly used methods

by many discipline like psychology, sociology, and education. With the development of psychology as an objective science of behavior, the method of introspection was replaced by careful observation of behavior. Observation is the study of behaviour as it occur in different settings. It is the process in which one or more persons observe what is happening in some real life situations. The relevant happenings are classified and recorded according to some planned scheme and analysis and interpretation of this perceived behavior is made by the obsever/observees.

Observation may be of different types. The commonly used types are:

(i) Participant observation

(ii) Non Participant observation

(iii) Structured observation

(iv) Unstructured observation

(v) Controlled observation

(vi) Uncontrolled observation

(i) Participant Observation

In this type of observation, the observer becomes part of the group under observation. The observer establishes rapport with the group or individual and may actually take part in some activities of his subjects which he wants to observe. The purpose of establishing rapport is that the observees do not become conscious of his presence and may not hide their internal behavior and feelings. In such case he is known as participant observer.

(ii) Non-Participant observation

In this type of observation, the observer observes the specific behavioural characteristics of the subject in natural settings. Subjects do not become aware of the fact that they are under observation by someone. The teacher can observe the behavior of the child in the classroom, in the playground or in any other social situations, where students may not become conscious of his presence. While observing the

particular aspect of behaviour, the observer must make a medium degree of interference of the action of the subject being observed. While using this method, the investigator should keep in mind that:

(a) What should be observed?

(b) How the observations should be recorded?

(c) How the accuracy of observation can be ensured?

In case the observation is characterized by a careful definition of the units to be observed, the style of recording the observed information, standardized conditions of observation and the selection of pertinent data of observation, then the observation is to be called structured observation. However, when observation takes place ignoring these characteristics, the same is termed as unstructured observation. Structured observation is commonly used in descriptive studies.

Sometime we talk of controlled and uncontrolled observations. If the observation takes place in the natural setting, we may call it uncontrolled observation. When the observation takes place according to definite pre-arranged plans, involving experimental procedure, we may call it controlled observation. The aim of uncontrolled observation is to get an unhidden picture of life of persons. Controlled observation aims to supply formalized data upon which generalizations can be built with some degree of assurance.

2.3.1 Steps in Observation Method

(i) To identify the appropriate group of subjects to observe.

(ii) Length of observations should be as minimum as possible.

(iii) Observation made should be carefully recorded.

(iv) The recorded behaviour is interpreted, analyzed and finally generalized.

2.3.2 Merits and Limitations of Observation Method

(i) Through this method, study can be conducted most conveniently.

(ii) It does not require any special tool to gather data.

(iii) It permits the observer to code and record behaviour at the time of its occurrence.

(iv) It is flexible and can be used in various situations for collecting data.

(v) The results obtained by observations are reliable, valid, systematic and specific.

(vi) The researcher can even verify the truth of statements made by observer in the context of a questionnaire or a schedule.

Limitations of Observation Method

i. The overt behavior does not provide reliable information about the internal mental process.

ii. The primary weakness of the observation method is that the observer may make biased and incorrect inferences from observation. There may be subjectivity on the part of the observer.

iii. Artificial behaviour may be displayed by the subject which affects the findings.

iv. It is time consuming and leads to wastage of time.

v. Overt behaviour is difficult to study. It may become difficult to draw the conclusions in case of adult behavior who may hide their actual behavior in the presence of observer.

vi. Sometimes, the observer is not familiar with the total situation and hence may commit error.

vii. The observer may select inadequate situations to be observed. It may narrow-down the researcher's range of experience of behavior of observee.

2.3.3 Suggestions for Improvement of Observation Method

1. The observations should be immediately recorded and not left on memory.

2. The mechanical devices such as camera, tape recorder can be used to improve the reliability of data generated.

3. The objectives of observations must be clearly and specifically defined.

4. The observer must prepare a detailed schedule of questions or statements about the behvaiour to be observed in advance.

5. The observer must fix the time and duration of the behavior to be observed and should stick to that.

Check Your Progress-1

Note: (a) Answer the questions given below

(b) Compare your answers with those given at the end of this lesson

i. Observation is the process in which one or more persons observe what is happening in some.....

ii. The method of introspection has been replaced by careful..... of.....

iii. In.....the observer becomes part of group under observation.

iv. When the observer observe the specific behavioural characteristics of the subject in natural settings, it is known as.....

v. Observation does not require any special..... to collect the data.

vi. The primary weakness of the observation method is that the observer may make .....and..... inferences from the observation.

2.4 CASE STUDY METHOD

Case study method is primarily concerned with a behaviour of a single person. It is a method of studying the problems of children. The most important characteristics of this method is that it deals with the life history of the individual in the complete

environment. This method is specifically followed in learning difficulties of the children at home and school. In this method data regarding the family background, early life, school life, the physical, educational, emotional and social development of the individual are collected to know the root and nature of the problem. This study is further supplemented by the use of the questionnaire, interview, free association and all other devices which are likely to throw light on the case. The preparation of a case study is not the work of a single individual but the combined venture of social worker, teacher, parents, medical man and psychologist. In preparing case study the information is collected from the following sources:

(1) Preliminary information. Name, age, sex, parents' age, qualification, occupation, income, number of children, social status.

(2) Past history. Condition of mother during pregnancy, any incident, child's development after birth- physical, mental, emotional, social, illness, relation between parents and other members of the family, achievement of the child, parents' death, birth order etc.

(3) Present condition. The information may be collected under the following heads:

(i) Physical. Results of medical examination of any disease.

(ii) Mental. I.Q. special abilities, general intelligence.

(iii) Social. Home environment, friends and their types, social environment in school, home, neighbourhood.

(iv) Emotional. Anxiety, fear, temperament, attitude etc.

(v) Interest. Personal, social, vocational and special aptitude.

(vi) School achievement. Position in school, failure, special achievement etc.

Careful physical examination pave way for knowing the behavioural problems related to functional or organic nature. Case study reveals the linkage of problem with past if any of factors responsible for a particular type of behavior.

The core of this method is diagnosis and treatment. It is not imperative to

ascertain or diagnose only the maladjustment but remedial measures or treatment to the problem is equally important. Various important methods are used for the diagnosis of maladjustment or behavioural problems

(a) Physical examination

(b) Case History

(c) Interview etc.

Various client-centered methods are used for treatment of the individual and those are:

(1) Auto-Suggestion

(2) Psycho-Analysis

(3) Electro Convulsive Therapy (ECT)

(4) Hypnosis

- Change of environment can provide relief to the behavioural problems
- Attitude of parents, teachers and peer groups are also helpful in improving the behavioural problems.
- Recreational facilities sublimate the repressed behavior. Recreational activities are helpful for improving the behavioural problems.

2.4.1 Merits and Limitations of Case Study Method

- The case study method has contributed chiefly to knowledge of personality traits and to a better understanding of motivation, learning difficulties and problematic behavior of children.
- It is the only method dealing with a particular person.
- It provides vital information about the individual.
- This method deepens our perception and gives us a clear insight into life of a person.

- A researcher can obtain a real and enlightened record of personal experiences which would reveal man's inner strings, tensions and motivations that drive him to adopt a certain pattern of behavior.
- This method is useful to gain insight of the past of the subject and suggests measures for improvement in the context of the present environment.

Limitations of Case Study Method

- In the preparation of a case study of an individual, the information is to be collected from the past life and present experiences. The information given by the individual himself, parents and friends may not be true or may be highly subjective.
- It is lengthy, costly and time consuming process.
- This method needs trained and experienced councellors, who are difficult to arrange.

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

i. Case study method deals with the.....of the individual in .....environment.

ii. The core of case study method is..... and .....

iii. The case study method is useful to gain insight of the.....of the subject and suggests measures for.....in the context of the present environment.

iv. Case study method needs..... and.....councellors, who are difficult to arrange.

2.5 EXPERIMENTAL METHOD

Experimental method has been developed in psychology by the continuous efforts of psychologists to make objective and scientific study of human behavior. It is the most precise, planned, systematic and controlled observation. Actually, it is this method which is responsible for assigning the status of science to psychology. In this method all the factors that have any influence on the process in question are kept under control and made constant. An experimental method, according to Kerlinger (1973), is to mean a scientific investigation in which an investigator manipulates and controls one or more independent variables and observes the dependent variables for variation concomitant to the manipulation of the independent variable'.

Experiments are situations in which the researcher manipulates one variable (called independent variable) and then observes its effect on another variable (called dependent variable). The key factor in this method is the controlling of the conditions or variables. By this control we can eliminate irrelevant conditions or variables and isolate relevant ones. In this way we become able to observe the casual relation between two phenomenon keeping all other conditions almost constant. For example, if we try to study the effect of intelligence on academic achievement by experimental method, we will need to discover the causative relation between the two phenomenon (variables) - intelligence and academic achievement. One of these variables, the effect of which we want to study, will be called independent variable and the other as dependent variable. Thus independent variable stands for the cause and dependent variables is characterized as the effect of that cause. The other conditions like study habits, sex, socio-economic conditions, parental education, home environment, health, past learning, memory etc. which exercise desirable impact upon one's achievement besides his intelligence are termed as intervening variables. In experimentation all such intervening variables are to be controlled or made constant or equalized and the effect of only one independent variable like intelligence in the present case is studied on one or more dependent variables like adjustment, achievement etc. For this we try to change and vary the independent variable. It brings concomitant changes in the dependent variable or variables. There changes are objectively observed and measured and on their basis conclusions are drawn.

2.5.1 Process or Steps in Experimental Method

The major steps involved in experimental method are as under:-

(1) Related literature: The researchers need to acquire upto date information relating to his problem. If the review is done with broad experience, it may constitute a major contribution (Sheikh, 2003). According to Keeling (1978), the underlying purpose of related literature, of course, is to locate the present research in the existing body of research on the subject and to point out what it contributes to the subject. Traverse (1978) asserts that the review of related literature should lead to the full and complete statement of the problem.

(2) Selecting and defining the problem: Experimental research starts with the selection of the problem which is amenable to experimentation.

The variables to be studied should be defined in operational terms. The variables are connected to hypothesis which is verified or refuted by the experimental data.

(3) Stating of hypothesis: After studying the available literature, a hypothesis is formulated. Hypothesis gives direction to the experimenter for work.

(4) Constructing the experimental plan: Experimental plan refers to conceptual framework within which the experiment is conducted.

(5) Variables and design of the experiment: Variable are of three types:

(i) Independent Variable: Which is manipulated by the experimenter?

(ii) Dependent Variable: It is the condition or characteristic that appears, disappears, or changes as the experimenter introduces, removes, or changes independent variable.

(iii) Intervening Variables: Such variables which cause intervention other than mentioned variables e.g. Noise, Ill health.

(6) Experimental design: It provides the researcher an opportunity for the

comparisons required by the hypothesis of the experiment and enables him to make a meaningful interpretation of the results of the study with the help of statistical analysis of data.

While selecting an experimental design for experimentation, three important criteria are to be kept in mind. These are: (1) Appropriateness (2) Control (3) Validity. There are various types of experimental design. They are broadly classified as under:

1. One Group Pretest-Posttest Design. In this design the experimenter first tests a group on some aspects of behaviour and then gives special treatment (X) to the same group. He tests the performance of the group after the special treatment. He statistically analyses the data and calculates the difference between the pretest and posttest scores of the group.

2. Two Group Designs. Researches in education and psychology have been often criticized of being loosely controlled. In recent years more rigorous designs have been evolved by using statistics to make researches more scientific and objective. In this design generally researchers use two parallel group techniques to see the effects of an independent variable on some dependent variable. Two groups are equated on the basis of significant variable. One group is called experimental and the other is called control group. The experimental group is subjected to a certain experience or to a specific treatment whereas the control group is not given any type of special treatment. After providing special treatment to the experimental group, both the groups are administered the same final test. The scores are statistically compared and conclusions are drawn as regards the effect of special treatment on the experimental group.

(7) Tools used: Tools are psychological tests on the basis of which experiment is conducted.

(8) Analysis of Data: Analysis of data is made on the basis of statistical techniques used.

(9) Results are drawn on the data collected on the basis of statistical treatment given for the data.

(10) Discussion and generalization: The results drawn from the analysis and interpretation of the data are discussed and experimenter sets how far the results can be applicable to the total population.

2.5.2 Merits and Limitations of Experimental Method

Merits of Experimental Method

- This approach is more rigorous as experiment is conducted under controlled conditions.
- It has the advantage of scientific and systematic procedures of finding solutions to the problems.
- The findings of experimental method are verifiable by other investigator under identical conditions in which the initial experiment was conducted.
- It provides objective information about the behavior being studied.

Limitations of Experimental Method

- Experimental data do not provide understanding of totality of behaviour of the subject.
- Experimental method has mostly been applied on animals so generalizing principles and laws derived on animal behaviour cannot be accurately applied on human beings.
- All problems of educational psychology can't be studied by experimental method.
- It is not always possible to repeat experiment in a number of times under controlled and identical conditions. This method lays much emphasis on quantification of data.
- It is time consuming and costly.

- The use of experimental method in social research is much more complicated.

Check Your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

i. In experimental method makes.....and.....study of human behaviour.

ii. Experimental method has assigned the status of.....to psychology.

iii. The key factor in experimental method is the.....of conditions or.....

iv. When the experimenter just tests the group on some aspects of behaviour and then gives special treatment to the same group it is known as ..... experimental design.

v. The findings of experimental method are.....by other researcher under.....conditions.

vi. Experimental method lays much emphasis on.....of data.

2.6 LET US SUM UP

Observation method is one of the most commonly used methods by many disciplines like psychology, sociology and education. It involves careful and systematic watching of facts as they occur in the course of nature. In every act of observation, there are two components. The analysis and interpretation of behaviour through observation, enables the teacher to improve the teaching learning process. Case study method is primarily concerned with a single person. It is a method of studying the problems of children. The most important characteristics of this method is that it deals with the life history of the individual in the complete environment. The complete and detailed study of a case may involve the use of observation, interview, medical examination and various tests like intelligence, personality, aptitude, academic

achievement and interest. The past and present experiences, conditions in school, society and home are also taken into account. Information from all sources is used to prepare a comprehensive case history and find out the causes of behavioual problem among the students. Experience and training are very important on the part of the councellors to discern what to look for and what to discard and also how to interpret his findings.

Experimental method has been developed in psychology by the continuous efforts of psychologists to make objective and scientific study of human behavior. It is the most precise, planned, systematic and controlled observation. Experiments are situations in which the researcher manipulates one variable (independent variable) and then observes its effect on another variable called (dependent variable).

2.7 LESSON END EXERCISE

1. What do you mean by observation method? Discuss the steps involved in observation method.
2. Discuss the various steps involved in observation method. What are its merits and limitations?
3. Discuss case study method in detail. What are its merits and limitations?
4. Give the meaning of experimental method. What are the various steps involved in experimental method?
5. What are the various steps involved in experimental method? Discuss its merits and limitations.

2.8 SUGGESTED FURTHER READINGS

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2.9 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check Your Progress-1

(i). Real life situations (ii). Observation, Behaviour (iii). Participant Observation (iv). Non-Participant Observation (v). tool (vi). biased, incorrect.

Answers to Check Your Progress-2

(i) Life history, complete

(ii) Diagnosis, treatment

(iii) Past, improvement

(iv) Trained, experienced

Answers to Check Your Progress-3

(i). Objective, systematic (ii). Science (iii). Control, variables (iv). One group Pretest-posttest (v). Verifiable, Identical (vi). Quantification

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Lesson No. : 3 **Unit : I**

MOTIVATION

Structure

3.1 INTRODUCTION

Dear learners, in the present lesson we are going to discuss the concept of motivation as psychological process and under this we shall study why we exhibit certain kind of behavior. What lead us to do something? The answer can be given in various ways and this compels us to study a psychological process called motivation.

Further, we will describe intrinsic and extrinsic motivation along with the role of parents and teachers in extrinsic motivation. Afterwards, the light will be thrown on the theory of achievement motivation and lastly the contribution of Sidney L. Pressey will be discussed in this context.

3.2 OBJECTIVES

After studying this lesson, you shall be able to:

- explain the meaning of the term 'motivation',
- describe the types of motives,
- differentiate between intrinsic and extrinsic motivation,
- describe the role of parents and teachers in extrinsic motivation,
- explain theory of achievement motivation, and
- discuss the contribution of Sidney L. Pressey

3.3 MOTIVATION

Motivation is one of the most frequently used words in psychology. It refers to the factors which move or activate the organism. We infer the presence of motivation when we see that people work towards certain goals. For example, we might observe that a student works hard at almost every task that comes to him/her; from this we infer that the person has motive to achieve.

All human behaviour appears to arise in response to some form of internal (physiological) or external (environmental) stimulation. The behaviours, however, are not random. They often involve some purpose or goal. It is often held that behaviours take place as a result of the arousal of certain motives. Thus motivation can be defined as the process of activating, maintaining and directing behaviour towards a particular goal. The process is usually terminated once the desired goal is attained by the person.

The process of initiating action is technically called 'motivation'. Directing behaviour towards certain goal is the essence of motivation. Motivation is not always

directly observable. It is inferred and used to explain behaviour. When we ask, "What motivates a person to do a particular task?" We usually mean why she behaves as she does. In other words, motivation, as popularly used, refers to the cause or why of behaviour.

Interestingly, we are not aware of all our motives. Behaviour can be governed by unconscious motives too. If our understanding of motives is correct, we have a powerful tool for explaining behaviour. We explain our everyday behaviour in terms of various motives.

Motives also help us make predictions about behaviour. We may tell what a person will do in future. Motives may not tell exactly what will happen but they give us an idea about the range of activities a person will do. Thus a person with a need to achieve in academics will work hard in school, an individual with a strong need to excel in sports will put in a lot of hard work in that field; similarly in business and in many other situations.

Key Concepts of Motivation

Needs: - The best one word definition of needs is 'deficiency'. In the homeostatic sense, needs are created whenever there is a physiological or psychological imbalance. For example a need exists when a cell in the body is deprived of food and water or the human personality is deprived of other persons who serve as friends or companions. (hunger, thirst and company)

Drives: - With a few exceptions, drives or motives (these two terms shall be used interchangeably), are set-up to alleviate needs. A drive can be simply defined as a deficiency with direction. Drives are action oriented and provide an energizing thrust toward goal accomplishment. They are at the very heart of the motivational process. The examples of the needs for food and water are translated into hunger and thirst drives and the need for friends becomes a drive for affiliation.

Goals: - At the end of motivation cycle is the goal. A goal in the motivation cycle can be defined as anything that will alleviate a need and reduce it to the drive. Thus attaining a goal tends to restore physiological and psychological balance and will reduce or cut-off the drive.

Types of Motivation

There are two types of motivation, Intrinsic and Extrinsic motivation. It is important to understand that we are not all the same; thus effectively motivating learners requires that we gain an understanding of the different types of motivation. Such an understanding will enable us to better categorize them and apply the appropriate type of motivation. We will find each individual is different and each individual's motivational needs will be varied as well. Some people respond best to intrinsic which means "from within" and will meet any obligation of an area of their passion. Quite the reverse, others will respond better to extrinsic motivation which, in their world, provides that difficult tasks can be dealt with provided there is a reward upon completion of that task.

a. Intrinsic motivation

Intrinsic motivation is doing something for the sake of personal satisfaction. The primary motivator is internal (i.e. you don't expect to get anything in return). You are intrinsically motivated when you do something simply because it makes you feel good, is personally challenging, and/or leads to a sense of accomplishment. For example, students may be intrinsically motivated to read because it satisfies their curiosity about the world and brings them a sense of calm. Intrinsic motivation is doing something "just because."

Our curiosity, internal fears, psychological needs and desires also serve as intrinsic motives.

It includes the following:

i. Biological drives: e.g. hunger, thirst, relief from pain, sleep,.

ii. Curiosity

iii. Internal fears: e.g. fear of rejection

iv. Psychological needs: e.g. need for being accepted and appreciated by others

v. Internal desires: e.g. desire to gain power or dominance

Advantages: Intrinsic motivation can be long-lasting and self-sustaining. Efforts to build this kind of motivation are also typically efforts at promoting student learning. Such efforts often focus on the subject rather than rewards or punishments.

Disadvantages: On the other hand, efforts at fostering intrinsic motivation can be slow to affect behavior and can require special and lengthy preparation. Students are individuals, so a variety of approaches may be needed to motivate different students. It is often helpful to know what interests one's students in order to connect these interests with the subject matter. This requires getting to know one's students. Also, it helps if the instructor is interested in the subject to begin with!

b. Extrinsic motivation

Extrinsic motivation is doing something to earn a reward or to avoid a punishment. The primary motivator is external (i.e. you expect to get something for completing a certain task, or you want to avoid a consequence for not doing something). For example, a student studies for a test because he wants to earn a good grade. Or students mind their behavior because they don't want to lose their recess. Students choose behaviors not because they enjoy them or find them satisfying, but in order to get something in return or avoid an adverse outcome.

It includes the following motives:

i. Incentives

ii. Bonuses

iii. Allowances

iv. Promotion and Demotion

v. Rewards and punishment

vi. Merit and distinction certificates

Advantages: Extrinsic motivators more readily produce behavior changes and typically involve relatively little effort or preparation. Also, efforts at applying extrinsic motivators often do not require extensive knowledge of individual students.

Disadvantages: On the other hand, extrinsic motivators can often distract students from learning the subject at hand. It can be challenging to devise appropriate rewards and punishments for student behaviors. Often, one needs to escalate the rewards and punishments over time to maintain a certain effect level. Also, extrinsic motivators typically do not work over the long term. Once the rewards or punishments are removed, students lose their motivation.

Role of Parents and Teachers in Extrinsic Motivation

Role of Teachers

Mceachie suggests that students have a need to welcome and indicates that teachers who acknowledge students diversity at the start of the course and that they welcome different perspectives and wants to accommodate different needs, set the tone for the students to feel respected and that they are free to communicate with the teacher.

To encourage student to become self motivated independent learners, the teachers can do the following:-

i. Give frequent, early positive feedback that supports beliefs that they can do well.

ii. Ensure opportunities for students success by assigning tasks that are neither too difficult nor too easy.

iii. Help students to find personal meaning and value in the teaching material.

iv. Create an atmosphere that is open and positive.

v. Help students feel that they are valued members of a learning community.

Role of Parents

A child spends only six hours in a day in school and rest at home. So, the great responsibility lies on the part of the parents. The children should always feel motivated to accomplish their tasks and as parents one should pay attention to the following:

i. Disregard what is NOT Important. Spending so much time on insignificant things is useless. Wasting time on nonsense is crap. This is what parents have to focus and advice their wards to spend energy in right direction. Parents should guide their

children to consider only the things that would be beneficial to them and when they do so; the parents should praise them.

ii. Reject Boredom. Parents should take care of this factor also, as boredom means being empty. Children should be guided to think of things that inspire them, things that make them smile. They should be told to spend their quality time with really what is worth the effort.

iii. Laugh a Lot. This is one of the most important factors where we are all lagging and is equally important for children. Happiness is the great treasure. It is the prime responsibility of the parents to watch their children whether they are spending life happily or not. They should be guided to spend some time for themselves. They can be taken to a movie of their interest, may be taken for swimming, invite friends for a house party and likewise such little things can be considered to make the wards happy. Having a great time could be a great source of stress reliever. Moreover, they get inspirations from it.

iv. Stay Fit. It is truly said, "Sound mind resides in sound body". Our body is the only instrument with which we achieve all goals of life and it is very indispensable to take care of this important instrument. Parents should take care of this factor also on priority basis. It is not advisable to make the children book worm. They should be guided to take part in some sports may be in or out of school. This not only gives them happiness and warm feeling, but kills laziness also. The parents should not only create such situations but should appreciate their efforts in this direction.

v. Listening Music and Dancing. Parents have to think that music is one of the great stress relieving thing and dancing makes us physically fit. This has been advocated by many child psychologists also. Sometimes, we as parents shout on our children while they are involved in such activities; instead we should also participate with them and encourage them. Listening to music can inspire them and get that awesome mood to keep everything on the go. The only thing better than silence is good music.

vi. Make Time to be Creative. Today we have burdened our children with lots of academics and have killed their creativity. They should be given liberty to discover a new passion. When it comes to building their creativity, why not try web designing, take some risks, do some painting. While their efforts may not lead to success every time, their new found talent will benefit them in the future. Parents should be with them always and should appreciate them for their endeavours.

vii. Have a Break. Parents should be well aware with this factor also and should encourage their children to apply it in their daily routine. They should be given liberty to call or invite friends to watch the latest blockbuster movie. Grab a bag of popcorn and soda and enjoy each other's company. This will not only give them happiness but will re-energize them to work with new enthusiasm.

viii. Diet Shift. This is also the aspect where parents responsibility is very high. In the growing years of the lives of children, diet is also one of the main factors. Children should be given healthy diet. But sometimes they hesitate to eat what is regularly prepared for them to eat. So, **"**How about changing their diet"? Explore and try to devour some new recipes for your wards. Break their usual meal. A change is always good. Eat and live well. For some people eating is an effective stress reliever.

Therefore, as parents if we take care all above discussed factors into consideration; we will not only motivate our children extrinsically but will make them physically as well as mentally fit. This will also make them stronger enough to accept the challenges of their lives positively and achieve their goals of life as well.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. The process of motivation is usually not terminated once the desired goal is attained by the person. True/False
2. Biological drives like hunger, thirst etc. are the examples of.…..……. motivation.
3. Merit and distinction certificates are the examples of.....of motivation.

3.4 THEORY OF ACHIEVEMENT MOTIVATION

What is Achievement Motivation?

The term achievement motivation may be defined by independently considering the words achievement and motivation. Achievement refers to competence (a condition

or quality of effectiveness, ability, sufficiency, or success). Motivation refers to the energization (instigation) and direction (aim) of behavior. Thus, achievement motivation may be defined as the energization and direction of competence-relevant behavior or why and how people strive toward competence (success) and away from incompetence (failure).

Achievement motivation can be understood simply as the tendency to strive for success or to attain a desirable goal. Embedded within this definition are a number of important implications. First, it is suggested that achievement motivation involves an inclination on the part of the individual. Historically, this has included a consideration of the individual's personality and how that personality influences a motivational state, given the presence of certain environmental factors. Since the 1980s, the focus of achievement motivation research has shifted from individual differences in personality to the cognitive, situational, and contextual determinants of achievement. Second, achievement usually involves a task-oriented behavior that can be evaluated. Third, the task orientation usually involves some standard of excellence that may be either internally or externally imposed.

Theories of Achievement Motivation

Henry A. Murray, in his influential book *Explorations in Personality* (1938), conceived of personality as a series of needs that involve a "readiness to respond" in certain ways under specific conditions. One of these is the need for achievement. He defined the need as a desire or tendency to "overcome obstacles, to exercise power, to strive to achieve something difficult as well as and as quickly as possible." Thus, achievement is a generalized need. Like many later motivational theorists, Murray argued that the pleasure of achievement is not in attaining the goal but rather in developing and exercising skills. In other words, it is the process that provides the motivation for achievement.

David McClelland and his many associates at Harvard University furthered the idea of needs in several decades' worth of work in learned needs theory. McClelland argued that people, regardless of culture or gender, are driven by three motives: achievement, affiliation, and influence. The need for achievement is characterized by the wish to find solutions to problems, master complex tasks, set

goals, and obtain feedback on one's level of success. McClelland proposed that these needs were socially acquired or learned.

John Atkinson, who collaborated with McClelland in some early work, developed a distinctively cognitive theory of achievement motivation that still retained the basic ideas of McClelland's theory—that people select and work toward goals because they have an underlying need to achieve. Atkinson made two important additions. First, he argued that the achievement motive is determined by two opposing inclinations: a tendency to approach success and a tendency to avoid failure. The first tendency is manifested by engaging in achievement-oriented activities, while the second tendency is manifested by not engaging in such activities. Second, Atkinson suggested that these two fundamental needs interact with expectations (the perceived probability of success or failure of the action) and values (the degree of pride in accomplishment versus the degree of shame in failure).

Several modifications were subsequently offered by Atkinson and others. For example, an important distinction between extrinsic motivation (engagement in a task for an external reward, such as a school grade or a pay raise) and intrinsic motivation (engagement in a task as a pleasure in its own right, with some standard of performance as a goal in itself) was developed to explain why some people may still engage in achievement activities, such as attending school or accepting a demanding job, even when their tendency to avoid failure is greater than their tendency to seek success.

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Achievement motivation includes both competence and……..
2. According to McClelland, "people, regardless of culture or gender, are driven by three motives: achievement, affiliation, and ……".
3. Who defined the need as a desire or tendency to "overcome obstacles, to exercise power, to strive to achieve something difficult as well as and as quickly as possible."

3.5 CONTRIBUTION OF SIDNEY L. PRESSEY

In the early 1920s Sidney Pressey, an educational psychology professor at Ohio State University, developed a machine to provide drill and practice items to students in his introductory courses. Pressey (1926, p.374) stated, " the procedure in mastery of drill and informational material were in many instances simple and definite enough to permit handling of much routine teaching by mechanical means." Pressey maintained that the teacher is "burdened by such routine of drill and information-fixing" (p. 374). Pressey further stated that this mechanical device could: Lift from her [the teacher's] shoulders as much as possible of this burden and make her free for those inspirational and thought-stimulating activities which are, presumably, the real function of the teacher. (p. 374)

The teaching machine that Pressey developed resembled a typewriter carriage with a window that revealed a question having four answers. On one side of the carriage were four keys. The user pressed the key that corresponded to the correct answer. When the user pressed a key, the machine recorded the answer on a counter to the back of the machine and revealed the next question. After the user was finished, the person scoring the test slipped the test sheet back into the device and noted the score on the counter.

Pressey was directly influenced by Edward Thorndike, an educational psychologist at Columbia University Teachers College. Thorndike wrote in 1912:

If, by a miracle of mechanical ingenuity, a book could be so arranged that only to him who had done what was directed on page one would page two become visible, and so on, much that now requires personal instruction could be managed by print. (p. 165).

It was in these words that Edward Thorndike described the premise of computer based instruction half a century before the feasibility of such a system became possible. Thorndike's ideas of the textbook's purpose lend themselves well to using the computer as a tool for learning. Thorndike stated:

A textbook can do much more than be on the one hand a mere statement of the results of reasoning such as the ordinary geography or German grammar is, or on the

other hand a mere statement of problems, such as the ordinary arithmetic or German reader is. (p. 165-166)

Pressey also noted that the most valuable and interesting purpose of his machine was to teach. Raising a lever on the back of the machine shifted the mechanism so that the user had to select the correct answer before the next question was revealed. Pressey (1926) stated that this immediacy of feedback makes the device "still more unusual" (p. 374). He also cited the fact that the question remains before the user until the correct answer is selected.

The influence of Thorndike on Pressey was substantial. Thorndike specified three conditions that maximized learning: the laws of recency, effect, and exercise. The law of effect stated that the likely recurrence of a response is generally governed by its consequence or effect generally in the form of reward or punishment. The law of recency stated that the most recent response is likely to govern the recurrence. The law of exercise stated that stimulus-response associations are strengthened through repetition.

In his machine Pressey sought to incorporate Thorndike's laws. In one version of his machine, a user had to answer a question twice correctly before it was eliminated; this addressed the laws of exercise and effect. Pressey (1927) stated:

Last the law of recency operated because the last answer chosen was the correct one. The correct response must almost inevitably be the most frequent, since the correct response is the only response by which the learner can go on to the next question, and since whenever a wrong response is made it must be compensated for by a further correct response. (p.551)

Pressey also believed that his machine provided the user with immediate knowledge of the results.

Pressey is credited with introducing the mastery learning paradigm into his machines by Pagliaro. Pagliaro also noted that Pressey "programmed" individualized instruction into his machine because the question was kept before the user until the correct response was selected and the question was eliminated as the correct answer was mastered.

In an article written in 1932, Pressey stated that "education was the one major activity in this country which has thus far not systematically applied ingenuity to the solution of its problems" (p. 668). He was confident that the machine he developed would lead to an "industrial revolution in education" (p. 672).

Pressey's revolution was delayed by the Great Depression. In the same year that Pressey predicted the revolution, the unemployment rate climbed to 23.6 percent, and new developments in educational technology were delayed until after World War II.

Skinner attributed the failure of Pressey's machines to the fact that the world of education was not ready for them. He also noted that Pressey's machines were designed to be used after some learning had taken place elsewhere.

By confirming correct responses and by weakening responses which should not have been acquired, a self-testing machine does, indeed teach; but it is not designed primarily for that purpose. (p. 969).

Check Your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. By whom was Pressey directly influenced?
2. Pressey believed that his machine provided the user with immediate knowledge of the results. True/False
3. In his machine Pressey sought to incorporate which laws of Thorndike.

3.6 LET US SUM UP

In the above lesson we elaborated the term 'motivation' along with its types viz. extrinsic and intrinsic; where we explained them in the context of education. We also described the role of parents in providing extrinsic motivation to children which is very much required in the present rapidly changing and highly demanding world. After this we described the theories of achievement

motivation and in the last we highlighted the contribution of Sidney L. Pressey in the education system.

3.7 LESSON END EXERCISE

Short Answer Type Questions

1. Describe the meaning of the term 'motivation'.
2. What do you mean by achievement motivation in educational context?
3. How Pressy's theory relates to 'Law of exercise' advocated by Thorndike?

Long Answer Type Questions

1. Discuss the role of the parents and teachers to motivate their children.
2. Define the term, 'achievement motivation'. Discuss the theoretical paradigms of achievement motivation.
3. In the words of Pressy, "Machine lifts from teachers' shoulders as much as possible of burden and make them free for those inspirational and thought-stimulating activities". Discuss.

3.8 SUGGESTED FURTHER READINGS

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Pressey, S.L. (1927). A machine for automatic teaching of drill material. *School and Society, 25*(645), 549-552.

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3.9 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. False
2. Intrinsic
3. Extrinsic

Check Your Progress-2

1. direction
2. influence
3. Henry A. Murray

Check Your Progress-3

1. Thorndike
2. True
3. Laws of exercise and effect

******

Lesson No. : 4 **Unit : II**

NATURE OF LEARNING, FACTORS INFLUENCING LEARNING

Structure

4.1 INTRODUCTION

All individuals are not alike in their growth and development. Individuals differ in their Physical growth, mental capabilities, interests, sociability, emotional maturity etc. The differences in patterns of growth and development are due to differences in heredity and environment. The process of learning is also affected by the individual differences. Learning is a universal experience, everybody learns at all stages and goes on learning from birth to death. All that, we do, think and feel in our lives is due to learning. Learning plays a pivotal role in the language we speak, our attitudes, our beliefs, our personality patterns. It is important for a teacher to know how does one acquire knowledge and skills, develops new habits and solves the problem. This means as a teacher you should know 'what is learning'? What is its nature? and 'which are the factors that influence the process of learning. In this lesson, we shall discuss the concept of learning, its nature and factors influencing learning.

4.2 OBJECTIVES

After going through this lesson, you shall be able to:

- explain the meaning of learning,
- reproduce two definitions of learning, and
- explain the factors affecting learning.

4.3 NATURE OF LEARNING

Learning occupies central place in the field of education and plays very important role in determining the behaviour of the individual. Unless a teacher is aware of nature, factors, methods and laws of learning, it is not possible for him/her to achieve success in giving thorough knowledge to his students. Learning is a very comprehensive term. It is not limited to classroom learning or deliberate learning of any skill. It includes all sorts of activities and experiences acquired through experience. Learning is the acquisition of habits, knowledge and attitudes. It involves new ways of doing things and it operates in an individual's attempt to overcome obstacles or to adjust to new situations. Learning is a progressive change in behaviour brought about through experience by various stimuli. It is a process which, as a result of training

and experience, leads to certain modifications in behaviour so that individual makes new and changed responses to the environment. An individual reacts to a situation in an effort to adopt his behaviour effectively to demands made upon him. It enables him to satisfy interests or to attain goals. The following example will illustrate this learning process. When the child is born, he performs certain action automatically. But in the course of time, he goes on learning new skills, gaining fresh information and developing new beliefs and attitudes. Not only this, there is change in his behaviour also. While approaching a burning fire, since the child gets burnt and withdraw himself away, next time when he faces a burning candle, he takes no time to withdraw himself from it. Thus, we come to know that the child has learnt that if one touches flame, he gets burnt up. Learning may also be understood as a progressive adjustment to the environment. The organism is placed in a new situation and in order to adjust himself to it he makes certain natural responses. Some of these responses are reflex actions and some of these are based on past experiences. He does not succeed and tries new channels of behaviour to succeed. In doing so certain changes and modifications in his behaviour and experience take place. If these changes and modifications are effective, they are repeated and become a part of his behaviour and experience. All this is learning, i.e. acquiring changes and modifications in experience and behaviour to meet the demands of adjusting to new situations.

The changes that occur due to the growth and maturation are not learning. The change of behaviour due to learning is relatively permanent until it is modified to a newer one. The temporary changes in behaviour like sadness, irritative mood, loss of control over muscles, which occur due to impact of alcohol or fatigue or illness are not counted towards learning.

4.3.1 Definitions of Learning

The definitions of learning given by different psychologists are as under:

According to Gates and other, “Learning is the modification of behaviour through experience and training”.

According to Melvin H.Marx, “Learning is relatively enduring change in behaviour which is a function of prior behaviour (usually called practice)”.

According to G.D. Box, "Learning is the process by which individual acquires various habits, knowledge and attitudes that are needed for meeting the demands of life in general".

According to Gardner Murphy, "The term learning covers every modification in behaviour to meet environmental requirements".

According to Guilford, "Learning is a change in behaviour resulting from behaviour".

According to Hilgard, " Learning refers to change in a subject's behaviour to a given situation brought about by his repeated experiences in that situation, provided that behaviour change cannot be explained on the basis of native response tendencies, maturation or temporary state of organism (e.g. fatigue, drugs etc.)".

According to Skinner, "Learning includes both acquisition and retention."

According to Peel, "Learning is a change in the individual following upon changes in the environment."

According to Crow & Crow, "Learning is the acquisition of habits, knowledge & attitudes. It involves new ways of doing things and it operates in an individual's attempt to overcome obstacles or to adjust to new environment."

4.3.2 Learning and Maturation

Our behaviour depends on both maturation and learning. Maturation is inner growth of the organism. Organic processes increase the ability and efficiency of the individual, and this growth has a certain pattern. It is said that a child should be able to walk or talk at a certain age or the baby should be able to hold its head, sit or stand after so many weeks or months. These changes are due to maturation and they are not influenced by outside conditions. Learning, on the other hand, is the result of environmental influences and experiences as a result of which the individual is able to move and work more effectively. But learning depends on maturation. For every type of learning a certain stage of maturation is considered necessary. A six-month baby cannot walk nor a child of five year learn writing free hand. They will learn when they grow mature enough to be capable of learning these activities. It is no use forcing children to learn things for which they are not sufficiently mature. Thus learning

and training depends upon maturation but maturation does not depend upon training. No amount of practice can teach a baby of six months to walk and run.

`Modifications which come about in behaviour are inherent in a normal organism and will be found in every individual generally at a particular age. But learning is personal and each individual learns in his own way and manner. Again the individual does not have to make an effort to mature, maturation is inner growth. But to learn he may have to strive hard. Maturation is inborn and unlearned, learning is acquired.

4.3.2 Characteristics of Learning

From the discussion of concept of learning, we state the following characteristics of learning:

- Learning is a universal process.
- Learning is a continuous process.
- Learning is a change in behaviour through experience.
- Learning is an organization of behaviour.
- Learning is a process of solving problems.
- Learning is goal oriented.
- Learning is adjustment.
- Learning is a complex process.
- Learning occurs both in formal and informal situations.
- Learning involves various dimensions of Psychological mental activities.
- Learning is function of practice.
- Learning is manifold in nature. It involves changes in three domains i.e. cognitive, affective and psychomotor.
- Learning involves perceptual operation and motor process.

Check Your Progress-1

Note: (a) Answer the question given below.

(b) Compare your answers with those given at the end of this lesson.

(A) Fill in the blanks:

(i) Learning is the modification of .....through .....

(ii) Learning involves the acquisition of....., ...and attitudes.

(B) Say 'true' or 'false'.

(i) Change in behaviour brought about due to fatigue, effects of drugs or the other temporary state of the organism is learning. ☐

(ii) Learning is a continuous process. ☐

(iii) Learning involves changes only in cognitive domain. ☐

(iv) Maturation is inborn and unlearned. ☐

(v) Learning and training depend upon maturation, but maturation does not depend upon learning. ☐

4.4 FACTORS INFLUENCING LEARNING

Many factors affect the process of learning. The main factors can be personal and environmental. Let us discuss these factors:

4.4.1 Personal factors

Important personal factors that affect learning are as under:

(a) **Maturation.** Learning is possible only when certain stage of maturation is reached. Maturation is reflected in the readiness of the child to do a certain activity. For every type of learning a certain stage of maturation is required. It is no use forcing the children to learn things for which they are not mature sufficiently. No amount of practice can make child of six months to walk and

drive bi-cycle. They will do these activities when they are mature enough to be capable of learning these activities.

(b) **Fatigue and Boredom.** Fatigue is physical or mental tiredness which decreases the efficiency and competency to work. Boredom is a lack of desire or an aversion to work on the part of an organism. Both these factors influence learning.

(c) **Physical and mental illness.** Imbalanced mental health hampers learning. A calm and balanced mind has the capacity to concentrate and learn better. Stress, tension, anxiety, frustration unable the child to concentrate on the task. Similarly physical defects like hearing defects, visual defects, malfunctioning of glands and prolonged illness have adverse affect on learning. Good physical heath helps to acquire knowledge and skills effectively.

(d) **Excited Physical Conditions.** An excited bodily state, arising out of emotions hinders learning. A man under the spell of emotions cannot concentrate and whatever is learnt, is forgotten easily.

(e) **Age.** Learning capacity varies with age. Thorndike on the basis of his experiments concluded that learning progresses rapidly between 18 and 20, remains stagnant till 25 and after that there is decline in the capacity to learn.

(f) **Motivation.** Motivation is the heart of learning process. Adequate motivation not only sets in motion the activity which results in learning, but also sustains and directs it. The learner must have motive to learn. The will to learn is important. Motivation depends upon the satisfaction of certain drives and needs. Motivation may be internal or external. Internal motives include drive, needs, sense of competition, level of aspirations etc. and external motives include rewards, knowledge of results and satisfactory reinforcement. If learner is conscious of the needs, learning will be more effective.

(g) **Interest and attention.** Learning depends upon the interest of the learner in a particular activity. If the interest is aroused and sustained in the particular activity, then it will be easier for the learner to master the task and he will master it more effectively. Teaching aids like charts, models, audio-visual aids arouse interest

of the learner and motivates them to learn and should be used effectively by the teacher. It is an everyday's experience that we pay much attention and are involved in a task in which we are interested. When interested and attentive, we learn the things easily, quickly and without committing errors.

(h) **Intelligence**. Intelligence is an important factor in learning and is positively related to it. Generally persons with higher IQs learn new and difficult material more easily whereas dull persons feel difficulty in learning and accomplishing even the simpler tasks. In other words, the more intelligent learn quickly and learn better.

4.4.2 Environmental factors

The following environmental factors also affect learning:

(a) Physical factor in environment. Man lives and learns in the physical environment, therefore, any physical factor also assumes importance for the learning process. For example, fresh air, high and low temperature quality, direction and nature of sunlight, noise, amount of humidity and other atmospheric conditions influence learning.

(b) Time of learning. Morning period is considered the best period for learning. Whatsover is learnt in the morning, is retained better by the organism because mind is fresh during early hours of the day.

(c) Family background and socio-economic status. Research in the field of family background and socio-economic status has proved that learning achievements, attitudes, values and ability of the students are different due to urban and rural environment and socio-economic conditions of the family. Therefore, for effective learning proper stimulation may be provided from the family irrespective of the background and socio-economic conditions of the family because it is responsible for developing adequate and correct attitude towards learning.

(d) Methods of learning. For effective learning, suitable method of learning is no less important. Methods of learning like project method, discussion method, whole vs part method, recitation method and learning by doing methods are

effective and should be used by the teacher keeping in mind the nature of task, intelligence and individual differences.

Check Your Progress-2

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

(b) Compare your answer with the above sub-section.

A. List the Personal and Environmental factors affecting learning.

4.5 LET US SUM UP

In this lesson, we have discussed the meaning and factors affecting learning. Learning is a change in behaviour through experience. It is a continuous and universal process. We learn at school, home, with our companions, anywhere, in any situation. Learning is affected by a number of personal factors like maturation, fatigue and boredom, physical and mental illness, excited physical conditions, age, motivation, interest, attention and intelligence etc. Similarly, certain environmental factors like physical factors in environment, time of learning, family background and socio-economic status affect the process of learning.

4.6 LESSON END EXERCISE

1. Define learning. How is it different from maturation?
2. What is learning? State its nature.
3. Discuss the personal factors affecting learning.
4. Discuss the environmental factors affecting learning.

4.7 SUUGESTED FURTHER READINGS

Aggarwal, J. C. (1995). *Essentials of educational psychology.* New Delhi: Vikas Publishing House Pvt. Ltd.

Bhatia, H.R. (1997). *A text book of educational psychology*. New York: MacMillan

Chauhan, S.S. (1988). *Advanced educational psychology.* New Delhi: Vikas Publication.

Crow, L.D., & Crow, A. (1973). *Educational psychology.* New Delhi: Eurasic Publishing House.

Dandekar, W.N. (1981). *Psychological foundations of education (2nd ed.)*. Madras: MacMillan India Ltd.

Kundu, C.L., & Tutoo, D.N. (1988). *Educational psychology.* New Delhi: Sterling Publications.

Mathur, S.S. (1994). *Educational psychology.* Meerut: Loyal Book Depot.

4.8 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

A. (i) Behaviour, experience

(ii) Habits, Knowledge

B. (i) False (ii) True (iii) False (iv) True (v) True

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Lesson No. : 5 **Unit : II**

THEORIES OF LEARNING

STRUCTURE

5.1 INTRODUCTION

Dear learners, in lesson no. 4 we have discussed nature of learning and factors affecting learning. You came to know that learning is not limited to classroom learning or deliberate learning of any skill. It includes all sorts of activities and experiences. You also learnt that learning is affected by a number of factors like maturation, fatigue and boredom, physical and mental illness, emotions, age, motivation, intelligence, interest, physical conditions, psychologically safe environment, time of learning and family background.

Psychologists have tried to explain how people learn and why they learn. They have carried on a number of experiments and studies on animals and children and came to certain definite conclusions with regard to different aspects of learning process. In this lesson, we will discuss about theories of learning. You will also come to know that how as a teacher you can apply the implications of the learning theories in the teaching-learning process.

5.2 OBJECTIVES

After going through this lesson, you shall be able to:

- categorize different theories of learning,
- describe trial and error theory of learning
- explain educational implications of trial and error theory,
- discuss classical conditioning theory of learning along with its educational implications,
- discuss operant conditioning theory of learning, and
- state educational implications of operant conditioning theory of learning.

5.3 THEORIES OF LEARNING

Various theories have been given by psychologists in order to explain the process of learning. How does an individual learn is answered by the psychologists through

various theories of learning. Broadly we may group these theories under two major heads.

(a) **Associationist or Connectionist or Behaviourist or Stimulus-Response (S-R) theories of learning.** These theories interpret learning in terms of connection or association between stimulus and response. Thorndike's Trial and Error theory. Hull's Drive Reduction theory, Skinner's Operant Conditioning theory (All these are S-R theories with reinforcement) and Pavlov's classical conditioning theory, Watson's Learning theory and Guthrie's continguity theory of learning (all these are theories without reinforcement), etc. are included in this category.

(b) **Cognitive or Field or Gestalt theories of learning.** These theories interpret learning in terms of purpose, insight, understanding, reasoning, memory and other cognitive factors. Kohler's Insight theory, Lewin's Field theory and Tolman's Sign theory have been included in this category.

5.4 TRIAL AND ERROR THEORY OF LEARNING

The Trial and Error Theory of Learning was put forward by an American Psychologist Edward Lee Thorndike. According to Thorndike all learning takes place because of formation of bond or connections between stimulus and response. He further says that learning takes place through a process of approximation and correction. We seem to learn by random and blind efforts; we try one solution, we try another solution till by sheer accident or by exhausting possibilities, we hit upon the correct solution. He emphasizes that when faced with a problem situation, a person makes a number of trials, some responses do not give satisfaction to the individual but he goes on making further trials till he gets satisfactory responses.

Thorndike conducted a number of experiments on animals to explains the process of learning. His most widely quoted experiment is with a cat placed in a puzzle box. Thorndike put a hungry cat in a puzzle box. The box had one door which could be opened by manipulating a latch of the door. A fish was placed outside the box. The cat being hungry had the motivation of eating fish outside the box. But the obstacle was the latch on the door. The cat made random movements inside the box

indicating trial and error type of behaviour-biting at the box, scratching the box, walking around, pulling and jumping etc. to come out to get the food. Now, in the course of her movements, the latch was manipulated accidently and the cat came out to get the food. Over a series of successive trials the cat took shorter and shorter time and committed less number of errors and finally was in a position to manipulate the latch as soon as it was put in the box and learnt the art of opening the door. Thorndike concluded that it was only after many random trials that the cat was able to hit upon the solutions. He named it as Trial and Error Learning. An analysis of the learning behaviour of the cat in the box shows that besides trial and error the principles of goal, motivation, explanation and reinforcement are involved in the process of learning by trial and error. The following steps are involved in trial and error learning:

(i) Presentation of a new situation which is seen as a problem

(ii) Natural responses to seek adjustment to the new situation

(iii) Hitting upon success by chance after trying a number of unsuccessful ways

(iv) Gradual reduction in time and errors in reaching the correct pathway, and their ultimate elimination

(v) Repetition of successful attempts

(vi) Fixation of correct attempt or solution of a problem.

5.4.1 Educational Implications of Trial and Error Learning

Thorndike's Theory of Trial and Error Learning has exercised an enormous influence in teaching learning process. It has the following educational implications:

- The theory lays emphasis on practice or repetition. The practice principle of this theory can be effectively applied in the learning of such material as arithmetical tables, spellings and formulae and in skills lessons like handwriting, dance, music, craft and drawing etc.
- The theory has highlighted the role of reward and praise in the process of learning. Rewards and recognition play a great role in encouraging the pupils. Due

recognition should be given to good achievement so that the organisms cheered up to march forward. It is the task of the educator to provide to every child such learning situations that he gets success and satisfying feeling.

r The theory emphasizes the principle of drive, motive and goal which has wider educational implications. In the absence of drive, learning cannot be effective. Hence teacher must arouse the interest of the students or readiness of pupils. In teaching any topic the teacher must tap their previous knowledge, arouse interest for the new topic through suitable questions and then announce the aim of the new lesson.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

Fill in the blanks:

(i) E.L. Thorndike was the propounder of.....theory of learning.

(ii) Trial and error theory of learning is based on .....bond.

(iii) In trial and error theory a person makes a number of attempts and finally comes to a.....attempt.

(iv) By repeated attempts at the task, the number of unsuccessful attempt go on .....

(v) Connectionist theory of learning interprets learning in terms of association between.....and.....

5.5 PAVLOV'S CLASSICAL CONDITIONING THEORY OF LEARNING

The theory of classical conditioning had its origin in the experiments of I.P. Pavlov, a Russian Psychologist. Pavlov encountered the phenomenon of conditioning in course of his studies on the digestive process for which he was awarded a Nobel Prize. During his experimental works on dogs, he accidently noticed a phenomenon

of secretion of saliva in dogs on the sight of food or caretaker's approaching foot steps. The salivating process, well before the food was put into the mouth of the dog, was called psychic secretion. This psychic secretion was the basis of classical conditioning theory of learning.

Classical conditioning is defined as a process in which a neutral stimulus by pairing with a natural stimulus, acquires all the characteristics of natural stimulus. It is also called substitution learning because we substitute a neutral stimulus in place of a natural stimulus. Learning by conditioning is learning to respond to a substitute stimulus, to a stimulus other then the natural or original stimulus. To understand the nature of the process of conditioning, the experiment performed by Pavlov is given below.

Pavlov placed a dog in a kennel. After a minor incision, a rubber tube was attached to the salivary gland of the dog so that whenever it salivated the saliva trickled down into a beaker. Meat powder, a natural or unconditioned stimulus was presented to the dog. The dog salivated on the presentation of meat powder. Its salivation was a natural or unconditional response to the meat powder. During the second stage of the experiment, a bell was paired with the meat powder. The bell was rung immediately followed by meat powder. The dog would salivate as in the first instance. This activity was repeated several times. In the third stage of the experiment, the bell was rung but no meat powder was presented. The dog responded by salivating to the sound of the bell, as it did in the previous stages. It had been conditioned to the bell, that is, the sound of bell could elicit saliva as was initially elicited by the meat powder. Diagrammatically the experiment appears as follows:

Stage 1 Meat powder.....saliva (UCR)

(UCS)

Stage 2 Bell + Meat powder————————saliva (UCR)

(Neutral stimulus) + (UCS)

Stage 3 Bell.....saliva

(CS) (CR)

Let us try to understand the terminology used by Pavlov.

(a) Unconditioned Stimulus/Natural Stimulus: Meat powder/food is the unconditioned stimulus. The stimulus can elicit response without learning. The response to an unconditioned stimulus is inborn or natural.

(b) Unconditioned Response/Natural Response: Salivation is unconditioned response. It is an unborn, unlearned reaction to unconditioned stimulus.

(c) Conditioned Stimulus (CS): Originally, the sound of the bell is a neutral stimulus for the dog. When paired with meat powder (UCS) it acquired the ability to elicit saliva.

(d) Conditioned Response (CR): When a response is elicited to conditioned stimulus it is called conditioned response. Dog's salivation to the sound of bell is a conditioned response.

Some important phenomenon of Conditioning are as under:

r **Extinction.** The stimulus response bond needs frequent reinforcement, that is the bond will continue if the conditioned stimulus continues to be associated with unconditioned stimulus. When there is no reinforcement, with repetition the stimulus response connection will grow weaker and eventually disappear. This process is known as extinction. Thus extinction occurs when the conditioned stimulus is repeatedly presented without the unconditioned stimulus. Suppose every time the bell is rung but it is not followed by meat powder. Then what will happen? At first the dog will continue to salivate at the sound of the bell, but after some trials it will stop responding to the sound of the bell. This means conditioned response has been extinguished.

r **Spontaneous Recovery.** Once a conditioned response has been extinguished it does not mean that it has been extinguished forever. The spontaneous recovery means that some degree of association remains between the conditioned stimulus and response. During extinction the learned response is forgotten or inhibited temporarily. The extinguished response may occur after sometime. The recurring or the re-establishment of the extinguished response may be termed as spontaneous recovery.

For example, after a few days when the bell was again rung, the dog salivated to the sound.

r **Stimulus Generalization.** Pavlov noted that if in placed of the sound of the bell, a different kind of sound was made, the dog salivated to it. This phenomenon was given the name of stimulus generalization. The more similar are the two stimuli, the more likely is the generalization that occurs.

5.5.1 Educational Implications of Classical Conditioning Theory

The theory of classical conditioning is useful in the field of education in the following ways:

- In the classroom learning process, classical conditioning emphasizes the importance of repetition as children learn by practice. In general, conditioned reflexes are strengthened with repetition under reinforcement. Similarly in the academic field certain skills like multiplication tables, the basic concept of language, the vocabulary etc. can be learnt by repetition.
- Principles of classical conditioning can be used for developing good habits in children such as cleanliness, respect for elders, punctuality, regularity, honesty, truthfulness etc. Similarly all bad habits can be broken down by deconditioning such as wrong spelling habits, stuttering, nail biting, etc.
- Acquired fear and phobias can be deconditioned by using the principles of classical conditioning. The feared object can be associated with an acceptable and pleasant one and reconditioning can take place.
- Judicious use of reward and punishment to bring the desired changes among learners is also based upon the conditioning process. The teacher should associate faults with punishments so that whenever a child feels like committing faults, he/she anticipates the punishments. Rewards and punishments, if they are to be proved successful should be presented immediately after the learning act.

- Positive attitude towards learning, teacher and the school can be developed through classical conditioning. Sometimes students come to like certain school subjects or co-curricular activities associated with a teacher who is quite popular among them. Similarly, they develop dislikes for the subject and activities associated with an unpopular teacher who creates anxiety among the students by his behaviour. The habit of disliking certain school subject and teacher can be directed towards interests in that subjects and teacher through reconditioning by associating pleasant stimuli with them.

- The principle of motivation, which is the chief governing force of learning process has been emphasized by this theory. Children learn if they have an inner urge to learn. The dog salivated because that was hungry. The dog would not have salivated on the ringing of the bell, if that had not been hungry. Similarly students cannot be motivated towards the learning process if they are not interested.

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

(A) Fill in the blanks:

(i) Classical Conditioning theory of learning interprets learning in terms of .....between.....and.....

(ii) Classical Conditioning theory of learning was developed by.....psychologist named.....

(iii) Classical Conditioning is a process is a process in which a .....stimulus, by pairing with a.....stimulus, acquires all the characteristics of the natural stimulus.

(iv) Meat powder was a.....or.....stimulus presented to the dog.

(v) The salivation was a .....or.....response to the meat powder.

(vi) The sound of the bell was a .....stimulus for the dog.

5.6 SKINNER'S OPERANT CONDITIONING THEORY OF LEARNING

B.F. Skinner propounded the Operant Conditioning Theory of Learning. The theory is called the operant conditioning as it is based on certain operations or actions which a person has to carry out. Skinner conducted many experiments on different reflexes in rats and pigeons and consequently put forward Operant Conditioning Theory of Learning. The process of operant conditioning Skinner explains as follows, "when a bit of behavior has the kind of consequences called reinforcing, it is more likely to occur again." In other words an organism tends in future to do what it was doing at the time of reinforcement. By baiting each step of the way, the experimenter can lead the subject to do what he wishes it to do.

Experiment

In an experiment a hungry pigeon was kept in a Skinner box. The pigeon has to raise his head to a particular height and peck at a particular spot in order to get his food. In actual experiment, the pigeon was rewarded with a food pellet when it approached a disc, then only when it nodded towards it and eventually only when it actually pecked it. By certain repetitions it learnt to do so quickly and automatically. Skinner called such behaviour of learning to peck or to press a lever or bar to get the reward, as operant conditioning. Operant means effective or active and this term indicates that the organism is operating upon the environment. Here, the process of operant conditioning is the change in frequency with which the head is lifted to a given height. The reinforcer is food and the reinforcement is the process of food presentation, when the response is emitted (the head is raised to a particular height and a particular spot is pecked.) The operant is the height to which the head must be raised. By judiciously rewarding the spontaneous action of birds, Skinner has shaped the behaviour of birds in many ways.

In operant conditioning, the important stimulus is one immediately following

the response, not the one preceding it. Any emitted response which leads to reinforcement is thereby strengthened. Skinner operant conditioning theory is known as type 'R' Conditioning in which response occurs spontaneously in the absence of any stimulus with which it may be specifically correlated.

He changed the traditional S-R formula to R-S formula. The term operant emphasizes the fact that behavior operates upon the environment to generate its own consequences.

Operations in Operant Conditioning

1. Shaping 2. Extinction 3.Spontaneous Recovery 4. Concept of Reinforcement

1. Shaping: It refers to the judicious use of reinforcement to bring desirable changes in behavior of the organism. The basic process in shaping the successive approximation to the desired behavior involves reinforcing some bit of the behavior which forms a part of the chain. By using technique of shaping we can change the behavior of the organism. We can bring those changes in the behavior which we want to install in the repertoire of the organism. Effective shaping requires thorough understanding and control of the reinforcing mechanism and effective arrangement of several or many behavior segments that comprise the learned task.

2. Extinction: It consists of withholding the reinforcer when the appropriate response occurs. Withholding the reinforcer means extinction of previously established relationship. Suppose in the Skinner box, the rat presses the bar but does not get food pellet. If this is repeatedly done, the bar pressing behavior of the rat will be extinguished.

3. Spontaneous Recovery: It refers to the fact that if an organism is removed from the situation for a while after extinction and then returned and again presented with S_1, his performance will be better than would be predicted from his performance at end of preceeding extinction.

4. Concept of Reinforcement: Any stimulus whose presentation or removal increases the probability of a response is a reinforcer.

i) Positive Reinforcer: A positive reinforcer is a stimulus which, when applied following an operant response, strengthens the probability of response. Food, teacher's smile, an affectionate pat on back are positive reinforcers.

ii**) Negative Reinforcer:** Negative reinforcer is a stimulus which when removed following an operant response strengthens the probability of that response. A loud noise, a very bright light, extreme heat, cold and electric shock etc are negative reinforcers.

iii) Punisher: Punisher is an aversive stimulus which follows a response and frequently serves to suppress it.

5.6.1 Educational Implications of Operant Conditioning Theory of Learning

1. The most important contribution of operant conditioning theory of learning is that of 'Programmed Instruction'. It focuses on eradication of drawbacks of traditional system of education. In programmed instruction students can progress at their own pace. It gives consideration to individual differences. The brighter students can progress quickly. The programmed instruction proceeds in a serial order from initial behavior to terminal behavior at each step. All these principles can be effectively used by the teacher in the classroom to meet the individual needs of the learners and creating conducive teaching-learning environment in the classroom.
2. The theory lays emphasis on motivation in teaching-learning process. If students get immediate confirmation, i.e. reinforcement they can better be motivated. Teacher can involve the students in teaching-learning process so that student's interest may be maintained in learning activities.
3. The theory can be effectively used by the teacher for development of good habits and breaking of bad habits by giving immediate positive reinforcement and negative reinforcement to the students.
4. Principles of operant conditioning can be used to check aversion of the student for a particular subject or a teacher. Suitable behavioural contingencies may be used and atmosphere of recognition, acceptance and affection may be created by the teacher to help the child in approaching the teacher and the subject with positive attitude.

5. The principles of operant conditioning can be used for dealing with the behavior problems of students. Fears, anxieties and prejudices among the students can be overcome by the teacher through variety of behavior contingencies such as praise, smile, affectionate pat on the back etc.

5.7 LET US SUM UP

In this lesson, it is explained that the theories of learning have been grouped under two major heads i.e. stimulus response theories and cognitive theories of learning. Trial and Error and classical conditioning theories are based on stimulus response bond. Insight theory has been grouped under cognitive theories of learning.

According to trial and error theory, an individual makes a number of responses to reach a goal. But after making a number of trials and some unsuccessful attempts, he comes to a successful attempt. Classical conditioning consists in pairing a neutral stimulus a number of times with a natural stimulus. Ultimately, the neutral stimulus will elicit the same response as is elicited by the natural stimulus. Operant conditioning involves operating upon or modifications of the environment by the subject. An operant is a response which is emitted by the subject without any particular forcing stimulus rather than elicited by a reinforcing situation. In Skinner's operant conditioning reinforcement is not paired with the stimulus but it depends upon the response emitted by the organism. These theories lay emphasis on practice, drill, motivation, goal and reinforcement in teaching-learning process.

Check Your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

A. Fill in the blanks:

(i) Operant conditioning theory of learning was propounded by.....

(ii) Operant conditioning involves.....or modification of the.....by the subject.

(iii) An operant is a response which is.....by the subject without any particular forcing.....

(iv) An operant is a response which is elicited by..... a situation.

(v) Withholding the reinforcer when the appropriate response occurs is known as .....

(vi) The procedure of approximation of desirable behaviour by reinforcing is known as.....

5.8 LESSON END EXERCISE

1. Discuss Thordinke's Trial and Error Theory of learning and state its educational implications for the teachers.
2. Discuss the essential features of classical conditioning theory of learning and state its educational implications
3. Explain the important features of operant conditioning theory of learning. Also describes its educational implications
4. Describes the phenomenon of classical conditioning

5.9 SUGGESTED FURTHER READING

Aggarwal, J. C. (1995). *Essentials of Educational Psychology.* New Delhi: Vikas Publishing House Private Limited.

Bhatia, H.R. (1997). *A text book of education psychology.* New York: MacMillan.

Bower, G.H., & Hilgard, E.R. (1986). *Theories of learning.* New Delhi: Prentice Hall of India

Chauhan, S.S. (1988). *Advanced educational psychology*. New Delhi: Vikas Publication.

Cotton, J. (1995). *The theory of learning: An introduction.* New Delhi: Prentice Hall of India Pvt. Ltd.

Crow, L.D. & Crow, A. (1973). *Educational psychology.* New Delhi: Eurasic Publishing House.

Dandekar, W.N. (1981). *Psychological foundations of education (2nd ed)*. Madras: MacMillan India Ltd.

5.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

A. (i) Trial and error

(ii) S-R

(iii) Successful

(iv) Decreasing

(v) Stimulus and Response.

Check Your Progress-2

A. (i) connection, stimulus, response

(ii) Russian, Ivan P. Pavlov

(iii) Neutral, Natural

(iv) Natural, unconditioned

(v) Natural, unconditioned

(vi) Conditioned

Check Your Progress-3

(i) B.F. Skinner

(ii) Operating upon, environment

(iii) Emitted, stimulus

(iv) Reinforcing

(v) Extinction

(vi) Shaping

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Lesson No. : 6 **Unit : II**

BEHAVIOURISTIC PERSPECTIVE TO LEARNING

Structure

6.1 INTRODUCTION

In this lesson you will understand 'Behaviourism' as a school of thought which focuses its attention totally on the overt or observable behavior for its objective observation and considers environmental forces to be the sole factor in shaping one's personality and influencing one's behavior. You will also appreciate the contribution of 'Behaviourism' in the field of education. You will also go through the related

theories of Gagne and Clark L. Hull and will understand their importance in present day teaching-learning situations.

6.2 OBJECTIVES

After going through this lesson, you shall be able to:

- explain the behaviouristic perspective to learning,
- describe the contribution of behaviourism to education,
- describe the Gagne's theory and its contributions to education,
- explain Hull's theory of learning, and
- discuss the contribution of Hull's theory to education.

6.3 BEHAVIOURISTIC PERSPECTIVE TO LEARNING

Human behavior is learned, thus all behaviour can be unlearned and new behaviours learned in its place. Behaviourism is concerned primarily with the observable and measurable aspects of human behaviour. Therefore, when behaviours, become unacceptable, they can be unlearned. Behaviourism views development as a continuous process in which children play a relatively passive role. It is also a general approach that is used in a variety of settings including both clinical and educational.

Behaviourists assume that the only things that are real (or at least worth studying) are the things we can see and observe. We cannot see the mind, the id, or the unconscious, but we can see how people act, react and behave. From behaviour we may be able to make inferences about the minds and the brain, but they are not the primary focus of the investigation. What people *do*, not what they *think* or *feel*, is the object of the study? Likewise the behaviourist does not look to the mind or the brain to understand the causes of abnormal behavior. He assumes that the behaviour represents certain learned habits, and he attempts to determine how they are learned.

The material that is studied is always behavior. Because behaviorists are not interested in the mind, or its more rarified equivalents such as psyche and soul,

inferences about the conditions that maintain and reinforce human behavior can be made from the study of animal behavior. Animal research has provided a very important foundation for the behavioral approach. The behavioral researcher is interested in understanding the mechanisms under lying the behavior of both normal individuals and those with problems that might be referred as "mental illness". When the behavioral model is applied to mental illness, it tends to be used for a wide variety of presenting problems. It is perhaps most effective in treating behavioral disorders and disorders of impulse control, such as excessive drinking, obesity, or sexual problems. Behavioral approaches may be quite useful in treatment of anxiety and have occasionally been helpful in the management of more severe mental disorders such as schizophrenia

History of Behaviorist Approach

By the early 20th century, the science of psychology has had important turnouts, 20-30 years after Wundt established the first psychology laboratory. Of all these turnouts, the method of introspection is the leading one. Wundt and his followers thought that the subjects such as conscious and feelings expected to be studied by psychology, could be studied just by introspection and they didn't consider it risky to use introspection as a scientific method. Psychology can use introspection as a scientific method since it deals with inner lives of people just as sciences about outer world use external observation as a scientific method. However, many have considered objectivity and reliability of introspection as a real problem. Another development in those years occurred in the world of science. Physical sciences made a great progress in those years and especially physics changed the world of science fully. Moreover, the philosophical tradition behind physics constituted the base of people's questioning most of the things. Another development in the early 20th century was that functionalism was on the rise within the scope of psychology. Some phenomena such as conscious, which were accepted to be a structure before started to be accepted as a process helping to adapt to the environment. Doubtless to say, Darwin's evolutionary theory also influenced this idea. Darwin's ideas about living beings that had to adapt to the environment in which they were living also made tremendous impact on psychology. Another development that can be evaluated in this context is the study of animal psychology. Animals' psychological situations turned into a

research subject under the influence of Darwin. It was thought that animals had some qualities such as conscious as well as perception, distinguishing. An article (psychology through the eyes of behaviorist) written by John Broadus Watson in 1913 in such a positivist environment was revolutionary. In his article, which changed both the methods and subjects of psychology, Watson stated that it was not scientific for psychologists to deal with unobservable phenomena such as conscious or thought, and that science had to deal with observable behaviours. Doubtless to say, Watson's these ideas have a background, in other words, Watson did not suddenly felt it necessary to boom like this. Watson could evaluate the spirit of time well and could read the developments well. Although some other important names of behaviorist approach such as Thorndike and Pavlov displayed some manners that could be included in behaviorist approaches before, Watson's article is accepted as the birth of behaviorist approach. The period that started with Watson's article is called as Watson's behaviorism and it is accepted to last until 1930. The second phase, which comprises the studies of Edward Tolman, Edwin Guthrie, Clark Hull and B.F. Skinner, is called as neo-behaviorism and it lasted until 1960s. In this period, behaviorists claimed that (a) the base of psychology was composed of studies about learning, (b) behaviours could be explained by principles of conditioning and (c) psychology had to comply with the principle of functionalism and that a concept that could not be defined functionally could not be studied, either. The third phase is the period that has been lasting since 1960 and it is called as new-neo-behaviorism or social behaviorism. The pioneers of this phase are Albert Bandura and Julian Rotter. Cognitive elements were added to behaviorism in this period. Behaviorists of this period think that it is not true for behaviorism to deny mental and cognitive processes. Even Bandura named his theory social behaviorism first and then replaced this name with social-cognitive theory while Rotter called his theory social learning theory. To have a general look at behaviorists, there are two kinds of behaviorists: methodological behaviorist and radical behaviorist. While Bandura and Rotter are included in the group of methodological behaviorist, Watson and Skinner are included in the group of radical behaviorist. While radical behaviorists believe that psychology should study just the observable behaviours and environmental processes, methodological behaviorists think that cognitive processes can also be studied, but methods of behaviorist approach

should be used. (Schultz and Schultz, 2007). According to another classification, there are three types of behaviorism: methodological behaviorism claiming that psychology is the science of behaviour, not mind; psychological behaviorism claiming that the reason of behaviour is not internal (such as mental processes) but external and analytical (philosophical or logical) behaviorism claiming that mental concepts and processes can be defined in terms of behaviorism. This variety also signifies that behaviorist approach includes different ideas. On the other hand, when we come to today, behaviorism not only has lost strength but also seems to be defeated by cognitive revolution. Put strict behaviorists such as Watson, Pavlov and Skinner aside, new-neo behaviorists state that they are cognitive-behaviorists. Even, according to a research, two thirds of the members of American Behaviour Analysis Association established depending on behaviorist approach define themselves as cognitive-behaviorist.

Fundamentals of Behaviorist Approach

As is mentioned above, behaviorism has passed through three phases. It is clear that different ideas have been accepted in each of these phases. However, behaviorism is basically an approach founded by Watson and it is doubtless that it has got some fundamental qualities. These fundamental qualities have been influenced by the conditions of that day. The first behaviorists who tried to gain scientific qualities to psychology were influenced by physics to a great extent and even they "imitated" them (Ormrod, 1990):

1. A person's learning is similar to other living things' learning. The same principles are valid about a person's learning in the same way a dog learns. So, behaviorists use the term, organism in their definitions and the term, organism comprises both people and animals.

2. Depending on the first principle, behaviorists try to explain human behaviour by means of the studies carried out with animals. Of course, there are a lot of reasons (such as being reinforced and raised easily), but the most important reason is explained by Tolman in that way: "Let's watch what mice live in cages, these animals cannot go out at night while a researcher plans to carry out an experiment. … They also don't have a conflict of class or race and they avoid

politics, economics and psychological notices." In short, it seems quite possible to isolate variables well while doing experiment with animals. Even Pavlov built a special building in which he thought he could control all kinds of physical stimuli.

3. Like John Locke's understanding of human mind, human is like a blank sheet from birth. The environment shapes it. (Mind is not a term used by most of the behaviorists.)

4. Learning can be examined by means of focusing on measurable and observable events such as physical subjects.

5. Most behaviorists believe that people's qualities such as feeling, idea, and motivation cannot be observed or measured directly and so they cannot be handled and studied scientifically. Organism is a "black box." What goes in (stimulus) and what comes from (reaction) the box is measurable and observable. However, what is going on in the box cannot be understood. So, it is not included in the subjects of psychology.

6. Principles of learning are based on the connection between stimulus and reaction.

7. Behaviorists use the term of conditioning rather than learning. According to this, organism is conditioned (to give a certain reaction) by environmental stimuli in learning. So, such kind of learning takes place out of the control of the organism.

8. Learning is said to take place only when there is a change in one of the observable behaviours of the organism. If there is no change in the behaviour, it is clear that learning doesn't take place.

9. Learning can be stated and expressed in a short and brief manner. All learnings can be explained through the same rules whether they are simple or complex.

Early Theorists:

Pavlov (1849-1936)

Ivan P. Pavlov is Russia's most famous scientist. He first won great distinction for his research on the physiology of the digestive system. Pavlov

encountered a methodological problem that was ultimately to prove more important and more interesting than his physiological research. He had discovered "conditioning".

For Pavlov, all behavior was reflexive. But how do such behaviors differ from the behavior commonly called "instinctive"? Instinctive behavior is sometimes said to be motivated. The animal has to be hungry, to be sexually aroused, or to have nest-building hormones before these kinds of instinctive behavior can occur. But Pavlov concluded that there seems to be no basis for distinguishing between reflexes and what has commonly been thought of as non reflexive behavior. As a psychologist, Pavlov was concerned with the nervous system, and specifically the cerebral cortex, not with any lawfulness that he might find in behavior.

At a more abstract level, Pavlov thought that all learning, whether of elicited responses in animals or of highly conceptual behaviors in humans, was due to the mechanisms of classical conditioning. We now believe it to be wrong, but it is nonetheless one of the great ideas of our culture.

Watson (1878-1958)

John B. Watson was one of the most colorful personalities in the history of psychology. Although he did not invent behaviorism, he became widely known as its chief spokesman and protagonist.

Watson was brought up in the prevalent tradition: Mechanism explains behavior. In a widely used textbook (Watson, 1914) he said that the study of the mind is the province of philosophy; it is the realm of speculation and endless word games. The mind has no place in psychology. A science of psychology must be based on objective phenomena and the ultimate explanation must be found in the central nervous system.

It was Watson, more than Pavlov or any other one person, who convinced psychologists that the real explanation of behavior lay in the nervous system and that as soon as we understood the brain a little better, most of the mysteries would disappear.

And, it was mainly because of Watson that so many psychologists came to believe that what they called conditioning was so important.

Skinner (1904-1990)

B. F. Skinner is considered by many authorities to have been the greatest behavioral psychologist of all time.

Earlier behaviorism had been concerned with stimulus-response connections. Skinner looked at the learning process in the opposite way, investigating how learning was affected by stimuli presented after an act was performed. He found that certain stimuli caused the organism to repeat an act more frequently. He called stimuli with this effect the "reinforcers". Skinner found that by providing reinforcement in a systematic way one could shape the behavior in desired directions.

Teachers have benefited the most from Skinner's fundamental work in reinforcement as a means of controlling and motivating student behavior. Its various applications to classroom practice are commonly called "behavior modification", a technique that many teachers consider to be one of their most valuable tools for improving both learning and behavior of their students.

Types of Learning

Classical conditioning is demonstrated when a neutral stimulus acquires the eliciting properties of the unconditioned stimulus through pairing the unconditioned stimulus with a neutral stimulus. Behavior is controlled by association.

Operant conditioning is demonstrated when the reinforcing consequences immediately following the response increases its future likelihood; aversive consequences immediately following the response to decrease its future likelihood.

In looking for a more direct and effective explanation of the development of children's social behavior, psychologists sparked the emergence of observational learning (or Social Learning Theory). Albert Bandura demonstrated that modeling or observational learning is the basis for a variety of children's behaviors. He stated

that children acquire many favorable and unfavorable responses by simply watching and listening to others around them. A child who kicks other children after he sees it occurs at the babysitter's house, a student who shaves her hair because her friends did, and the boy who is always late for class because others are, are all displaying the results of observational learning.

Other examples of observational learning include: modeling, imitation, vicarious learning, identification, copying, social facilitation and role play.

In studying animal behaviors, the term *imprinting* was introduced by Lorenz. Imprinting refers to the appearance of complex behaviors apparently as a result of exposure to an appropriate object at a critical time. This is demonstrated with newly hatched ducklings which will follow the first moving object they encounter and become attached to it (usually a mother).

Contribution to Education

1. Behaviorists such as Watson and Skinner construe knowledge as a repertoire of behaviors. Skinner argues that it is not the case that we use knowledge to guide our action; rather, "knowledge is action, or at least rules for action". It is a set of passive, largely mechanical responses to environmental stimuli. Knowledge that is not actively expressed in behavior can be explained as behavioral capacities. For example, "I know a bluebird when I see one" can be seen as effectively equivalent to "I have the capacity to identify a bluebird although I am not now doing so". If knowledge is construed as a repertoire of behaviors, someone can be said to understand something if they possess the appropriate repertoire. No mention of cognitive processes is necessary.

2. From a behaviorist perspective, the transmission of information from teacher to learner is essentially the transmission of the response appropriate to a certain stimulus. Thus, the point of education is to present the student with the appropriate repertoire of behavioral responses to specific stimuli and to reinforce those responses through an effective reinforcement schedule. An effective reinforcement schedule requires consistent repetition of the material; small, progressive sequences of tasks; and continuous positive reinforcement. Without positive

reinforcement, learned responses will quickly become extinct. This is because learners will continue to modify their behavior until they receive some positive reinforcement.

3. Behaviorists explain motivation in terms of schedules of positive and negative reinforcement. Just as receiving food pellets each time it pecks at a button teaches a pigeon to peck the button, pleasant experiences cause human learners to make the desired connections between specific stimuli and the appropriate responses. For example, a student who receives verbal praise and good grades for correct answers (positive reinforcement) is likely to learn those answers effectively; one who receives little or no positive feedback for the same answers (negative reinforcement) is less likely to learn them as effectively. Likewise, human learners tend to avoid responses that are associated with punishment or unpleasant consequences such as poor grades or adverse feedback.

4. Behaviorist teaching methods tend to rely on so-called "skill and drill" exercises to provide the consistent repetition necessary for effective reinforcement of response patterns. Other methods include question (stimulus) and answer (response) frameworks in which questions are of gradually increasing difficulty; guided practice; and regular reviews of material. Behaviorist methods also typically rely heavily on the use of positive reinforcements such as verbal praise, good grades, and prizes. Behaviorists assess the degree of learning using methods that measure observable behavior such as exam performance. Behaviorist teaching methods have proven most successful in areas where there is a "correct" response or easily memorized material. For example, while behaviorist methods have proven to be successful in teaching structured material such as facts and formulae, scientific concepts, and foreign language vocabulary, their efficacy in teaching comprehension, composition, and analytical abilities is questionable.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. An article titled.....was written by J. B. Watson.
2. Behaviorist does not look to the mind or the brain to understand the causes of abnormal behavior. True/False
3. Pavlov had discovered.....
4. According to Skinner, the stimuli which cause the organism to repeat an act more frequently are known as.....
5. John Locke advocated that human mind is like a blank sheet from birth. (True/False)
6. The term *imprinting* was introduced by …….....……..
7. Albert Bandura demonstrated that.....or..... learning is basis for a variety of children's behaviour.

6.4 GAGNE'S CONTRIBUTIONS TO LEARNING

In 1956, the American educational psychologist Robert M. Gagné proposed a system of classifying different types of learning in terms of the degree of complexity of the mental processes involved. He identified eight basic types, and arranged these in the hierarchy. According to Gagné, the higher orders of learning in this hierarchy build upon the lower levels, requiring progressively greater amounts of previous learning for their success. The lowest four orders tend to focus on the more behavioural aspects of learning, while the highest four focus on the more cognitive aspects.

Let us now take a closer look at Gagne's eight categories of learning.

1. **Signal Learning**. This is the simplest form of learning, and consists essentially of the classical conditioning first described by the behavioural psychologist

Pavlov. In this, the subject is 'conditioned' to emit a desired response as a result of a stimulus that would not normally produce that response. This is done by first exposing the subject to the chosen stimulus (known as the conditioned stimulus) along with another stimulus (known as the unconditioned stimulus) which produces the desired response naturally; after a certain number of repetitions of the double stimulus, it is found that the subject emits the desired response when exposed to the conditioned stimulus on its own. The applications of classical conditioning in facilitating human learning are, however, very limited.

2. **Stimulus-response learning**. This somewhat more sophisticated form of learning, which is also known as operant conditioning, was originally developed by Skinner. It involves developing desired stimulus-response bonds in the subject through a carefully-planned reinforcement schedule based on the use of 'rewards' and 'punishments'. Operant conditioning differs from classical conditioning in that the reinforcing agent (the 'reward' or 'punishment') is presented after the response. It is this type of conditioning that forms the basis of programmed learning in all its various manifestations.

3. **Chaining**. This is a more advanced form of learning in which the subject develops the ability to connect two or more previously-learned stimulus-response bonds into a linked sequence. It is the process whereby most complex psychomotor skills (eg riding a bicycle or playing the piano) are learned.

4. **Verbal association**. This is a form of chaining in which the links between the items being connected are verbal in nature. Verbal association is one of the key processes in the development of language skills.

5. **Discrimination learning**. This involves developing the ability to make appropriate (different) responses to a series of similar stimuli that differ in a systematic way. The process is made more complex (and hence more difficult) by the phenomenon of interference, whereby one piece of learning inhibits another. Interference is thought to be one of the main causes of forgetting.

6. **Concept learning**. This involves developing the ability to make a consistent response to different stimuli that form a common class or category of some sort. It forms the basis of the ability to generalise, classify etc.

7. **Rule learning**. This is a very-high-level cognitive process that involves being able to learn relationships between concepts and apply these relationships in different situations, including situations not previously encountered. It forms the basis of the learning of general rules, procedures, etc.

8. **Problem solving**. This is the highest level of cognitive process according to Gagné. It involves developing the ability to invent a complex rule, algorithm or procedure for the purpose of solving one particular problem, and then using the method to solve other problems of a similar nature.

Gagne's learning hierarchy is useful in teaching

Gagne's learning hierarchy helps the teacher to identify suitable learning types for the learners.

1. It helps the teacher to select appropriate teaching technique.
2. It helps the teacher to select suitable content or unit for teaching for teaching.
3. It helps the teacher to decide what lower behaviors or subordinate skills should be taught before teaching higher learning types.
4. It helps the teacher to break a complex task into component skills and teach those skills only that the students are lacking.
5. Textbooks can be produced on the basis of the task analysis of learning objectives.

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. How many types of learning were identified by Gagne?
2. .....is the process whereby most complex psychomotor skills are learned.

3. …….. is a form of chaining in which the links between the items being connected are verbal in nature.

4. .....forms the basis of the ability to generalise, classify etc.

5. …….. is the highest level of cognitive process according to Gagné.

6.5 HULL'S THEORY OF LEARNING

Learning is one of the most important topics in present-day psychology, yet it is an extremely difficult concept to define. Learning occupies a very important place in our life. Most of what we do or do not do is influenced by what we have learnt. Learning therefore provides a key to the structure of our personality and behavior. An individual starts to learning immediately after his birth or in a strict sense even in womb of the mother. Experience direct or indirect is found to play a dominant role in molding and shaping behavior of the individual from the very beginning. The change in behavior brought about by experience is commonly known as learning. In this way, the term learning broadly speaking, stands for all those changes and modifications in the behavior of the individual which he undergoes during his life time.

Life history

Clark Leonard Hull was born in Akron, New York (May 24, 1884 – May 10, 1952). He was an influential American psychologist and learning theorist in behaviorism. He sought to explain learning and motivation by scientific laws of behavior. Clark Hull's most important contribution to psychology lies in his theory of learning, considered one of the most important learning theories of the twentieth century. He also conducted research demonstrating that his theories could predict and control behavior, and inspired many of his students to continue to develop his theories and maintain his high standards of scientific method in the field of psychology.

Clark Hull grew up handicapped and contracted polio at the age of 24, yet he became one of the great contributors to psychology. His family was not well off so his education had to be stopped at times. Clark earned extra money through teaching.

Originally Clark aspired to be a great engineer, but that was before he fell in love with the field of Psychology. By the age of 29 he graduated from Michigan University. Clark was 34 when he received his Ph.D. in Psychology at the University of Wisconsin in 1918. Soon after graduation he became a member of the faculty at the University of Wisconsin, where he served for 10 years. Although one of his first experiments was an analytical study of the effects of tobacco on behavioral efficiency, his lifelong emphasis was on the development of objective methods for psychological studies designed to determine the underlying principles of behavior.

Hull devoted the next 10 years to the study of hypnosis and suggestibility, and in 1933 he published *Hypnosis and Suggestibility*, while employed as a research professor at Yale University. This is where he developed his major contribution, an elaborate theory of behavior based on Pavlov's laws of conditioning. Pavlov provoked Hull to become greatly interested in the problem of conditioned reflexes and learning. In 1943 Hull published, *Principles of Behavior*, which presented a number of constructs in a detailed Theory of Behavior. Soon he became the most cited psychologist. For his effort, Hull received the Warren medal in 1945 from the society of Experimental Psychology. Hull was physically disabled most of his life. In 1948 he had coronary attack, and four years later he died. In his last book he wrote (*A behavior system*), he expressed regret that the third book that he had intended to write on learning would never be written.

1. Change in traditional S-R notion

Hull rejected the Gutherie's contiguity approach as well as the S-R formula given by Thorndike. Guthrie emphasized only the contiguity, i.e. togetherness of the stimuli and the response, for the formation of an association and Thorndike made it out to be mechanical, a trigger like function of stimulus-response. Hull introduced the concept of intervening variables between S and R. Accordingly, when a stimulus (S) impinges on the the organism, it results in a sensory neural impulse (s), a kind of stimulus trace. This stimulus trace ultimately causes a motor neural reaction (r), this results in an overt response (R).

Thus we may have a formula S-s-r-R instead of the traditional S-R.

However, there are so many other things within the inner mechanism of the organism like his interests, needs, drives and also the reinforcing mechanism that may influence his response or behavior. Consequently, the traditional S-R formula in Hull's approach was extended to S-O-R incorporating all intervening variables existing between environmental stimulation and overt response.

2. The concept of reinforcement and drive-stimuli reduction

Hull maintained that the establishment of simple S-R connection is not enough for learning. In this regard he refuted Guthrie's, Thorndike's and Skinner's claims. He viewed learning in terms of reduction of one's need, drive or drive stimuli.

Drive, according to him may be referred to a state of tension resulting from need. For example, the thirst drive arises out of our body's need to take in water for its maintenance. If the response or the reaction of the organism reduces the need or drive, we then have a condition of reinforcement enabling the organism to repeat the S-R association and thus to habitually react in the same way in a particular situation.

Drive stimuli are the stimuli that characteristically accompany certain drive e.g. dryness of mouth, lips and throat accompanying the thirst drive.

During his work, Hull changed his stand twice from need reduction to drive reduction and finally to drive stimulus reduction for associating it with the task of reinforcement for the following reasons:

i. It was experimentally observed that the behavior of the hungry rats could be effectively reinforced by saccharine water which is sweet but utterly non-nutritive, i.e. not possessing the capacity to reduce the food need in the least.

ii. Reduction of drive takes a considerable time. For example, if we consider the thirst drive, it takes a long time for the water to go into the mouth, the throat, the stomach, the blood and the effect of its ingestion to be conveyed to the brain to reduce the thirst drive. Reduction of a drive stimulus is relatively quick process

that occurs immediately after the presentation of a reinforcer. Water is taken by the organism and it soon results in the reduction of the thirst drive stimuli (dryness of mouth, lips and throat). The behavior is reinforced and thus the reinforcement of one's behavior can be better explained through the concept of drive stimuli reduction than drive reduction.

Hull thus considered the aims of reinforcement to be the reduction of the drive or drive stimuli. He thought reinforcement to be of two kinds- primary and secondary. Primary reinforcement tended to strengthen a certain behavior through the satisfaction of basic biological needs, drive or drive stimuli. Secondary reinforcement, on the other hand, is brought about by an originally neutral stimulus like money by association with a primary reinforcing agent like food.

3. Habit formation and habit strength

Hull pointed out that repetition of the reinforcement strengthens the association of stimulus and response. It brings about and organization in the nervous system known as 'habit' or a particular response to a particular stimulus and when this happens we say behavior is learned. In this way, Hull reduced learning to habit formation. The success of this learning behavior is measured through a concept termed as 'habit strength' and symbolized as sHr.

Stimulus generalization

This is another concept of this theory. Stimulus generalization means if there are two or more similar stimuli, they can elicit same or nearly the same response from the organism as was elicited by the original stimulus. For example, a child who fears from a snake also fears from a rope or any other thing which looks like a snake. Based on this characteristic, the habit strength sHr will generalize from one stimulus to another to the extent to which the two stimuli are similar. Hull provided the term 'generalized habit strength' symbolized as sr to describe the generalization of habit strength through the phenomenon of stimulus generalization. With this he tries to explain the phenomenon of transfer of training by emphasizing that learning performed under similar conditions would be likely to be transferred to the new learning situation.

Reaction Potential

Yet another concept elaborated by Hull is that of reaction potential. Reaction potential indicates the potential of an individual to react or respond. He defined it as the probability of the repetition of a learned response at any given moment and provided the following formula to explain its meaning and purpose.

$$\text{Reaction potential} = sEr = sHr \times D \times V \times K$$

Where, sHr represents the habit strength, D the drive, V the stimulus intensity, and K the incentive.

Accordingly, reaction potential is known to depend upon the following four factors:

- Habit strength (sHr), i.e. how often the response was rewarded in a particular situation.
- Strength of the drive (D), potentially present to energize the behaviour of an individual in that situation.
- Stimulus intensity (V), i.e.The power or the intensity of the stimulus (such as big size,bright colours, loud or appealing sound, or any other strong attraction) to evoke a desired response.
- The incentive (K), i.e. the degree of the attractiveness of a particular reward present in the situation.

Since all the above four factors are multiplied in contributing towards the building of a reaction potential, if anyone had a value of zero, reaction potential would be zero. For example, there could have been many reinforcing pairings between S and R (producing habit strength sHr), but if drive (D) is zero, the organism is not able to detect the stimulus or if the reward or incentive is absent, a learned response will not occur (Hergenhahn, 1976).

Inhibition

Inhibition exercises a regressive effect on the reaction potential by decreasing

or sometimes eliminating the possibility of the reoccurrence of a previously learned response. Hull describes two types of inhibitions, reaction inhibition symbolized as Ir and conditional inhibition symbolized as sIr.

Reactive inhibition is caused by long hours of work, the fatigue associated with muscular activity. It results in Inhibition of further response. Reactive inhibition is caused by the internal physiological and biochemical nature of the individual and therefore varies from individual to individual. It causes reduction in the drive level as well as in the reaction potential of an individual to repeat a response or behaviour. The impact of fatigue, however, may vanish as a result of some rest or interruption of work and the inhibition caused on account of physiological factors like fatigue may also disappear. That is why there may be a spontaneous recovery of a learned response after extinction (the non-occurrence of a learned response due to reactive inhibition).

The other inhibition is known as conditional inhibition is a result of learning and experience. It rests on psychological and environmental factors instead of internal and physiological factors.

Both of these types of inhibitions work in exercising the overall effect of reducing or even eliminating the probability of the reoccurrence of a learned response. For example, if a child refuses to learn further, it may be the result of the reactive inhibition, the mental or physical fatigue caused by overwork in terms of learning or it may be the result of psychological or environmental factors such as his dislike of subject, the method of teaching, the teacher, or other environmental conditions.

Effective reaction potential

Inhibitions, reactive and conditioned, both tend to reduce the level of one's reaction potential. They result in the effective reaction potential symbolized as sEr. It can be expressed in terms of the following equation:

$$\textit{Effective reaction potential } sEr = (sHr \times D \times V \times K) - (Ir + sIr)$$
$$= \textit{Reaction potential} - \textit{Inhibition}$$

Momentary effective reaction potential. In the course of his experiments Hull

observed that many of the learned responses were seen to be elicited on some trials but not on others. This led him to present the concept of an oscillation effect symbolized as sOr.

He asserted that it happens on account of the variation brought about in the inhibitory potential of an individual from moment depending on several internal and external factors. This continuously changing inhibitory potential name was 'oscillation effect' and was given due weightage in defining the momentary effective reaction of an individual for producing learned response at a particular moment in the following way:

Momentary effective reaction potential

$sEr = (sHr \times D \times V \times K) - I] - sOr$

This momentary effective reaction potential is responsible for the occurrence of learned response. Hull provided the following postulates for describing the characteristics of the momentary effective reaction potential in relation to the emittance of a learned response.

- The value of momentary effective reaction potential must exceed a certain value called reaction threshold (sLr) in order to emit a learned response.
- The probability of a learned response (p) is increased to extend that the value of momentary effective reaction potential is higher than the value of reaction threshold.
- The greater the value of momentary effective reaction potential (sEr), the shorter will be the latency i.e., the reaction time between the presentation of a stimulus and the elicitation of learned response.
- The larger the value of momentary effective reaction potential, it increases the power of resistance for the extension of a learned response, i.e , that requires greater number of non-reinforced responses for extinction.
- The magnitude of an emitted learned response termed as amplitude (A) is directly related to the size of the momentary effective reaction potential.

Educational Implications of Hull's Theory

Hull's system of learning is acclaimed and remembered for putting forward one of the most systematic, scientific and mathematical theories of learning. Hull was able to popularize a very innovative and objective behaviouristic approach to learning which was more effective in comparison to the approach of his predecessors. The significant contributions and educational implications of his theory can be briefly summarized as:

1. Hull's theory introduced the concept of intervening variables between Stimulus and Response. The things within the individual definitely act and react with what is received in terms of stimuli from the external environment before emitting an overt response. Hull provided the amended S-O-R formula in place of the traditional S-R approach. He termed the environmental influences upon the individual as 'inputs', and his responses as 'outputs' and what go from the individual as 'processes'. He asserted that 'input' and 'output' can be measured experimentally; therefore, behaviour in its processes and products can be subjected to experimental verification.

   Hull's theory attached sufficient importance to the needs, drives, incentives, reinforcement and adequate motivation for achieving satisfactory results in the process of teaching and learning.

   The greatest contribution of Hull's theory lies in its emphasis on linking the learning to the needs of the children. He says that it is the need or drive that energizes an individual to act, behave or learn.Therefore, he advocated the need-based goals of education, including need-based curricula and methods of teaching.

   Whereas needs start the process of learning, reinforcement and incentives act as catalytic agents for increasing one's efforts towards achieving the goals of possibilities of proper motivation and reinforcement incentives.

2. Hull's theory tried to extend the concept of reinforcement. Prior to this, reinforcement was considered only in terms of rewards and satisfaction but Hull

stated that to escape pain or punishment or to reduce need is also a kind of reward and helps in reinforcement.

3. Hull's theory laid great emphasis on the formation of good habits as a means of the learning of desirable behaviour. It advocated continuous and gradual introduction of small doses of reinforcement rather than one, single heavy dose.

4. Hull's theory brought into focus that different individual have different capacities. It presented a systematic and mathematical treatment of individual differences. Hull attributed individual differences to the variation of the values of numerical constants in the equations in the postulates. He believed that some numerical constant varied from species to species, from individual to individual and from one physiological state to the other in the same individual. Such views propagated by Hull's theory emphasized the need for planning education according to the individual differences of the learners.

5. Hull's theory emphasized the need for proper rest and other measures to reduce the ill-effects of fatigue in any act of learning. The principle of work and appropriate rest, may thus be said to have evolved as a result of the experimental findings of this theory.

6. Hull's theory stood against any inhibition-causing obstacle in the path of learning or emitting the desired response. It stressed the prime need of minimizing or removing all types of inhibitions, internal or physiological and external or learned, for achieving good results in the process of teaching and learning or obtaining the desired behaviour in an individual. In a practical class room situation, therefore, a teacher has to be very careful in the proper distribution of the drill and practice work so as to avoid unnecessary fatigue and the resulting inhibition.

   Similarly, the principle of change and variety in terms of subjects, teachers and class-rooms etc. may be introduced for bringing down the ill-effects of boredom and fatigue.

7. Hull's system of learning advocated the following chain sequence for improved results in the teaching-learning process:

(a) Drive - This is something which is needed by the learner in order to behave or respond

(b) Cue - There must be something to which the learner must respond

(c) Response - The learner must be made to respond or do something in order to learn some act

(d) Reward - The learner's response must be reinforced or rewarded, thus enabling him/her to learn what she/he wants to learn

Check Your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Clark Hull published his first book titled.....in 1933.

2. Hull rejected Gutherie's.....approach and S-R formula given by.....

3. According to Hull's theory the term 'sLr' refers to as……

4. According to Hull, drive stimuli are the stimuli that characteristically accompany certain drive. True/False

5. Complete the following equation:

Momentary Effective Reaction Potential(sEr) = ……..

6. 'Habit strength' is symbolised by.....

6.6 LET US SUM UP

Dear learners in the present lesson, we discussed the behaviouristic approach in educational context. We also discussed its historical perspective along with the contributions of some behaviourists like Watson, Pavlov and Skinner briefly. We highlighted the main contribution of this approach in the field of education. The various

types of learning were also discussed along with Gagnes theory. The main components of Need Reduction Theory given by Clark L. Hull were also explained along with its contribution in present educational context.

6.7 LESSON END EXERCISE

Short Answer Type Questions

1. Describe the term 'Behaviourism' in your own words.
2. Discuss the concept of 'Discrimination Learning' advocated by Gagne.
3. What do you mean by the term 'Momentary Effective Reaction Potential'?

Long Answer Type Questions

1. Point out three major contributions of behaviourism in education.
2. Describe various types of learning advocated by Gagne.
3. Highlight the contribution of Hull's theory in present Indian context of education.

6.8 SUGGESTED FURTHER READINGS

Biggie, M.L., & Hunt, M.P. (1968). *Psychological foundations of education*. New York: Harper & Row.

Crow, L.D. & Crow, A. (1973). *Educational psychology*. New Delhi: Eurasia Publishing House.

Gagne, R.M. (1970). *The Conditioning of learning* (2nd ed.). New York: Rinehart& Winston.

Hilgard, E.O. (1976). *Theories of learning*. New York: Appleton-Century Croft.

Hull, C. L. (1943). *Principles of behaviour*. New York: Appleton-Century Croft.

Skinner, B. F. (1976). *About behaviorism*. New York: Vintage Books.

ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress -1

1. Psychology through the eyes of behaviourist

2. True
3. Conditioning
4. Reinforcers
5. True
6. Lorenz
7. Modelling, observational

Check Your Progress -2

1. Eight
2. Chaining
3. Verbal association
4. Concept learning
5. Problem solving

Check Your Progress -3

1. Hypnosis and suggestibility
2. Contiguity, thorndike
3. Reaction threshold
4.. True
5. sEr= (sHr× D × V ×K)–I] – sOr
6. sHr

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Lesson No. : 7 **Unit : II**

COGNITIVE PERSPECTIVE TO LEARNING

STRUCTURE

7.1 INTRODUCTION

When parents usually think about intellectual or cognitive development, they are thinking more about learning academic skills and building a knowledge base. They usually limit their concept to knowing colors, recognizing shapes, learning the alphabet, and for sure the "3Rs" consisting of reading, writing, and arithmetic. However, cognitive

and intellectual development is much broader than that. Cognitive development and intellectual development really focuses on the way changes in the brain occur related to how we think and learn as we grow. Children do not just know less than adults do, there are differences in the very way that they think about and understand their experiences. Therefore, in this lesson an attempt has been made to discuss cognitive perspective to learning along with three main theories i.e. Kohler's, Bruner's and Ausbel's theory and their importance for present day classroom teaching and learning situations.

7.2 OBJECTIVES

After going through this lesson, you shall be able to:

- explain the cognitive perspective to learning,
- describe the contribution of cognitivism to education,
- describe the Kohler's theory and its contributions to education,
- explain Bruner's theory of learning and highlight its contribution to education, and
- explain Ausbel's theory of learning along with its contribution to education.

7.3 COGNITIVE PERSPECTIVE TO LEARNING

In the early 1950s, a movement called the "cognitive revolution" took place in response to behaviorism. Cognitivism is the belief that much of human behavior can be understood in terms of how people think. It rejects the notion that psychologists should avoid studying mental processes because they are unobservable. Cognitivism is, in part, a synthesis of earlier forms of analysis, such as behaviorism and gestaltism. Like behaviorism, it adopts precise quantitative analysis to study how people learn and think; like Gestaltism, it emphasizes internal mental processes.

Cognitive Psychology

This new school of contemporary psychology is the result of the wave of intellectualism demonstrating faith in man's higher cognitive abilities and capacity to his environment and struggle for perfection. The roots of this psychology may be

discovered in the cognitive outlook of the gestaltists who advocated an overall mental functioning and insight in place of a molecular and mechanistic approach for the study of human behaviour.

The main theme of this new school is cognitive revolution (sometimes referred to as the 'white- box' theory) which postulates that internal processes are the subject matter of psychology. This contrasts with behaviourism (sometimes called the 'black-box' theory).By referring to it as it as the black box theory, it is implied that behaviourists are concerned with the output or response(R) of the organism in a certain situation, and to degree with the input or stimulus(S) but do not consider what transpires between the stimulus and the response. This unexplored element is represented by a 'black box' which intervenes between S and R.

Congnitive psychology studies man's thinking , memory, language, development, perception, imagery and other mental processes in order to peep into the higher human mental functions like insight, creativity and problem solving. Cognitive psychologists are totally opposed to the stimulus- response approach of the behaviourists. They maintain that there is more to learning and behaving than just single responses to stimuli. The human mind does not accept information from its environment in exactly the form and style it is conveyed to him. The conveyed information is compared with the information already stored in the mind; it is subjected to interpretation and then used or stored according to the need of the time.

Cognitive psychology is gaining in popularity day by day. Edward Tolman, one of the founder cognitive psychologists, has made notable contributions in the field of learning, thinking and creative functioning. While explaining the problem-solving behaviour of the higher organisms, he stated that the organism tries to set up mental hypotheses through purposeful behaviour.

Jean Piaget, Swiss psychologist, who has been the most prominent among the contempory cognitive psychologists, has shown keen interest in the study of development of cognitive abilities and operation of cognitive processes in children. Piaget explored the genesis of cognitive structures and the process that underlies learning and knowledge construction. Trained as a biologist, Piaget later shifted his interest to how human beings make sense of their environment and experience. The key notions that Piaget

employed to elucidate his cognitive theory basically derive from biological concepts. According to Piaget, the process of intellectual and cognitive development resembles a biological act, which requires adaptation to environmental demands. Having done a large number of experiments to explore the ways children think, Piaget argued that children do not passively receive environmental stimulation. Rather, they actively seek it, naturally exploring and acting on their world in order to understand it. Piaget's studies and ideas focused on the mechanism of learning within the context of natural sciences instead of the type of logic that learners use. He posited that the biological maturation that human beings go through causes distinct stages in cognitive development. Each of these stages is sequential, dependent on one another to develop, characterized by acquisition of discernable skills, and reflects qualitative differences in cognitive abilities. According to Piaget, the mechanism of change in cognition is equilibration, which is a dynamic interplay of progressive equilibria, adaptation and organization, and growth and change in the master developmental process. Once encountered with a new learning situation, the individual draws on his or her prior knowledge to make the new experience understandable. Experiencing a new event, situation, or learning environment at times engenders contradictions to one's present understandings, which in turn makes them insufficient and leads to perturbation and a state of disequilibration in the mental schemas. To handle this situation and to form a comfortable state of equilibrium in the cognitive structure, the individual needs to modify or reorganize his or her schemas via adaptation. This internal process of restructuring the schemas is done through assimilation and accommodation. While assimilation is a process of integrating new information with existing knowledge, accommodation is a process of modification or transformation in existing cognitive structures in response to a new situation.

Implications of Cognitivism for Classroom Practices

Instruction based on cognitive principles should be authentic and real. The teacher is expected to provide a rich classroom environment that fosters a child's spontaneous exploration. Students are encouraged to explore instructional materials and to become active constructors of their own knowledge through experiences that encourage assimilation and accommodation. Teaching is tailored to the needs, interests,

and backgrounds of students. The teacher is more concerned with constructing a meaningful context than directly teaching specific skills. From the cognitive perspective, because students learn by receiving, storing, and retrieving information, the teacher is urged to thoroughly analyze and consider the instructional materials, proper tasks, and relevant learner characteristics to help learners to effectively and efficiently process the information received. Instructional materials should include demonstrations, illustrative examples, and constructive feedback so that students can have mental models to embody.

To help students process information effectively and efficiently, the teacher needs to employ the following strategies and principles when teaching their subjects:

- **Provide organized instruction**

  Make the structure and relations of the material evident to learners through concept maps or other graphic representations. In multimedia instruction, present animation and audio narration (and/or text descriptions) simultaneously rather than sequentially.

- **Use single, coherent representations**

  These allow the learner to focus attention rather than split attention between two places, for example, between a diagram and the text or even between a diagram with labels not located close to their referents.

- **Link new material with what is currently known**

  This provides a sort of mental "scaffolding" for the new material.

- **Carefully analyze the attention demands of instruction**

  Count the number of elements in instructional messages. Make sure that the learner will not attend to too many different elements at the same time.

- **Recognize the limits of attention (sensory register)**

  Help learners focus their attention through techniques such as identifying the most important points to be learned in advance of studying new material.

- **Recognize the limitations of short-term memory**

  Use the concept of chunking. Do not present 49 separate items. Make them 7 groups of 7. Use elaboration and multiple contexts.

- **Match encoding strategies with the material to be learned**

  For example, do not encourage the use of mnemonic techniques unless it is essential to memorize the material. If you want it to be processed more "deeply," then find encoding strategies that are more inherently meaningful.

- **Provide opportunities for both verbal and imaginal encoding**

  Even though it is not clear whether these are actually two different systems, imaging does help students remember.

- **Arrange for a variety of practice opportunities**

  The goal is to help the learner generalize the concept, principle, or skill to be learned so that it can be applied outside of the original context in which it was taught. Provide for systematic problem-space exploration instead of conventional repeated practice. Provide worked examples as alternatives to conventional problem-based instruction.

- **Eliminate redundancy**

  Redundant information between text and diagram has been shown to decrease learning.

- **Help learners become "self-regulated"**

  Assist them in selecting and using appropriate learning strategies such as summarizing and questioning.

Teaching Methods Based on Some Principles of Cognitive Learning Theory

Cognitive apprenticeship, reciprocal teaching, anchored instruction, inquiry learning, discovery learning, and problem-based learning are the most distinctive

methods of teaching based on a cognitive perspective on learning. These teaching approaches are as under:

- **Cognitive Apprenticeship**

  Cognitive apprenticeship is a method of helping students grasps concepts and procedures under the guidance of an expert such as the teacher. Its basic principles lie in the works of Vygotsky, including his theory of the zone of proximal development. This approach to instruction is marked by modelling, coaching, articulation, reflection and exploration as the phases of instruction.

- **Reciprocal Teaching**

  Reciprocal teaching is based on information processing theory, a branch of cognitive learning theory. Palincsar (1986), who developed this method together with Brown, defines it as an instructional activity in the form of a dialogue happening between teachers and students about parts of text. The aim is to bring meaning to the text in question to facilitate learning and understanding. The teacher incorporates four strategies into the dialogue by asking students to employ cognitive techniques of summarizing, question generating, clarifying, and predicting.

- **Anchored Instruction**

  Anchored instruction refers to designing and implementing instruction around anchors (i.e., cases, stories, or situations) that involve some kinds of case-study or problem situation. As its name implies, anchored instruction anchors teaching and learning in realistic contexts by urging the teachers and students to formulate and seek answers to questions.

- **Inquiry Learning**

  This teaching method grows out of Piaget's theory of cognitive development and resembles the scientific inquiry method. The primary goal is to help students develop their higher-order thinking skills by engaging them in a process

of either investigating an issue or formulating and testing a hypothesis in order to find solutions to a problem.

- **Discovery Learning**

  As is the case for inquiry learning, this teaching method is informed by Piaget's theory of cognitive development. Ormrod (1995) defines discovery learning as "an approach to instruction through which students interact with their environment by exploring and manipulating objects, wrestling with questions and controversies, or performing experiments". As its name suggests, discovery learning encourages students to discover principles and important relationships by engaging them in such activities as asking questions, formulating hypothesis, doing experiments and research, and investigating a phenomenon.

- **Problem-based Learning**

  Problem-based learning involves presenting students with an ill-structured, open-ended, authentic or real life problem with many possible correct solutions and asking them to find answers to that authentic problem. As opposed to traditional instruction that teaches facts and skills first and then introduces the problem, this method introduces the problem at the very beginning of instruction on the basis of what students already know (or students' existing knowledge) and teaches facts and skills in a relevant context.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Cognitive revolution sometimes referred to as the ……. theory.
2. The statement, "Internal process of restructuring the schemas is done through assimilation and accommodation", is associated with which psychologist?
3. Gestaltists advocated an overall mental functioning and insight in place of a molecular and mechanistic approach for the study of human behaviour.

(True/False)

7.4 THEORY OF INSIGHTFUL LEARNING (WOLFGANG KOHLER)

The views propagated by behaviourists in the form of an association between stimuli and responses for understanding learning faced great difficulty in explaining the learning process or behaviour involving higher cognitive abilities. The chance success through trial and error or association through connectionism and conditioning may account for simple acquisition of knowledge, skills, Interest, habits and other personality characteristics, but is not sufficient to account for problem solving, creativity and acquisition of other similar cognitive behaviour including insight(learning that appears to come suddenly).

Dissatisfied with the approach of behaviourists, the cognitive psychologists tried to see learning as a more deliberate and conscious effort of the individual rather than a product of mere habit formation or a stimulus response machine – like mechanism. According to them, in a learning process, the learner does not merely receive or make responses to the stimuli, but definitely processes i.e interacts with and does something about what he receives and his response is determined by that processing.

Thinking along these lines, a group of German psychologists called gestaltists and particularly Wolfgang Kohler originated a learning theory named insightful learning.

'Gestalt' is a German noun for which there is no English equivalent. So the term was carried over into English psychological literature. The nearest English translation of gestalt is 'configuration' or more simply an 'organised whole' in contrast to a collection of parts. Gestalt psychologists consider the process of learning to be gestalt – an organized whole. The basic idea of the theory is that a thing cannot be understood by the study of its constituent parts but only by the study of its as a totality or whole.

Infact the focus of Gestalt theory has been the idea of grouping, i.e. characteristics of Stimuli cause us to structure or interpret a visual field or problem in a certain way. The primary factors that determine grouping are:

- Proximity-elements tend to be grouped tighter according to their nearness.
- Similarity-items similar in some respect tend to be grouped together.
- Closure-items are grouped together if they tend to complete some entity and
- Simplicity- items tend to be organized into simple figures according to symmetry, regularity and smoothness.

These factors, also called the laws of organisation, have been explained in the context of perception and problem solving by Gestalt psychologist.

In practical terms, Gestalt psychology is primarily concerned with the nature of perception. According to it, an individual perceives a thing as a whole while the behaviourists and stimulus-response theorists define perception so as to make it analogous with the taking of a photograph. They hold that sensation comes prior to meaning and consider these two acts as separate. But the Gestalt Psychologists do not separate. But the Gestalt psychologists do not separate sensation of an object from its meaning. They are of the opinion that unless a person sees some meaning in an object he will pay little or no attention to it, what is more, to the gestalt psychologists; the meaning of perception always involves a problem of organisation. A thing is perceived as a relationship within a field which includes the thing, the viewer and a complex background incorporating the viewer's purposes and previous experience.

- Gestalt psychologists tried to interpret learning as a purposive, exploratory and creative enterprise instead of trial and error or a simple stimulus response mechanism. A learner, while learning, always perceives the situation as a whole and after seeing and evaluating the different relationships takes the proper decision intelligently. He always responds to the proper relationships rather than to specific stimuli. Gestalt psychology used the term 'insight' to describe the perception of the whole situation by the learner. During the period 1913-1917, Kohler conducted many experiments on chimpanzees in the Canary Islands and embodied his findings in his books. The experiments demonstrated learning by insight. Some of Kohler's experiments are now described.

- In one experiment, Kohler put the Chimpanzee, Sultan, inside a cage and a banana were hung from roof of the cage. A box was placed inside the cage. The chimpanzee tried to reach inside the cage. Suddenly, he got an idea and used the box as a jumping platform by placing it just below the hanging bananas.

- In another experiment, Kohler made this problem more difficult and two or three boxes were required to reach the banana. Moreover, the placing of one box on the other required different specific arrangements.

- In a more complicated experiment, a banana was placed outside the cage of the chimpanzee. Two sticks, one longer than the other, were placed outside the cage. One was hollow at one end so that the other, the stick could be thrust into it to form a longer stick. The banana was so kept that it could not be picked up by any one of the sticks. The chimpanzee first tried to the banana with these sticks one after the other but failed. Suddenly, animal had a bright idea and joined the two sticks together and reached the banana.

These experiments demonstrated the role of intelligence and cognitive abilities in higher learning such as problem solving. The apes, somewhat higher animals, did not resort to blind trial and error mechanism adopted by Thorndike's cat or the simple habit formation as in the case of Pavlov's dog or Wastson's Albert. They reacted intelligently by: Identifying the problem, organising their perceptual field, and using 'insight' (the term coined by Kohler) to reach a solution. Once the situation is perceived as whole and the perceptual field is properly organised, a problem becomes solvable through flashes of insight.

Through Kohler seemed to see insightful learning in terms of a sudden 'aha' or a bolt of lightning, it is found to depend upon factors such as:

- **Experience**: past experience help in the insightful solution of problems. A child cannot solve the problems of modern mathematics unless he is well acquainted with its symbolic language.

- **Intelligence**: Insightful solution depends upon the basic intelligence. The more the individual is intelligent, the greater will his insight be.

- **Learning Situation**: How insightfully an individual will react, depends upon the situation in which he has been placed. Some situations are more conductive to insightful solution than others. As a common observation, insight occurs when the learning situation is so arranged that all the necessary aspects are open to view.

- **Initial Efforts**: Insightful learning has to pass through the process of trial and error but this stage does not last long. These initial efforts in the form of a simple trial and error mechanism open the way for insightful learning.

- **Repetition and generalization**: After obtaining an insightful solution of a particular learning process and type of problem, the individual tries to implement it in another situation, demanding a similar type of solution. The solution found in one situation helps him to react insightfully in other identical situations.

Educational Implications of the Theory of Insightful Learning

The greatest contribution of the theory of insightful learning is that it has made learning purposeful and goal- oriented task. It does not involve simple reflexive or automatic machine –like responses .The learner has to be motivated by arousing his interest and curiosity for the learning process and he has to be well acquainted with the specific aims and purposes of the learning.

Moreover, the emphasis, in this theory, on importance of viewing the situation as a whole has given birth to the important maxim, from the whole to the parts, in the field of learning. If a person wishes to learn or memorise a poem, it should be presented to him as a whole and after being read and understood as a whole, it may be broken into parts or stanzas for being effectively memorized. Similarly, a problem requiring solution should be considered as a whole and after being assessed as a whole, may be tackled for solution on a piecemeal basis.

The theory of insightful learning requires the organisation of the perceptual field and learning material in the form of a 'gestalt' i.e., a whole. Based on this phenomenon, we cannot treat any learning related to a subject or skill as merely a

collection of isolated facts, information's or unrelated behavioural acts. This has made significant contributions in the organisation of the curriculum, scheme of studies, work-plan and procedure of planning the schedule of learning or teaching of a behaviour. What we see to-day in the form of an emphasis on unity and cohesiveness (in the form of gestalt) within the learning acts or experiences in any scheme of studies or learning is nothing but a pattern of learning borrowed from the gestaltists theory of insightful learning.

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. The nearest English translation of gestalt is ……

2. According to Gestalt theory one of the primary factors grouping is similarity which means elements tend to be grouped tighter according to their nearness. True/ False.

3. Gestalt psychologists tried to interpret learning as a trial and error or a simple stimulus response mechanism. True/ False.

4. Insight theory of learning has given birth to an important maxim of teaching i.e. from.....to.....

7.5 BRUNER'S THEORY

Jerome Bruner approached the study of cognitive development from a psychological-experimental frame of reference. He, his colleagues and his students involved much greater number of individuals than used by Piaget, under controlled experiments. Bruner studied the means by which human beings interact with the environment cognitively.

He observed the initial emergence of the means of acting on the environment and representing experience, and also the continuity of development. Bruner agrees

with Piaget regarding the description of internal representation of experience. But Bruner emphasized continuity, the importance of language and the importance of education in cognitive development more than Piaget.

Bruner conceived three ways of knowing something: through actually performing it (through doing it), through sensing it and through a symbolic means such as language. He used three special terms to designate these three actions. Knowing and representing experiences are according to him **"enactive", "iconic"** and **"symbolic".**

In the *enactive* stage, knowledge is stored primarily in the form of motor responses. And this is not just limited to children. Many adults can perform a variety of motor tasks (typing, sewing a shirt, operating a lawn mower) that they would find difficult to describe in iconic (picture) or symbolic (word) form.

In the *iconic* stage, knowledge is stored primarily in the form of visual images. This may explain why, when we are learning a new subject, it is often helpful to have diagrams or illustrations to accompany verbal information.

In the *symbolic* stage, knowledge is stored primarily as words, mathematical symbols, or in other symbol systems. According to Bruner's taxonomy, these differ from icons in that symbols are "arbitrary." For example, the word "beauty" is an arbitrary designation for the idea of beauty in that the word itself is no more inherently beautiful than any other word.

Educational Implications of Bruner's Theory

The aim of education should be to create autonomous learners (i.e., learning to learn). For Bruner (1961), the purpose of education is not to impart knowledge, but instead to facilitate a child's thinking and problem-solving skills which can then be transferred to a range of situations. Specifically, education should also develop symbolic thinking in children.

In 1960 Bruner's text, *The Process of Education* was published. The main premise of Bruner's text was that students are active learners who construct their own knowledge.

Readiness

Bruner (1960) opposed Piaget's notion of readiness. He argued that schools waste time trying to match the complexity of subject material to a child's cognitive stage of development.

This means students are held back by teachers as certain topics are deemed too difficult to understand and must be taught when the teacher believes the child has reached the appropriate state of cognitive maturity.

The Spiral Curriculum

Bruner (1960) adopts a different view and believes a child (of any age) is capable of understanding complex information. Bruner (1960) explained how this was possible through the concept of the spiral curriculum. This involved information being structured so that complex ideas can be taught at a simplified level first, and then re-visited at more complex levels later on.

Therefore, subjects would be taught at levels of gradually increasing difficultly (hence the spiral analogy). Ideally, teaching his way should lead to children being able to solve problems by themselves.

Discovery Learning

Bruner (1961) proposes that learners' construct their own knowledge and do this by organizing and categorizing information using a coding system. Bruner believed that the most effective way to develop a coding system is to discover it rather than being told it by the teacher.

The concept of discovery learning implies that students construct their own knowledge for themselves (also known as a constructivist approach).

The role of the teacher should not be to teach information by rote learning, but instead to facilitate the learning process. This means that a good teacher will design lessons that help students discover the relationship between bits of information.

To do this a teacher must give students the information they need, but without

organizing for them. The use of the spiral curriculum can aid the process of *discovery learning*.

Check Your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Bruner studied the means by which human beings interact with the environment cognitively. (True/ False)
2. In the…….stage, knowledge is stored primarily in the form of motor responses.
3. Bruner argued that schools waste time trying to match the complexity of subject material to a child's cognitive stage of development. (True/ False)
4. Three special terms used by Bruner for knowing something are....., ... and.....
5. In the iconic stage, knowledge is stored primarily in the form of.....

7.6 AUSUBEL'S THEORY

David Paul Ausubel was an American psychologist whose most significant contribution is to the fields of educational psychology, cognitive science, and science education. Ausubel believed that understanding concepts, principles, and ideas are achieved through deductive reasoning. Similarly, he believed in the idea of meaningful learning as opposed to rote memorization. The most important single factor influencing learning is what the learner already knows. This led Ausubel to develop an interesting theory of meaningful learning and advance organizers.

Learning Theory

Ausubel's believes that learning of new knowledge relies on what is already known. That is, construction of knowledge begins with our observation and recognition of events and objects through concepts we already have. We learn by constructing a

network of concepts and adding to them.

Ausubel also stresses the importance of reception rather than discovery learning, and meaningful rather than rote learning. He declares that his theory applies only to reception learning in school settings. He didn't say, however, that discovery learning doesn't work; but rather that it was not efficient. In other words, Ausubel believed that understanding concepts, principles, and ideas are achieved through deductive reasoning. Ausubel was influenced by the teachings of Jean Piaget. Similar to Piaget's ideas of conceptual schemes, Ausubel related this to his explanation of how people acquire knowledge.

Meaningful learning

Ausebel's theory also focuses on meaningful learning. According to his theory, to learn meaningfully, individuals must relate new knowledge to relevant concepts they already know. New knowledge must interact with the learner's knowledge structure. Meaningful learning can be contrasted with rote learning. He believed in the idea of meaningful learning as opposed to rote memorization. The latter can also incorporate new information into the pre-existing knowledge structure but without interaction. Rote memory is used to recall sequences of objects, such as phone numbers. However, it is of no use to the learner in understanding the relationships between the objects. Because meaningful learning involves recognition of the links between concepts, it has the privilege of being transferred to long-term memory. The most crucial element in meaningful learning is how the new information is integrated into the old knowledge structure. Accordingly, Ausubel believes that knowledge is hierarchically organized; that new Information is meaningful to the extent that it can be related (attached, anchored) to what is already known.

Subsumption Theory

Ausubel subsumption theory is based on the idea that an individual's existing cognitive structure (organization, stability and clarity of knowledge in a particular subject) is the principal and basic factor influencing the learning and retention of meaningful new mats. This theory is applied in the 'advance organizer' strategy developed by Ausubel. From Ausubel's perspective, this is the meaning of learning.

When information is subsumed into the learner's cognitive structure, it is organized hierarchically. New material can be subsumed in two different ways, and for both of these, no meaningful learning takes place unless a stable cognitive structure exists. This existing structure provides a framework into which the new learning is related, hierarchically, to the previous information or concepts in the individual's cognitive structure. Ausubel, whose theories are particularly relevant for educators, considered neo-behaviorist views inadequate. Although he recognized other forms of learning, his work focused on verbal learning. He dealt with the nature of meaning, and believes the external world acquires meaning only as it is converted into the content of consciousness by the learner.

When one encounters completely new unfamiliar material, then rote learning, as opposed to meaningful learning, takes place. This rote learning may eventually contribute to the construction of a new cognitive structure which can later be used in meaningful learning. The two types of subsumption are: 1. Correlative subsumption - new material is an extension or elaboration of what is already known. 2. Derivative subsumption - new material or relationships can be derived from the existing structure. Information can be moved in the hierarchy, or linked to other concepts or information to create new interpretations or meaning. From this type of subsumption, completely new concepts can emerge, and previous concepts can be changed or expanded to include more of the previously existing information. This is "figuring out."

There are three prerequisites in order to significant learning to occur:

- The material itself must have a logical meaning.
- Learner must be proactive in the new concept of knowledge and there is adequate contact between the tendencies,
- Learners' existing cognitive structures must have the proper assimilation of new knowledge and ideas.

Motivation Theory

Ausubel's learning theory also attaches great importance to student motivation. According to his view, the cognitive drive, achievement motivation, self-improving

internal driving force, and the subsidiary internal driving composition are significant for learning. Cognitive drive is a student's desire for knowledge, understanding and mastery of knowledge and representations and the need to solve the problem. This inner driving force begins in the curious tendency of students, and to explore, manipulate, understand and cope with the psychological environment, the tendency is one of the most important and most stable motivations. Self-improvement is the internal driving force by virtue of the ability of students to win the corresponding position or achievement needs.

Educational Implications of Ausubel's Theory

Ausubel indicates that his theory applies to reception (expository) learning in school settings. He distinguishes reception learning from rote and discovery learning; the former because it doesn't involve subsumption (i.e., meaningful materials) and the latter because the learner must discover information through problem solving.

Principles for Application

- The most general ideas of a subject should be presented first and then progressively differentiated in terms of detail and specificity.
- Instructional materials should attempt to integrate new material with previously presented information through comparisons and cross-referencing of new and old ideas.

Example of applying different kind of learning

Rote and Meaningful Learning

In an attempt to acquire meaningful knowledge, the learner can approach the task in two different ways. If a person attempts to memorize his/her driving license number without relating the numbers to anything more than a random series, that is rote learning. On the other hand, if a person attempts to create some connection to something that they already know, they experience meaningful learning. An example might be a man memorizing a long distance phone call by recognizing that the ten digit number is actually three series of three, three, and four digits. Furthermore, the numbers (to him) can be recalled because he is familiar with

that state's area code. The middle set of numbers is the same as the aircraft he usually flies in (747 or 727 for example), and the last four digits are a familiar high school basketball score (50-61, the home team lost). Materials learned that have relation to experiences or memories that are firm in the person's memory are more likely to be retained. Whereas, materials that are learned isolated as rote learning may tend to be forgotten quickly.

Is meaningful learning just what rote learning is not? This is true only if you keep in mind that meaningful learning is very connected to the process of knowledge retention within cognitive structures. Rote memory works at times for short term memory. However, the knowledge can only be effectively retained if it is meaningful, and therefore must be processed in a way that it can be subsumed and anchored in the mind.

Signaling is the first and most basic concept that Ausubel prescribes. It is a tool familiar to most of us and can be as simple as numbering the main points of the presentation. This is known as specifying the structure of relations. Other types of signaling include (1) premature presentations, (2) summary statements, and (3) point words that "indicate the author's perspective or emphasize important information". Ausubel has described two very powerful methods that educators can use to help prepare the students for meaningful learning.

The most controversial and noteworthy method Ausubel has introduced is "advanced organizers." These are not merely previews of the subject material that is to be presented. Advanced organizers are more general, abstract concepts that will provide the great context to which the new information can be subsumed and anchored (Ausubel, 1963). For example, before introducing a lesson on brown bears, a teacher might have his/her students read a history and geography of Admiralty Island. By providing this advanced organizer, students may have a better chance of organizing the information regarding the brown bear's habitat, territorial patterns, and nutrition.

Advance organizers are believed to have different results for good versus slow learners. Because most good learners already have the ability to organize new information, the organizers have little additional effect. However, for slow learners, Ausubel believes that organizers are extremely helpful as this group of students needs additional help structuring their thinking.

Role of the instructor and the learner

Ausubel's theory does not address broad prescriptions for learning and therefore provides no specifications for the role of the teacher. However, he outlines three variables that influence meaningful verbal learning: (1) the availability of relevant and inclusive subsuming concepts, (2) the degree that subsumers can be discriminated, and (3) the stability and clarity of subsuming concepts. One can assume that the role of the teacher and instructional designer is to consider these variables by investigating and providing the appropriate subsumers to facilitate meaningful verbal learning.

On the other hand, the role of the learner in this type of learning is not as significant as the teacher role. This is because this theory is more concerned about how the student meaningfully learns through verbal learning other than experimental learning. Therefore, the learning process depends on teachers significantly. Teachers have to enable learners to instruct new knowledge based on their existing knowledge.

Check Your Progress-4

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Ausubel believed in the idea of meaningful learning as similar to rote memorization. (True/ False)
2. Ausubel's…….theory is based on the idea that an individual's existing cognitive structure is the principal and basic factor influencing the learning and retention among students.
3. Bruner is a leading advocate of discovery learning. (Yes/ No.)
4. Ausubel has introduced most important method known as.....

7.7 LET US SUM UP

A wide variety of learning theories can be classified on a continuum in terms of whether they place the teacher and overt behaviors or the learner and internal mental processes at the centre of instruction. While one end of the continuum represents behaviorism, the other end of the continuum represents cognitivism and constructivism. Whereas behaviorist theoretical framework characterizes the underpinnings of teacher-centered instruction, cognitive and constructivist perspectives come into play in shaping learner-centred instruction. It is now commonly suggested that rather than behaviorism, cognitivism and its accompanying teaching methods should be integrated into teachers' instructional agendas. Teachers are expected to teach their subject in accordance with the principles of cognitive learning theories. New curriculum programs urge them to embrace and practice those teaching approaches that pay attention to individual differences in students' cognitive structures or previous knowledge bases, in order to help students integrate new knowledge with the knowledge they already have. Omnipresent in new curriculum development is the notion that teachers do their best to find innovative ways that not only facilitate but also optimize students' learning to the greatest extent possible. Because cognitivism is concerned with illuminating how the process of learning occurs in different contexts by offering strategies that promote students' learning, teachers can benefit from this invaluable learning paradigm in their effort to help students attain the subject's goals.

7.8 LESSON END EXERCISE

Short Answer Type Questions

1. Describe briefly the term 'cognitivism'.
2. Discuss the factors on which the insightful learning is based.
3. How does learning occur based on Bruner's discovery learning?
4. Discuss the concept of 'meaningful learning' advocated by Ausubel.

Long Answer Type Questions

1. Describe how cognitivism is helpful for present day classroom practices?

2. Discuss in detail the concept of cognitive learning in the light of Bruner's theory.

3. Highlight the educational contribution of Ausubel's theory in present Indian context.

7.9 SUGGESTED FURTHER READINGS

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7.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. White Box theory
2. Piaget
3. True

Check Your Progress-2

1. Organised whole
2. False
3. False
4. Whole, parts

Check Your Progress-3

1. True
2. Enactive stage

3. True

4. ‘Enactive’, iconic’ and symbolic

5. Visual images

Check Your Progress-4

1. False

2. Subsumption theory

3. Yes

4. Advanced organizers

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Lesson No. : 8 **Unit : III**

TEACHING AS A PROFESSION

STRUCTURE

8.1 INTRODUCTION

There are various types of individual differences among students. In order to handle students and maximize learning, a teacher must know the complexities involved in teaching profession. This lesson tries to justify teaching as a profession. Personal and professional growth of teachers is very essential for meeting the requirements of changing educational scenario. A teacher has to update himself/ herself. The present lesson also deals with multiple responsibilities of a teacher in an institutional settings.

8.2 OBJECTIVES

After going through this lesson, you shall be able to:

- explain the concept of profession,
- explain the characteristics of a profession,
- explain the characteristics of a teaching profession,
- describe the need for personal growth of a teacher,
- discuss the opportunities for personal growth of a teacher, and
- describe various responsibilities of a teacher in an institutional setting.

8.3 TEACHING AS A PROFESSION

For understanding teaching as a profession, first of all we have to understand the meaning and characteristics of a profession.

8.3.1 Concept of a Profession

A profession is something, a little more than a job, it is a career for someone that wants to be part of a society, who becomes competent in his chosen sector through training, maintains his skills through continuing professional development (CPD) and commits to behaving ethical, to protect the interests of the public.

A profession is a disciplined group of individuals who adhere to ethical standards…. A professional is a member of a profession. Professionals are

governed by code of ethics, and profess a commitment to competence, integrity and morality, altruism, and the promotion of public good with their expert domain.

A profession has been defined as a special type of occupation (possessing) corporate solidarity… prolonged specialized training in a body of abstract knowledge, and a collectivity or service orientation… a vocational sub-culture which implies implicit code of behavior, generates an espirit de corpus among members of the some profession and ensures them certain occupational advantages… (also) bureaucratic structures and monopolistic privileges to perform certain type of work… professional literature, legislation etc.

The service rendered by professionals may be direct (teachers and doctors) or indirect as it is in the case of teacher educators. Any professional person provides service for a limited period of time when his/her clientele are in an institution or within the institutional framework.

8.3.2 Characteristics of a Profession

From the foregoing discussion on the concept of a profession, following characteristics of a profession are clearly evident:

- **Great Responsibility**

  Professionals deal with matters of vital importance to their clients and are therefore, entrusted with great responsibilities and obligations.

- **Accountability**

  Professionals hold themselves accountable for the quality of their work with clients. The profession may or may not have mechanisms in place to reinforce or ensure adherence to this among its members

- **Based on Specialized, Theoretical Knowledge**

  Professionals render specialized service based on theory, knowledge and skills that are most often peculiar to their profession and are generally beyond the understanding and/or capacity of those outside of the profession.

- **Institutional Preparation**

  Professions typically require a significant period of hands on practical experience in the protected company of senior members before the aspirants are recognized as professionals. After this, provisional period of ongoing education towards professional development is required.

- **Autonomy**

  Professionals have control over and correspondingly, ultimate responsibility for their own work. Professionals define the terms, processes and conditions of work to be performed for clients.

- **Clients Rather than Customers**

  Members of a profession exercise discrimination in choosing clients rather than accepting an interested party as customer.

- **Direct Working Relationships**

  Professionals habitually work directly with their clients rather than through intermediaries or proxies.

- **Ethical Constraints**

  Due to above mentioned characteristics, there is a clear requirement of ethical constraints in the professions. Professionals are bound to a code of conduct or ethics.

- **Merit Based**

  In professions, members achieve employment and success based on merit and corresponding voluntary relations rather on corrupted ideals. In the absence of this characteristic, issues of responsibility, accountability and ethical constraints become irrelevant, negating any otherwise professional characteristic.

8.3.3 Characteristics of Teaching Profession

According to Jacques Barzun, "Teaching is not a lost art (profession), but the regard for it is a lost tradition".

In order to justify teaching as a profession, we will have to elicit characteristics of a teaching profession and then try to understand why teaching is called a profession.

Teaching is the application of specialized knowledge, skills and attributes designed to provide unique service to meet the educational needs of the individual and society. The choice of learning activities whereby the goals of education are realized in the school is the responsibility of teaching. Teaching occupation has following characteristics which clearly justifies it as a profession:

- **Has Specialized and Organized Body of Knowledge**

  Members of the teaching profession have an organized body of knowledge that separates the group from all others. Teacher are equipped with such a body of knowledge, have an extensive background, its own culture and a set of teaching methods experientially derived through continuous research in all part of the world.

- **Serves a Great Purpose**

  According to Kothari commission, "Destiny of the nation is shaped in its classrooms" This statement categorically acknowledges the importance of teaching profession. Teaching serves a great social purpose. Teachers carry responsibility weighted with social purpose. Through rapid and self-imposed adherence to the code of conduct, which sets out their duties and responsibilities, teachers pass on their accumulated culture and assist each student under their care in achieving self-realization.

- **Professional Organization**

  There is a cooperation achieved through a professional organization. Cooperation plays an important role in the development of the teaching profession because it presents a bonding together to achieve commonly derived purposes. The teaching profession has won its well-deserved place in the social order through continuous cooperation on research, professional preparation and strict adherence to code

of professional conduct, which obligates every teacher to treat student within a sacred trust. Teachers have control or influence over their own governance, socialization into teaching and research connected with their profession.

- **Transforms Raw Material Into a Practical and Definite End**

  In teaching profession, the learners constitute the raw material. These learners are prepared for various roles in continuous evolving society which has varied expectations. Learners are trained into a practical and definite end by means of providing practical training and other pedagogical courses.

- **Teaching Profession Tends Towards Self-Organization**

  Teaching profession is self-organized in the sense that the personnel engaged in this profession are sensitive towards growth and development. They evolve a definite mechanism to sustain and promote the standards of teaching profession.

- **Need Formal Preparation and Continuous Growth and Development**

  There is formal period of preparation and a requirement of continuous growth and development. Teachers are required to complete a defined teacher preparation programme followed by a period of induction or internship prior to being granted permanent certificate. Teachers are devoted to continuous development of their ability to deliver their service.

- **Degree of Autonomy**

  There is a high degree of autonomy. Teachers have opportunities to make decisions about important aspects of their work right from curriculum development, planning activities of a year, identifying instructional objectives, deciding methods of teaching, deciding upon the use of media, identifying evaluation criteria and evaluation techniques to decide upon the admission and promotion rules, planning and execution of co-curricular activities. Teachers apply reasoned judgement and professional decision making daily in diagnosing educational needs, prescribing and implementing instructional programmes and evaluating the progress of students.

- **Code of Ethics**

The teaching profession has control or influence over educational standards, admissions, licensing, professional development, ethical and performance standards and professional discipline. As professionals, teachers are governed in their professional relationships with other members, school boards, students and the general public by rules of conduct set in the association's code of conduct. The code stipulates minimum standards of professional conduct for teachers, but it is not an exhaustive list of such standards.

Besides, education is a dynamic discipline. New knowledge is continuously generated regarding methods of teaching and other foundation courses of teaching. A teacher needs to get oriented to the new knowledge and update the already acquired knowledge and skills through in service training.

From the above discussion, it is clearly evident that the teaching profession has the distinct characteristics for it to be termed a profession, it is a complex profession because it has to take into consideration needs and expectation of an ever changing society.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. List the distinct characteristics of a profession.

_____

_____

2. List the main features of teaching occupation which justify its claim for teaching profession.

_____

_____

8.4 PERSONAL GROWTH OF A TEACHER

For educators, it takes a lot of hard work and dedication to be an effective teacher. Personal growth and development is a critical component that the teachers must enhance in order to maximize their potential. Personal growth and development includes physical, social, mental, emotional and spiritual aspects. Influence of personal growth on student learning is shown below:

Challenge what you believe about your students and yourself	As you push against your beliefs and skills, your fears and misconceptions will push you back, you will feel resistence, but remember	
	Comfort Zone	
Examining Beliefs →	← **Misconceptions** **Fear** →	← **Nurturing Skills**
	Student Learning	
	As you grow, you increase realm of influence, your success, and therefore, your impact on student learning.	Increase your skills and the precision with which apply you skills

8.4.1 Need for Personal Growth of a Teacher

Societal and national expectations of educators are quite high. Modern society needs school staff with expert teachers to provide instruction and take care of children. Teachers are now being accorded professional status. As professionals and experts, teachers are expected to use most effective practice to help students learn essential skills and attitudes. It is no longer sufficient for teachers to be warm and loving toward children, nor is it sufficient to employ teaching practices based solely on intuition, personal preferences or conventional wisdom. Contemporary teachers are accountable for using teaching practices that have shown to be effective. Teachers should be able to provide remedial and compensatory teaching and communicate with students clearly and precisely to identify students' concerns and needs and to maintain favourable and cooperative interaction with them.

Besides intellectual development of students, teachers are also expected to promote their vocational, spiritual and moral well-being. Society expects of students to develop among other things, desirable interests, values and attitudes. Therefore, a teacher is required to continually grow personally and professionally.

Personal development goes hand in hand with professional development. It enhances it by ensuring that we look deep within ourselves to discover the true motivations for why we do, what we do and what is most important to us as teachers? Ultimately these realizations drive us to excel for the benefit of our learners and for the future of education.

In order to keep growing, a teacher must ask following questions continuously:

(i) What is most important to me as a teacher?

(ii) What takes me out of my comfort zone?

(iii) How can I make sure I am learning every day?

(iv) What is the most amazing thing about me and how can I use it in my teaching?

(v) What is most important thing my learners need from me?

8.4.2 Opportunities for Personal Growth of a Teacher

According to Meador (2017), it takes lot of hard work and dedication to be an effective teacher. Like other careers, there are those who are more natural at it than others. Even those with the most natural teaching ability, must put in necessary time to cultivate their innate talent. Personal growth and development is a critical component that all teachers must embrace in order to maximize their potential. There are several ways/opportunities through which a teacher can enhance their personal growth and development. Most teachers generally make use of a combination of following opportunities to solicit valuable feedback and information that will suit their careers.

(a) Advanced Degree

Earning an advanced degree in an area within education or in the concerned

area is a familiar way to gain a fresh perspective. Teachers will learn new educational trends. It helps the teacher to specialize in his/her area of interest. A teacher must be organized and self-motivated and adept at multitasking to use this as an opportunity to improve as a teacher. Many open universities, central institutes and teacher training colleges offer several such opportunities. A teacher has moral obligation to work for better teaching throughout his/her career. For this, motivation and desire to excel in the profession is needed.

(b) Teacher – Teacher Observation

Doing observation and being observed are equally valuable tools. Teachers should be open to being observed in their classrooms. This is difficult if either teacher is egoistical and easily offended. Every teacher has individual strengths and weaknesses, but he/she may not be aware of these. During observation, the observer will take detailed notes of observed teacher's strengths and weaknesses. Later they can sit together and discuss the observation. This will help in developing self-awareness and will provide collaborative opportunity for both teachers and will benefit both i.e. observer and observed.

(c) Internet

Internet provides unlimited resources. There are millions of lesson plans, activities and information available online for teachers. Sometimes, one has to filter everything to find the highest quality content. The instant access to resources and content makes teacher better. With the internet, there is no excuse for failing to provide one's students with the high quality lessons. Sites **like You tube, teachers pay teachers** and **teaching channel** offer quality educational content that can improve teachers and their classrooms. Social media such as **twitter, facebook, google etc.** have created a global exchange of ideas and best practices among teachers. Personal Learning Network (PLN) are providing teachers with a new avenue for personal growth and development.

(d) Journaling

Journaling can provide valuable learning opportunities through self-reflection. It allows to capture moment in one's teaching career that may be beneficial to reference

to other points along the way. Ten minutes a day can provide a teacher with lots of useful information. Learning opportunities arise almost daily and journaling allow to encapsulate these movements, reflect on them at a later time and make adjustment that can help to become a better teacher.

(e) Advice and Evaluation from Administrators

An advice and objective evaluation by the administrators can be of immense help to the teacher if followed by constructive suggestions. This will not only help in improving teaching but also in performing various other duties in the institutional settings.

(f) Literature

There is abundance of literature dedicated to teachers. A teacher can find a plethora of books and periodicals to help improve in an area of his/her choice. There are many books which are inspirational and motivational in nature. There are excellent books and periodicals that can help the teacher in teaching critical content.

The most effective performers in any field including the teaching are the ones who possess the discipline and bravery needed for self-direction. In order to grow and develop continuously, the teacher should do the following:

- Videotape yourself in the teaching profession.
- Compose a reflective journal.
- Read
- Watch other teacher.
- Gather objective feedback.

Check Your Progress-2

Note: (a) Answer the question given below.

(b) Compare your answer with those given at the end of this lesson.

1. What are the various opportunities available to a teacher for personal growth?

_____

_____

_____

8.5 MULTIPLE RESPONSIBILITIES OF A TEACHER IN AN INSTITUTIONAL SETTING

Teachers play vital roles in the lives of the students in the educational institutions. Teachers are best known for educating the students, who are placed under their care. Beyond this, teachers have to play many other roles: teacher set the tone of their classrooms, build a warm environment, mentor and nurture students, become role models and listen and look for signs of trouble. Following are the major responsibilities of teacher:

(a) Teaching Knowledge

Most common responsibility assigned to teachers is to impart knowledge in the classroom. Teachers are given curriculum that they are expected to follow throughout the year and all the required knowledge is passed on to the students through various teaching methods and teaching strategies suiting to the needs and level of students. Now a days, teaching has become learner centered and teachers are expected to match their methods and strategies to the needs and learning styles of students.

(b) Creating Classroom Environment

Teacher is an important component of classroom environment. Students often mimic teachers' actions and assign nicknames to the teachers. If teacher creates warm

and happy environment, students are more likely to be happy. The environment set by the teacher can be either positive or negative. If the students sense that teacher is angry, they may react negatively and therefore, learning may be impaired. Teachers are responsible for social behavior in the class. The behavior is primarily a reflection of teacher's action and the environment these teachers set.

(c) Role Modeling

Teacher typically do not think themselves as role models, however, they are. Students spend a great deal of time with their teacher and therefore, teachers become role models for students. This can be positive as well as negative. The teachers are not only expected to teach but also to look after and love students. Teachers who are healthy role models for students are respected and imitated by students and parents.

(d) Mentoring

Mentoring is a natural role played by teachers whether it is intentional or not. This can have positive and negative effects on students. Mentoring is a way a teacher encourages students to enjoy learning. It also involves listening to students. By taking time to listen students, teachers impart to students a sense of ownership in the classroom, which helps to build confidence of students.

(e) Protecting

Teacher has to look for signs of trouble in the students. When students' behaviour change or physical signs of abuse are noticed, teachers are required to look into the problem and help students to solve it.

(f) Development of Life Skills

The teacher has to develop an adaptive and positive behaviour that enables students to meet the challenges of life. Life skills include social skills, thinking skills, coping skills and emotional skills.

In the age where meritocracy flourishes and excellence is the goal, focus has to be on meeting needs of children beyond various levels of scholastic competence.

Parents and teachers have to become facilitators to help the youth develop life skills and become empowered to live effectively realizing their potential. The battle will become easier if coping skills are inbuilt in the education system. Teacher should teach how to think and not, what to think.

(g) Responsibilities Under Right of Children to Free and Compulsory Education (2009)

In provision 14 under part IV of Right of Children to Free and Compulsory Education (2009), where a child is admitted in a school after the extended period, he/ she shall be eligible to complete studies with the help of special training, as determined by the head teacher of the school. It becomes the responsibility of the teacher to provide such training. Under part VI, provision 21, the teacher shall maintain a file containing the pupil cumulative record for every child, which will be the basis for awarding the certificate for completion of elementary education.

Under clause (2) of provision 21, a teacher is required to participate in training programme and to participate in curriculum formulation and development of syllabi, training modules and text book development.

(h) Responsibility in Inclusive Setting

In inclusive setting, common model 'co-teaching model' is used where there are two teachers working in the general classroom, one is general education teacher and other is a special education teacher. Both of these teachers are required to complement each other. The teacher has to adopt multiple teaching strategies as per the needs of the learners. Teachers are required to identify children with disabilities in the classroom and refer the identified children to experts for further information. Teachers have to collaborate with medical, para-professional, social workers, parents and special education teachers.

Besides these, teachers have following responsibilities.

- Planning, preparing and delivering lessons.
- Teaching according to educational needs, abilities and achievement of the individual students or groups of students.

- Adopting and working towards the implementation of school development plan.
- Assigning work, correcting and marking the work carried out by students.
- Assessing, recording and reporting on the development, progress, attainment and behaviour of students.
- Participating in arrangements, within an agreed national framework for the appraisal of students' performance.
- Promoting the general progress and well-being of individual students, groups of students or class.
- Providing guidance and advice to students on educational and social matters and on their further education and future careers, providing information on sources of more expert advice.
- Communicating, consulting and cooperating with other members of the school staff, including those having posts of special responsibility and parents/ guardians to ensure the best interests of students.
- Review and evaluating one's own teaching and learning strategies, methodologies and programmes.
- Advising and cooperating with the head of the school, heads of departments, education officers and other teachers in preparation and development of courses of study and teaching materials.
- Ensuring high standards of practice and quality of teaching and learning of students.
- Maintain good order and discipline among students and safeguarding their health.
- Participating in in-serving education and training courses as well as professional development opportunities.
- Participating actively in the meetings of the staff.

- Contributing to the professional development of new teachers and student teachers.
- Providing necessary information and advice to the designated personnel in the school.
- Ensuring safe custody and optimum use of equipment normally used by oneself during lessons and see to its regular serving and maintenance.
- Participating in school assemblies.

Check Your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answer with those given at the end of this lesson.

1. Name four major life skills.

_____

_____

_____

2. Mentoring is not an effective way for teacher to encourage students to enjoy learning. True / False

3. Teachers have to become facilitators to help the child develop life skills. (True / False)

4. Teachers have to collaborate with parents, para-professional, special education teachers to identify children with disabilities in classroom. (True / False)

8.6 LET US SUM UP

Teaching is the application of specialized knowledge, skills and attributes designed to provide unique service to the students and society. Teaching occupation has characteristics i.e. has specialized knowledge, provides great service, has

professional organization, transforms raw material into a practical and definite end, tends towards self-organization, need formal training and continuous growth and development, has high degree of autonomy and code of ethics, which justifies its claim to be a profession. Societal and national expectation of teachers are very high. Therefore, in order to fulfill these expectations, a teacher has to grow personally as well as professionally. Getting an advanced degree, teacher-teacher observation, internet, journaling, advice/evaluation from administrators and literature are some of the opportunities which help the teacher's personal growth. A teacher has to perform multifarious roles and responsibilities in an institutional setting.

8.7 LESSON END EXERCISE

(1) What are the characteristics of a profession?

(2) Justify the claim of a teaching occupation to a teaching profession.

(3) Describe the need and opportunities for the personal growth of teachers.

(4) What are the major responsibilities of a teacher in an institutional setting?

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8.9 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. Great Responsibility, Accountability, Based on Specialized Theoretical Knowledge, Institutional Preparation, Autonomy, Clients Rather Than Customers, Direct Working Relationship, Ethical Constraints, Merit Based and Capitalist Morality.

2. Specialised and organized body of knowledge

   Serves a great purpose

   Transforms raw material into a practical and definite end

   Tends towards self-organization

   Need formal preparation and continuous growth and development

   High degree of autonomy

   Code of ethics

Check Your Progress-2

1. Advanced Degree
2. Teacher-Teacher observation
3. Internet
4. Journaling
5. Advice and Evaluation from administrators
6. Literature

Check Your Progress-3

1. Social Skills

   Thinking Skills

   Coping Skills

   Emotional Skills
2. False
3. True
4. True

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Lesson No. : 9 **Unit : III**

ROLE OF TEACHER IN DEVELOPMENT OF PERSONAL RELATIONSHIP

STRUCTURE

9.1 INTRODUCTION

Literature points to a strong link between positive nurturing interpersonal relationships between teachers and students as an important ingredient in the recipe of students' success. Socially supportive relationships can have positive and lasting effects on the lives of children. Successful educational leaders are successful planners. They have the ability to collaborate with their leadership team, teaching staff, students and parents including all stakeholders associated with the operations of a successful educational institution. In the present lesson, we will discuss the role of the teacher in development of interpersonal relationships between teacher and learners, between peer groups and development of self-esteem, autonomy and feeling of freedom among learners.

9.2 OBJECTIVES

After studying this lesson, you shall be able to:

- explain the role of a teacher in the development of personal relationships between teacher and learners,
- describe the role of a teacher in the development of personal relationships between peer groups,
- discuss the role of a teacher in the development of self-esteem among learners,
- explain the role of a teacher in the development of autonomy among learners, and
- elaborate the role of a teacher in the development of feeling of freedom among learners.

9.3 ROLE OF TEACHER IN DEVELOPMENT OF PERSONAL RELATIONSHIP BETWEEN TEACHER AND LEARNERS

The interpersonal relationships between students and teachers, teacher and other teachers, teacher and administrators, school staff personnel, parents and community members are vital for creating a positive successful learning

environment for all students. Teachers have the obligation to identify, address and change negative behaviour that inhibits positive student progress. Teacher's ability to weaken and eliminate negativity while nurturing and feeding the positive aspects of interpersonal relationships requires that he/she should have the knowledge and ability to plan for and implement the intentional expectations of accentuating the positive for the good of all students. Teacher serves as a role model and help regulate student behaviour through interactions and relationships. For developing healthy interpersonal relationships between teacher and students, the teacher may use following strategies.

(a) Know Your Students

Knowing students' interests shows that you care about your students as people and that you are aware about their strengths and weaknesses. If the teacher teaches by using students' interests, the bond between the students and teacher will strengthen. Work assigned to students will be completed on time and the quality of the product will be high because it matches the interests of students.

Knowing a student's temperament can help to construct appropriate learning opportunities. If a particular student in the class is distractible, then he/she can be helped in his/her efforts to concentrate by offering quitter area for work. If a student is very shy and appears engaged but never raises hand to ask questions, the teacher can assess his level of understanding of a concept in one to one conversation at the end of the class.

(b) Provide Meaningful Feedback to Students

The feedback and way of providing feedback to students has great effect on students-teacher relationships. If possible, watch a video of your own teaching. If a teacher gives meaningful feedback, then it shows that he/she is caring about students and their learning. In his/her conversation, a teacher focuses on what his/her students have accomplished, or he/she is concentrating on comments on what they have not mastered. A teacher should categorically point out the achievement of his/her students and simultaneously find out why some students could not master the assigned task. On the basis of this diagnosis, students should be helped. A teacher through his/her body

language, facial expressions, and tone of voice must show his/her students that he/she is interested in them as people too.

While providing feedback to students, teacher should clearly convey the message that he/she is supporting their learning and really cares about them. Try to pay equal attention to all the students unless otherwise desired by a particular student on the basis of his/her special needs.

(c) Create Conducive Classroom Climate

Socio emotional climate of the classroom should be healthy. Allow time to students to link the concepts and skills they have learnt to their own experiences. Build fun into things you do in the classroom. Plan activities that create a sense of community so that the students have an opportunity to see the connections between what they already know and the new things they are learning as well as the time to enjoy being with you and other students. Provide social and emotional support to students and set high expectations for learning.

(d) Be Respectful and Sensitive to Adolescents

Positive relationships encourage student motivation and engagement in learning. Students need to feel that their teachers respect and accept their opinions and interests. Teacher's actions and words matter much and may have long-term positive or negative consequences.

(e) Develop Positive Discourse with Students with Challenging Behaviour

Students with challenged behaviour are already troubled and are facing certain problems and may have low confidence level. Therefore, think about what you say to the difficult students in your class. Are you very prescriptive and ask them to do something or are you constantly asking them to stop doing something. No one likes being repeatedly and annoyingly asked to do something and being asked to do something or talk against one's will and your students are no exception.

Try to find time and place to have positive discourse with your problem students. Notice and mention positive behaviour they exhibit. Use this positive behaviour to correct other behavioral deficiencies in such students.

(f) Make Efforts to Develop and Sustain Relationship with Difficult Students

Difficult students require more energy on the part of students. Help such students understand their interests and motivations. This will not only help the teacher to tailor instructions to their interests and motivations but the time spent will also allow them to develop trust in teacher. According to O'Connor et al (2012), persistent teacher-student conflict increases the likelihood that children will exhibit negative externalizing behaviours and develop more stress whereas positive teacher-student relationships can offset some of the normal stressors that students experience as they grow and develop. Students who perceive greater support from their teachers experience less depression and have more growth in self-esteem.

Students who perceive that their teachers are respectful, eager to support their autonomy, focused on setting realistic and individualized expectations for performance and offering nurturing and constructive feedback are more motivated in school. Teacher should accept and help the difficult students to accept themselves. This will enhance their ego and develop their self-esteem.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Which of the following is a method of developing healthy interpersonal relationships between teacher and students?

   (a) Create positive classroom climate

   (b) Know your students

   (c) Provide positive feedback

   (d) All the of the above

2. Which of the following is not conducive for developing healthy relationship between teacher and students?

(a) Develop positive discourse with students.

(b) Use authority for maintaining discipline and getting the work done.

(c) Be respectful and sensitive to adolescents.

(d) Give meaningful feedback to students.

9.4 ROLE OF TEACHER IN DEVELOPMENT OF PERSONAL RELATIONSHIPS BETWEEN PEER GROUPS

Peer groups is both a social group and a primary group of people who have similar interests (homophily), age, background or social status. The members of the peer group are likely to influence person's beliefs and behaviour. The peer groups contain hierarchies and distinct patterns of behaviour. Healthy peer group relationships are necessary for creating healthy socio emotional climate in the school in general and classroom in particular. Therefore, teachers must address both children's academic and social needs to maintain supportive and optimal learning environment. Teachers influence on peer relationships must be intentional.

Warmth is the key feature of high quality peer relationships and highly functional classroom climates. When students have opportunities to talk and listen to each other, provide emotional support, share learning experiences and develop respect, they are more likely to feel that they belong and are understood and cared for by their peers. Warm interactions with classroom peers create a climate of comfort and help meet students' need for relatedness. Therefore, teacher should arrange small group discussions and provide opportunities to students to know each other. This will be helpful in eradicating prejudices among students.

Proper structure helps an organisation in its functioning and maintaining healthy interpersonal relationships and classroom is no exception. Interactions with peers that contribute to structure in the classroom are also important for development of sense of control. Although, they do not provide structure in the same way that teachers do, classroom peers provide contextual affordance that can support academic competence. For developing proper peer group relationships, the teacher should create

democratic atmosphere in the class where students can interact freely, of course under the supervision of teacher.

Overtime, Warmth, structure and autonomy support from teachers and peers not only operate as social resource but also help students to construct their own personal motivation resources by promoting positive self-perceptions of relatedness, competence and autonomy.

For developing healthy peer group relationships, a teacher must have a clear understanding of the social structure of his/her class. For this, he/she can make use of socio metric techniques. If the teacher comes to know that cliques are forming in the class, he/she should immediately make efforts to break these cliques, otherwise inter clique rivalries may start which will be harmful for peer group relationships and will spoil the atmosphere of the class. Efforts must also be made to help isolates and rejectees become members of peer group. This can be done by arranging small group co-curricular activities.

As teacher, he/she must keep in mind that most students desperately want to look good in the eyes of their peers. Teacher should help them maintain a good public image in a variety of ways. For instance, teacher can help them acquire skills they need i.e. public address techniques, personal hygiene and so on to present themselves in a favourable light. Students can be assigned small group projects in which every student has a unique talent to contribute. When valued classmates ridicule academic achievement, teacher can allow students to demonstrate their accomplishments to him/her privately i.e. through written assignments or one to one conversations instead of in front of the classmates.

Check Your Progress-2

Note: (a) Answer the questions given below

(b) Compare your answers with those given at the end of this lesson

1. What are the main features of healthy peer group relationships?

   (a) Structure

   (b) Warmth

   (c) Autonomy

   (d) All the above

2. Name the skills required by the students for maintaining good public image.

_____

9.5 ROLE OF TEACHER IN DEVELOPMENT OF SELF-ESTEEM AMONG LEARNERS

According to Wikipedia, self-esteem reflects an individual's overall subjective emotional evaluation of his/her own worth. It is the decision made by an individual as an attitude towards self. Self-esteem can best be described as the degree to which "Worthiness" as a person is evaluated.

Teachers play one of the biggest roles in how good or bad children can feel about themselves-again avoid criticism. Influence from a teacher can make and break a child's sense of self-esteem. Self-esteem is important in and out of classroom.

The most important feature of high self-esteem and resilience is the belief that one has control over many areas of one's life and can accurately define these areas. This belief is tied to the feeling of ownership. For developing this sense of ownership and self-control, teachers should provide opportunities to the students from very early age to learn and apply problem solving and decision making skills.

When students find that they are making positive difference to the school environment, they are motivated to do well and are more willing to take appropriate risk in learning. Teacher should provide opportunities to contribute to their world and to the well-being of others.

Each student possesses an "island of competence" or areas of strength that must be identified, reinforced and displayed by teachers. A strength based model of teaching recognises the importance of using child's strengths as an important component of any intervention programme.

Teacher should actively invite and involve students in the process of their own learning. Always accentuate the positive and avoid criticism.

Give students the opportunity to tell the thing they liked most about themselves

and then prompt them to state things they can do well and the things they feel good about.

Always remember that self-esteem is about how much students feel valued, appreciated, accepted, loved, have a good sense of self-worth and having a good self-image. Expectations from students must be realistic. This goes setting children for success. Differentiated instruction is the key and ensures that expectations match students' strengths and ability levels.

Every student desires to learn and be successful in school. If they are not, then teacher must strive to understand the nature of their learning problems and arrange remedial instructions accordingly.

If students are demonstrating self-defeating behaviours such as quitting, or not trying or acting like class clowns or class bully, the teacher should recognize these as ineffective coping strategies, that of mark feeling of vulnerability, low self-esteem and hopelessness. Rather imposing punitive consequences, the teacher should try to minimize the despair among students.

For checking the use of ineffective copping behaviours, the teacher should teach learners in ways they can learn best. Teacher should change his/her teaching approach and teaching style, if students with learning problems are to adopt a more positive and hopeful approach. Teacher must be comfortable in making accommodations wherever and whenever needed.

If all children learn differently, then it makes inherent sense that teacher should teach them in ways they learn best.

The teacher should use attribution theory for bolstering self-esteem and hope. This approach directs the teacher to find ways for learner with learning problems to feel an increasing sense of ownership, control and responsibility for their successes and to views mistakes as experiences from which to learn rather them feel defeated.

One of the most effective means of dealing with fear of making mistakes and failing, is to discuss fears with students even before any mistakes are made. Openly acknowledging the fear of failure renders it less potent and less destructive.

The teacher should help students with learning problems to understand their unique strengths and weakness and make appropriate accommodations in the school programmes.

Check Your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Selfesteem can be best described as the degree to which.....on a person is evaluated.
2. Which of the following is not a strategy for developing self-esteem among learners?

   (a) Maximize self-defeating behaviours.

   (b) Make accommodation in the school programme keeping in view the strengths and weaknesses of students.

   (c) Make use of attribution theory.

   (d) Avoid criticism.

9.6 ROLE OF A TEACHER IN DEVELOPMENT OF AUTONOMY AMONG LEARNERS

Literally, autonomy could refer people ruling themselves. In degree to which autonomy means freedom from outside coercion, it broadly overlaps with liberty. Autonomy goes further, however, and specifies that an individual or group rules themselves.

Autonomy can be defined as the ability of learners to take the initiative in their own learning in a variety of situations and contexts. This includes the ability not only to take and follow through conscious decisions but also to create a suitable learning environment for themselves.

In a shift from teacher-centeredness to learner centeredness in education, learner autonomy has become very important. The teacher has special responsibility of developing autonomy among learners, he/she can perform in following manner.

- The teacher acts as a facilitator, helper and consultant to the learners.
- During learning process, in order to help the students learn how to learn independently and effectively, the teacher plays the role of a manager who creates a supportive and stimulating learning environment, who is available as a resource person, who challenges learners to achieve their potential and who helps learners to become aware of institutional requirements and expectations associated with discipline in which they are studying.
- Teachers have to listen attentively to the learners and motivate them to take the initiative in their own learning and support them in formulating realistic goals for themselves and incorporating these goals in their learning plan. Teachers make materials available and give both advice and constructive feedback.
- Teachers have to change their traditional roles. They will have to become active participants, monitors, consultants and guide while working closely with students' learning and help them develop better techniques of learning.
- For learners to become autonomous, teachers must redefine their views about teacher- learner roles. The burden of such redefining should not be put solely on teachers. Students must also realize that they should also take responsibility for their learning.
- The teacher has to play an active role in developing students' learning strategy, which can facilitate the development of learning autonomy.
- Help students build the belief and confidence in autonomous learning and guide students to prepare practical plans.

- Encourage more communication between teacher and students via various channels to monitor the learning process. Make use of self-directed centre to facilitate learning autonomy.
- Learners should be encouraged to plan an active part in shaping the common learning process for themselves i.e. bring their own material to classroom, learn to judge their won proficiency by making their own assessments or having their peer assess them.

Check Your Progress-4

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Autonomy is the ability of learners to take the.....in their own learning.
2. In order to develop autonomy among learners, a teacher is required to do which of the following?

   (a) Act as facilitators and consultant.

   (b) Act as manager for creating supportive environment.

   (c) Encourage communication between teacher and students.

   (d) All the above.

9.7 ROLE OF TEACHER IN DEVELOPMENT OF FEELING OF FREEDOM AMONG LEARNERS

Freedom, generally, is having an ability to act or change without constraint. Bebbington (2012) report that when students were given freedom to decide what to learn, how to learn and who to learn, they created high quality work and their learning was authentic and closely connected to their interests and they were bold enough to present their learning in front of peers and teachers.

When people are oppressed, then they tried to be sullen, until they finally rebelled. This is a simple fact of human nature and is true for students also. When a teacher chooses to run classroom like a dictator, ruling with fear and oppressing students, he will develop a classroom environment of resentment. Students will obey reluctantly, out of fear of retribution, students will begin to rebel in small ways. Contrary to this, when students are given a completely free reign, chaos tend to occur, with no accountability, any behaviour becomes acceptable. The leader (teacher) looses respect because students feel that he/she is unable to control. When students make all the rules or the teacher does not hold students accountable for their actions, chaos may result.

A teacher wants a balanced classroom environment and wants students to have a voice but don't want them to take advantage of his/her good will.

While developing freedom among learners, the teacher has to decide about what should those freedoms be? What kind of responsibilities be given to students. Both consistency and flexibility should naturally develop from teacher's expectations.

Show respect to students by empowering them to take care of their needs and simultaneously ask them to respect time as the teacher does. For this, teacher has to be a role model.

When students are working individually or in groups on some assignment or activity, allow them freedom to move from their seats for consultation with other students, get materials but in return hold each student responsible for getting the assignment completed and turned on in time, respecting others and keeping their areas clean.

While offering any freedom to students, make the students aware that there is corresponding responsibility. Make sure to provide some structure to those freedoms. Fix the limits of freedom. With structure comes accountability. Tell students about the consequences if they abuse their freedom.

With a balance of freedom and responsibilities, teacher has the opportunity to develop respect between himself/herself and students. As long as you provide structure, students will respond positively to that type of balanced classroom environment.

Giving genuine freedom and empowering students opens the doors to mutual respect, positive attitudes and good behaviour in the classroom.

Finally make students aware that if freedom is abused then consequences is that freedom will be taken away.

9.8 LET US SUM UP

Nurturing interpersonal relationships between teacher and students is an important ingredient in the recipe of students' success. A teacher can develop healthy interpersonal relationships with students by understanding them thoroughly, providing them meaningful feedback, by creating conducive classroom climate, by being respectful and sensitive to students and by developing positive discourse with students with challenging behaviours.

In educational process, peer group is a social and primary group. Warmth, structure, autonomy and supports from teachers are very important for developing healthy peer group relationships. For developing healthy relationships between peer groups, a teacher should have clear understanding of the social structure of his/her class.

Self-esteem is the decision made by an individual, as an attitude towards self. It is the degree of "worthiness' as a person is evaluated. For developing self-esteem among learners, teacher should encourage them to believe that they have control over many areas of their lives. Develop sense of ownership, self-control, make them feel that they are making positive difference to school environment, identify their strengths and reinforce them. Involve students actively in the process of their own learning. Have realistic expectations from students. Try to minimize despair among learners and make use of attribution theory.

Autonomy is defined as the ability of learners to take initiative in their own learning in variety of situations and contexts. Teacher has to be a facilitator, helper and consultant. Listen to students attentively and motivate them to take initiative in their own learning and help them in formulating realistic plans. Encourage communication between teacher and students via variety of channels.

Freedom is the ability to act or change without constraints. For developing freedom among learners, develop a proper structure and define the boundaries of the freedom. Both consistency and flexibility should naturally develop from teacher's expectations. Make students aware that along with freedom goes responsibility and accountability.

9.9 LESSON END EXERCISE

1. Discuss the role of teacher in development of personal relationships between teacher and learners.
2. As a teacher how can you develop personal relationships between peer groups?
3. Describe the role of a teacher in development of self-esteem among learners.
4. How a teacher can help in the development of autonomy among learners?
5. Explain the role of a teacher in development of freedom among learners.

9.10 SUGGESTED FURTHER READINGS

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9.11 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. d
2. b

Check Your Progress-2

1. d
2. Public address techniques and personal hygiene.

Check Your Progress-3

1. Worthiness
2. a

Check Your Progress-4

1. Initiative
2. d

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Lesson No. : 10 **Unit : III**

EDUCATION IN INCLUSIVE SETTING

STRUCTURE

10.1 INTRODUCTION

In the previous lesson, we have discussed the role of teacher in development of interpersonal relationships between teacher and learners, between peer groups and development of self-esteem, autonomy and feeling of freedom among students. The present lesson is focused on inclusion of disabled and marginalized groups in education. Inclusion means placement and education of children with disabilities and from marginalized groups in regular classroom with children of same age who do not have disabilities. The main focus is specifically on inclusive classroom and resource room along with strategies for working with students in inclusive classroom and the role of teacher in inclusive classroom. The lesson also deals with the concept, need, objectives, principles and procedure of precision teaching.

10.2 OBJECTIVES

After going through this lesson, you shall be able to:

- describe disability and marginalized groups,
- explain the concept of education in inclusive setting,
- explain what is not inclusion,

- describe classroom and resource room in inclusive setting,
- describe strategies for working with students in inclusive classroom,
- discuss the role of teacher in inclusive setting,
- explain the advantages and limitations of inclusive education,
- explain the concept of precision teaching,
- describe the need and objectives of precision teaching,
- discuss the principles of precision teaching,
- explain the procedure of precision teaching, and
- discuss the advantages of precision teaching.

10.3 MEANING OF DISABILITY

According to Wikipedia, "Disability is an impairment that may be cognitive, developmental, intellectual, physical and sensory or some combination of these… It substantially affects a person's life activities and may be present from birth or occur during a person's life time".

World Health Organization defined disability "as an umbrella term, covering impairments, activity limitation and participation restrictions. An impairment is a problem in body function or structure, an activity limitation is a difficulty encountered by an individual in executing a task or action; while participation restriction is a problem experienced by an individual in involvement in life situations. Disability is thus not just a health problem. It is a complex phenomenon, reflecting the interaction between features of a person's body and features of a society in which he/she lives. Overcoming the difficulties faced by people with disabilities requires interventions to remove environmental and social barriers.

The Individuals with Disabilities Education Act (IDEA)has listed 14 disability categories i.e.(i) Autism, (ii) Deaf-Blindness, (iii) Deafness, (iv) Developmental Delay (v) Emotional Disturbance, (vi)Hearing Impaired (vii) Intellectual Disability

(Mental Retardation), (viii) Multiple Disabilities, (ix) Orthopedic Impairment (x) Other Health Impairments, (xi) Specific Learning Disabilities, (xii) Speech or Language Impairment (xiii) Traumatic Brain Injury; and (xiv) Visual Impairment Including Blindness.

10.4 MEANING OF MARGINALIZED GROUPS

Marginalization is sometimes also called social exclusion which refers to the relegation to the fringes of society due to lack of access to rights, resources and opportunities… In the context of INWORK, marginalized and vulnerable groups include people with experiences of (i) homelessness, (ii) problematic substance use (alcohol and drugs) (iii) prison /offending and (iv) mental health problems.

Marginalized group are different groups of people within given culture, context and history of risk of being subjected to multiple discrimination due to the interplay of different personal characteristic or grounds such as sex, gender, age, ethnicity, religion or belief, health status, disability, sexual orientation, gender identity, education or living in various geographical localities.

Belonging to such groups or even being perceived to belong to them heightens the risk of inequalities in terms of excess to rights and use of services and goods in a variety of domains, such as access to education, employment, health, social and housing assistance, protection against domestic or institutional violence, and justice.

The right to education is universal and does not allow any form of exclusion or discrimination. Marginalized groups are often left behind by national educational policies, denying many people their right to education. Non-discrimination and equality are the key human rights that apply to the right to education. Affirmative action and promotional measures are often necessary in order to eliminate existing inequalities and disparities in education.

10.5 EDUCATION IN INCLUSIVE SETTING

Inclusion in education is the right of every child, inspite of all its nuances. The Jometian declaration on "Education for All" and the Salamanca statement and Frame for Action state that, … schools should accommodate all children regardless

of their physical, intellectual, emotional, social, linguistic or other conditions." (Art 3 Salamanca Frame Work for Action).

Article 2 of Salamanca statement mentions that "Regular Schools with this inclusive orientation are the most effective means of combating discriminatory attitude, creating welcoming communities, building an inclusive society and achieving education for all; moreover, they provide an effective education to the majority of children and improve the efficiency and ultimately cost-effectiveness of the entire education system".

In the Dakar Framework for Action (2000), the message of the Jometian World Declaration on Education for all(1990) was reaffirmed …. "In order to attract and retain children from marginalized and excluded groups, education systems should respond flexibly… Education systems must be inclusive, actively seeking out children who are not enrolled, and responding flexibly to all the circumstances and need, of all learners…"

The Indian 'Equal Opportunities and Rights of Persons with Disabilities Act' 1995, rule 26, speaks about the education of children with disabilities upto age of 18 years in an appropriate environment.

Inclusive education is defined as a strategy of addressing and responding to the diverse needs of all learners by increasing participation in learning and reducing exclusion within and from education. It promotes the process of including children with special needs (disabled or otherwise disadvantaged) into regular education system where they should join their school age peers in a learning process that is most conducive to their needs. Inclusive education provides equal membership to all students, shared ownership of all students, necessary support to all students, positive and rich learning environment for all students.

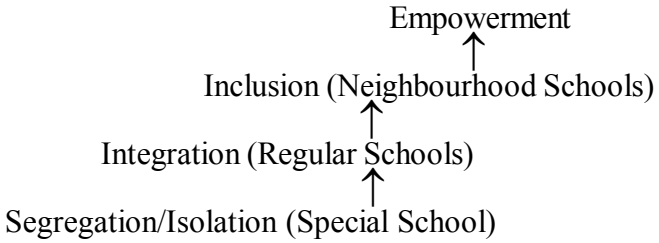
In education, "inclusion refers to the placement and education of children with disabilities in regular education classrooms with children of the same age who do not have disabilities". Inclusion gives a message:

Everyone belongs to school,

Everyone is welcome to school.

Inclusive education means that all students attend and are welcomed by their neighbourhood schools in age appropriate regular classes and are supported to learn, contribute and participate in all aspects of life of the school.

As quoted in 'Inclusive Education for Children with Special Needs', Julka 2001 has traced a path of inclusion figuratively in the following way:



10.5.1 What is not Inclusion?

Many times educators are misinformed and confused about inclusion. Part of this confusion strikes at the heart of the matter and arises from the meaning of the term itself. Inclusion can exist in environment where some children are educated separately or substantially different to their peers.

- Inclusion does not mean dumping children with special needs into regular classes.
- Educating children in special, mostly segregated environments in regular schools is not inclusion.
- Educating children part time in special schools and part time in regular schools is not inclusion.
- Educating children in regular schools, but requiring them to follow, substantially different courses of study in terms of content and learning environment to their peers is also not inclusion (unless all children in a class follow individual programmes).

10.5.2 Classroom in Inclusive Settings

An inclusive classroom is a general education classroom in which students

with and without disabilities learn together. Variety of strategies and techniques can be used to create a productive and successful inclusive classroom. The most common model is a **co-teaching model** in which there are two teachers working in the general classroom, one who is a certified in general education and one who is certified in special education. In an inclusive classroom, every student has access to materials they need in order to learn.

In an inclusive classroom, many students have a variety of educational needs. Therefore, multiple instructional strategies can help to serve every student better. By presenting information in variety of ways, students can receive information in their preferred learning style. This will allow students to demonstrate understanding in a variety of ways.

10.5.3 Resource Room in Inclusive Settings

A resource room is a separate, remedial classroom in a school where student with educational disabilities such as specific learning disabilities are given direct specialized instruction and academic remediation and assistance with homework and related assignments as an individual or groups.

Resource rooms are learning spaces where a special education teacher instructs and assists students identified with a disability. This classrooms are staffed by special education teachers and sometimes para-professionals. The number of students in a resource room at specific time varies but typically consists of at the most five students per instructor. Individual needs are supported in resource room. Students getting this type of support will receive sometime in the resource room, which is referred to as "removal" from regular educational environment. Special education support within the regular setting is a part of the inclusion model.

Depending on individual needs, students usually attend resource rooms 3 to 5 times per week for about 45 minutes per day. Students using these services are typically included rather than segregated or mainstreamed – because they attend other classes with their peers.

10.5.4 Strategies for Working with Students in Inclusive Classroom

Kristin Voget (2016) has suggested following strategies for working with students in inclusive classroom:

(a) Get to Know Your Students

Check and make sure that you have current documents for students in your class. Make a chart with what services each student receives and how frequently. Make note of their individualized education programme (IEP) meeting date. If it is not started as yet, start a folder for student work samples. this will make the special educator's job much easier.

(b) Implement Universal Design for Learning (UDL)

It is an approach to curriculum planning and mapping that makes learning engaging and accessible to a wide range of learners with different strengths and needs. Universal design for learning builds on Gardner's Theory of Multiple Intelligences. It calls for teaching to utilize multiple modalities and for students to respond to learning with a variety of assessment tools.

(c) Support Important Life Skills

Life skills are the skills which we need in order to be productive and contributing members of society. Find or create a survey for students to gauge what essential skills they have and what they need. Decide how to incorporate instruction in these skills into everyday schedule.

(d) Engage in Collaborative Planning

No classroom is an island, especially an inclusive classroom. Opening up your room to service providers, paraprofessionals, special education teachers and parents gives valuable opportunities to participate in collaborative teaching. Collaborative teaching looks differently depending on what school, level and settings we are working.

(e) Develop a Strong Behavior Management Plan

Having a successful inclusive classroom depends upon having control over classroom. It is essential to have clearly communicative expectations and goals that are accessible to all students. Classroom environment should be such that it suits diverse students' needs. Some specific behavior management strategies that support effective instructions are:

- Post daily schedule.
- Display classroom rules and expectations.
- Encourage peer to peer instruction and leadership.
- Use signals to quite down, start working and putting away materials.
- Giving students folders, labels and containers to organize supplies.
- Checking in with students while they work.
- Utilizing proactive rather than reactive interventions as needed.
- Speak to students privately about any concerns.
- Employ specific, targeted positive reinforcement when a student meets a behavioural or academic goal.

10.5.5 Role of a Teacher in Inclusive Settings

For the success of inclusive education, teachers have a great role to play. First of all, teachers must have positive attitude towards children with special needs. Teachers must have firm belief that all children are worth educating and all children can learn. They have the capacity to make a huge difference in the lives of children. For helping students with special needs, a special education teacher may work along with a general education teacher. In inclusive classrooms, the teacher has to perform following roles:

- Treat students with disabilities as an equal class member.
- Identification of children with disabilities in the classroom and referring the identified children to experts for further examination and treatment.
- Accept the child with disabilities and have positive attitude towards normal and disabled children.
- Placing children in the classroom in proper places so that they feel comfortable and are benefited by the classroom interaction.

- Avoid juvenile language and ignore students' (minor) inappropriate behaviours.
- Removing architectural barriers wherever possible so that children with disabilities move freely and independently.
- Involve the children with disabilities in almost all the activities of the classroom.
- Make adequate adaptation in the classroom transaction so that the children with disabilities learn according to their abilities.
- Preparation of teaching aids or adaptation of teaching aids which will help the children with disabilities learn.
- Organize guidance and counseling for parents and public awareness programmes.
- Collaborating with medical, paraprofessionals, social workers, parents and special education teachers.
- Assign the child with disabilities to a cooperative learning group/laboratory.
- Construction of achievement and diagnostic tools.
- Providing remedial instruction to children who require it.

Besides, a special education teacher has to perform some specific duties. The role of special education teacher varies according to the needs of individual student.

In inclusive classroom, special education teacher and regular education teacher engage in co-planning. The amount of instruction special education teacher gives varies. In some inclusive classrooms, the two teachers take turns presenting lesson. This way be done on daily basis, with each teacher taking a portion of the lesson or the special education teacher may teach the class, one or two days a week. When not teaching the entire class, the special education teacher may sit beside students and provide one to one help or additional instruction. To help students feel more included,

as a part of the class, special education teacher may not be in the inclusive classroom every day, unless student's needs require it.

Even though the focus of special education teacher's job is the special need students in the class, he is also responsible for helping the general education teacher in managing the class. Special education teachers must regularly develop Individualized Education Plans and hold meetings to discuss these plans with parents, administrators, counselors and other individuals involved in the education of a child with special needs.

10.5.6 Advantages of Inclusive Education

All children benefit from inclusive education.

- It allows students to develop their strengths and gifts with high and appropriate expectations.
- It helps the students with disabilities to work on individual goals while participating in the life of the classroom with other students of their own age.
- It involves parents in the education of their wards and in the activities of local schools.
- It fosters a school culture of respect and belonging. Inclusive education provides opportunities to learn about and accept individual differences, lessening the impact of harassment and bulling.
- Develops friendships with a wide variety of other children, each with their own individual needs and abilities.
- It positively affects both school and community to appreciate diversity and inclusion on a broader levels.
- It gives students with learning disabilities more access to educational materials and lesson they wouldn't have had in a special education settings.
- It adheres to civil rights and educational laws.

10.5.7 Limitations of Inclusive Education

Full inclusion is quickly becoming a norm in public schools but the question is, does it fully benefit the students it serves? Unfortunately, the answer is not always yes. Inclusive educations suffers from following limitations:

- Some students with disabilities are not adequately placed. It may be due to low basic skills in reading, writing or maths, intellectual and emotional disabilities or students' inability to access the education.
- Inclusion into a general education classroom usually relies on effective accommodation i.e. technology usage, assistance to help students with disabilities to access educational materials and lessons being taught. In many cases, students with intellectual disabilities such as mental retardation will not be able to access the educational materials.
- Some students even if they have a specific learning disability such as auditory processing disorder-may be severally affected to the point that they cannot keep up with the curriculum despite all accommodations made.
- Uncertainty about professional roles and status of teachers especially those who have the responsibility for additional support needs become a major hindrance.
- There is a lack of agreement about the nature and usefulness of specialist knowledge.
- Sometimes, there are territorial dispute between professionals associated •with certain "special practices".
- Inadequate preparation of teacher and a lack of ongoing professional development opportunities affects the inclusion practice adversely.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. List the marginalized groups in the context of INWORK.

2. Which model is commonly used in a classroom in inclusive setting?

3. List the strategies for working with students in inclusive setting.

10.6 MEANING OF PRECISION TEACHING

Precision teaching is a method of planning a teaching programme to meet the needs of individual child or young person who is experiencing difficulty with acquiring or maintaining some skills. It has inbuilt monitoring function and is basically a mean of evaluating the effectiveness of what is being taught. **Vygotsky** suggested that effective teaching should be geared towards a learner's Zone of Proximal Development(ZPD).

	Zone of Proximal Development	
What is known	Skill is too difficult for a child to master on his own, but that can be done with guidance and encouragement from a knowledgeable person.	What is not known

Precision teaching is very specific about the material used with the child, ensuring that it is within the learner's zone of proximal development.

Precision teaching also draws on Haring and Easton's Learning Hierarchy (1978) which shows how new learning needs to be fluent before it can be maintained effectively. The learning hierarchy is as under:

Acquisition

In acquisition stage, the child learns a skill to accuracy. For this teaching methods like modeling, imitation, cueing, visual prompting and drill can used.

Fluency

In this stage, child reaches accuracy with skills to the level where they are unlikely to forget. This is in effect "over learning". In this stage, speed and automaticity is important. Drill, repetition and timed tasks can be used at this stage.

Maintenance

By the end of maintenance stage, the level of proficiency is reached in terms of accuracy and fluency. The skill developed is retained and available for use when needed and overtime by the child. At this stage teacher should provide opportunities to use skill over and over and intermittent testing of the skill should be done.

Generalization

The child applies the skill under different conditions or in a novel situation. Discrimination and differentiation training can be used to develop generalization.

Adaptation

In this stage, the child can apply the acquired skill to new situations or under different conditions without the need for specific instruction. Students do it naturally. Problem solving and simulation exercises will be very effective at this stage.

Precision teaching is pioneered by **Ogden Lindsley** in the 1960s. Precision teaching is largely based on Skinner's Operant Conditioning. It is a type of programmed instruction which focuses heavily on frequency as its main datum. By focusing on fluency, the teacher can then adjust the curricula for each learner to maximize the learning based on the learner's personal fluency measurements. According to **Owen White,** "precision teaching has been used successfully to teach the progress of learners ranging from the severally handicapped to university graduates, from the very young to the very old.

10.6.1 Why Precision Teaching?

Precision teaching is a systematic measurement system that guides instructional decision making. Precision teaching effectively and efficiently strengthens fluent responding by reinforcing high frequency responding. Monitoring learning closely gives immediate feedback about teaching. In precision teaching teacher focuses closely on exactly which material a child is struggling with and which methods are proving fruitful. The number of correct responses show that when a child has achieved fluency with their new learning which reduces the likelihood of learning to be "lost again".

10.6.2 Objectives of Precision Teaching

Precision teaching is focused on following objectives:

1. to understand students well enough to help them achieve their goals.
2. to unbundle and expand instruction and students support. This means to deconstruct courses into competencies and micro competencies and appropriately aligning assessments.
3. to apply predictive learning analytics to different approaches and matched to specific students based upon the highest probability of success.
4. to create multiple strategies for student support. Asking what type of tutoring, coaching, mentoring and motivational support is most effective for specific students.

10.6.3 Principles of Precision Teaching

Precision teaching is based on following principles:

(a) Focus on Directly Observable Behavior

For the teacher, it is important to measure concrete, directly observable behaviours which can be quantified and recorded. By focusing on directly observable behaviour, teachers can avoid ambiguity.

(b) Frequency as a Measure of Performance

Frequency data has additional advantage over traditional data i.e. percent correct when put to use in education.

(c) The Standard Celebration Chart

Ogden Lindsley created standard celebration chart at the University of Kansas Children's Rehabilitation Unit. With this chart, different students being charted by different teachers will still have pictures of progress which can be compared and evaluated.

(d) The Learner Knows the Best.

10.6.4 Procedure of Precision Teaching

McGreevy (1983) outlined precision teaching as five step process, which are as follows:

(a) Select a Task

A task should be countable. It should have a counting period which means the amount of time each day one spends on counting the movements. The counting period needs to be long enough so that the movements can occur frequently. The task should include correct/incorrect pair. It should also specify learning channel set and should also have a movement that is hard to-do.

A task description should include both what to do (correct) as well as what not to do (incorrect). Each task description should make clear both the input (or receive) channel and output (send) channel.

(b) Set An Aim

It refers to the final desired level of performance, generally one in which there is high frequency of correct movements or zero frequency of incorrect movements. The pacing of correct movements specified in the aim should be rapid, smooth and natural i.e. the performance should be fluent. Early on precision teachers set aims based on Norm Based Reference Criteria but now they have shifted to Minimum Component Based Behaviour Frequencies.

(c) Count and Teach

Exactly what one counts obviously depends upon the task. There are generally two possibilities i.e. correct movements or incorrect movements. Instructional component of precision teaching considers four factors: (i) what to do before a movement occurs (materials and teacher's assistance), (ii) what to do after a correct movement occurs (pleasant consequences), (iii) what to do after incorrect movement occurs (ignore or unpleasant consequences) and (iv) how the teacher practices the task with the child.

(d) Develop a Learning Picture

In this step standard celebration chart is inspected for changes in counts per minute over daily assessment periods for both correct and incorrect movements. The two trends form a learning picture, which tells the teacher and student how rapidly the movements are increasing or decreasing and help them project if or when the student will reach aim or "O".

(e) Decide What To Do?

Teaching decision are based on the shape of the learning picture that emerges on the standard celebration chart. **White & Haring** (1980) recommended

that "if the correct rate of a skill is higher than the error rate and is accelerating (regardless of how error rate might be changed), the skill is probably appropriate one or more of the instructional procedure. Hence the decision would be to continue with the current programme. Contrary to this, if the picture shows that hard to-do" has become "hard-to-learn", which means a student is advancing too slowly or not at all. The general options available are: change the movement, change the counting period or change the aim.

10.6.5 Which Children Might Benefit from Precision Teaching?

1. Children who seem able to complete the task but are reluctant (self-efficacy).
2. Children who appear to know something one day but not the next (struck on accuracy-need fluency).
3. Children who appear to know something in one area but not in another (struck in maintenance-need generalization)
4. Children who are very slow in the production of work (struck on accuracy-need fluency)
5. Children who don't have the basics.

10.6.6 Advantages of Precision Teaching

- Precision teaching provides early intervention for those who are at risk of learning disorders.
- Learning materials are tailored according to the needs of students who may have high or low abilities.
- Precision teaching provides greater choice for the learner who can target areas of weakness or further develop areas of strengths depending on their goals.

Check Your Progress–2

Note: (a) Answer the questions given below

(b) Compare your answers with those given at the end of this lesson.

1. Precision teaching is based on which of the following?

   (a) Trial and Error Learning.

   (b) Cognitive Field Theories.

   (c) Skinner's Operant Conditioning.

   (d) All the above.

2. List the principle of precision teaching.

   _____

   _____

   _____

3. What are the major steps of precision teaching.

   _____

   _____

   _____

10.7 LET US SUM UP

Inclusive education means placement and education of children with disabilities and from marginalized groups in regular classroom with children of same age who do not have disabilities. In inclusive setting, "every one belongs to school and everyone is welcome to school". Co-teaching model is commonly followed in inclusive classroom where general education teacher and special education teacher complement each other. According to Kristin Voget, different strategies namely know

your students, implement universal design for learning, support important life skills, engage in collaborative planning and develop strong behaviour management plan are followed.

Precision teaching is a method of planning a teaching programme to meet the needs of individual child or young person who is experiencing difficulty with acquiring or maintaining skills. Precision teaching is based on Skinner's Operant Conditioning. It is based on certain principle i.e. focus on directly observable behaviour, frequency as a measure of performance, the standard celebration chart and the learner knows the best. Five steps namely, select a task, set an aim, count and teach, develop a learning picture and decide what to do, are used in precision teaching.

10.8 LESSON END EXERCISE

1. What do you understand by inclusive education? Describe the role of teacher in inclusive settings.
2. Write short notes on following:
   a. Inclusive Classroom.
   b. Resource Room in Inclusive Setting.
3. Describe the principles of precision teaching.
4. What are the objectives of precision teaching? Discuss the procedure of precision teaching.

10.9 SUGGESTED FURTHER READINGS

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10.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. Homeless

   Children with problematic substance use (Alcohol and Drugs, Prison/ Offending) Children with mental health problems.

2. Co-teaching model

3. Get to know your students

   Implement universal design for learning (UDL)

   Support important life skills.

   Engage in collaborative planning

   Develop a strong behaviour management plan

Check Your Progress-2

1. C
2. Focus on directly observable behaviour

   Frequency as a measure of performance

   Standard celebration chart

   The learner knows the best
3. Select a task

   Set an aim

   Count and teach

   Develop a learning picture

   Decide what to do?

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Lesson No. : 11 **Unit : IV**

INTELLIGENCE - MEANING AND TYPES

STRUCTURE

11.1 INTRODUCTION

Right from the dawn of civilization man has often wondered about individual differences in abilities, yet it was not until the third quarter of the nineteenth century that efforts could be made about understanding its complex nature. Intelligence is a broad term that is employed by layman to denote the presence of such qualities as alertness, quickness of mind, level of one's academic success, status in an occupation, or the acquisition of an eminence in a particular field of endeavour and so on. Aristotle rightly says, "Reason, in the sense of intelligence is not found equally in all animals, nor in all men." Distinctions in intelligence are recognized and used almost every hour of human lives. The teacher or the educationist responsible for the education of individual children from the beginning, is supposed to know as to what is understood by intelligence, what is its real nature. Sometimes teachers in the classroom and even many educational administrators are not very clear about the concept of intelligence. For example, if a teacher is asked to point out the most intelligent pupil in the class, he very often points out a quiet, shy child who gives no trouble, comes to the class regularly, does his homework regularly and is no problem to the teacher and the teacher thinks that this boy is very good in his behaviour and routine classwork and is thus very intelligent. He may, on the other hand, point out another child who is rather aggressive, rowdy, sometimes cutting classes, not doing his homework regularly and even sometimes questions the teacher in the class and enters in an argument. He may be labelled as a bad boy, and may be called an ass. But if intelligence of these boys is judged, the former may be found to be having I.Q. near about 100, whereas the second child who is active and restless may be found to have an I.Q. of 125. To the teacher, ordinarily good behaviour stands for good intelligence, but it is known that good behaviour is different from intelligent behaviour.

The confusion, therefore, arises when the meaning of intelligence as a concept is not understood. It is among the most elusive of concepts. Certainly, there are few other concepts that have been conceptualized in as many different ways. The various conceptions of intelligence that have been proposed have usually sounded related to each other; unfortunately, the nature and extent of the inter-relations remain fuzzy. In this lesson we will deal with the nature and meaning of intelligence. We will begin

with some definitions to bring home the point that even among the psychologists there is a lack of unanimity about this term. We will also discuss the two types of intelligence.

11.2 OBJECTIVES

After studying this lesson, you shall be able to:

- describe the concept of intelligence,
- reproduce definitions of intelligence,
- describe features of intelligence,
- define the term fluid intelligence and crystallized intelligence, and
- explain how to measure fluid intelligence and crystallized intelligence.

11.3 MEANING OF INTELLIGENCE

Origin of the concept of Intelligence

According to Cyril Burt, the term intelligence goes back to intelligentia, a term introduced by Cicero. The former, then, adds, "As Guilford has reminded us, the modem notion of 'intelligence as a unitary entity' was a gift to psychology from biology through the instrumentality of Herbart Spencer."

According to Spencer, during the evolution of animal kingdom, and during the growth of the individual child, the fundamental capacity of cognition "progressively differentiate in a hierarchy of more specialised abilities" - sensory, perceptual, associative and relational, much as the trunk of a tree sprouts into boughs, branches, and twigs.

After the first scale of intelligence measurement was published by Binet and Simon, psychologists tried to study and define the term intelligence critically. Symposia were held on the problem, and numerous voices were heard. As Spearman put it, intelligence became a "mere vocal sound, a word with so many meanings that finally it had none."

Binet, a pinnacle among mental testers, had his views about intelligence but

he never stated a formal definition of intelligence in a published form. According to Hollingworth, "Binet emphasized three phases of behaviour: (1) the ability to take and maintain a given mental set; (2) the capacity to make adaptations for the purpose of attaining a desired end; and (3) the power of auto-criticism." Guilford adds, "Still later, Binet added a fourth step, comprehension. With the four steps of direction, comprehension, invention and criticism, Binet's description of thinking or problem solving is quite congruent with recent thinking."

Terman makes intelligence synonymous with abstract thinking in his statement, "An individual is intelligent in proportion as he is able to carry on abstract thinking." According to Rex Knight, "Terman gives emphasis on abstract thinking but neglects the process of perceptual level of thinking. The definition ignores the fact that undirected abstruse thought is as little intelligent as undirected observation. Again, it assumes that the capacity for abstract thinking is simple and indivisible,whereas, in fact, it is a compound ability comprising more than one power." Rex Knight, then concludes that "the capacity for abstract thought, like all other abilities, involves factors specific to itself as well as intelligence, and therefore to identify it with intelligence is a mistake."

In the Indian systems of thought *buddhi* (intellect) defined as *nischayatmikabuddhih* (decision maker) is described as an inner instrument (*antahkarana*), which possesses wisdom, prudence, emotion, societal values, and relations. The noteworthy attempts to define intelligence comprehensively are those of Stoddard, Wechsler, Piaget, Thorndike and Hebb; the last two, of course, describe types of intelligence.

11.3.1 Definitions of Intelligence

The attempt to compress the concept of intelligence into a compact definition is too complex, too many-sided, too wide-ranging and too vague. Accordingly, there have been various attempts to describe it in a more comprehensive manner rather than define it in a compact form.

Here, the contributions of Stoddard, Wechsler, E. L. Thorndike and Hebb only have been briefly discussed.

Stoddard's description

Stoddard describes intelligence, treating it as a theoretical composite whose elements may be operationally tested.

Intelligence is the ability to undertake activities that are characterised by (1) difficulty, (2) complexity, (3) abstractness, (4) economy, (5) adaptiveness to goal, (6) social value, and (7) the emergence of originals, and to maintain such activities under conditions that demand a concentration of energy and a resistance to emotional forces.

Difficulty which is a function of the "percentage passing" as well as a function of population must increase with chronological age, so long as mental growth is postulated. Stoddard remarks that, "it must be, to be meaningful, truly hierarchical and not simply a broadening of the base." Complexity is referred to the breadth or area of intelligence. In other words, it refers to the number of tasks that can be successfully undertaken by the individual. For Stoddard, the third attribute of abstractness "lies at the heart of intelligence." It is the key characteristic of all high level mental operations.

Coming to the fourth attribute of intelligence, Stoddard remarks that economy is another name for speed - the accomplishment of the most mental tasks in the least time. However he prefers the word "economy" for speed for the latter implies fast motion without sufficient stress upon direction and accuracy. While discussing the fifth and the sixth attributes, Stoddard states that the adaptiveness to a goal and social value tend to merge. "Regardless to the test content revealing these attributes, the first reference point is to individual behaviour and the second to the more slowly changing mores."The seventh one, the emergence of originals, is included, as one attribute because of its special place at the upper end of any valid distribution of intelligence.

Wechsler's description

As per Wechsler,

Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.

The definition specially states that an individual's intelligence is revealed by his behaviour as a whole and that intelligence involves behaviour toward a goal which may be more or less immediate. The inclusion of phrases "to act purposefully" and "to deal effectively" specifies that "drive" or "incentive" enters into intelligent behaviour. Wechsler clearly emphasizes these aspects by supporting Alexander's findings, which include a reference to such non-intellective aspects.

Thorndike's description

Under the effect of this era of specifications, E. L. Thorndike specified intelligent activity into three types: (1) social intelligence or ability to understand and deal with persons; (2) concrete intelligence or ability to understand and deal with things; (3) abstract intelligence or ability to understand and deal with verbal and mathematical symbols.

This division indicates the need for designing separate tests to measure how effectively the individual is functioning in each.

Intelligence has been defined by the Thorndike as the sum total of everything you know, as the ability to learn or profit from experience, as the ability to solve problems or as the ability to cope with the demands of the environment.

In 1921, a symposium was organised to define intelligence. Thirteen psychologists specialising in the area of intellectual assessment considered the definitional aspects of intelligence. The symposium proceedings, published in a special issue of the *Journal of Educational Psychology*, revealed that the experts had thirteen different views on the nature of intelligence. Some of the definitions given by experts are given below:

"…intelligence, that is to say, reasoning, judgment, memory, and the power of abstraction" (Binet 1890, cited in Sattler, 1988, p. 45) "Intelligence is a general capacity of the individual consciously to adjust his thinking to new requirements" (Stern, 1914)

"An individual is intelligent in proportion as he is able to carry on abstract thinking" (Terman, 1921, p. 128)

"Intelligence is the capacity of the organism to adjust itself to an increasingly complex environment" (Spearman, 1927)

In 1986, Sternberg and Determan found that twenty-four prominent scholars had twenty-four different definitions of intelligence. Sternberg (1997) has attempted a comparison of the two surveys. He has remarked that in the 1921 survey, the elements that appeared most often in the definitions were "(a) higher level abilities (such as abstract reasoning, mental representation, problem solving, and decision making), (b) ability to learn, and (c) adaptation to meet the demands of the environment. In the 1986 survey, the most common elements were (a) higher level abilities, (b) that which is valued by culture, and (c) executive process"(Sternberg, 1997, p.1030).

Snyderman and Rothman (1987) have presented responses of over 1,000 experts that belonged to different disciplines such as psychology, sociology, education, and genetics. Of the thirteen descriptions rated by the respondents, there was nearly unanimous agreement that abstract reasoning, the capacity to acquire knowledge, and problem solving ability were important elements of intelligence.

"Intelligence, as a hypothetical construct, is the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment" (Wechsler, 1944).

More recently, Wechsler (1975) defined intelligence as "the capacity of an individual to understand the world about him and his resourcefulness to cope with its challenges" (p.139).

"Intelligence comprises the mental abilities necessary for adaptation to, as well as shaping and selection of, any environmental context." (Sternberg, 1997, p.1030)

A common element of several of the definitions that we have quoted is adaptation, the ability to modify one's behaviour to meet the environmental demands. A second common element is the ability to think abstractly using symbols. The ability to acquire new information or to learn through experience is similarly the third common element. However, it appears that the quest for a satisfactory definition of intelligence is an unending search.

Operational Definition of Intelligence

Observing the diversity of theoretical definitions in the 1921 survey, about which we discussed above, Boring (1923) operationally defined that "intelligence is what intelligence tests measure". You may notice that this operational definition side steps the thorny conceptual problem of coming to grips with the "true" nature of intelligence; it does not solve it. Nonetheless it does what operational definitions are supposed to do—it gives us a definition we can start working with. Most intelligence tests have been constructed with the assumption that intelligence is some kind of general attribute, more or less of which exists in everyone and which determines how an individual will be able to deal with a problem situation. However, this sort of assumption is not supported by recent theoretical models of intelligence.

Features of Intelligence

From the above discussion it is concluded that intelligence has the following features:

- The ability to comprehend; to understand and profit from experience
- Intelligence is an umbrella term used to describe a property of the mind that encompasses many related abilities, such as the capacities to reason.
- Intelligence refers to discrete information with currency and relevance, and

  the abstraction, evaluation, and understanding of such information for its accuracy and value.
- Military intelligence, commonly abbreviated as milint, is a military service that uses intelligence gathering disciplines to collect information.
- Capacity of mind, especially to understand principles, truths, facts or meanings, acquire knowledge, and apply it to practice; the ability to learn and comprehend.

Descriptive Conceptions of Intelligence

In popular understanding, intelligence means mental abilities enabling one to think rationally, learn readily, act purposefully, and deal effectively with one's environment. In psychological testing, it is a term that has been given many different technical meanings concerned with mental abilities such as verbal reasoning, quantitative thinking, abstract analysis, manipulation of geometric shapes, recognition of similarities and differences between pictured objects.

Intelligence also implies "intellect" as

(a) **Capacity :** Capacity or power of the mind for thinking and knowing in contrast to those mental faculties by which the individual feels or wills.

(b) **Figurative :** Figurative references to individuals with marked capabilities for thought, or to thinking powers, in general.

According to the Dictionary of Psychology,

> *'Intelligence' refers to the ability to function effectively with problems, whereas 'intellect' refers to the rational thought functions of the human mind.*

11.4 TYPES OF INTELLIGENCE

Fluid and crystallized intelligence were originally identified by Raymond Cattell. Concepts of fluid and crystallized intelligence were further developed by Cattell's student, John L. Horn. Since Cattell's and Horn's publications, the concepts of fluid and crystallized intelligence have become so ingrained in the field of intelligence that they are no longer routinely attributed to Cattell or Horn—much as Cattell's scree plot became ingrained in the practice of factor analysis or Freud's concept of the subconscious is ingrained in psychology and in the public's perceptions of the mind.

11.4.1 Fluid Intelligence

Abbreviated as Gf, fluid intelligence is one of the discrete factors of general intelligence, according to psychologist Charles Spearman. It is defined

as the innate and inherent learning capacity of all individuals. Such acumen does not depend on one's education, learning and experience. Also known as a person's on-the-spot reasoning capability, fluid intelligence is the mind's information processing system. As an individual's native mental ability, Gf pertains to one's capacity to think and reason out. It also governs memory capacity, attention and information analysis.

Fluid intelligence is overseen by the anterior cingulate cortex, dorsolateral prefrontal cortex, and other regions that affect short-term memory and attention. Activities that utilize fluid intelligence include learning, problem solving and pattern recognition.

Similar to crystallized intelligence, fluid intelligence peaks during childhood and adolescence. However, it peaks during the late 20s and starts to decline. The decline in Gf is attributed to the age-related degeneration of the right cerebellum.

Lack of practice is another factor that can lead to lower marks of Gf. Other researches point to brain trauma and injury as additional causes for the deterioration of one's fluid intelligence.

Reduction in fluid intelligence is commonly seen in people with Autism and Asperger's Syndrome, although they demonstrate better results in some aspects of Gf measurement tests.

11.4.2 Crystallized Intelligence

Tagged by Cattell as Gc, crystallized intelligence is expertise resulting from the lifelong process of learning and skill accumulation. It covers capacities that a person has acquired through knowledge and expertise.

To summarize, crystallized intelligence is a lifetime's worth of information, amassed through schooling and everyday activities. It is the things that you 'know.' It also covers the application of such information and developed skills to problem solving.

Because of these abilities, it is said that crystallized intelligence is governed by the hippocampus, alongside other brain regions that affect the storage and utilization of long-term memories.

Similar to fluid intelligence, crystallized intelligence develops during the childhood and adolescent years. Although stellar improvement is seen during periods, the peak age of crystallized intelligence remains to be unknown. Compared to Gf, Gc continues to improve until late adulthood. It is usually maintained throughout the years, until it starts to decline by age 65. While crystallized intelligence is a compendium of an individual's lifelong learning process, it can be modified and altered as well. Every new thing that a person learns can be added to crystallized intelligence.

The Relationship of Fluid and Crystallized Intelligence

While both intelligences are dependent with each other, they are related in different ways. Crystallized intelligence does not affect an individual's fluid intelligence, however, an enhanced Gf can alter one's Gc. In fact, those with better Gf rates acquire more knowledge at a faster rate. With these results, it follows that having a bigger capacity for learning can have a positive impact on an individual learning ability.

11.5 MEASUREMENT OF FLUID AND CRYSTALLIZED INTELLIGENCE

Contrary to popular beliefs, most IQ examinations strive to measure both kinds of intelligences. For example, the Wechsler Adult Intelligence Scale aims to measure fluid intelligence and crystallized intelligence by utilizing the performance scale and the verbal scale respectively. The results of these two scales, when combined, correspond to the individual's IQ rating.

Although most tests cover both intelligences, there are examinations that measure each intelligence solely. Fluid intelligence is rated with the help of the Raven Progressive Matrices, the Cattell Culture Fair IQ test and tests 5 and 15 of the Woodcock-Johnson Tests of Cognitive Abilities. Crystallized intelligence, on the other hand, can be calculated through a slew of vocabulary exams.

While IQ measuring is often done in schools to predict a child's learning capacity, some corporate environments require IQ determination as well. The Cognitive Process Profile is administered to applicants to determine the rates of their fluid and crystallized intelligences, although the markings of the former are what most bosses are looking for. According to the Stratified Systems Theory of Elliot Jacques, an individual's fluid intelligence can predict work performance in complex, ambiguous and uncertain job environments.

11.6 IMPROVING FLUID AND CRYSTALLIZED INTELLIGENCE

For so long, experts believe that intelligence cannot be improved. Fortunately, current researches show that crystallized and (potentially) fluid intelligence can be enhanced.

One such study is that of Jaeggiet, et. al published in the 2008 edition of the *Proceedings of the National Academy of Sciences*. In the research, they showed that fluid intelligence can be trained to a certain extent with the help of brain training.

One software that claims to boost fluid intelligence according to the tenets of Jaeggi's study is High IQ Programme According to its manufacturers, 20 days of training with this special program can increase one's fluid intelligence by as much as 40%.

Crystallized intelligence, too, can be improved, as postulated by Tracy and Ross Alloway in their research entitled "The Efficacy of Working Memory Training in Improving Crystallized Intelligence." According to the study, individuals who undertook working memory training fared better in cognitive training exams, compared to the control group who underwent knowledge-based training.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Fluid intelligence is denoted as

   (a) Gf (b) GF (c) GG (d) None of the above

2. Who denoted crystallised intelligence as Gc?

   (a) Cattell (b) Tolman (c) Piaget (d) None of the above

3. In the Indian systems of thought buddhi (intellect) is defined as:

   (a) nischayatmikabuddhih (b) nischayatmikbuddhi

   (c) nischayatmikabudh (d) None of the above

4. Who denoted Fluid Intelligence?

   (a) Cattell (b) Tolman (c) Piaget (d) Spearman

5. According to which psychologists "intelligence is the ability to carry on abstract thinking"

   (a) Stoddard b) Terman c) Wechsler d) Thorndike

6. Fluid intelligence is also known as person's on the spot.....

7. Crystallized intelligence is expertise resulting from the ..... process of learning and skill.....

11.7 LET US SUM UP

To be labeled as being "intelligent" imparts positive feelings, encourages self esteem and a sense of worth. Yet, what is intelligent and smart has been the focus of theories, definitions and philosophies dating as far back as Plato (428 BC). Intelligence (in all cultures) is the ability to learn from experience, solve problems, and use our knowledge to adapt to new situations. This is the conceptual definition.

In research studies, intelligence is whatever the intelligence test measures. This tends to be "school smarts" and it tends to be culture-specific. This is the operational definition. Fluid intelligence is inborn and inherent learning capacity of an individual. Fluid intelligence governs memory attention and information analysis. It does not depend upon one's education, learning and experience. Crystallized intelligence is expertise resulting from the process of learning and experience. It affects the storage and utilization of long term memory.

11.8 LESSON END EXERCISE

1. Define intelligence.
2. What were the common factors that emerged regarding the definition of intelligence in the 1921 symposium of thirteen experts?
3. On which elements there is maximal agreement in the Snyderman and Rothman data on 1000 experts?
4. How will you operationally define the phenomenon of intelligence?
5. What do you understand by Fluid intelligence and crystallized intelligence?
6. Discuss the relation between fluid and crystallized intelligence.

11.9 SUGGESTED FURTHER READINGS

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11.10 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. a
2. a
3. a
4. d
5. b
6. Reasoning Capability
7. Lifelong, Accumulation

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Lesson No. : 12 **Unit : IV**

THEORIES OF INTELLIGENCE

STRUCTURE

12.1 INTRODUCTION

In our day to day life, different people are likely to agree fairly well on who the bright people in their class or work group or social circle are. However, there are wide variations in lay man's definitions of the concept. We come across the concept of 'intelligence' very often in our lives.

In the previous lesson you have learnt that intelligence is very hard to define, Psychologists also differ from one another in their concept and definition. The concept of "intelligence is a highly argumentative topic for majority of the psychologists". The description of intelligence is focused on the individual trait, which is the ability to understand, think, reason and other cognitive processes. The concept of intelligence seems to be a broad field which has occupied many researchers for years without they are reaching a definite conclusion. We talk about an intelligent student, a prudent officer, a wise woman and a shrewd business man etc.

Psychologists have long debated how to best conceptualize and measure intelligence. These questions include how many types of intelligence there are, the role of nature versus nurture in intelligence, how intelligence is represented in the brain, and the meaning of group differences in intelligence. In the early 1900s, the French psychologist Alfred Binet (1857-1914) and his colleague Henri Simon (1872-1961) began working in Paris to develop a measure that would differentiate students who were expected to be better learners from students who were expected to be slower learners. The goal was to help teachers better educate these two groups of students. Binet and Simon developed what most psychologists today regard as the first intelligence test which consisted of a wide variety of questions that included the ability to name objects, define words, draw pictures, complete sentences, compare items, and construct sentences.

12.2 OBJECTIVES

After going through this lesson, you shall be able to:

- elaborate Spearman's two factor theory along with its implication,
- discuss Thurstone's Group factor theory along with its implication,
- explain Thorndike's Multifactor theory of intelligence,
- compare the different intelligence theories, and
- discuss educational implications based on different theories of intelligence.

12.3 THEORIES OF INTELLIGENCE

As we have seen, Intelligence is humanitarian concept which is dynamic. The intelligence in different persons can be found different. The level of intelligence is also different. In schools we can find students with similar age do not have same intellectual abilities. Some students do better & some cannot. Some students do better in one of the intellectual abilities, while other students do better in another. Even after attaining adult age, people can have different intellectual abilities. So, one question gets up in mind that why does it happen? As 'the curiosity is the mother of research', this question led thinkers, psychologists, researchers to find the factors creating impact on the intellectual abilities of people and creates difference in intellectual performance of people. So, the experts, psychologists and philosophers tried to find out root cause or factors due to which difference is found in intelligence of people. Some say that the basic or general factors are two i.e. Hereditary Factors and Environmental Factors. The first one deals with those abilities of an individual that he gets from his parents/ancestors through genetic transformations. While second factor deals with the factors around the person like family influence, society in which he is brought up, friends, schools, culture and own experiences through various circumstances. This issue called Nature Vs Nurture gives controversy. The English philosopher Locke argued that the mind of a new born baby is blank and environment & his own life experiences build his abilities to perform. While other French philosopher Rousseau proposed that person has some natural characteristics or genetic factors are more vital than environment to develop the person's abilities.

Apart from defining "intelligence" and factors affecting intelligence, psychologists have been concerned to know the structure of intelligence. They have made analyses in an effort to determine its underlying factors. The purpose of these analyses has been to discover if possible the elements or components of intelligence, not only for a better theoretical understanding of this complex process but also to learn what might be the implications for the design and construction of mental tests. It is not to be inferred, however, that the dynamics of intelligent activity can be adequately understood merely by enumerating and characterizing the components, whatever they might be. Whatever the components, they do not operate independently or in isolation.

Understanding the dynamic aspects of mental activity requires some means of characterizing the organization of factors, their inter-relationships and their relation to motivational forces.

Philosophers and psychologists developed various theories as regards to the nature of intelligence. The representative theories of intelligence are as follows:

12.4 SPEARMAN'S TWO FACTOR THEORY

The English psychologist, Charles Spearman (1863-1945), in 1904 proposed his theory of intelligence called two-factor theory. According to him intellectual abilities are comprised of two factors, namely; the general ability known as G-factor and specific abilities known as S-factors. The performance by the individual is determined by the G-factor and the S-factors. The total intelligence of the individual is the sum total of the G-factor and the S-factors. The performance of a particular task depends on the 'G' factor or general ability and the particular 'S' factor or specific ability.

Spearman proposed a two factors theory. The first factor was a general capacity or energetically mental factor, which was basically a reasoning factor. In addition to this general factor (labelled g), each test measure skills that were specific to that particular test; hence the second component was specific intelligence. Thus, although assigning primary importance to the general factor, the theory does recognize that other specific factors must be considered. The implication for measuring intelligence, however, is that the best test would be one saturated with general intelligence.

Spearman was an early psychometric psychologist who believed that there was a single basic general intelligence which he called g, a single dominant broad intellectual ability factor. He believed that g interacted with a factor specific to each individual mental task, S which was the individual ability that would make a person more or less skilled at a given mental task. In other words, Spearman's idea was based on the observation that if a person has a good vocabulary, there is a better than 50-50 chance that they have a good memory and that they are also good at mathematics. Likewise, if a person is good at mathematics, they are also probably likely to have a

good vocabulary or memory. These associations aren't perfect, but they are usually true. General intelligence, g was the conceptual explanation for why people's scores generally tend to correlate across subjects, and the specific abilities or skills, S explained the differences in the individual scores. So, there's a different S for mathematics, a different S for vocabulary, a different S for memory, and so forth for each type of cognitive task.

Spearman's later method was to evaluate what are called tetrad difference. If a, p, b, q stand for abilities and rap, rbq, raq, rbp are coefficient of correlation between the various pairs, then

rap x rbq - raq x rbp = 0

Spearman calls this relation tetrad equation. Critically observing this theory in actual practice, tetrad differences generally deviate from zero. Commenting on the theory Vernon states, 'factor analysis is an exploratory and suggestive rather than a conclusive technique'. But two Features of Spearman's theory are thoroughly substantiated and a third feature is definitely wrong. The feature where Spearman went wrong was his belief in determinacy of 'g' that would yield one and the same 'g'.

Thomson criticizes the theory by arguing that the two factors theory was possible but could not get a necessary inference from the statistical results. Thurstone accepts the tetrad differences method only as a historical interest and states that when more than one factor is required, tetrad differences criterion cannot be applicable. But as the practical inference of this theory, the test constructors generally selects the test items, which are considered to be saturated with 'g'.

Characteristics of 'G' Factor:

- It is universal inborn ability.
- It is general mental energy.
- It is constant.
- The amount of 'g' differs from individual to individual.

- It is used in every activity of life.
- Greater the 'g' in an individual, greater is his success in life

Characteristics of 'S' Factor:

- It is learned and acquired in the environment.
- It varies from activity to activity in the same individual.
- Individuals differ in the amount of 'S' ability.

'G' factor represents Native Intelligence thus when we respond to any situation or perform an intellectual task, our general mental ability or 'G' factor is mainly responsible for it and our specific ability in that particular task is responsible for the rest.

There are a large number of specific abilities such as ability to draw inferences, ability to complete sentences, ability to code message etc.

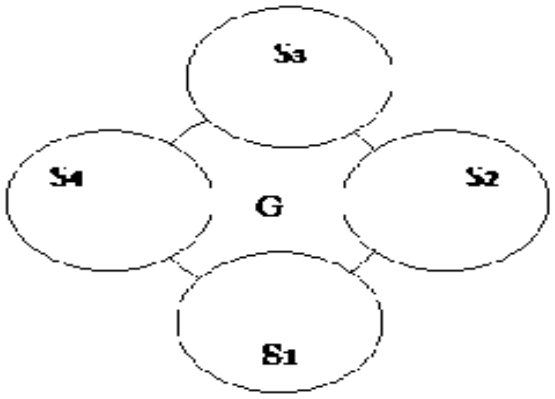

Fig: Spearman's Two-Factor Theory or Eclectic Theory

Different individuals differed both in their 'G' as well as 'S' factors. For e.g. an individual's performance in literature is partly due to his general intelligence and partly due some specific aptitude for his language, i.e. G+S1. In mathematics his performance may be the result of G+S2. In drawing, it may be due to G+S3 and in

social sciences; it may be due to G+S4 and so on. Thus the factor 'G' is present in all specific activities.

Educational Implications and relevance of Spearman's Two –Factor Theory:

- The theory gives a better insight to the teacher about the nature of intelligence.
- The general ability differs from individual to individual.
- The specific abilities also differ from individual to individual.
- 'S' factor varies in degrees. Therefore, it can be modified by learning or habitual training
- A child requires different amounts of 'G' and 'S' factors for achieving success in different Subjects.
- We require a high quality of 'G' factor for our success in life.
- Both 'G' and 'S' have a high correlation.
- This theory could be used to guide, construction of a set of ability test.
- The theory is useful in determining the causes of slow or unsatisfactory performance of students inspite of their adequate intelligence.
- The theory guides us to devise enrichment programmes for the gifted and creative students.

Conclusion: Thus we see that Spearman did not believe in the concept that mental powers are independent of one another. According to him, they are unitary.

Check Your Progress-1

Note: (a) Answers the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Two Factor Theory is given by

(a) Spearman (b) Thurston

(c) Thorndike (d) Gardner

2. According to Spearman, which factor is shared by all type of intellectual tasks?

   (a) S factor (b) G factor

   (c) Both (d) None of these

3. In which year, spearman has proposed his theory?

   (a) 1910 (b) 1905

   (c) 1906 (d) 1904

4. G factor is universal.....ability.

5. S factor is..... and acquired in the.....

12.5 THURSTONE'S GROUP FACTOR THEORY

Louis Thurstone came out with the group factor theory (1937) saying that Intelligence is a cluster of abilities. These mental operations then constitute a group. A second group of mental operations has its own unifying Primary factor; a third group has a third Primary factor and so on. Each of them has its own primary factor. Each of these primary factors is said to be relatively independent of others. Intermediate between the two factor of Spearman and multifactor theory of Thorndike is the group factor theory put forth by L.L. Thurstone. This is also known as theory of Primary Mental Abilities.

Thurstone's assumption was that certain mental operations have in common a primary factor (which is not essentially "g") which gives them psychological and functional unity and which differentiates them from other mental operations. These mental operations constitute in themselves a group and the primary factor or the mental ability operating through that group or bunch of those operations was named as the "group factor" or the primary factor which is relatively independent of such other primary factors operating in certain other group or bunches of mental operations.

Thrustone objected to Spearman's emphasis on general intelligence. He felt that intelligence could be broken down into a number of primary abilities. To find these abilities, he applied the method of factor analysis to results from a large number of tests employing many different types of items. One set of items was for verbal comprehension,

another for arithmetical computation and so on. He wished to find a more definitive way of grouping intelligence test items than the rather crude item sorting used in the verbal and performance scales of the standford-Binet and Wechsler Tests.

After administering a large variety of test material to college students and to high school and eighth-grade pupils, he intercorrelated the scores of all the tests. Then he applied factor analysis to arrive at the basic factors. Those test items that best represented each of the discovered factors were used to form new tests; these tests were then given to another group of subjects and the intercorrelations reanalysed. Thurston and his collaborators concluded that six primary factors emerged clearly enough for identification and use in test design and construction. The six factors identified by Thurston are as shown in Table : 2.1

TABLE 2.1

Primary Factors (Abilities)

Sr. No.	Factor	Meaning
1.	Number factor (N)	The ability to do numerical calculations rapidly and accurately. This ability is involved in rapid arithmetic computation and in solving simple arithmetic word problems.
2.	Verbal factor (V)	The ability found in tests involving verbal comprehension. The ability to understand the meaning of words. Vocabulary tests represent this factor.
3.	Space factor (S)	The ability involved in any tasks in which the subject manipulates an object imaginably in space. The ability to visualize space form relationships, as in recognizing the same figure presented in different orientations. This ability is involved in visualizing shapes, rotations of objects, and how pieces of a puzzle fit together.

Sr. No.	Factor	Meaning
4.	World fluency factor (W)	The ability involved whenever the subject is asked to think of isolated words at a rapid rate. The ability to think of words rapidly, as in solving anagrams or thinking of words that rhyme. This ability is involved in rapidly producing words, sentences, and other verbal material. It is measured by tests such as one that requires the examinee to produce as many words as possible beginning with a particular letter in a short amount of time.
5.	Reasoning factor (R)	The ability found in tasks that require the subject to discover a rule or principle involved in series or groups of letters.Although it is believed both induction and deduction are involved, it seems that induction is more significant here.
6.	Rote memory factor (M)	The ability to memorize quickly. The ability to recall verbal stimuli such as word pairs or sentences. It means the ability to recall and associate previously learned items effectively or memorize quickly.
7.	Perceptual factor (P)	This ability is involved in proofreading and in rapid recognition of letters and numbers. It is measured by tests such as those requiring the crossing out of As in a long string of letters or in tests requiring recognition of which of several pictures at the right is identical to the picture at the left.

Later Thurstone added a new factor making it 7 - the perceptual ability (P). Still later he added 2 factors to his list making the total as nine, deduction reasoning (D) and inducive reasoning (I), apart from general reasoning (R).

Although primary mental abilities or factors were originally said to be functionally independent of each other, it was actually found that they were positively and significantly intercorrelated.

Educational Significance and Implications

- Thurstone contributed greatly to the measurement of attitudes. In psychology, the 'Thurston scale' developed in 1928 was the first formal techniques for measuring of attitudes.
- Thurstone's theory of intelligence was a major influence on later theories of multiple intelligences, such as those of Guilford, Gardner, and Sternberg.
- Thurstone has been noted for developing a comparative judgment scaling technique. The rank scale can be used to rank all possible feelings related to an issue and to categorize people expressing an opinion based on the rank of that opinion. It is used today mainly in basic research.
- Thurstone held that if the individual wants to perform any particular activity, one or more of these factors or abilities are involved. Some of them are more important than others. The theory has helped in providing such a conceptual work as is useful in making tests of abilities dealing with definite categories of mental activities.
- Thurstone's tests of mental ability are useful in diagnostic work and educational and vocational guidance.

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Which intelligence theory is given by the Thurstone?

(a) Two Factor Theory (b) Group Factor Theory

(c) Multifactor Theory (d) Uni Factor Theory

2. In which year, Thurstone has proposed his theory?

(a) 1937 (b) 1930

(c) 1920 (d) 1935

3. According to Thurstone's Group Factor Theory, which is not factor of primary mental ability?

(a) Number factor (b) Critical Thinking factor

(c) Space factor (d) Reasoning factor

4. According to Thurstone, Intelligence is a.....

5. According to Thurstone, Intelligence could be broken down into a number of.....

12.6 THORNDIKE'S MULTIFACTOR THEORY (STIMULUS-RESPONSE THEORY)

Thorndike, (1977) the American Psychologist derived the new theory i.e. Multifactor Theory of Intelligence. In this theory he proposed that there are specific stimuli & related specific responses. There is positive correlation between these stimuli & response. Thorndike proposed that the intelligence is nothing but the convenient name for almost infinite number of actual or potential specific connections between stimuli & responses. He distinguished the **attributes of intelligence in four factors-**

(a) **Level** - This factor deals with the difficulty of a problem or task that can be solved. That means the level of difficulty of tests determines our level of intelligence. More difficult the test or problem that can be solved, more is the level of intelligence.

(b) **Range** - This factor deals with the number of problems/tasks at any specific level of difficulty. Range is determined not only by level but also by the wide experience and by opportunity to learn.

(c) **Area -** This factor refers to the number of situations collectively at each level of difficulty. It is summation of all ranges at each level of intelligence.

(d) **Speed** - This factor refers to rapidity/spontaneity with which we can respond to the items. We should not emphasize speed too much in intelligence test.

Thorndike thought that intelligence was neither a unitary quality nor a composite of two factors of Spearman or group factors as given by Thurstone, Burt and others. He, as a behaviourist, thought of mental acts as constituted of minute elements operating together. According to this theory intelligence is said to be constituted of a multitude of separate factors or elements, each one being a minute element of ability. Any intellectual activity is dependent upon a great number of these minute factors operating together. Therefore, if performances on any two intellectual activities are positively related, it is due to the number of common elements involved in the two activities.

If two types of mental activities A and B are more highly correlated than are A and C, the reason, according to the multifactor theory, would be that the first pair has more elements in common than does the second pair. In short, the degree of relationship of a pair of tasks is in direct proportion to the number of common elements involved in the tasks.

According to this theory, then, "there is really no such factor as "general intelligence"; there are only many highly specific acts, the number of such depending upon how refined a classification we might wish to make and are capable of making."

To his atomistic theory Thorndike adds, however, that certain mental activities have so many of their elements in common that it is useful to classify these tasks into separate groups to which special names are given; for example, verbal meaning, arithmetical reasoning, comprehension, visual perception of relationship and others. Consequently, in constructing a mental test, Thorndike found that his atomistic theory and multitude of minute elements of ability are of less practical significance than the conception that many of them operate together in any situation demanding intelligence, i.e. certain factors could be grouped together for purposes of measurement.

Thorndike's CAVD test designed to measure ability to deal with abstractions has tests of sentence completion (C), arithmetical reasoning (A), vocabulary (V), and the following of directions (D). It is not claimed by Thorndike that these four sets of items encompass the entire range of abstract intelligence. He contended that these

measures of abstract intelligence were sufficient bases from which to estimate other aspects of abstract intelligence.

Thorndike later modified his view of highly particularised and independent abilities in favour of a theory of unique traits. This theory received the support of Kelley, Patterson, Hotgeljng and others. Kelley, for example, by means of statistical analysis of the intercorrelations between performances on many kinds of tests arrived at the conclusion that all the varying abilities of an individual can be accounted for on the basis of a relatively small number of independent traits or separate abilities that were completely unrelated to each other. These he called as orthogonal traits.

Educational Implications

- According to this theory the task can be started from the easier aspects towards its difficult side. This approach will benefit the weaker and backward children.
- A small child learns some skills through trial and error method only such as sitting, standing, walking, running etc. In teaching also the child rectifies the writing after committing mistakes.
- In this theory, more emphasis has been laid on motivation. Thus, before stating teaching in the classroom the students should be properly motivated.

Check your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. In which year, Thorndike has proposed his theory?

   (a). 1967 (b). 1977

   (c). 1975 (d). 1987

2. In Thorndike's Intelligence theory, which is not the factor of Intelligence?

   (a). Speed (b). Memory

   (c). Range (d). Level

3. In Thorndike's Intelligence theory, which factor deals with the difficulty of a problem or task that can be solved?

(a). Speed (b). Memory

(c). Range (d). Level

4. In Thorndike's Multifactor Theory of Intelligence, which factor deals rapidity with which one can respond to the test item

(a). Level (b). Range

(c). Speed (d). Area

5. In multifactor theory of intelligence, which factor refers to summation of all ranges at each level of intelligence

(a). Level (b). Range

(c). Speed (d). Area

12.7 LET US SUM UP

Until a clear-cut definition of intelligence can be given, theories will continue not to be able to explain it. The likelihood of such a definition occurring is virtually zero, as there will always be alternatives given, and so theories of intelligence are bound to be self-defeating. Different psychologist have proposed different theories related to intelligence. In this lesson, we discussed Spearman's two factor theory, Thurstone's Group Factor theory and Thorndike's Multifactor theory of intelligence. Spearman proposed that intelligence is combination of Two factors: G and S factor. Louis Thurston came out with the group factor theory (1937) saying that Intelligence is a cluster of abilities. These mental operations then constitute a group. According to Thorndike theory, intelligence is said to be constituted of a multitude of separate factors or elements, each one being a minute element of ability. Any intellectual activity is dependent upon a great number of these minute factors operating together.

12.8 LESSON END EXERCISE

Short Answer Type Questions

1. Explain the meaning of intelligence.
2. Discuss the characteristics of S factor of two factor theory.
3. What will be the educational implications of Two factor theory?
4. Discuss the attributes of Intelligence (Four Factors) given by Thorndike.
5. Explain the seven Primary Mental Abilities given by Thurstone.

Long Answer Type Questions

1. Explain the meaning of intelligence along with its characteristics.
2. How the Heredity and Environment affect the intelligence of Human Being?
3. Explain Two Factor Theory of intelligence along with its educational implications.
4. Explain Primary Mental Ability theory along with its educational implications.
5. Compare and Contrast Spearman Two Factor Theory and Thurstone Group factor theory.
6. Discuss Thorndike Multifactor theory along with its educational implications.

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12.10. ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. a 2. b 3. d 4. Inborn 5. Learned, environment

Check Your Progress-2

1 b 2. a 3. b 4. Cluster of abilities 5. Primary abilities

Check Your Progress-3

1. b 2. b 3. d 4. c 5. Area

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Lesson No. : 13 **Unit : IV**

ASSESSMENT - MEANING, NEEDS AND TECHNIQUES OF ASSESSMENT LEARNING

STRUCTURE

13.1 INTRODUCTION

In lesson no 11 we have discussed about the concept of intelligence, definitions of intelligence and types of intelligence. You came to know that intelligence involves mental abilities which enable one to think rationally, learn rapidly, act purposefully and deal effectively with one's environment. Intelligence is generally governed from the ways a person appears to understand a fact or a group of facts, and the manner in which he responds to those facts. It was discussed that fluid intelligence is innate and inherent learning capacity of all individuals, whereas crystallized intelligence is acquired through education, learning and experience. In lesson no. 12, we discussed about theories of intelligence. You came to know that Two Factor Theory of Intelligence advocates that intelligence comprises of two factors, namely, the General Ability known as G- factor and Specific Abilities known as S-factors. Thorndike's Multifactor Theory advocates that intelligence is constituted of a multitude of separate factors or elements, each one being a minute element of ability. Thurstone's Group Factor Theory advocates that intelligence consists of cluster of abilities. The teacher can use tests to assess and evaluate students' progress in the classroom. In this lesson, we shall discuss about assessment and different learning techniques of assessment.

13.2 OBJECTIVES

After going through this lesson, you shall be able to:

- explain the concept of assessment,
- discuss needs of classroom assessment,
- explain the types of assessment, and
- describe various classroom assessment techniques.

13.3 MEANING OF ASSESSMENT

In recent years and throughout the world, assessment has been a fundamental component of everyday life in primary, secondary or tertiary education as well as in industrial or commercial training. Assessment is vital to the education process. Assessment is a process by which information is obtained relative to some known objective or goal. In schools, the most visible assessments are summative. Summative assessments are used to measure what students have learnt at the end of a unit, to promote students, to ensure they have met required standards on the way to earning certification for school completion or to enter certain occupations, or as a method for selecting students for entry into further education. But assessment may also serve a formative function. In classrooms, formative assessment refers to frequent, interactive assessments of student progress and understanding to identify learning needs and adjust teaching appropriately. Teachers using formative assessment approaches and techniques are better prepared to meet diverse students' needs – through differentiation and adaptation of teaching to raise levels of student achievement and to achieve a greater equity of student outcomes. The principles of formative assessment may be applied at the school and policy levels, to identify areas for improvement and to promote effective and constructive cultures of evaluation throughout education systems. More consistent use of formative assessment throughout education systems may help stakeholders address the very barriers to its wider practice in classrooms. This overview shows how formative assessment promotes the goals of lifelong learning, including higher levels of student achievement, greater equity of student outcomes, and improved learning to learn skills.

13.4 NEED FOR ASSESSMENT

Classroom assessment is among an instructor's most essential educational tools. When properly developed and interpreted, assessments can help teachers better understand what their students are learning. By providing the means to gather evidence about what students know and can do, assessment can help teachers to:

- identify students' strengths and weaknesses
- monitor student learning and progress
- plan and conduct instruction

If our students have learnt what we have taught, we would never need to assess. It is this simple and profound reality that means that assessment is perhaps the central process in effective instruction. It is only through assessment that we can discover whether the instructional activities in which we engaged our students resulted in the intended learning. Assessment really is the bridge between teaching and learning. Assessment is needed to:

- **Inform and guide teaching and learning-** A good classroom assessment plan gathers evidence of student learning that informs teachers' instructional decisions. It provides teachers with information about what students know and can do. A good classroom assessment plan provides a road map for students. Students should, at all times, have access to the assessment so they can use it to inform and guide their learning.

- **Help students set learning goals-** Students need frequent opportunities to reflect on where their learning is at and what needs to be done to achieve their learning goals. When students are actively involved in assessing their own next learning steps and creating goals to accomplish them, they make major advances in directing their learning and what they understand about themselves as learners.

- **Assign report card and grades-** Grades provide parents, employers, other schools, governments, post-secondary institutions and others with summary information about student learning.

- **Motivate students-** Research (Davies 2004; Stiggins et al. 2004) has shown that students will be motivated and confident learners when they experience progress and achievement, rather than the failure and defeat associated with being compared to more successful peers.

13.5 ASSESSING LEARNING

No matter how well a teaching and learning session is planned, or it is not how well the teacher has performed, but it is the reaction of the learners that matters. The real test is whether learners have learnt and ultimately progressed against the

learning objectives defined at the start of the session. Testing learning is an important part of classroom practice, and questioning is one of the most common methods of checking learner understanding. Questioning is something teachers do naturally as part of their daily routine, but developing the skills associated with questioning techniques presents many challenges for teachers and is something that is developed over time. Teachers need to review what is to be learnt in anyone teaching and learning session and plan for the inclusion of questioning accordingly. When to pose open and closed questions, how to develop a question distribution strategy and when to use questions to check learners' knowledge, comprehension and application are all issues that teachers should consider. Assessment is integral to the teaching–learning process, facilitating student learning and improving instruction, and can take a variety of forms. Successful Assessment for learning strategies result in improved learner progress on a continual basis. Assessment as part of classroom activities is a fundamental process required to promote learning and ultimately achievement. Learners need to know and understand the following before learning can take place:

- What is the aim of the learning?
- Why do they need to learn it?
- Where are they in terms of achieving the aim?
- How can they achieve the aim?

When learners know and understand these principles, the quality of learning will improve. Sharing this information with learners will promote ownership of the learning aims and a sense of shared responsibility between the teacher and learner to achieve those aims. Improving learners' confidence and self-esteem reflects positively in learners' work and their motivation is improved. To promote effective assessment, teachers need to:

- explain the learning aims to learners and check their understanding
- demonstrate the standard learners are required to achieve and help them recognise when they have achieved that standard

- give effective feedback on assessment decisions, so that learners know how to improve
- demonstrate high expectations and make it obvious to learners that they believe that they can improve on their past performance
- provide regular opportunities for teachers and learners to reflect on the last performance and review learners' progress
- develop learners' self-assessment skills, so that they can recognise what aspects of their own work need to improve.

13.6 CLASSROOM ASSESSMENT

Classroom Assessment is the observation of students in the process of learning, the collection of frequent feedback on students' learning, and the design of modest classroom experiments that provide information on how students learn and how students respond to particular teaching approaches. Classroom assessment helps individual teachers to obtain useful feedback on what, how much, and how well their students are learning. Faculty can then use this information to refocus their teaching to help students make their learning more efficient and more effective. Therefore, assessment must be considered during the planning stage of instruction when learning outcomes and teaching methods are being targeted. It is a continuous activity, not something to be dealt with only at the end of a unit of study. Students should be made aware of the expected outcomes of the course and the procedures to be used in assessing performance relative to the learning outcomes. Students can gradually become more actively involved in the assessment process in order to develop lifelong learning skills.

13.6.1 Characteristics of Classroom Assessment:

- **Learner-Centered:** Classroom Assessment focuses the primary attention of teachers and students on observing and improving learning, rather than on observing and improving teaching.
- **Teacher-Directed**: Classroom Assessment respects the autonomy, academic freedom, and professional judgment of teacher. The individual teacher

decides what to assess, how to assess, and how to respond to the information gained through the assessment.

- **Mutually Beneficial:** Classroom Assessment requires the active participation of students and faculty. When students participate more actively, and feel more confident that they can succeed, they are likely to do better in their course work. As teachers work closely with students to assess learning, they improve their teaching skills and gain new insights.
- **Formative**: Classroom Assessment is formative rather than summative. Summative assessments include tests and other graded evaluations. Classroom assessments, on the other hand, are almost never graded and are almost always anonymous. Their aim is to provide faculty with information on what, how much, and how well students are learning.
- **Context-Specific**: Classroom Assessments need to respond to the particular needs and characteristics of the teachers, students, and disciplines to which they are applied. Being Context-Specific means: what works in one class will not necessarily work in another.
- **Ongoing:** Classroom Assessment is an ongoing process, perhaps best thought of as the creation and maintenance of a classroom "feedback loop." Changes are made based on the classroom research results and student feedback.
- **Builds on Good Teaching Practices:** Most college teachers already collect some feedback on their student' learning and use that feedback to inform their teaching. Classroom Assessment is an attempt to build on existing good practice by making it more systematic, more flexible, and more effective.

13.6.2 Types of Classroom Assessment

Classroom assessment is generally divided into three types: assessment *for* learning, assessment of learning and assessment *as* learning.

Assessment for Learning (Formative Assessment)

Assessment for Learning is all about informing learners of their progress to

empower them to take the necessary action to improve their performance. Teachers need to create learning opportunities where learners can progress at their own pace and undertake consolidation activities where necessary. The principal characteristic of Assessment for Learning is effective feedback provided by teachers to learners on their progress. The value of the feedback is dependent on two factors:

- The quality of the feedback
- How learners receive and ultimately use it.

Teachers, therefore, need training and support to enable them to make valuable assessment decisions, to provide quality feedback to learners, and to teach learners to receive feedback positively and use the information contained within it effectively to improve their work. Assessment for learning is ongoing assessment that allows teachers to monitor students on a day-to-day basis and modify their teaching based on what the students need to be successful. This assessment provides students with the timely, specific feedback that they need to make adjustments to their learning. Formative assessment is similar to diagnostic assessment but differs in that it provides ongoing feedback to the teacher about the effectiveness of instruction. Formative assessment encompasses a variety of strategies, used selectively to accomplish one or more of the following purposes:

- to monitor student learning and provide feedback to students and parents
- to identify areas of growth
- to motivate students and provide incentive to study
- to help focus attention and effort
- to emphasize what is important to learn
- to provide practice in applying, demonstrating, and extending knowledge, skills, and attitudes
- to encourage goal-setting and monitor achievement of goals

- to reflect on program structure and effectiveness, and modify or adjust teaching as necessary

After teaching a lesson, we need to determine whether the lesson was accessible to all students while still challenging to the more capable; what the students learned and still need to know; how we can improve the lesson to make it more effective; and, if necessary, what other lesson we might offer as a better alternative. This continual evaluation of instructional choices is at the heart of improving our teaching practice.

Teachers' Roles in Assessment for Learning:

"Assessment for learning occurs throughout the learning process. It is interactive, with teachers:

- aligning instruction
- identifying particular learning needs of students or groups
- selecting and adapting materials and resources
- creating differentiated teaching strategies and learning opportunities for helping individual students move forward in their learning
- Providing immediate feedback and direction to students

Assessment of Learning (Summative Assessment)

Assessment of learning is the snapshot in time that lets the teacher, students and their parents know how well each student has completed the learning tasks and activities. It provides information about student achievement. While it provides useful reporting information, it often has little effect on learning. Summative assessment occurs most often at the end of a unit of study. The primary purposes are to determine the knowledge, skills, and attitudes that have developed over a period of time, to summarize student progress.

Teachers' Roles in Assessment of Learning:

"Teachers have the responsibility of reporting student learning accurately

and fairly, based on evidence obtained from a variety of contexts and applications.

Effective assessment of learning requires that teachers provide:

- a rationale for undertaking a particular assessment of learning at a particular point in time
- clear descriptions of the intended learning
- processes that make it possible for students to demonstrate their competence and skill
- a range of alternative mechanisms for assessing the same outcomes
- public and defensible reference points for making judgements
- transparent approaches to interpretation
- descriptions of the assessment process
- strategies for recourse in the event of disagreement about the decisions."

Assessment as Learning

Assessment as learning develops and supports students' metacognitive skills. This form of assessment is crucial in helping students become lifelong learners. As students engage in peer and self-assessment, they learn to make sense of information, relate it to prior knowledge and use it for new learning. Students develop a sense of ownership and efficacy when they use teacher, peer and self-assessment feedback to make adjustments, improvements and changes to what they understand.

Teachers' Roles in Assessment as Learning

"The teachers' role in promoting the development of independent learners through assessment as learning is to:

- model and teach the skills of self-assessment
- guide students in setting their own goals, and monitoring their progress toward them

- provide exemplars and models of good practice and quality work that reflect curriculum outcomes
- work with students to develop clear criteria of good practice
- guide students in developing internal feedback or self-monitoring mechanisms to validate and question their own thinking, and to become comfortable with ambiguity and uncertainty that is inevitable in learning anything new
- provide regular and challenging opportunities to practise, so that students can become confident and competent self-assessors
- monitor students' megacognitive processes as well as their learning, and provide descriptive feedback
- Create an environment where it is safe for students to take chances and where support is readily available."

Check Your Progress-1

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

(b) Compare your answers with those given at the end of this lesson.

1. In schools, the most visible assessments are.....
2. Assessment is the bridge between.....and learning.
3. Assessment as part of classroom activities is a fundamental process required to promote.....
4. Formative assessment provides.....feedback to the teacher about the.....of instruction.
5. .....assessment occurs most often at the end of a unit of learning.

13.7 CREATING A CLASSROOM ASSESSMENT

The assessment process starts with planning based on the program of studies learning outcomes and involves assessing, evaluating and communicating student learning, as shown in the following diagram.

Planning

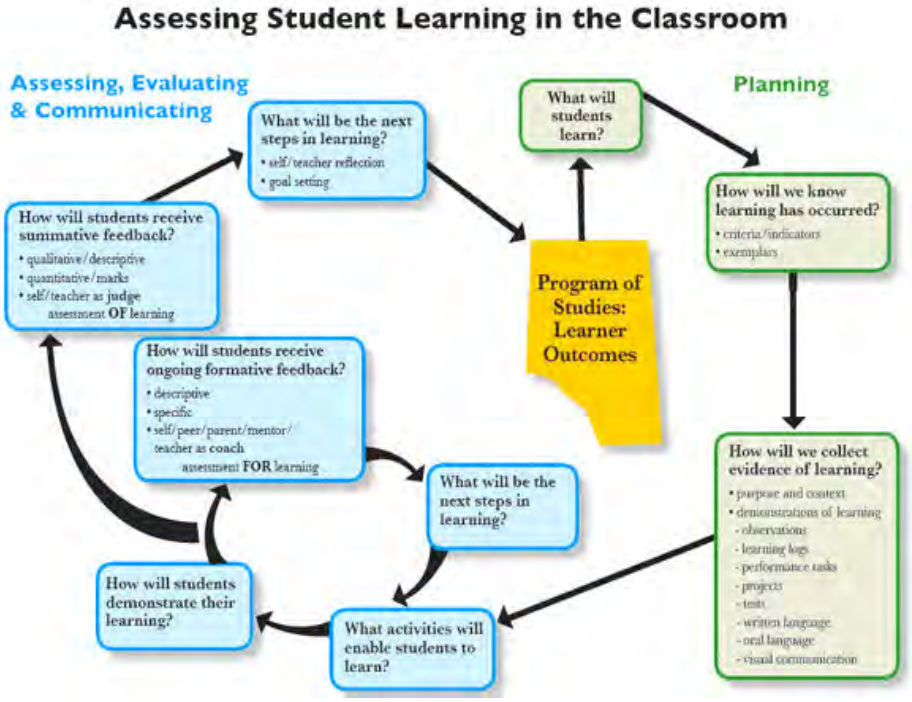
Learning does not happen incidentally, it has to be carefully planned. Planning is an essential part of a teacher's workload. Teachers need to plan and create opportunities within each session for both the learner and the teacher to obtain information about a learner's progress towards the learning goals defined by the teacher at the start of the session. It is crucial that the learning goals are communicated to the learner, and of equal importance is that the teacher checks to ensure that the learner not only understands the learning goals, but also appreciates the assessment criteria which will be used to assess the work. Teachers need to:

- decide what is going to be learnt in a particular session
- define the learning goals
- communicate the learning goals to the learners
- compile questions and design tasks to check learner understanding of the learning goals
- explain to the learners the criteria which will be used to assess their work
- decide how feedback is going to be provided
- define how learners will take an active part in the assessment process
- plan opportunities for learners to use the feedback provided on the assessment decision to further progress.

Knowing what you are looking for, will help to determine which technique to choose, and how to interpret the results. Therefore, before using any technique, complete a planning worksheet like the one following.

Classroom Assessment Planning Sheet

1. What do I want to know?
2. Which technique will I use to get this information? Why?
3. How will I introduce this technique to my students?
4. How much class time will it take?
5. How will I know if the technique was successful?
6. What instructional changes will I make as a result of the information I receive?



Involving Students in the Assessment Process

One of the best ways to help students understand what will be assessed is to establish the assessment criteria with them. Working with students to develop rubrics and other assessment tools is a powerful way to help students build an understanding of what a good product or performance looks like. It helps students develop a clear picture of where they are going, where they are now and how they can close the gap.

This does not mean that each student creates his or her own assessment criteria. The teachers have a strong role to play in guiding students to identify the criteria and features of understandings they want their students to develop.

A second way to involve students in a meaningful way in the construction of assessments are to work with them as a class to identify what good work looks like. What is the difference between strong and weak work? What performance criteria do they think are important? Does everyone understand what to do to attain the expected outcomes? This type of student involvement takes time and teachers may need to encourage students to contribute in meaningful ways.

13.8 CLASSROOM ASSESSMENT TECHNIQUES (CATS)

Classroom assessment techniques are non-threatening ways of evaluating student learning and their reaction to your teaching methods. The purpose of classroom assessment is to enable both instructors and students to mutually improve learning. Classroom assessment techniques will help you to:

- plan and conduct a classroom assessment
- analyze the feedback
- make changes to improve learning as early as the next class

Various classroom assessment techniques and its use are discussed in this section of lesson.

13.9 CONCEPT MAPS

A concept map is a graphical representation of a student's knowledge about a topic (Zeilik and others, 1997; McClure and other, 1999). Concept maps are pictorial essays, a method of illustrating the principal concepts of a lesson from the main points. They include the supporting information that indicates how a student has organized his/her ideas. Good concept maps force their creators to challenge their own understanding and to build a strong foundation for information that follows. A poorly constructed map allows a reviewer to quickly identify gaps in logic or

comprehension. Concept maps will vary from person to person, no two will be alike. They allow for creative thinking in their construction. Concept maps have two principal components:

1. Terms or concepts - often presented in boxes;
2. Directional links (arrows) and linking phrases (prepositions) - that connect the terms.

How to make a Concept Map

1. **Choose a specific topic**. For example, a map that illustrates the characteristics of one rock type will be more straightforward to generate than one that tries to show the features of all the major types of rocks. If the topic is too broadly defined it will involve too much information and any sense of organization or structure may be lost.
2. **Select a few key terms-** Identify 3-6 primary terms that you can use to form the spine or center of the concept map.
3. **Organize the key terms-** Place the key terms in a logical order starting with the most significant term. Draw arrows between terms and write a brief phrase to link the terms together.
4. **Choose secondary terms**- Identify any additional terms that are related to the key terms.
5. **Organize the secondary term-** Draw arrows from key terms to the relevant secondary terms and include a linking phrase. Continue to add terms and linking phrases until the topic is complete.
6. **Add cross-links** from one part of the concept map to another. Creating cross-links between initially discrete sets of terms illustrates the recognition of broad connections within a topic.

Concept maps identify the relationships between components and therefore correspond to synthesis in Bloom's taxonomy. The number of levels in a concept map

can be readily counted. The terms are joined by logical linking phrases appropriate for the topic. To speed formal assessment the maps can be readily evaluated as good, average, or poor. Alternatively, one can construct a formal scoring scheme (see caption, Fig. 1). McClure and other (1999) assessed a variety of grading strategies and found the most accurate method scored each concept pair (two concepts and the linking phrase).

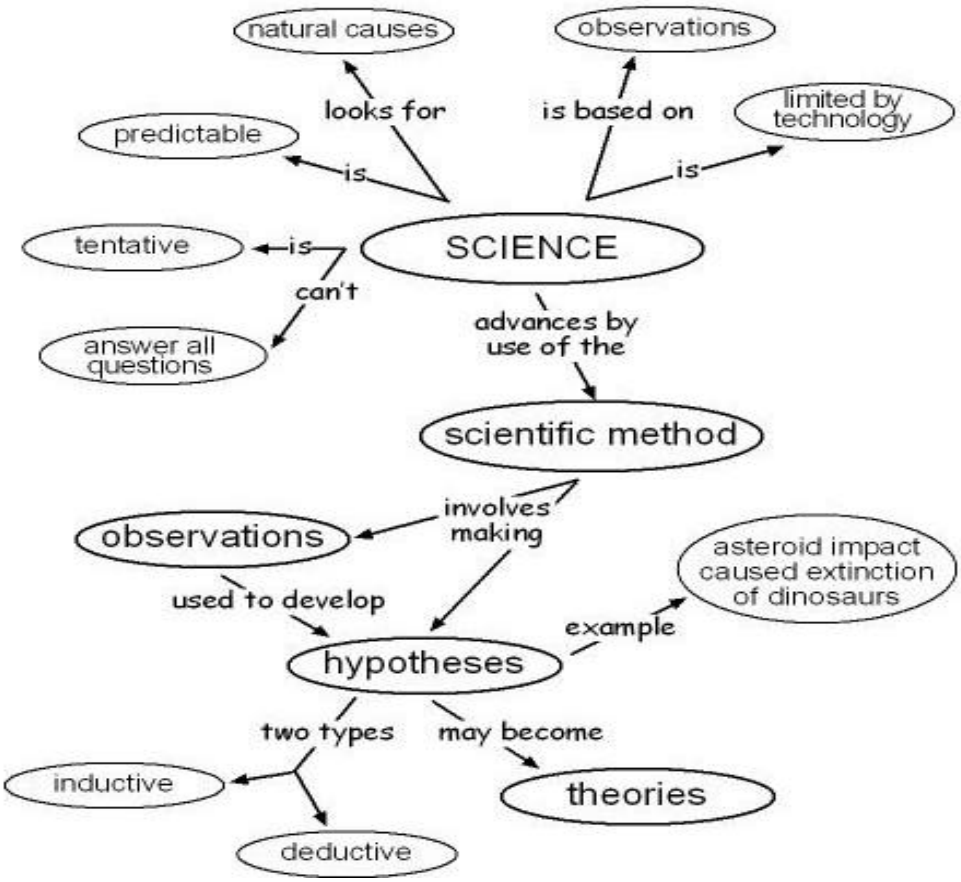


Figure 1: **A simple concept map that illustrates the relationship between the elements**

One potential scoring scheme would award 5 points per hierarchical level (4 levels present); 1 point for each reasonable linking phrase between adjacent points (13 links). Using this scheme the concept map would earn 33 points.

13.10 CONCEPT TESTS

Concept tests are short, informal, targeted tests that are administered during class to help instructors gauge whether students understand key concepts. They can be used both to assess students' prior knowledge (coming into a course or unit) or their understanding of content in the current course.

Usually these tests consist of one to five multiple-choice questions. Students are asked to select the best answer and submit it by raising their hands, holding up a colour card associated with a response option, or using a remote control device to key in their response. The primary purpose of concept tests is to get a snapshot of the current understanding of the class, not of an individual student. As a result, concept tests are usually ungraded or very low-stakes. They are most valuable in large classes where it is difficult to assess student understanding in real time.

Creating a concept test

Creating a good concept test can be time-consuming, so a teacher might want to see if question repositories or fully developed concept tests already exist in the field. If she creates her own, she need to begin with a clear understanding of the knowledge and skills that she/he wants the students to acquire. The questions should probe a student's comprehension or application of a concept rather than factual recall. Concept test questions often describe a problem, event, or situation. Examples of appropriate types of questions include:

- Asking students to predict the outcome of an event (e.g., what would happen in this experiment? How would changing one variable affect others?)
- Asking students to apply rules or principles to new situations (e.g. which concept is relevant here? How would you apply it?)
- Asking students to solve a problem using a known equation or select a procedure to complete a new task (e.g., what procedure would be appropriate to solve this problem?)

The following question stems are used frequently in concept test questions:

- Which of the following best describes…?
- Which is the best method for…?
- If the value of X was changed to…
- Which of the following is the best explanation for…?
- Which of the following is another example of…?
- What is the major problem with…
- What would happen if…

When possible, incorrect answers ("distractors") should be designed to reveal common errors or misconceptions

Implementing concept tests

Concept tests can be used in a number of different ways. Some instructors use them at the beginning of class to gauge students' understanding of readings or homework. Some use them intermittently in class to test students' comprehension. Based on how well students perform, the instructor may decide to move on in the lecture or pause to review a difficult concept.

Another method is to give students the chance to respond to a question individually, and then put them in pairs or small groups to compare and discuss their answers. After a short period of time, the students vote again for the answer they think is correct. This gives students the opportunity to articulate their reasoning for a particular answer.

13.11 ASSESSING GROUP WORK (USING RUBRICS)

A rubric is a multi-purpose scoring guide for assessing student products and performances. This tool works in a number of different ways to advance student learning, and has great potential in particular for non-traditional, first generation, and minority students. In addition, rubrics improve teaching, contribute to sound assessment, and are an important source of information for program improvement. A rubric is a type of scoring guide that assesses and articulates specific components

and expectations for an assignment. Rubrics can be used for a variety of assignments: research papers, group projects, portfolios and presentations. Rubrics help instructors:

- Assess assignments consistently from student-to-student.
- Save time in grading, both short-term and long-term.
- Give timely, effective feedback and promote student learning in a sustainable way.
- Clarify expectations and components of an assignment for both students and course TAs.
- Refine teaching skills by evaluating rubric results.

Rubrics help students:

- Understand expectations and components of an assignment.
- Become more aware of their learning process and progress.
- Improve work through timely and detailed feedback.

Using assessment rubrics can present the following challenges:

- When learning outcomes relate to higher levels of cognition (for example, evaluating or creating), assessment designers can find it difficult to specify criteria and standards with exactitude. This can be a particular issue in disciplines or activities requiring creativity or other hard-to-measure capabilities.
- It can be challenging for designers to encompass different dimensions of learning outcomes (cognitive, psychomotor, affective) within specific criteria and standards. Performance in the affective domain in particular can be difficult to distinguish according to strict criteria and standards.
- Assessment rubrics are inherently indeterminate (Sadler, 2009), particularly when it comes to translating judgments on each criterion of an analytic rubric into grades.

- Breaking down the assessment into complicated, detailed criteria may increase the marking workload for staff, and may lead to:
    - distorted grading decisions (Sadler, 2009) or
    - students becoming over-dependent on the rubric and less inclined to develop their own judgment by creating, or contributing to the creation of, assessment rubrics (Boud, 2010).

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Which evaluation is used to assess the continuous progress of students?

    (a) Summative evaluation

    (b) Formative evaluation

    (c) Diagnostic evaluation

    (d) All

2. Classroom assessment helps individual teachers to obtain useful feedback on what, how much, and how well their students are learning. (true/ false)

3. ..... assessment is not reported as part of an achievement grade.

4. .... is a multi-purpose scoring guide for assessing student products and performances.

5. The technique which helps the teacher to determine which key points are missed by the students is known as .....

6. Concept map is a..... of students knowledge about a topic.

13.12 LET US SUM UP

Assessment is vital to the education process. Assessment really is the bridge between teaching and learning. Assessment is used to inform and guide teaching and learning, help students set learning goals, assign report card and grades and motivate students. Assessment as part of classroom activities is a fundamental process required to promote learning and ultimately achievement.

Classroom Assessment is the observation of students in the process of learning. Classroom assessment is generally divided into three types: assessment *for* learning (formative assessment), assessment *of* learning (summative assessment) and assessment *as* learning (diagnostic assessment).Teachers can use a variety of assessment tools and strategies to assess student performance. Some of these strategies and tools include: Anecdotal notes, Observation checklists, Conversations, Portfolios, Question and answer, Checklists, rating scales and rubrics.

Various classroom assessment techniques include the concept maps, concept tests and rubrics. Concept maps are pictorial essays, a method of illustrating the principal concepts of a lesson from the main points. They include the supporting information that indicates how a student has organized his/her ideas.

Concept tests are short, informal, targeted tests that are administered during class to help instructors gauge whether students understand key concepts. They can be used both to assess students' prior knowledge (coming into a course or unit) or their understanding of content in the current course.

A rubric is a type of scoring guide that assesses and articulates specific components and expectations for an assignment. Rubrics can be used for a variety of assignments: research papers, group projects, portfolios and presentations.

13.13 LESSON END EXERCISE

Short Answer Type Question

1. Explain the following terms:

    - Assessment

- Summative assessment
- Formative assessment
- Diagnostic assessment

2. Explain the following classroom assessment techniques:
   - Concept maps
   - Concept tests
   - Rubries

Long Answer Type Questions

1. What is classroom assessment? Explain the characteristics of classroom assessment.
2. Explain the role of teacher in assessment.
3. Differentiate between Assessment for Learning (Formative Assessment) and Assessment of Learning (Summative assessment).
4. Explain the process of assessing student learning in the classroom.
5. Discuss classroom assessment techniques in detail.

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13.15 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. Summative 2. Teaching 3. Learning 4. Ongoing, Effectiveness, Summative

Check Your Progress-2

1. (b) 2. True 3. Formative assessment 4. Rubric 5. The muddiest point

6. Graphical representation

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Lesson No. : 14 **Unit : IV**

EVALUATION - MEANING, TYPES AND BASICS OF EVALUATION

STRUCTURE

14.1 INTRODUCTION

Evaluation is the heart of the educational process, for it helps to determine whether the goal of schooling, the expected and desired behavior changes, have been attained. Progress in learning can be recognized by observation but such casual observation is incomplete and inaccurate, and may be erroneous. Evaluation must be done systematically, and students' performance, their status, growth and development in various areas of behavior and personality must be correctly, comprehensively and methodically appraised. Evaluation makes use of tests but in addition supplements data from anecdotal records, interviews, examples of past performance and reports from parents, doctors and all those who have had anything to do with the pupil. The pupil is not only to be graded and classified numerically but he is to be understood, appreciated and interpreted in all aspects of his personality, growth and development, acquisition and learning.

14.2 OBJECTIVES

After going through this lesson, you shall be able to:

- describe meaning of evaluation,
- explain purpose of evaluation,
- discuss basics of evaluation, and
- discuss different types of evaluation techniques- anecdotal records, checklist, self-evaluation and portfolios.

14.3 MEANING OF EVALUATION

Evaluation has a wider meaning. It goes beyond measurement. When from useful information including measurement, we make a judgement, that is evaluation. Example- The teacher may evaluate the student Geetha that she is doing well in mathematics, because most of the class scored 50/100. This is an example of evaluation using quantitative data (measurable information). The teacher might also make an evaluation based on qualitative data, such as her observations that Geetha works hard, has an enthusiastic attitude towards mathematics and finishes her assignments quickly.

- Evaluation is a science of providing information for decision making.
- It Includes measurement, assessment and testing
- It is a process that involves:

  Information gathering,

  Information processing,

  Judgement forming and

  Decision making

From the above, we can arrive at the following concept of evaluation:

Evaluation is a concept that has emerged as a prominent process of assessing, testing and measuring. Its main objective is Qualitative Improvement.

Evaluation is a process of making value judgements over a level of performance or achievement. Making value judgements in evaluation process presupposes the set of objectives

Evaluation implies a critical assessment of educative process and its outcome in the light of the objectives.

14.4 PURPOSES OF EVALUATION

Evaluation is the process of determining the extent to which the objectives are achieved.

- It is concerned not only with the appraisal of achievement, but also with its improvement.
- Evaluation is a continuous and a dynamic process. Evaluation helps in forming the following decisions:

  P Instructional

  P Curricular

P Selection

P Placement or Classification

P Personal

Among the above decisions, we shall learn how evaluation assists a teacher in taking instructional decisions. Evaluation assists in taking certain instructional decisions like:

- to what extent students are ready for learning experience?
- to what extent they can cope with the pace of Learning Experiences provided?
- How the individual differences within the group can be tackled?
- What are the learning problems of the students?
- What is the intensity of such problems?
- What modifications are needed in the instruction to suit the needs of students, etc.

14.5 BASICS OF EVALUATION

It must have been understood from what has been said above that evaluation is a complex and varied process. It is also a continuing process for the need for constant checking of the further progress and improvement. Broadly we may define evaluation as appraising pupils' attainment of educational objectives. So the first essential in understanding evaluation and determining a programme of evaluation in any school is to select and define educational objectives. A comprehensive, complete statement of the objectives of education should include the behavioural changes that are envisaged in pupils of that school. It is not enough to say that the school has to teach efficient citizenship. Careful formulation of concrete objectives at each stage of development and for each grade considering the level of maturity of pupils has to be made.

Such goals should be formulated by a number of teachers and should be clearly

explained to pupils. They should be stated in terms of pupil behavior and related to their needs. They should not be beyond the reach of pupils and there should be valid and reliable techniques of evaluating progress towards those goals. These goals should help the teacher to decide which activities in the school are desirable and which have less value.

What habits, attitudes, understandings or ideals should be encouraged and cultivated, what class and pupil activities will illustrate and apply those objectives, and what procedures and methods of teaching will contribute to the achievement of those objectives will have to be carefully determined in the light of educational objectives formulated.

Teachers approach to those objectives and their methods and tools of evaluation should be comprehensive and many sided. No single method or tool will be enough to evaluate the several phases of growth and in this lesson some of the common methods and instruments of evaluation will be discussed.

Lastly and it will bear any amount of repetition, our approach in evaluation should be organismic, that is, the accent should be on totality of personality, curriculum and environment. The student has to be evaluated not only in intelligence and scholastic achievements but also in emotional maturity, physical characteristics and social relationships; he has to be evaluated not only in academic learning but also in games and sports, group discussion, dramatics, leisure time pursuits, dress, personal appearance , relation with teachers and classmates; and he has to be evaluated in his responses and status in the family and in the home, in the class and the playground, and in the community outside the home and the school. The total programme of education in total environment and setting has to be evaluated in respect to the child's total personality.

Evaluation helps the learners as well, in realizing how he should change to learn better and providing satisfaction when he does what he should do. Thus evaluation not only gives knowledge and understanding of what has been achieved so far but also provides motivation for future learning and development.

Check Your Progress-1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. The systematic process of collecting and analyzing data in order to make decision is called

   (a) Evaluation (b) Measurement

   (c) Assessment (d) Testing

2. The process of quantifying the degree to which someone or something possesses a given trait is called

   (a) Evaluation (b) Measurement

   (c) Assessment (d) Testing

3. Which among the following purposes of measurement and evaluation helps in improving learning in schools?

   (a) Placement (b) Stimulating

   (c) Feedback (d) All the above

4. What does formative evaluation do?

   (a) Find out the cause of students' difficulties

   (b) Adjust teacher's lesson plan

   (c) Pinpoint areas where the student has failed to learn

   (d) Determine the extent to which the objectives are achieved

5. Which among the following descriptions best suits diagnostic evaluation?

   (a) Fix the students in the appropriate group

   (b) Feedback to the teacher and the student

   (c) Follow up evaluation to formative evaluation

   (d) Looks at the entire course of instruction

6. Curriculum evaluation includes

(a) Evaluation of one small aspect of a total curriculum

(b) Finding whether the student is working up to a potential

(c) Measurement of achievement, aptitude, personality and interest

(d) Promotion of a student

7. Choose the possible sequence of activities in evaluation

(i) Establishing the parameters of evaluation,

(ii) Translating the goals into specific objectives,

(iii) Assessment of entry behaviour,

(iv) Formative evaluation

a. i, ii, iii, and iv

b. i, iii, iv and ii

c. i, ii, iv and iii

d. i, iv, iii and ii

14.6 ANECDOTAL RECORDS

They are recordings of the observed behaviour of children based on some significant item of conduct or a word picture of the student in action or a habit repeated many times in performing a learning task. It can also be a word snapshot at the moment of incident or narration of events in which the student takes such a part as to reveal something very special about his personality. An 'Anecdotal Record is a continuous cumulative description of real examples of learner behavior observed by their teachers. This observed behaviour is mainly used for the diagnosis of learning problems which in turn helps the teacher, helps the learner in the pursuit of learning the development of his personality.

Advantages of Anecdotal Records

- Provides observational narrative records of significant incidents in a child's life.
- Provides a wealth of information across different developmental areas
- Facilitates taking of notes on the child's social, emotional development choices, interests and relationships etc.
- Identifies strengths and weakness and assess progress over time.
- A summary of these records is valuable forwarding a pupil's records when he is transfered from one school to another
- They motivate teachers to use the records.
- They provide data for learners to use in self appraisal.

Guidelines for the preparation of Anecdotal Records

- The objective description of behaviour should not be mixed up with the subjective comments
- Any significant behaviour be it in the class room, in the school or outside the school should be recorded.
- Students behaviour whether it is favourable or unfavourable or neither of the two should be recorded.
- The facts presented in all the anecdotes must be shifted and arranged so that they may be studied in relation to one another.
- The records should be kept confidential. It should not fall into irresponsible hands.
- A single anecdote does not provide conclusive information.
- Only problematic situations may be noticed. It would be better to describe incidents rather than making statements of judgement.

- Select amongst the many interesting classroom events and not including all.
- Avoid general comments.
- Prepare and collect anecdotes over a period of time about sustained interests and critical things that are happening in their life. This helps to understand the child's behaviour/responses to different class room situations.
- Record as soon as possible after the event so that rich, accurate and significant details can be included for later interpretation.

14.7 CHECKLIST

Checklists can be used for formative (ongoing) assessment to monitor students' behavior and progress towards reaching stated goals. In this lesson, two kinds of checklists are emphasized.

- Teacher observation checklists
- Checklists for self- and peer assessments

Observation Checklist

Kay Burke (1994) describes an observation checklist as "a strategy to monitor specific skills, behaviors, or dispositions of individual students or all the students in the class." She suggests that teachers use observation checklists for "formative assessment by focusing on specific behaviors, thinking, social skills, writing skills, speaking skills..."

Checklists only indicates if a student can accomplish the listed objectives. Nothing is included about the quality of performance. In foreign languages, checklists, most often, state the language and cultural skills to be attained.

Considerations for Planning Checklist

When designing an observation checklist, the teacher must determine the kind of behavior(s) or skills he/she is hoping to observe. Some observation checklists

may be devoted primarily to the application of the writing process while others may focus on higher order thinking skills or on the use of spoken and/or written language within the classroom.

Checklists can be used with the whole class, with groups, or with individuals and are most effective when the students are aware, from the onset, of the behaviors and/or skills to be observed. This way, the checklists provide the individuals, the groups, and/or the class with guidelines for self monitoring.

Management tips for teachers using observation checklists

Teachers may want to focus on one student, or on a few students at a time. In a classroom of 25, teachers may observe 5 students each day. However, all students should be observed within a given period of time.

- Teachers may also want to observe students in different kinds of activities.
- Teachers will need to record their observations immediately while they remember which students did what.
- Teachers will need to evaluate students in terms of their own personal growth.

14.8 SELF EVALUATION

Self evaluation is a great opportunity for employees to honestly and objectively consider and document their performance. Having said that, employees must also know how to complete a self evaluation and be comfortable with the process. Properly conducting a self evaluation can make the difference between a meaningful evaluation and one that is less effective. This brief tip sheet is meant to enable you to conduct better self evaluations.

A self evaluation is your thoughtful and considered written review of your performance during the evaluation cycle. It involves rating established goals, competencies, and overall performance.

The Benefits of Self Evaluation

When you self assess, you become an active participant in your own evaluation.

Your involvement enables you to honestly assess your strengths and also areas you need to improve. You then can participate more constructively in the evaluation meeting with your supervisor. Self evaluation also serves to increase commitment to goal setting/achievement, competency development, and career planning.

What do you need to do in order to complete your self evaluation

- **Time** Allow about an hour to complete the self evaluation. That hour includes time you may need to review documentation that you've kept throughout the year relating to your goals and competencies.
- **Quiet** Conduct the self evaluation in a quiet place without interruptions so that you can devote your full attention and reflection to the process.
- **Relax** Try to relax and reflect upon individual goals, experiences, and incidents. No one is perfect, and it is very likely that you will recall both good and bad experiences. The purpose of the evaluation process is to highlight strengths, correct performance weaknesses, and develop unused skills and abilities. In order to do this, you must be willing to recognize areas that need improvement or development.
- **Highlight the highlights** Don't be shy about letting your supervisor know where you shone during the year. The self evaluation is the place to boast with grace and diplomacy and, naturally, without putting any of your colleagues down. Don't be modest; state your accomplishments objectively and accurately.
- **Don't forget about achievements made early on in the evaluation period.** Your supervisor cannot possibly remember all of your projects and your participation throughout the year. Go back over documents and e-mails to help you remember your earlier accomplishments.
- **Don't be stuffy.** One of the benefits of a self-evaluation is its tendency to lead to constructive dialogue between you and your supervisor. Therefore, try to write in a conversational style, one that is as natural as the verbal back and forth that occurs throughout the year.

- **Be objective.** It's awfully tempting to give yourself high marks across the board, but it's a little unlikely that you've done everything right. Instead of evaluating yourself based on how you wished you'd performed, offer the results and quantify them as much as possible by using facts, figures, and specific dates. The more you can point to the tangible benefits you offer the University, the more invaluable you will be. Ask yourself some specific questions: What did I do to contribute to my school/units goals and success? Did my efforts further the University's mission? Did I take a leadership role when the opportunity arose?

- **Don't use the self-review as a bargaining chip.** This is the time to show not tell. So, it's not the time to talk about your compensation. Be clear about your accomplishments and save salary discussions for later.

- **Use appropriate language.** Choose words that demonstrate some objectivity and distance. Even if you're writing about yourself, but you can still stand back and offer a little perspective. For example, instead of mentioning your sparkling personality, document specific behaviors like your ability to get along well with others. Rather than say how much you like your job, include the ways that you have grown and improved during the evaluation period.

- **Suggest specific improvements.** The self-evaluation is a good opportunity to identify specific ways to improve your performance. Don't be afraid to mention ways that you can do your job more effectively. Making suggestions like this is not the same as holding something up as a weakness. Indeed, it is a mark of strength and professional maturity for employees to identify ways to grow and improve.

- **Complete the Learning and Career Development Action Plan.** Choose, complete, and apply knowledge you gain from development activities to support your performance goals, your competency development and your career direction.

- **Write more than one draft.** The self-evaluation is part of your employment record so you'll want to "get it right". Make certain you are thorough and

professional in your approach and language. And, that you write, review, and revise your self-evaluation to ensure you "Send Forward" your best work.

14.9 PORTFOLIO

A portfolio is a living and changing collection of records that reflect one's accomplishments, skills, experiences, and attributes. It highlights and showcases samples of some best work, along with life experiences, values and achievements of someone. The personal information that one incorporates into your portfolio can greatly reflect on his/her abilities as an individual as well as becomes a useful tool in marketing himself/herself to employers, corporations, colleges and universities. A portfolio does not take the place of a resume, but it can accentuate ones abilities and what one can offer in the chosen field.

Why is Portfolio Needed?

A portfolio can set one apart from other applicants, whether in a professional or academic setting.

- It allows one to be more personal and creative in order to expand on and exhibit one's skills, knowledge, projects and experiences.
- A portfolio is a method of self discovery and confidence building.
- It is a multi-faceted way to organize one's accomplishments, goals, aspirations, and personal thought. It showcases one's personality to potential employers and organizations.
- It is useful tool to include in an interview. It provides tangible proof of skills and abilities and demonstrates to the employer that one is qualified for that specific job.
- It can be helpful in applying for bonuses, scholarships, grants and negotiating promotions and raises.
- A portfolio demonstrates prior work or learning experiences that can be useful for educational credit.

How to create a portfolio?

First, one need to determine what type of portfolio is best suited for one's needs:

1. **Student Portfolio**—Useful in an academic setting; demonstrates knowledge attained in a given class or throughout one's school career. This portfolio can be very helpful if one plans on continuing one's education beyond the undergraduate level.

2. **Project Portfolio**—Useful in an academic and professional setting; shows the efforts or steps taken to complete a specific project or independent study. For example, if one has the experience of producing a school play, one would create a portfolio that incorporated the materials and research that was involved. If one wanted to apply for a grant in order to do another play then he could use his/ her portfolio as a form of proof that one did a good job and would be a prime candidate to receive the requested grant.

3. **Professional Portfolio**—Useful in a professional setting; demonstrates one's skills, background, accomplishments and experiences. This portfolio is versatile and can be arranged for a specific position. For example, a teaching portfolio would be a type of professional portfolio that would highlight experiences, achievements, goals and ambitions for a position as a teacher within an educational institution.

4. **Online Portfolio**—Useful in an academic and professional setting; enables one's credentials to be more easily accessible via the internet. This should not take the place of a hard copy portfolio, but be created in addition to one. This portfolio can be very helpful for those planning on applying for a job in the field of technology and/or graphic design. Also, an online portfolio can be useful to anyone in any given field. As the Information Age progresses, prospective employers are beginning to request online portfolios. Bear in mind that several employers may be located afar and with one click of a mouse, they can access your information more readily.

5. **Personal Portfolio**—Simply for one's personal use. This portfolio is a collection or a scrapbook of things that interest oneself. This portfolio could be used as a stepping block towards understanding who you are and where you would like to be in the future.

What should be included in portfolio

As one begins to create one's portfolio, there are several different categories that you should consider: Personal Information, Values, Personal Goals and History, Accomplishments and Job History, Skills and Attributes, Education and Training as well as Testimonials and Recommendations.

Here is a list of possible information to include.

- Letters of reference
- Resume or Vitae
- Lists of accomplishments
- Samples of work (e.g., items produced on internship or co-op experiences, class projects, items produced from previous job)
- Memos and/or reports (optional)
- Designs and Photographs (optional)
- Transcripts
- Licenses or Certifications
- Evidence of specific skills (e.g., writing, graphic design, public speaking, leadership, event management)

Making a Portfolio

First and foremost, it is very important that one's portfolio:

- Looks professional and accurately reflects one's skills

- Is specific and occupationally focused
- Is easy to update and view
- Is self-explanatory if need be
- Supports information presented in one's resume

Second, it is vital to adopt a specific presentation format for the material within portfolio. For example:

1. Introductory Title Page
2. Table of Contents

a. Can be organized two ways—chronologically or functionally

3. Work Samples

a. Provide a reflection statement for each sample

b. Reflection statement can be in either paragraph or bulleted format

c. The reflection statements should contain a brief description of the sample item and its background and a detailed list of the competencies developed by the sample

When creating a smaller portfolio for an interview the following is to be considered:

- Placing items in a loose-leaf binder
- Using sheet protectors
- Using copies of one's work and keeping a master copy available
- Organizing pages by index tabs and/or dividers
- Try to keep this portfolio between 5-10 pages in length
- Avoid page numbers as this would allow to add and move things around more easily

- Be consistent with headings and placement of items
- Keep the sections job specific

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

1. Recordings of the observed behavior of children based on some significant item of conduct are known as.....

2. Thoughtful and considered written review of one's performance during the evaluation cycle is known as.....

3. Self-evaluation enables one to honestly assess one's.....an also areas one need to.....

4. Which of the following is not a type of portfolio?

   (a) Online Portfolio

   (b) Professional Portfolio

   (c) Student Portfolio

   (d) Teacher Portfolio

14.10 LET US SUM UP

Evaluation is a concept that has emerged as a prominent process of assessing, testing and measuring. Evaluation is the heart of education process. It helps in determining whether the goal of schooling, the expected and desired behavior changes have been attained. Its main objective is Qualitative Improvement. Teachers have always watched and observed students in the classroom and they have made instructional decisions based on these observations.

Observations can take place in a variety of settings. They can focus on student performance during a single activity or during routine classroom activities.

After deciding what to observe, when to observe, and how often to observe, teachers will need to plan how to record their observations. Observations which go unrecorded in some way will not be as easily defensible to students, parents, and administrators, and may be forgotten over time.

There are several possibilities for recording information to help guide the observations and to make sure that the observations are consistent for all the students involved. In this lesson various techniques of evaluation i.e. anecdotal records, checklist, self-evaluation and portfolio have been discussed. Teachers can make use of these techniques depending upon the purpose and aspect of behavior to be evaluated.

14.11 LESSON END EXERCISE

1. What do you mean by evaluation? What purpose does evaluation serve in education?
2. Define Anecdotal Record.
3. Explain in brief two types of checklist.
4. What is self evaluation? Explain.
5. What is Portfolio? How can it be created?
6. Explain in brief student portfolio.
7. Discuss the format of portfolio.

14.12 SUGGESTED FURTHER READINGS

Evaluation. Retrieved from

http://evaluationtoolbox.net.au/index.php?option=com content&view=article&Itemid=17

Gafoor, K.A. (2013). *Types and Phases of Evaluation in Educational Practice.* DOI: 10.13140/2.1.3801.1680

Gronlund, N.E., & Linn, R.L. (1990). *Measurement and evaluation in teaching.* 6th edition London: Macmillan.

Portfolio. Retrieved from http://careercenter.cofc.edu/documents/portfolio.pdf

Self-evaluation. Retrieved from file:///C:/Users/ASUS/Desktop/Conducting_a_Self_Evaluation.pdf

Tools to use in assessment. Retrieved from http://www.ncpublicschools.org/docs/curriculum/worldlanguages/resources/aaa/obcheck4.pdf

Tuchman, B.W. (1975). M*easuring educational outcomes fundamental of testing*. Atlanta: Harcourt Brace Jovanovich inc.

14.13 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

1. a. 2. b 3. d 4. c 5. c 6. a 7. a

Check Your Progress-2

1. Anecdotal Records
2. Self-evaluation
3. Strengths, improve
4. d

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BACHELOR OF EDUCATION (B.Ed.)

SEMESTER-II

(For the examination to be held in the year 2018, 2019 & 2020)

Course No. 202 (Theory) **Title : Teaching, Learning and Evaluation**

Credits : 4 **Total Marks : 100**

Maximum Marks Internal : 40

Maximum Marks External : 60

Duration of Examination : 3 hrs.

Objectives :

To enable the pupil teachers to :

Understand the meaning of psychology, child psychology and educational psychology.

Become familiar with the different methods of studying behaviour.

Appreciate the role of a teacher in a classroom.

Understand the concept of learning and also behaviouristic and cognitive perspective to learning.

Become aware of importance of inclusive setting in a classroom.

Develop understanding of different methods of learning and learning styles.

Understand the concept of motivation and role of teachers and parents in developing motivation.

Understand dynamics of intelligence.

UNIT - I

Concept of Psychology, child psychology and educational psychology.

Methods of studying behaviour :-

(a) Naturalistic and Participant observation.

(b) Experimental method.

(c) Case Study Method.

Motivation - concept, types, role of parents and teachers in extrinsic motivation, theory of achievement motivation, Contribution of Sidney L Pressey.

UNIT - II

Learning - Nature of learning, factors influencing learning (personal and environmental), Gagne's conditions of learning, Hull's theory.

Behaviouristic perspective to learning - concept and contribution to education. Theories of Trial and Error, Pavlov's Classical Conditioning theory and Skinner's Operant Conditioning theory.

Cognitive perspective to learning - concept and contribution to Education, Theories of Gestalt (Kohler), Bruner and Ausbel.

UNIT - III

Teaching as a profession, need and opportunities for personal growth of a teacher. Multiple responsibilities of teacher in an institutional setting.

Role of teacher in development of personal relationship between teacher and learner, between peer groups and developing self esteem, autonomy and feeling of freedom among learners.

Education in inclussive setting with inclusion of disabled and marginalized groups. Precision teaching.

UNIT - IV

Intelligence : Meaning and types of intelligence (crystalline and fluid), Theories of intelligence - Spearman's two factor theory, Thurston's group factor theory and Thorndike's multifactor theory.

Meaning of assessment, Need for assessment, assessing learning (creating an assignment, classroom assessment techniques, using concept maps, using concept tests) assessing group work, creating and using rubrics - (paper presentation/projects/ oral presentations).

Meaning of evaluation, basics of evaluation - anecdotal records, checklist, self evaluation and use of portfolios.

SESSIONAL WORK

Case study of a school with inclusive setting/study of various methods used by teachers for enhancing learning/use of intelligence test to assess intelligence level of students.

Note for Paper Setters :

The Question paper consists of 9 questions having Q. No. 1 as compulsory having four parts spread over the entire syllabus, with a weightage of 12 marks. The rest of question paper is divided into four units and the students are to attempt four questions from these units with the internal choice. The essay type question carries 12 marks each. Unit IV having the sessional work/field work (section) could also be a part of the theory paper.

Internship/field work Unit IV having the components/activities of the internship are to be developed in the form of the Reflective Journal. All the activities under internship are to be evaluated for credits and hence all the activities are to be showcased by the trainee and are to be fully recorded with the complete certification of its genuineness.

The theory paper is to have 60 marks (external). 40 marks are for the In House activities.

Book Recommended :

Chauhan, S.S. (2001), *Advanced Educational Psychology,* Vikas Publishing House Pvt. Ltd., New Delhi.

Dash, M. (2006), *Fundamentals of Educational Psychology,* Atlantic Publisher and Distributors Pvt. Ltd., New Delhi.

Mangal, S.K. (2002), *Essentials of Educational Psychology,* Prentice Hall of India Pvt. Ltd., New Delhi.

Solso, Robert, L. (2002), *Cognitive Psychology,* Pearson Ed. (Singapore) Pvt. Ltd., Delhi.

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