M.A. EDUCATION

SEMESTER - I(CBCS)

CORE COURSE- II

ADVANCED PSYCHOLOGY OF EDUCATION

SUBJECT CODE - CC2

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CONTENTS

M.A. EDUCATION
SEMESTER I
CORE COURSE II
ADVANCED PSYCHOLOGY OF EDUCATION

Theory: 60 **Internals: 40** **Total Marks : 100**

Total Credits= 6

Course Objectives

1. To develop an understanding of educational Psychology
1. To critically evaluate the theories of learning
2. To develop an understanding of learner dynamics
3. To develop an understanding of learner diversity
4. To address the individual differences in the classroom
5. To apply models of teaching for effective teaching and learning
6. To develop an understanding of meta cognition and development of self and identity

Module 1 -Application of Educational Psychology for Learning Credits: 2

Unit -1- Fundamentals in Educational Psychology

a) Psychology and Educational Psychology- concept, meaning and definition

b) Contribution of Educational Psychology to the learning process

c) Scope of educational psychology- the teacher, the learner, the learning environment and the learning resources

Unit-2 Critical Understanding of theories of Learning

a) Behavioral views: Classical Conditioning (I. Pavlov), Operant Conditioning (B.F. Skinner)

b) Cognitive views: Learning by discovery (Jerome Bruner) Information Processing (David Ausubel)

d) Social Learning (Albert Bandura) and Social Constructivism (L. Vygotsky)

Unit-3 Understanding Learner Dynamics

a) Learning Styles-Kolb's Learning Style

b) Thinking Styles- - Sternberg's Thinking Styles

c) Mental health and Mental hygiene, Defense Mechanisms

Module -2 Application of Educational Psychology for Teaching
Credits: 2

Unit-4 Learner Diversity

a) Personality- Theories of personality Western (cognitive -Ellis, humanistic -Berne) and Indian perspective (Vedic and Buddhist)

b) Intelligence - cognitive (J.P. Guildford, Emotional Intelligence and Multiple Intelligence

c) Creativity and Creative thinking contribution of E.D. Bono

Unit:5 Educational needs of differently abled children

a) Catering to Individual Differences- Cognitive exceptional children, physically exceptional children, socio-cultural exceptional children

b) Emotional and Behavioral disorders - Attention Deficit Disorder Attention Deficit Hyperactive Disorder, Disruptive Behaviour Disorder

c) Inclusive Education- concept of mainstreaming, integration and inclusion, need and importance of inclusive education in the Indian context

Unit 6: Teaching for Thinking and Self Development

a) Models of Teaching: Inductive Thinking by Hilda Taba, Synectics by William Gordan

b) Meta cognition- Meaning, development and teaching for Meta cognition

c) Development of self and identity, Carol Dweck Self-Theory and Daryl Bem Self-perception Theory

Module 3: Internal Assignment:
Credits: 2

Sr. No.	**Particulars**	**Marks**
1.	Assignments (2*10)	30
2.	Case study/Projects/Posters and exhibits /Seminar/ Workshop/ Cooperative Learning /Blended Learning/Construction/ Nai-Talim- Experiential Learning /Open Book Assignment/ Class test	10

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1

FUNDAMENTALS IN EDUCATIONAL PSYCHOLOGY

Unit Structure:

1.0 OBJECTIVES:

After reading this unit, you will be able to;

- Define Psychology and Educational Psychology.
- Explain the contribution of Educational Psychology to the learning process.
- Explain the Scope of Educational Psychology.

1.1 INTRODUCTION

The earliest origin of Psychology is in the writings of the ancient Greek philosophers about the nature of life, particularly to writings of Aristotle. Aristotle was born in 384 B.C., was interested in learning everything he could about the nature of life itself. Aristotle used the term 'psyche' to refer to the essence of life. This term is translated from Greek to mean "mind". Indeed, the term Psychology comes from Aristotle's word 'psyche' plus the Greek word 'logos', which means "the study of". Thus, Aristotle was the first one launched the study of life that evolved later into the modern Science Psychology.

1.2 PSYCHOLOGY AND EDUCATIONAL PSYCHOLOGY CONCEPT, MEANING AND DEFINITION

Concept of Psychology-

The term 'psychology' literally means the science of the soul. (Psyche-soul; logos - science).Formerly, psychology was a part of metaphysics, and dealt with the nature, origin, and destiny of the soul. It was called rational psychology. But modern psychology is empirical and does not deal with the problems relating to the soul. It deals with mental processes apart from the soul or mental substance.

According to the American Psychological Association, ***'Psychology is the scientific study of the mind and behavior'***. It is a multifaceted discipline and includes many sub-fields of study such as human development, sports, health, clinical, social behavior and cognitive processes.

Psychoanalysis, founded by Sigmund Freud (1856-1939) was the dominant paradigm in psychology during the early twentieth century. Freud believed that people could be cured by making conscious their unconscious thoughts and motivations, thus gaining insight. Psychodynamic approach as a whole includes all theories that were based on his ideas, e.g., Jung (1964), Adler (1927) and Erikson (1950).

The classic contemporary perspectives in psychology to adopt scientific strategies were the behaviorists, who were renowned for their reliance on controlled laboratory experiments and rejection of any unseen or unconscious forces as causes of behavior.

Later, the humanistic approach became the 'third force' in psychology and proposed the importance of subjective experience and personal growth.

During the 1960s and 1970s, psychology began a cognitive revolution, adopting a rigorous, scientific, lab-based scientific approach with application to memory, perception, cognitive development, mental illness, and much more.

Definition of psychology

Psychology has been defined in several ways by various psychologists belonging to different schools of thoughts. Some recent definitions of Psychology are as follows

1."Psychology is the scientific study of the activities of the individual in relation to the environment." **– Woodsworth**

2.“Psychology today concerns itself with the scientific investigation of behaviour, including from the stand-point of behaviour, much of what earlier psychologists dealt with as experience” – **Munn**

3.Scientific study of behaviour and mind. **– Nairne (2003)**

4. A science in which behavioural and other evidence is used to understand the internal processes leading people (and members of other species) to behave as they do. **– Eysenck (2004)**

5.The science that studies behaviour and mental processes.**– Rathus (2008)**

To conclude, psychology is defined as the science of behaviour mental processes. This definition contains key terms – science, behaviour and mental processes. Psychology is considered to be a science because psychologists attempt to understand people through careful controlled observation. The term behaviour refers to a person's overt actions that others can directly observe while the mental processes refer to the private thoughts, emotions, feelings and motives that others cannot directly observe i.e. the covert behaviour. So today psychology is defined as a science of behaviour and cognitive processes.

Concept of Educational Psychology

Educational psychology consists of two words “education” and “psychology”. Psychology is a science of behaviour and experience, and education is the modification of behaviour. Modern Education aims at the harmonious development of the personality of the child. It is the task of the schools and the teachers to create such situations where the personality can be developed freely and fully. This is the modern meaning of education. But this modern meaning of education depends upon the knowledge of psychology. Thus, educational psychology is application of the knowledge of psychology in the field of education.

It is one of the many branches of psychology dealing namely with the problems, processes and products of education. Educational psychology may be defined as that branch of psychology which studies the behaviour of the learner in relation to his educational needs and the environment.

Some definitions of Educational psychology are as follows:

1. **Skinner’s view** – “Educational psychology is that branch of psychology which deals with teaching and learning.” According to him, teaching and learning are the most important problems, areas of fields of educational psychology. He further says that “Educational psychology covers the entire range and behaviour of the personality related to education.”

2. **Stephen’s view** –“Educational psychology is the systematic study of educational growth and development.” According to him, whatever is

concerned with the systematic study of educational growth and development can be included in the scope of educational psychology.

3. **Good's view** – Carter V good in the *'Dictionary of Education'* writes, "Educational psychology is the investigation of psychological problems involved in education, together with the practical application of psychological principles of education."

4. **Views of Crow and crow** – "Educational psychology describes and explains the learning experiences of an individual from birth through old age."

5. **David Ausubel's view** – "Education psychology is the special branch of psychology concerned with the nature, conditions, outcomes and evaluation of school learning and retention."

It can be concluded that educational psychology is the study of the learner and the learning process in relation to the educational environment or learning situations. It studies the experiences and behaviour of the learners in relation to the educational environment which is mainly provided by the teacher for the purpose of bringing about desired changes. Therefore, educational psychology becomes a psychology of teaching and learning. Teaching and learning are the main processes of education, and the learner is the key figure in the process.

1.3 CONTRIBUTION OF EDUCATIONAL PSYCHOLOGY TO THE LEARNING PROCESS

Education aims at shaping the behaviour of the students in a desirable way and bringing about all-round development in their personality. This task is carried out through the process of formal and informal teaching and learning. Educational Psychology helps in the process of teaching and learning by adopting the scientific principle. Educational Psychology helps a teacher in the following way:

1. Knowledge of Innate Nature: The child has got natural urges, instincts, potentialities and propensities. These innate qualities are the "Prime movers" of his behavior. The teacher who knows psychology can make his teaching very successful while keeping in view the innate nature of the child.

2. Knowledge of Individual differences: No two individuals are alike. Individuals differ in age, capacities, capabilities, potentialities, propensities, abilities, aptitudes, achievements, interests, motives and many other traits. There are gifted children on the one extreme and handicapped child on the other. All of them should not be taught in the same manner. This is possible only if the teacher knows the psychology of the child.

3.Knowledge of behaviour: Educational Psychology assists the teacher in knowing the behavior of the child at different stages of development .It is

also helps the teacher in understanding the physiological and psychological basis of behavior, i.e. nervous system, glands, instincts, emotions, sentiments, motives, play, intelligence, heredity and environment etc.

4. Knowledge of learning: Knowledge of educational psychology helps the teacher in analyzing the different aspects of learning, i.e. the process of learning, method of learning, laws of learning and factors of learning. It helps the teacher in arousing the attention, interest and motivation of the students with the help of various audio-visual aids.

5. Knowledge of mental hygiene: Mental hygiene is the backbone of a balanced personality. The teacher who is endowed with the knowledge of educational psychology will try to maintain the mental hygiene of his pupils in the positive side by following various principles of mental hygiene.

6. Knowledge of guidance: Educational psychology helps the teacher in giving guidance to the pupils by having an understanding of interests, abilities, aptitudes, achievements, problems, educational and vocational plans of the pupils.

7. Improvement in teacher-taught relationship: Basically, the teacher taught relationship is psychological. Educational psychology helps the teacher in maintaining cordial relations with their students. It helps the teachers in treating their pupils with sympathy and understanding. He assists and co-operates in the student's participation in the group activities.

8. Measurement and evaluation: Educational psychology helps a teacher in knowing sound methods of measuring and evaluating the achievement of the pupils.

9. Improvement in curriculum: Educational Psychology has led to important improvement in the curriculum. It has laid stress on co-curricular activities like games, scouting, picnics, dancing, camps, variety of programmes etc. To be active and effective, the curriculum must be based upon psychological foundations.

10. Improvement in teaching methods: Educational Psychology gives information to the teacher about the process of learning, effective methods of teaching and learning, important factors which help or impede the process of learning, and allows him to make use of this information in his teaching.

11. Improvement in discipline: Educational Psychology helps the teacher in maintaining discipline by avoiding repressions, frustrations and anxieties and thus saves the child from maladjustments. A teacher can teach effectively by making minimum use of his energy in terms of time and labor.

12. The students can learn effectively by spending less of their time and effort.

13. Helps to carry out the processes and produce the results of education.

14. It supplies the necessary knowledge and skills, especially for the teacher to realize the objectives of education.

15. It equips the teacher with essential scientific skills, technological expertise and advice in molding and shaping the behaviour of the students.

Educational Psychology thus plays the same role as other sciences and technology in helping the teachers and other persons connected with the building of the future of the youngsters in their charge. Thus, Educational Psychology can be described as the science and technology of Education.

1.4 SCOPE OF EDUCATIONAL PSYCHOLOGY:

In Psychology the scope of study and the fields of operation are extended to cover the behaviour of all living organisms related to all their life activities, whereas, in Educational Psychology, the scope of such behavioural study has to be limited within the confines of the teaching-learning process, i.e. studying the behaviour of the learner in relation to their educational environmental, specifically for the satisfaction of their educational needs and the all round development of their personality. Therefore, the subject matter of Educational Psychology must be centered on the process of teaching and learning for enabling the teacher and learners to do their jobs as satisfactorily as possible. The educative process includes the following areas of education of the learner:

1. Teacher:

Teacher's role is very crucial in the task of behavioral modification and personality development of the number of children studying in a class. Much depends on the competency and capability of the teacher for carrying out the desired task. For this purpose, the teacher must pay attention to the following aspects which have been included in the text of educational Psychology:

- Personality traits and characteristics of good teachers.
- Duties and responsibilities of a teacher.
- Measures for knowing and doing away with personal conflicts, anxiety and tension.
- Teacher's motivation, level of aspiration, adjustment and mental health.

2. Learner:

Before the learner is taught, his individuality and personality should be known. Therefore, topics like the following should be included which will be helpful in exploring the individual's life, viz;

- Learner's instincts and other innate abilities.

- The learned and acquired abilities.
- Individual differences in terms of abilities and capacities.
- Their interests, aptitudes, attitudes, intelligence and creativity.
- Mental health and personality.

All these are important for personality appraisal.

3. Learning process:

The subject matter of educational Psychology thus covers the topics helpful in suggesting principles, methods and techniques for the selection of the learning experiences appropriate to each development stage of the children. It enunciates how to organize the contents or topics grade-wise for giving them the shape of a syllabus or curriculum; even how to cater to the individual differences and individuality of the children in framing the syllabi or curricula is also taken care by educational Psychology. The subject tries to encompass the essential knowledge and skills for equipping the teachers to plan, select and arrange learning experiences for the children suitable for their age, grade and also meeting their specific individual potentialities. It must include the topics and contents which are specifically meant for improving the processes and products of education mainly centered on the teaching- learning process. As a result its study involves the following topics:

- Psychology of learning
- Motivation of learning
- Factors affecting learning
- Transfer of learning / training
- Sensation, perception and concept formation.
- Interest and attitude formation
- Thinking, reasoning and problem solving behavior etc.

4. Learning Environment:

Educational Psychology helps the teacher and the learners to understand the suitability and appropriateness of a teaching - learning situation for the effective realization of the teaching - learning objectives. Educational Psychology plays its role in deciding the type of learning experiences suitable for the children at each developmental stage by keeping in view the differences in their potentialities. Every environmental situation is not suitable for a particular piece of instruction or the sharing of a learning experience. The effectiveness of a teaching - learning programme depends largely on the suitability of the teaching - learning situations in terms of time, place and other environmental factors. Educational Psychology helps in taking into account the following:

- Classroom climate
- Institutional/ Organizational climate
- Group behaviour and group dynamics

- Role of rewards and punishment
- Guidance and Counseling

5. Learning Resources:

Although Educational Psychology does not connect itself directly with the problem of what to teach or what learning experiences or resources are to be provided for the learner yet it has the full responsibility of suggesting techniques of acquiring the learning resources. Once the task of Educational Philosophy to decide the aims and objectives of a piece of instruction at a particular stage is finished, the need of educational Psychology is felt. At this stage, Educational Psychology helps in deciding what learning resources are desirable at what stage of the growth and development of the learner so that these experiences can be acquired with a greater ease and satisfaction. In this area Educational Psychology has the subject matter which deals with the knowledge and principles of Psychology which facilitates the selection of the desirable learning resources for the learner. Educational Psychology helps in taking into account in organizing the following:

- Print media - books, newspapers, magazines
- Audio - Visual- television, films
- Multimedia – Computers (online & offline)
- Museum, Visits, Exhibitions, etc.

Educational Psychology is a continuously growing discipline adding new dimensions to its field of study. However, its scope may be considered extensive in the sense that all that is needed for providing solutions to the problems and demands of the dynamic educational system must find place in the study of educational Psychology.

1.5 LET US SUM UP

From this unit we have learned about the conceptual meaning of Psychology and Educational Psychology according to various psychologist views. The contribution of educational psychology to the learning process of learners and helps teachers in teaching the content. The scope of it is very wide and explains the major role of teacher and student.

1.6 UNIT END EXERCISE

1. Define the term Psychology.
2. Define term Educational Psychology.
3. How does the knowledge of educational psychology helps the teacher and students in their teaching and learning process?
4. Discuss the scope of educational Psychology.

1.7 REFERENCES

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2

CRITICAL UNDERSTANDING OF THEORIES OF LEARNING

Unit Structure

2.0 OBJECTIVES:

After reading this unit you will be able to:

- Explain classical conditioning theory of learning and operant conditioning theory of learning.
- Differentiate between classical conditioning and operant conditioning theory of learning.
- Describe the principles of Ausubel's theory of meaningful learning and Bruner's theory of learning.
- Define social learning.
- Describe the basic principles underlying social learning proposed by Albert Bandura and social constructivism by Lev Vygotsky.
- State the implications of social learning and social constructivism theories on teaching learning process.

2.1 INTRODUCTION:

Learning is universal in nature. All organisms both human and animal learn according to their capacity. But human beings can learn any type of act, may be simple or complex, because human beings are endowed with mental qualities like intelligence, reasoning, thinking,

problem solving etc. Learning is a lifelong process, we learn from birth to death. Then what is learning, how it occurs, what are the suitable conditions for learning etc are pertinent questions that need to be answered in order to understand learning. Different Schools of Psychology answered these questions differently. They proposed different theories of learning.

The theory of learning can be classified into;

1. Behaviorist theory of learning; Classical conditioning, Operant conditioning etc

2. Cognitive theory of learning: Ausubel's theory of meaningful learning and Bruner theory of learning etc.

3. Social learning and social constructivism.

Learning plays an important role in our day to day experiences. Learning is a social process and we learn through interaction with peers, parents and teachers etc in a social setting. Observation, imitation and modeling plays an important role in a child's learning. In the present unit we shall learn about the social cognitive and constructivist views of learning developed by Albert Bandura and Lev Vygotsky.

2.2 BEHAVIORAL VIEWS:

A) CLASSICAL CONDITIONING

This theory was developed by Ivan P. Pavlov (1849-1936), a Russian physiologist around the turn of the 19th century. He was initially interested in studying the process of gastric secretion in dogs and received the Nobel Prize for this work. In studying the dog's digestive process, he noted that the dog was salivating not only at the sight of food but also at the sight of the bowl, the experimenter and sound. Pavlov at first called these responses as Psychic secretions that are distinguishable from original ones. Realizing the significance of such an event, he changed the focus of his research from physiological to psychological.

PAVLOV'S EXPERIMENT:

It is better to clarify basic terms such as Unconditioned stimulus (US), Unconditioned response (UR), Conditioned stimulus (CS) and Conditioned response (CR) used by Pavlov in his experiment before explaining the experiment. Salivation in response to food placed in the mouth is a natural, unlearned response-in short, a reflex. Thus this response was called Unconditioned response. The food is called unconditioned stimulus as it elicited the unconditioned response. When Pavlov's repeated presentation of the bell followed by food led the dog to salivate in response to the bell alone, this salivation was called a conditional response. The model of classical conditioning is given below.

1. US (food)……UR (saliva)
2. CS (sound of bell)
   US (food)…….UR (saliva)
3. CS (sound of bell)……CR (saliva)

In this experiment the subject is first presented with the sound of a bell followed by food, which evokes the inborn salivary response. After repeated presentation of the sound of the bell followed by the food, the sound itself is adequate to elicit the salivary response. The bell is referred to as a conditioned stimulus and salivation in response to the bell is called a conditioned response.

Classical conditioning may be defined as a process in which a neutral stimulus by pairing with a natural stimulus acquires all the characteristics of natural stimulus. It is sometimes called stimulus substitution as a new stimulus previously a neutral one is substituted for the stimulus which originally elicited the response.

Another type of conditioning called higher order conditioning goes one step further as presented below.

1. US (food)……..UR (saliva)
2. CS+US (bell+food)….CR (saliva)
3. CS1+CS2 (bell+light)…CR (saliva)
4. CS2 (light)……..CR (saliva)

Principles of Classical Conditioning:

During this experiment Pavlov observed various principles or phenomena of conditioning. These are presented below.

Extinction: If the sound of a bell which has been eliciting a salivary response is rung repeatedly without presentation of food, the amount of saliva secreted in response to the sound of the bell decreases gradually each time, until finally there is no salivation to the conditioned stimulus. When the conditioned response disappears, extinction occurs.

Spontaneous recovery: An extinguished response usually returns though at a lowered strength, after an interval of time during which the conditioned stimulus is not presented. This is called spontaneous recovery.

Stimulus generalization: It is a process in which a conditioned response to a stimulus is generalized to a similar category of stimuli.

Differential conditioning: The subject may be trained to differentiate between the conditioned stimulus and similar stimuli. For example, a bell of a certain tone is the CS. When the bell is sounded, food immediately follows, but when other sounds occur, such as horns, there is no food. At

first the dog salivates to all such sounds but soon it learns to salivate only to the bell. Salivation to other sounds is extinguished. When extinction occurs for stimuli which are not the CS, we say differential conditioning has developed.

Educational implications:

Pavlov brought a revolution in the field of psychology. His theory has generated worldwide research on conditioning. The conditioning was accepted as a theoretical framework and practical technique of solving a variety of applied problems. He reported 'capacity to learn depends on the type of the nervous system and repetition of the activity under reinforcement'. For learning to occur, one must have some drive that motivates action.' The principles of classical conditioning can be used in the following areas.

1. Good habits such as cleanliness, respect for elders and punctuality etc can be developed among children by conditioning.

2. Similarly bad habits of children can be eliminated by conditioning.

3. The principles of classical conditioning are used in de-conditioning emotional fears in mental patients.

4. It can be used to develop a favorable or unfavorable attitude towards learning, teachers and school among students.

5. The principles of classical conditioning are used to teach alphabets and fundamental principles of arithmetic by using some concrete materials.

B) OPERANT CONDITIONING

B F Skinner (1904-1990) of Harvard University developed the theory of Operant conditioning. He conducted a number of research on reflexes of rats and pigeons. Finally he selected eating as the subject of his experiments because of its simplicity and easiness. He developed his own apparatus and method of observation to study and analyze behaviour in an objective way.

He recognized two types of conditioning; Respondent conditioning and Operant conditioning. When reinforcing stimulus paired with a neutral stimulus that acquired properties of natural stimulus is now a respondent conditioning. When a response occurs spontaneously in the absence of any stimuli is known as operant conditioning. His conditioning is referred as operant conditioning which is defined as any learning which is based on response contingent reinforcement and does not involve choice among experimentally defined alternatives. It is based on the fact that behaviour operates upon the environment to generate its own consequences. If the consequences are rewarding the response will be repeated and will grow in strength. This relationship between response and reward is the essence of operant conditioning. It is also known as instrumental conditioning because the organism's response is instrumental in gaining some reward.

SKINNER'S EXPERIMENT:

A laboratory rat is placed in the conditioning apparatus known as Skinner box, which leaves it free to roam within the confined area. Usually it moves about in an exploratory manner. Eventually it presses a bar which triggers a food delivery mechanism, and a pellet becomes available. After gaining this reward, the subject continues its apparently random activity, sniffing, stretching, and cleaning itself but sooner or later it presses the lever again. This bar-press activates the food delivery mechanism and again the rat receives reward. As time passes, the bar is pressed more frequently, and then a point is reached where the rat presses the bar consistently in order to receive the reward.

Principles of Operant Conditioning:

Like classical conditioning, Operant conditioning operates on different principles such as shaping, extinction, spontaneous recovery and reinforcement.

Shaping: It refers to the judicious use of selective reinforcement to bring certain desirable changes in the behaviour of the subject. The basic process in shaping is successive approximation to the desired behaviour. The experimenter shapes or molds the behavior of the subject by using reinforcement. Successful shaping involves generalization, habit competition and chaining.

Extinction: It is withdrawing the reinforcer when the appropriate response occurs. Complete absence of reinforcement results in extinction of response.

Spontaneous recovery: As in classical conditioning there may be spontaneous recovery if the subject is removed from the conditioning situation for a time and returned to it. It is almost similar to classical conditioning of Pavlov.

Reinforcement: It is central to operant conditioning theory. A reinforce is any event which changes subsequent behavior when it follows behavior in time. B F Skinner used reinforcement as a procedure for controlling behavior. It is an event that enhances the rate of responding in subject. Reinforce is of three types such as positive reinforce, negative reinforce and punisher. Positive reinforce refers to any stimulus that enhances or strengthens the responses in an organism. Food is a positive reinforcement for hungry men. Things like food, water, praise, money and social approval are examples of positive reinforces. Negative reinforce is a stimulus that learner will readily terminate if given the opportunities to do so. When negative reinforce is used, the response to be learned serves to terminate the aversive stimulation. Social disapproval or condemnations are examples of negative reinforcement. Punisher is an aversive stimulus which follows a response and frequently serves to suppress. Negative reinforcement and pusher are different from each other. A negative reinforcement precedes the response and forces its occurrence to terminate

whereas the punisher follows the response and decreases the likelihood of the recurrence of the responses.

Educational Implications:

B F Skinner conducted extensive research on animals relating to operant conditioning and advocated that the result of these research studies has significant implications for the education of human beings.

1. The principles of operant conditioning can be used to eliminate the fear from the school environment by using positive reinforcement. Teachers can appropriately use reinforcement in the classroom which can increase achievement of students.

2. The correct response of students should be reinforced immediately as immediate reinforcement strengthens the reoccurrence of the behaviour.

3. The greatest contribution of Skinner is **programme learning material**. The programme learning material can be used to teach different school subjects. It helps students to proceed at their own pace which makes learning joyful. It also reinforces the responses of the child as exercise and answers are part of programme learning material. It helps a teacher in individualizing the instruction.

Difference between Classical and Operant Conditioning

Classical conditioning	**Operant conditioning**
It was developed by Ivan Pavlov is known as respondent conditioning	It was developed by B F Skinner is known as operant conditioning
The occurrence of CR is reflexively forced by US	The response is more voluntary and spontaneous
The US occurs without regard to the subjects behavior	The reinforcement is contingent upon the occurrence of response
The association between stimulus and response is on the basis of law of contiguity	The association between stimulus and response is on the basis of law of effect
Controlled by autonomic nervous system	Controlled by central nervous system
Reinforcement comes first to elicit the response	Reinforcement is provided after the response is made
The essence of learning is stimulus substitution	The essence of learning is response modification
The classically conditioned reflexes may have zero strength initially	The operant can not have zero strength as it has to occur at least once before it can be reinforced

2.3 COGNITIVE VIEWS:

A) AUSUBEL THEORY OF MEANINGFUL LEARNING

David P. Ausubel (1918-2008) an American psychologist developed a theory of learning popularly known as theory of meaningful learning. His work focused on verbal learning. He deals 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. He is a cognitive theorist. He explains how the learner incorporates new information into their cognitive structure. For him existing cognitive structure is the main factor influencing learning and retention of a new material. He has been interested in questions like how children acquire knowledge. Either he receives some knowledge that is presented to him or gets some knowledge independently by him through discovery. Ausubel advocated four types of learning such as Reception learning, Discovery learning, Rote learning and Meaningful learning on the basis of how knowledge is available to learners.

Reception Learning: When a child merely receives knowledge that is presented to him via textbooks, reference materials, various aids etc is known as reception learning. Here the child only receives knowledge as it is presented to him.

Discovery Learning: When a child gets other information about the subjects independently by himself along with information presented to him is called discovery learning. Here the learner relates the information obtained through discovery to information already presented to him by the instructor.

Rote Learning: When a learner simply remembers the information presented to him without understanding is known as rote learning.

Meaningful Learning: When a learner tries to memorize information with understanding it is called meaningful learning.

Ausubel advocated that learning can be divided as reception and discovery on the basis of how knowledge is presented to learner and rote and meaningful learning on the basis of how learner incorporates the knowledge into cognitive structure. Hence four types of learning emerge; Meaningful reception learning, Rote reception learning, Meaningful discovery learning and Rote discovery learning. Out of four types of learning, rote learning is meaningless, it should be discarded. Thus there will be two types of meaningful learning such as meaningful reception and meaningful discovery.

Subsumption theory:

Gagne explained his theory of learning by Subsumption theory. To subsume is to incorporate new material into one's cognitive structure. When information is subsumed into the learner cognitive structure, it is an

organized hierarchy. 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. The existing structure provides a framework into which the new learning is related, hierarchy to previous information/concept in the individual's cognitive structure.

When one encounters completely new unfamiliar information then rote learning takes place. This rote learning may eventually contribute to the construction of new cognitive structures which can later be used in meaningful learning. The two types of Subsumption are

i) Correlative subsumption: When new material is an extension or elaboration of what is already known.

ii) Derivative subsumption: When new material or relationship can be derived from the existing structure, from this type of subsumption completely new concept can emerge and previous concept can be changed/expanded to include more of previously existing information

Educational Implications:

Ausubel gives emphasis on meaningful learning and discards rote learning. The schooling process has to be changed to develop the ability among students to learn meaningfully. The students should understand the information presented to him by the teacher before retaining or memorizing. The teaching learning process in school should be changed to deemphasize rote learning. The learner should be encouraged to create concepts of their own by relating information presented to him with the previous experience or searching present experience. The teacher should present material to the learner in proper structure, systematic and meaningful.

His notable contribution to classroom practice is the **advance organizer**. Advance organizer is a tool/mental learning aid to help students integrate new information with their existing knowledge, learning to meaningful learning as opposed to rote reception. It is a means of preparing the learners cognitive structure for the learning experience about to take place. It is a device to activate the learner the relevant schema/conceptual patterns so that new information can be more really subsumed into learners existing cognitive structure. It was important for teachers to provide a preview of information to be learned. Teacher could do this by providing a brief introduction about the way that information that is going to be presented is structured. This would enable students to start with a 'Big Picture' of the upcoming content and link new ideas, concerns, vocabulary, to existing mental maps of the content era. He developed the idea of an advanced organizer that to be presented to learners before presenting whole materials. An advance organizer is an introductory material at the beginning of a chapter or passage which provides a structure for reading later materials and thus facilitates learning of the later materials. It is an introduction offering an outline of what is to follow.

Ausubel is a proponent of didactic, expository teaching methods. It encourages rapid learning and retention. He emphasized on the active nature of reception learning. The need is to require learners to be active by understanding, completely missing words, by rewording sentences by giving additional examples.

B)BRUNER'S THEORY OF LEARNING

Jerome Bruner (1915) an American psychologist developed theory of cognitive development, learning and instruction. According to him cognitive development involves an increasing independence of the response of the learner from the particular stimuli. It implies a great degree of cognitive processing and mental representation beyond the immediate sensory data. His idea of cognitive development is based on the premise that a person's knowledge of the world is based on his constructed models of reality. He gives emphasis on language for cognitive development. Bruner advocated three stage of cognitive development such as;

Enactive stage: In this stage the infant's action is a response to stimuli defining the stimuli. That means an infant knows the stimuli only by acting on it, otherwise it does not exist. Cognitive development occurs through activities of infants. This stage corresponds to Piaget's sensory motor period.

Iconic stage: In this stage children represent the world through images. Repetition of action may lead to the development of an image of the action. It is governed by a perceptual organization. The transition from action to image is usually seen by the end of the first year of life.

Symbolic stage: In this stage children represent the world through symbols. That is, a child can represent the knowledge in symbolic form and can understand certain abstract concepts. The child in this stage engages in language and mathematics. For the development of symbolic quality, language is important.

BRUNER'S VIEW ON LEARNING:

According to Bruner, learning involves active processing of information and that is constructed and organized in a unique way by each learner. Knowledge about the world is not simply poured into the individual, instead the individual attends selectively to the environment, process and organize the information they take in and store the information with their own unique models for future use. Learning involves three simultaneous processes.

Acquisition: The child acquires new knowledge or information by incorporating it according to the existing mode of representation. It leads to modification or expansion of existing modes.

Transmission: The new knowledge or information acquired by the child is manipulated or modified to meet new tasks.

Evaluation: Finally the child evaluates how successfully he has manipulated the information.

Readiness: He advocated that readiness is essential for learning. It is not something that comes through maturation. Rather it can be learned and therefore can be taught.

Motivation: Ideally interest in the material to be learned is the best stimulus to the learner, rather than external goals as grade. Motives for learning must be kept active; they must base as much as possible upon the interest of the learner. It must be kept broad and diverse in expression. Similarly motivation is also required for learning to occur. Learning which occurs as a result of natural curiosity, the urge towards mastery and competence and modeling after another is satisfying or self rewarding.

Discovery learning: It is an inquiry based, construction learning theory that takes place in problem solving situations where the learner draws on his/her own past experience and existing knowledge to discover facts and relationships and new truth to be learned. Students interact with the world by exploring and manipulating objects, wrestling with questions and controversies or performing experiments. As a result students may be more likely to remember concepts and knowledge discovered on their own. Bruner proposed discovery learning in which children are engaged to explore and learn on their own by the methods of discovery. It does not mean finding out something which was not known before rather refers to what one discovers for oneself. According to him discovery is a matter of rearranging or transforming the evidence in such a way that one is enabled to go beyond the evidence so assembled to additional new insight. It involves construction as well as testing hypotheses. Bruner mentions four advantages of discovery learning; it increases intellectual potency, it increases intrinsic motivation, it teaches the techniques of discovery and it results in better retention of what is learned. He said teachers should encourage learners to explore, enquire about the surroundings and thereby learn.

Intuitive and analytical thinking: Intuition (the intellectual techniques of arriving and plausible but tentative formulation without going through the analytical steps by which such formulations would be found to be valid/invalid) is a much neglected but essential feature of productive thinking.

<u>Educational Implications</u>:

Bruner gives stress on readiness of learners in the learning process. Teachers must be concerned about the experiences and contexts that will make a child willing to learn. Teaching learning process should take into account the nature of the learner and predispositions in the learner.

The role of structure in learning and how it may be made the center of teaching. The teaching and learning of structure, rather simply mastery of facts and themes is central.

The goals of education should be clear and related to the life of the learner as it creates intrinsic motivation that activates the process of exploration. The learner must know the goals because it urges them to learn.

He gives utmost importance to children in the learning process. Therefore knowledge must be related to the previous experience of the child. It must also be designed in such a way that is within the grasp of the learner at his stage of development. The subject matter must be so selected that it must be appropriate for children at different levels of development. Subject matter can be represented in three ways such as by set of actions, by set of images and by set of symbols.

The teaching learning materials (curriculum, textbooks) should be properly sequenced for effective teaching. It can be ordered from easy to difficult, simple to complex, known to unknown concrete to abstract. A good sequence is that which progresses from enactive through iconic to symbolic representation.

Bruner advocated a **Spiral curriculum**. It is based on the idea that any subject can be taught effectively in some intelligently honest form to any child at any stage of development. A curriculum as it develops should revisit these basic ideas repeatedly, building upon them until the student has grasped the full formal apparatus that goes with them. Instead of moving through the materials in a lockstep fashion (mastering a step and then proceeding to a new one) the same material can be presented or taught at different levels with addition of more details. Here learners will get a chance to broaden and deepen their knowledge.

He also emphasizes reinforcement. Reinforcement is necessary for learning to occur. Reinforcement should be given at the right time. It must come when it is useful or relevant, not too early and not too late. He believes that strong intrinsic reward can lead a learner to learn.

The process of teaching and learning is that a combination of concrete, pictorial and symbolic activities lead to more effective learning. The progression is; start with a concrete experience, then move to picture and finally use symbolic representation.

2.4.1 SOCIAL LEARNING (ALBERT BANDURA)

Albert Bandura's social learning theory consists of a blending of behaviouristic reinforcement theory and purposive cognitive psychology. His theory aimed at a balanced synthesis of cognitive psychology with the principles of behaviour modification. Bandura believed that the traditional behavioural views were accurate but incomplete because they give only a partial explanation of learning-overlooking important elements particularly the social influences in learning. Social learning theory explains human behavior in terms of continuous reciprocal interaction between cognitive, behavioral, and environmental influences. It is also referred to as observational learning or imitation learning.

Bandura's Social Learning Theory proposed that people learn from one another, via observation, imitation, and modeling. People learn through observing others' behavior, attitudes, and outcomes of those behaviors. Most human behavior is learned observationally through modeling: from observing others, one forms an idea of how new behaviors are performed, and on later occasions this coded information serves as a guide for action.

BASIC SOCIAL LEARNING CONCEPTS :

(1) People can learn through observation (Observational Learning): In his famous "Bobo doll" studies, Bandura demonstrated that children learn and imitate behaviors they have observed in other people. The preschool children in Bandura's studies (1965) observed an adult (model) acting violently toward a Bobo doll. One group saw the model rewarded for aggression; another group saw the model punished and a third group saw no consequences. When they were moved to a room with the Bobo Doll, the children who had seen the punching and kicking reinforced in the film were the most aggressive toward the doll. Those who had seen the attacks punished were the most aggressive. When the children were later allowed to play in a room with the Bobo doll, they began to imitate the aggressive actions they had previously observed.

Bandura identified three basic models of observational learning:

1. A live model, which involves an actual individual demonstrating or acting out a behavior.

2. A verbal instructional model, which involves descriptions and explanations of a behavior.

3. A symbolic model, which involves real or fictional characters displaying behaviors in books, films, television programs, or online media.

(2) Mental states are important to learning (Intrinsic Reinforcement)- Bandura noted that external, environmental reinforcement was not the only factor to influence learning and behavior of children. He described intrinsic reinforcement as a form of internal reward, such as pride, satisfaction, and a sense of accomplishment. This emphasis on internal thoughts and cognitions helps connect learning theories to cognitive developmental theories.

(3) Learning does not necessarily lead to a change in behaviour.-While behaviorists believed that learning led to a permanent change in behavior, observational learning demonstrates that people can learn new information without demonstrating new behaviors.

The Modeling Process:

Not all observed behaviors are effectively learned. Factors involving both the model and the learner can play a role in whether social learning is

successful. Certain requirements and steps must also be followed. The following steps are involved in the observational learning and modeling process:

Attention:

In order to learn, you need to be paying attention. Anything that detracts your attention is going to have a negative effect on observational learning. If the model is interesting or there is a novel aspect to the situation, you are far more likely to dedicate your full attention to learning.

Retention:

The ability to store information is also an important part of the learning process. Retention can be affected by a number of factors, but the ability to pull up information later and act on it is vital to observational learning.

Reproduction:

Once you have paid attention to the model and retained the information, it is time to actually perform the behavior you observed. Further practice of the learned behavior leads to improvement and skill advancement.

Motivation:

Finally, in order for observational learning to be successful, you have to be motivated to imitate the behavior that has been modeled. Reinforcement and punishment play an important role in motivation. While experiencing these motivators can be highly effective, so can observing others experience some type of reinforcement or punishment. For example, if you see another student rewarded with extra credit for being to class on time, you might start to show up a few minutes early each day.

2.4.2 SOCIAL CONSTRUCTIVISM(LEV VYGOTSKY)

Lev Vygotsky (1896-1934) a Russian psychologist and philosopher in the 1930's, is most often associated with the social constructivist theory. He emphasizes the influences of cultural and social contexts in learning and supports a discovery model of learning. This type of model places the teacher in an active role while the students' mental abilities develop naturally through various paths of discovery. Vygotsky's theory is one of the foundations of constructivism. It emphasizes three major themes:

Major themes:

- Social interaction plays a fundamental role in the process of cognitive development. In contrast to Jean Piaget's understanding of child development (in which development necessarily precedes learning), Vygotsky felt social learning precedes development. He states: "Every function in the child's cultural development appears twice: first, on the social level, and later, on the individual level;

first, between people (inter-psychological) and then inside the child (intra-psychological)." (Vygotsky, 1978).

- The More Knowledgeable Other (MKO). The MKO refers to anyone who has a better understanding or a higher ability level than the learner, with respect to a particular task, process, or concept.

- The Zone of Proximal Development (ZPD). The ZPD is the distance between a student's ability to perform a task under adult facilitation and/or with peer collaboration and the student's ability to solve the problem independently. For learners there is a zone of proximal development for each task they are expected to master. Learning occurred in this zone.

Vygotsky focused on the connections between people and the socio-cultural context in which they act and interact in shared experiences .According to Vygotsky, humans use tools that develop from a culture, such as speech and writing, to mediate their social environments. Initially children develop these tools to serve solely as social functions, ways to communicate needs. Vygotsky believed that the internalization of these tools led to higher thinking skills.

Applications of the Vygotsky's Social Development Theory:

Many schools have traditionally held a transmissions or instructions model in which a teacher or lecturer 'transmits' information to students. In contrast, Vygotsky's theory promotes learning contexts in which students play an active role in learning. Roles of the teacher and student are therefore shifted, as a teacher should collaborate with his or her students in order to help facilitate meaning construction in students. Learning therefore becomes a reciprocal experience for the students and teacher.

Implications of Vygotskian Principles in the Classroom:

- Learning and development is a social and collaborative activity that cannot be "taught" to anyone. It is up to the student to construct his or her own understanding in his or her own mind. It is during this process that the teacher acts as a facilitator.

- The zone of proximal development can be used to design appropriate situations during which the student can be provided the appropriate support for their optimal learning. Applying Zone of Proximal Development to teaching may involve assessing, selecting learning activities and providing instructional support to help students move through the zone successfully.

- When providing appropriate situations, the teacher must take into consideration that learning should take place in meaningful contexts, preferably the context in which the knowledge is to be applied.

- Out of school experiences should be related to school experiences. Pictures, news clips, and personal stories incorporated into classroom activities provide the students with a sense of oneness between their community and learning.

2.5 LET US SUM UP :

The unit describes the Behavioral, Cognitive and the theories of Learning. These theories of learning help a teacher to understand how learning takes place in students. An understanding of learning theories helps teachers connect to all different kinds of students. Teachers can create specific strategies and techniques to apply these theories in their classrooms. While highlighting the contributions of the psychologists to the different schools, the unit also spells out the educational implications of the theories.

2.6 UNIT END EXERCISE:

1. What is the classical conditioning theory of learning? Explain its relevance for classroom practice.
2. Differentiate between classical conditioning and operant conditioning theory of learning.
3. Describe Ausubel theory of meaningful learning with special emphasis on the role of subsumption and advance organizer in learning.
4. Elucidate Bruner theory of learning. Explain the educational implications of his theory.
5. What is social learning? Discuss the implications of social learning theory proposed by Albert Bandura on Teaching learning process
6. What is a social constructivist view of learning? Critically examine the implications of the implications of this theory in the present day.

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3

UNDERSTANDING LEARNER DYNAMICS

Unit Structure

3.0 OBJECTIVES:

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

- Describe the Kolb's Model
- Explain the application of the Kolb's Model
- Enumerate the different thinking styles
- Explain the application of thinking styles in Education.
- Explain the concept of mental health and hygiene.
- Discuss the various strategies to maintain mental health (Defence mechanism).

3.1 INTRODUCTION:

Classroom teaching can be considered effective only by learning about student engagement and involvement in the learning process. To ensure this a teacher ought to understand the different learning and thinking styles of the students. Teachers can ensure creative and critical thinking among students.

3.2 LEARNING STYLES: CONCEPT AND APPLICATION OF KOLB'S MODEL

Concept of learning styles:

The simplest definition of a learning style is the learning strengths and preferences of a student. However, many other definitions exist, such as the one given by the National Association of Secondary School Principals. They define a learning style as "the composite of characteristic

cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment" (Keefe & Monk, 1986, p 1). According to Sharma "cognitive style refers to the characteristic way in which an individual organizes his environment and accordingly acts on it. These are intrinsic information-processing patterns that represent a person's typical mode of perceiving, thinking, remembering and problem-solving." She also defines learning style "as the composite of characteristic cognitive, affective and physiological factors that serve as a relatively stable indicator of how a learner perceives, interacts with and responds to the learning environment." Despite the plethora of definitions for learning styles, the basic idea can be seen through a few examples provided by Felder (1996). He discusses that some students might focus on facts while others prefer theories or that some students learn better visually and others verbally. In other words, a learning style may be defined as a habitual pattern or a preferred way of acquiring knowledge or doing something.

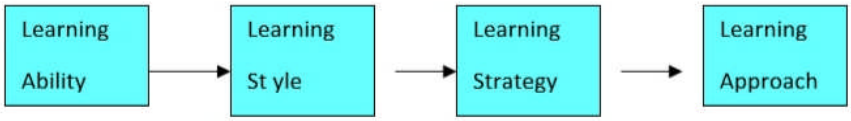
Distinction between Learning Style, Strategy and Approach:

At the outset, it is necessary to distinguish between the terms 'styles', 'approaches' and 'strategies'. In the Psychological literature, the term 'styles' has been used to convey the marked differences in preference shown by people as they carry out tasks. According to Webster's Dictionary (1967), "A style is a distinctive or c Webster's Dictionary (1967), "A style is a distinctive or characteristic manner …or method of acting or performing". (p.873). Allport, the Psychologist defined a style as a means of identifying distinctive personality types or types of behaviour. On the other hand, the term 'strategy' has been used to convey preferences which are more task-related whereas the term 'approaches' has been used to convey "processes" and "pre-dispositions" to adopt particular processes. Learning styles operate without individual awareness and imply a higher degree of stability.

On the other hand, learning strategy implies operations followed to minimize error during decision-making process and involves a conscious choice of alternatives and is dependent on the task or context.

Learning approach refers to (a) the processes adopted during learning, which directly determine the outcomes of learning and (b) the predispositions or orientations to adopt particular processes.

▲
In short, the relationship between these concepts can be ordered as follows:



Personality has been assumed to be a source of variation in learning styles among individuals.

Meaning of Learning Styles:

Several definitions of learning style currently exist. Keefe defined learning style as being characteristic of the cognitive, affective, and physiological behaviours that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment. Learning style also represents both inherited characteristics and environmental influences.

Dunn described learning style as "... the way each learner begins to concentrate, process, and retain new and difficult information" (p. 224) She noted that this interaction occurs differently for everyone. Dunn also highlighted that "To identify and assess a person's learning style, it is important to examine each individual's multidimensional characteristics in order to determine what will most likely trigger each student's concentration, maintain it, respond to his or her natural processing style, *and* cause long-term memory" (p. 224).

David Kolb's learning styles model and experiential learning theory (ELT):

Having developed the model over many years prior, David Kolb published his learning styles model in 1984. The model gave rise to related terms such as Kolb's experiential learning theory (ELT), and Kolb's learning styles inventory (LSI). In his publications - notably his 1984 book 'Experiential Learning: Experience. As The Source of Learning and Development' Kolb acknowledges the early work on experiential learning by others in the 1900's, including Rogers, Jung, and Piaget. In turn, Kolb's learning styles model and experiential learning theory are today acknowledged by academics, teachers, managers and trainers as truly seminal works; fundamental concepts towards our understanding and explaining human learning behaviour, and towards helping others to learn.

Kolb's experiential learning theory (learning styles) model :

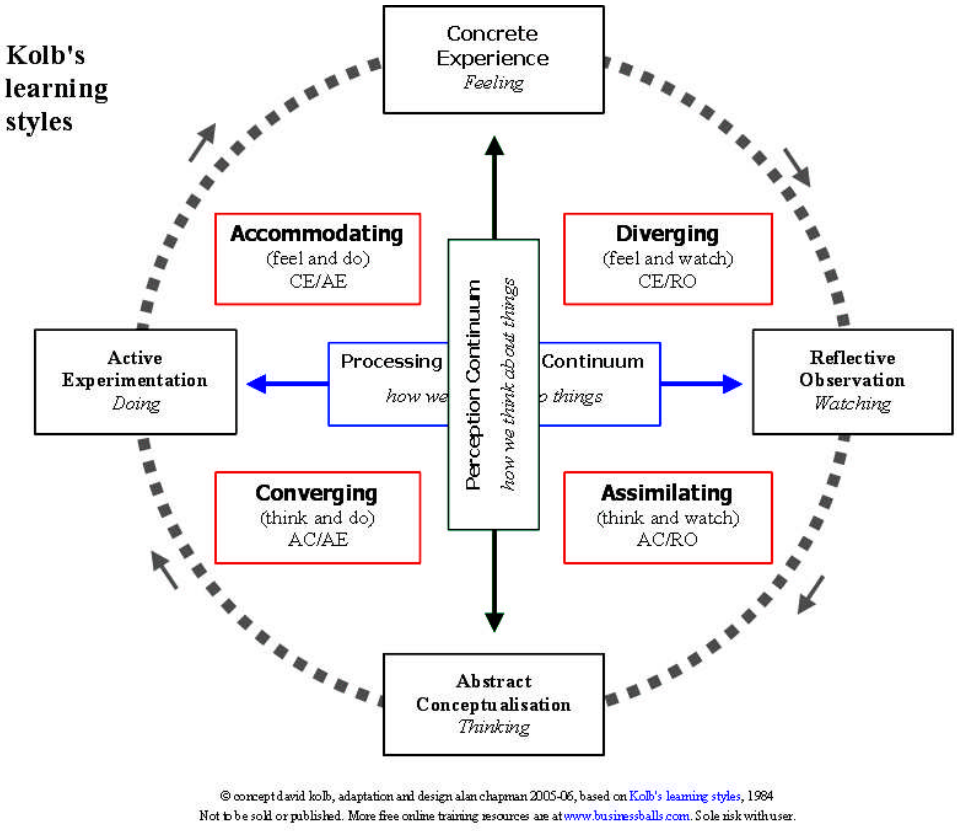
Kolb's learning theory sets out **four distinct learning styles** (or preferences), which are based on **a four-stage learning cycle**. (This might also be interpreted as a 'training cycle'.)

In this respect Kolb's model is particularly elegant, since it offers both a way to understand **individual people's different learning styles**, and also an explanation of **a cycle of experiential learning that applies to us all**.

Kolb includes this 'cycle of learning' as a central principle in his experiential learning theory, typically expressed as a four-stage **cycle of learning**, in which **'immediate or concrete experiences'** provide a basis for **'observations and reflections'**. These 'observations and reflections' are assimilated and distilled into **'abstract concepts'** producing new implications for action which can be **'actively tested'** in turn creating new experiences.

Kolb's model therefore works on two levels - a four-stage cycle:

1. **Concrete Experience - (CE)**
2. **Reflective Observation - (RO)**
3. **Abstract Conceptualization - (AC)**
4. **Active Experimentation - (AE)** and a **four-type definition of learning styles**, (each representing the combination of two preferred styles, rather like a two-by-two matrix of the four-stage cycle styles, as illustrated below), for which Kolb used the terms:
    1. **Diverging (CE/RO)**
    2. **Assimilating (AC/RO)**
    3. **Converging (AC/AE)**
    4. **Accommodating (CE/AE)**.



Kolb explains that different people naturally prefer a certain single different learning style. Various factors influence a person's preferred style: notably in his experiential learning theory model (ELT) Kolb defined three stages of a person's development, and suggests that our propensity to reconcile and successfully integrate the four different learning styles improves as we mature through our development stages. The development stages that Kolb identified are:

1. Acquisition - birth to adolescence - development of basic abilities and 'cognitive structures'

2. Specialization - schooling, early work and personal experiences of adulthood - the development of a particular 'specialized learning style' shaped by 'social, educational, and organizational socialization'

3. Integration - mid-career through to later life - expression of non-dominant learning style in work and personal life.

Kolb learning styles definitions and descriptions:

Knowing a person's (and your own) learning style enables learning to be orientated according to the preferred method. That said, everyone responds to and needs the stimulus of all types of learning styles to one extent or another - it's a matter of using emphasis that fits best with the given situation and a person's learning style preferences.

Here are brief descriptions of the four Kolb learning styles:

- **Diverging (feeling and watching - CE/RO)** -

  These people are able to look at things from different perspectives. They are sensitive. They prefer to watch rather than do, tending to gather information and use imagination to solve problems. They are best at viewing concrete situations with several different viewpoints. Kolb called this style 'Diverging' because these people perform better in situations that require ideas-generation, for example, brainstorming. People with a Diverging learning style have broad cultural interests and like to gather information. They are interested in people, tend to be imaginative and emotional, and tend to be strong in the arts. People with the Diverging style prefer to work in groups, to listen with an open mind and to receive personal feedback.

- **Assimilating (watching and thinking - AC/RO)** - The Assimilating learning preference is for a concise, logical approach. Ideas and concepts are more important than people. These people require good, clear explanations rather than practical opportunity. They excel at understanding wide-ranging information and organizing it in a clear logical format. People with an Assimilating learning style are less focused on people and more interested in ideas and abstract concepts. People with this style are more attracted to logically sound theories than approaches based on practical value.

- **Converging (doing and thinking - AC/AE)** - People with a Converging learning style can solve problems and will use their learning to find solutions to practical issues. They prefer technical tasks, and are less concerned with people and interpersonal aspects. People with a Converging learning style are best at finding practical uses for ideas and theories. They can solve problems and make decisions by finding solutions to questions and problems. People with

a Converging learning style are more attracted to technical tasks and problems than social or interpersonal issues. A Converging learning style enables specialist and technology abilities. People with a Converging style like to experiment with new ideas, to simulate, and to work with practical applications.

- **Accommodating (doing and feeling - CE/AE)** - The Accommodating learning style is 'hands-on', and relies on intuition rather than logic. These people use other people's analysis, and prefer to take a practical, experiential approach. They are attracted to new challenges and experiences, and to carrying out plans. They commonly act on 'gut' instinct rather than logical analysis. People with an Accommodating learning style will tend to rely on others for information rather than carry out their own analysis. This learning style is prevalent and useful in roles requiring action and initiative. People with an Accommodating learning style prefer to work in teams to complete tasks. They set targets and actively work in the field trying different ways to achieve an objective.

APPLICATION:

Kolb's learning style theory integrates individual students' approaches to perceiving and processing information (Kolb, 1985). The following are the ways through which it can be used in the classrooms:

1. Abstract conceptualization:

At the opposite end of the perceiving continuum is the abstract conceptualization mode. These learners use logical analysis and they solve problems systematically (Kolb, 1985). They are "theorists" (DeCiantis & Kirton, 1996) who learn by "thinking" (Smith & Kolb, 1986). In college mathematics classrooms, they appreciate highly structured lectures, and they are comfortable in dealing with theories and abstract ideas. In laboratory group work, abstract conceptualizes like to focus on how practical exercises and experiments connect to the theoretical framework. In individual problem solving, these learners often categorize problems into groups and derive systematic solutions, usually linked to the theoretical steps. In examinations, they prefer true-false and matching questions related to theoretical terms and definitions, as well as longer answer questions that require theoretical knowledge.

2. Active experimentation:

Learners in the active experimentation mode process information '%y doing" (Smith & Kol, 1986,), appreciate opportunities to work actively on well-defined tasks (Felder, 1996), and "value getting things done" (Kolb, 1985). In college mathematics classrooms, these learners favor hands-on activities and discussions over traditional lectures. In laboratory group work, they prefer to be assigned active tasks and to accomplish visible results. In individual problem solving, active experimenters enjoy the risk-taking component if it is connected to

problems that have a practical focus. In examinations, they favor take-home and pre-prepared questions that require the creative application of course information and principles to real-life situations.

3. Reflective observation:

At the opposite end of the processing continuum is the reflective observation mode, with learners who use "watching and listening" (Veres, 1991) to "create ideas that integrate their observations into logically sound theories" (Atkinson & Murrell, 1988,). These learners see the validity of different perspectives (Kolb, 1985). In college mathematics classrooms, they prefer lectures where they can listen to theoretical information without direct involvement. In laboratory group work, they tend to consider the opinions of other group members and to integrate these concepts with their own perceptions. In individual problem solving, these learners are prone to devise structured plans of action based on theoretical formulae and previous experience, grouping the problems by type. In examinations, reflective observers prefer longer answers and "what if" questions whereby they can demonstrate their theoretical knowledge.

4. Laboratory Group Work :

A variety of laboratory assignments, in individual and group format, will expose students to multiple learning experiences that can foster functioning in all learning modes. Group assignments bring students together to discuss possibilities, compare answers, reflect, interpret, and experiment actively. Instructors should encourage students to form study groups, so they can meet under the direction of a group leader to discuss laboratory questions and connect them to the course material. Concrete experiences may wish to choose their own group members, but creating heterogeneous groups on the basis of learning style assessment will ensure opportunities to share individual strengths. An excellent group exercise for every learning style is the development of questions of various kinds (multiple choice, true and false) and difficulty as review for upcoming tests.

5. Individual Problem Solving:

Individual problem solving in mathematics and other scientific disciplines can promote assimilation and reflection while providing opportunities for active trial-and-error experimentation and the development of critical thinking skills. In addition, students can be asked to summarize their knowledge (for example, by using flow charts, diagrams, and compare-and-contrast tables) as part of the assignment. Opportunities for reflection and analysis will appeal to diverges, while converges will be stimulated by real-life application problems. The instructor can organize sessions to teach students how to approach problem solving in order to relieve the feelings of anxiety and inadequacy that some students experience regardless of learning style.

6. Examinations :

Tests and exams should include both short and long-answer questions. Multiple-choice questions that focus on rote knowledge and recall appeal to concrete experiences. Those that require deductive reasoning stimulate diverges, while inductive reasoning favors accommodators. True-false and matching questions that require rational theory building are preferred by assimilators and abstract conceptualizes. These types of questions are also useful when testing recall of facts and definitions. And application of theories. Long-answer questions based on problem solving appeal to diverges and active experimenters,

Therefore: This theory takes into account that people could use any of the four styles some of the time by claiming that the classification is a preferred method, not an exclusive one. Gregorc's (1982) model is similar to Kolb's, except that the two dimensions rate perception from abstract to concrete and order from sequential to random. The final classification of the learner is into one of four states, again similar to Kolb, using the Gregory Style Delineator.

3.3 THINKING STYLES: CONCEPT, APPLICATION AND CONTRIBUTION OF R. STERNBERG :

Meaning:

- Cognitive abilities like thinking, reasoning and problem-solving may be considered to be some of the chief characteristics which distinguish human beings from other species.
- A highly developed computer or a robot, a magnificent building are all products of the thinking, reasoning and problem-solving capabilities of their creators and inventors.
- Even to understand, appreciate or put these into use, we have to employ our powers of thinking.
- The challenges and problems faced by the individual, or by society, in general, are solved through serious efforts involving thinking and reasoning.
- The powers of thinking and reasoning may thus be considered to be the essential tools for the welfare and meaningful existence of the individual as well as society.
- **Actually 'thinking' is a very complex process.**
- Thinking consists of the cognitive rearrangement or manipulation of both – the information from the environment and the symbols stored in the long term memory.
- Thinking is the form of information processing that goes on during the period between a stimulus event and the response to it.

Definitions:

- **Mohsin (1967) -** "Thinking is an implicit problem solving behaviour".
- **Garret (1968) -** "Thinking is behaviour which is often implicit and hidden and in which symbols (images, ideas, concepts) are ordinarily employed."
- **Valentine (1965) - "**In strict psychological discussion it is best to keep the thinking for an activity which consists of a connected flow of ideas which are directed towards some end or purpose".
    - Therefore, thinking may be defined as a pattern of behaviour in which we make use of internal representations (symbols, images, signs etc.) of things and events for the solution of some specific, purposeful problem.
    - Thinking is a mental process which starts with a problem and concludes with its solution.

Five Thinking Styles:

According to Bramson, the five thinking styles are:

- Synthesists
- Idealists
- Pragmatist Thinkers
- Analyst Thinkers
- Realist Thinkers

Synthesists:

According to Bramson, "Synthesists are creative thinkers who perceive the world in terms of opposites. When you say black, they think white, when you say long, they think short."

To connect with Synthesists, Bramson suggests "listen appreciatively to their speculation and don't confuse their arguing nature with resistance."

Idealists:

According to Bramson, "Idealists believe in lofty goals and standards."

To connect with Idealists, Bramson suggests "associate what you want to do with these goals of quality, service, and community good."

Pragmatic Thinkers:

According to Bramson, "Pragmatic thinkers are flexible, resourceful folk who look for immediate payoff rather than for a grand plan that will change the world."To connect with Pragmatists, Bramson

suggests “emphasize short-term objectives on which you can get started with resources at hand.”

Analyst Thinkers*:*

According to Bramsom, “Analyst thinkers equate accuracy, thoroughness, and attention to detail with completeness. They are likely to gather data, measure it, categorize it, and rationally and methodically calculate the right answer to any problem you come up with. To connect to Analysts, Bramson suggests “provide a logical plan replete with back-up data and specifications.”

Realist Thinkers:

According to Bramson, “Realist thinkers are fast moving doers who know that reality is what their senses – sight, sound, taste, smell, and touch – tell them it is, and not that dry stuff that one finds in accounting ledgers, or the insipid pages of manual of operations.”

To connect with Realists, Bramson suggests, “If you communicate with Realist bosses as if they were Analysts, you will never get their attention. Rather than gobs of computer-printouts and other detailed information, Realists want a three-paragraph “Executive Summary” which tells briefly what is wrong and how you propose to fix it. For rather complicated reasons, they will often take you at your word if they see you as a qualified expert. You become an expert in their eyes when they know that you’ve assembled a store of facts in which they are interested, and you have proposed a set of actions that they already believe are the best things to do.”

Robert Jeffrey Sternberg:

(born December 8, 1949), He is an American psychologist and psychometrician and the Dean of Arts and Sciences at Tufts University. He was formerly IBM Professor of Psychology and Education at Yale University and the President of the American Psychological Association He is a member of the editorial boards of numerous journals, including American Psychologist. Sternberg has a BA from Yale University and a PhD from Stanford University. Gordon Bower was his PhD advisor. He holds ten honorary doctorates from one North American, one South American, and eight European universities, and additionally holds an honorary professor rate at the University of Heidelberg in Germany. He is currently also a Distinguished Associate of The Psychometrics Centre at the University of Cambridge.

Sternberg has proposed a triarchic theory of intelligence.

Triarchic theory of intelligence-

Many descriptions of intelligence focus on mental abilities such as vocabulary, comprehension, memory and problem-solving that can be measured through intelligence tests. This reflects the tendency of

psychologists to develop their understanding of intelligence by observing behavior believed to be associated with intelligence.

Sternberg believes that this focus on specific types of measurable mental abilities is too narrow. He believes that studying intelligence in this way leads to an understanding of only one part of intelligence and that this part is only seen in people who are "school smart" or "book smart".

The Triarchic Model:

Sternberg (2003) categorizes intelligence into three parts, which are central in his theory, the triarchic theory of intelligence:

- **Analytical intelligence**, the ability to complete academic, problem-solving tasks, such as those used in traditional intelligence tests. These types of tasks usually present well-defined problems that have only a single correct answer.

- **Creative or synthetic intelligence**, the ability to successfully deal with new and unusual situations by drawing on existing knowledge and skills. Individuals high in creative intelligence may give 'wrong' answers because they see things from a different perspective.

- **Practical intelligence**, the ability to adapt to everyday life by drawing on existing knowledge and skills. Practical intelligence enables an individual to understand what needs to be done in a specific setting and then do it.

Sternberg (2003) discusses experience and its role in intelligence. Creative or synthetic intelligence helps individuals to transfer information from one problem to another. Sternberg calls the application of ideas from one problem to a new type of problem *relative novelty*. In contrast to the skills of relative novelty there is *relative familiarity* which enables an individual to become so familiar with a process that it becomes automatized. This can free up brain resources for coping with new ideas.

Context, or how one adapts, selects and shapes their environment is another area that is not represented by traditional measures of giftedness. Practically intelligent people are good at picking up tacit information and utilizing that information. They tend to shape their environment around them. (Sternberg, 2003)

Sternberg proposed the following cognitive styles in 1997:

The four forms of mental self-government are hierarchical, monarchic, oligarchic, and anarchic. The hierarchic style holds multiple goals simultaneously and prioritizes them. The oligarchic style is similar but differs in involving difficulty prioritizing. The monarchic style, in comparison, focuses on a single activity until completion. The anarchic style resists conformity to "systems, rules, or particular approaches to problems.

Practical application and Contribution:

Sternberg's educational theories aim to bring out the best in all students by catering for different forms of intelligence and thinking styles. They have evolved through reflection on their own problems.

Sternberg does not advocate teaching everything three times, but varying teaching styles in order to practice different skills and cater for different learning styles:

- **Analytical skills**: for example, getting students to analyze a character from a novel, compare and contrast two paintings or rate the performance of someone who has won a tennis match. Assessment is based on the extent to which the work is informed, logical, organized and balanced.

- **Creative skills**: asking students questions to which there is no 'right' answer: imagining alternative endings to a novel; creating an advertisement for a product based on something studied in a science class; writing a dialogue in French in which a tourist asks for directions in Paris. Assessment is based on the extent to which the work is informed, novel, compelling and task oriented.

- **Practical skills**: enabling students to apply something they have learned in a real world context: using a lesson learned from a literary character in their own lives; applying a mathematical lesson in the supermarket; predicting how they would have to change their lifestyle in a different region of the globe. Assessment is based on the extent to which the product is informed and feasible.

- **For Sternberg**, the gifted student is one who can capitalize on strengths and compensate for their weaknesses, adapt to novelty and automatize new skills rapidly. For him, just as there is no single kind of intelligence; there is no single kind of giftedness. It can manifest in different ways in different situations. His view is that what is good for gifted students is good for all students, but that if badly done, gifted education can become an elitist enterprise.

- In *Teaching for Wisdom, Intelligence, Creativity, and Success*, Sternberg, Jarvin, and Grigorenko (2009) identify "four types of different thinking skills: memory, analytical skills, creative skills, and practical skills" (p. 19). Comparison between these thinking types and the core processes of the Architecture of Learning provide valuable insights.

- "Practical skills" comprises knowledge students need "in living their own life" (p. 47). Practical skills can be applied to "real world situations" (p. 47). Verb phrases associated with practical skills include *apply*, *connect to real life*, *identify examples*, *translate*, *show its benefit in different contexts*, *predict*, *design*, *problem-solve*, *implement*, and *advise*.

- Application, as defined in Architecture of Learning, is practice within the instructional setting that enables the use of understandings or skills within a widened or new (i.e., outside the instructional) setting. It provides the practice that constructs proficiency. Many of the verbs associated with Sternberg, Jarvin, and Grigorenko's "practical skills" relate to activities that engage students in Architecture of Learning's application.

- This connection between practical skills and application is similar to those of memory and experience, analytical skills and comprehension, and creative skills and elaboration. These remarkable parallels reinforce beneficial insights.

3.4.1 MENTAL HEALTH AND MENTAL HYGIENE

Good health depends on the state of both body and mind. Each exerts a direct influence on the other .A healthy person is not only physically healthy but also mentally healthy. Health means that both body and mind are working efficiently and harmoniously. Mental health is a basic factor that contributes to the maintenance of physical health as well as social effectiveness. If a person is well adjusted, has good physical health and desirable social and moral values, his mental health is likely to be good. Good mental health is indicated in such persons as a happy, healthy, hopeful and harmonious personality.

(A) CONCEPT OF MENTAL HEALTH

1. **Hadfield's View:** Mental health is the full and harmonious functioning of the whole personality.

2. **World Health Organization:** According to the World Health Organization, "Mental health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity."

3. **Boehm's View:** "Mental health is a condition and level of social functioning which is socially acceptable and personally satisfying."

4. **The White House Conference :** "Mental health may be defined as the adjustment of individuals to themselves and the world at large with a maximum of effectiveness ,satisfaction , cheerfulness and socially considerable behaviour and the ability of facing the realities of life ."

5. **View of Catts and Moslay :** "Mental health is the ability which helps us to seek adjustment in the difficult situations of our life ."

6. **Menninger 's View :** "Mental health is the adjustment of human beings to the world and to each other with a maximum of effectiveness and happiness ."

7. **Lewkan's View :** "Mentally healthy person is one who is happy , lives peacefully with his neighbors , makes his children healthy citizens and

after fulfilling such basic responsibilities is still empowered with sufficient strength to serve the cause of the society in any way."

In the light of above definitions it can be concluded that mental health is a condition or a state of harmonious functioning of the human personality. It is a state of one's peace of mind, satisfaction, happiness, effectiveness and harmony brought out by one's level of adjustment with oneself and the world at large.

Some of the important characteristics reflecting the concept of mental health are as under:

1. Mental health is a positive state and not mere absence of mental disorder.
2. Mental health is a dynamic concept.
3. Good physical health is essential for achieving an optimal level of mental health.
4. There is nothing to be called perfect mental health .It is better to talk of optimum mental health rather than perfect mental health.
5. Mental health differs from ethical standards. Morality does not guarantee mental health. A morally sound person may suffer from severe abnormalities like sex perversions, frustrations and anxieties.
6. Mental health and sociability are not the same thing .It is not essential that a sociable person will be mentally healthy.
7. Mental health is not the same thing as efficiency .An efficient person may not be a mentally healthy person.

(B) CONCEPT OF MENTAL HYGIENE

Meaning of Mental Hygiene

Mental hygiene is a means of achieving mental health . Let us consider some of the definitions of mental hygiene so that the nature and functions of mental health are properly understood:

1. D.B.Klein's View: "Mental hygiene is the study of ways and means for keeping the mind healthy and developing ."
2. Hadfields View: "Mental hygiene is concerned with the maintenance of mental health and the prevention of mental disorder."
3. Bernard's View: Mental hygiene is simply the means by which the process of mental health is realized.
4. Shaffer's View: "In its broadest sense the aim of mental hygiene is to help all persons achieve fuller, happier , more harmonious and more effective existence ."

5. James Drever's View: "Mental hygiene is the investigations of laws of mental health and the taking or advocacy of measures for its prevention."

6. View of Crow and Crow: "Mental hygiene is a science that deals with human welfare and pervades all fields of human relationship."

In the light of above definitions it can be concluded that:

1. Mental hygiene is the science and art of preserving and maximizing mental health.

2. It stands for wholesome, stable and balanced personality.

3. An Individual who is balanced physically, mentally, emotionally and socially is known as a normal man and is said to have enjoyed good mental hygiene.

4. Mental hygiene is the systematic study of those rules and laws which help us and train us to establish adjustment and co-ordination with the environment.

5. It saves us from intellectual ailments.

Elements of Mental Hygiene:

The elements of mental hygiene will further highlight the concept (meaning) of mental hygiene.

1. **Physical health :** A sound mind lives in a sound body .So Sound physique is essential to keep good mental health .Persons who have some physical defects or deformities may develop various types of complexes and frustrations and the result is bad mental hygiene. So it is essential that parents and teachers should keep the children physically fit so that they may enjoy a wholesome personality.

2. **Intellectual health:** Intellectual health is another important element of mental hygiene. Intellectual persons can adjust well to the changing and frustrating situations. Thus good intelligence keeps the mental hygiene of the child good. So parents and teachers should provide opportunities for the development of various intellectual abilities.

3. **Emotional health:** For mental health, emotional health is very important. An emotionally stable child enjoys good mental hygiene and emotionally unstable conditions cause maladjustments and mental disorders. So parents and teachers should try to keep the children away from unhealthy emotions and feelings of anger, fear, hatred, disgust, jealousy etc. On the other hand they should provide a healthy atmosphere where emotions can be sublimated for useful purposes.

4. **Interests and aptitudes:** It is essential that the children should be healthy in their interests and inclinations. The work assigned to children should be according to their interests and aptitudes so that

they may get success and the wholesome and balanced personality may be developed. If the work assigned to students is above their heads or not according to their interests and aptitudes then they will lack confidence and hence suffer from frustration which leads to bad mental hygiene. In the selection of occupations and vacations, the interests of the person should be kept in mind.

5. **Environment:** For good mental hygiene it is essential to have a good environment. Bad environment in the home, school and society leads to bad mental hygiene and a good environment leads to good mental hygiene. So a healthy environment in the home, school and society should be cooperative.

Relation between Mental Health and Mental Hygiene:

Concept of mental hygiene can be made clearer by studying its relationship with mental health.

Various definitions of mental health and mental hygiene clearly point out the relationship that exists between mental health and mental hygiene. One cannot exist without the other. There cannot be any mental health, if there is no proper arrangement for mental hygiene. Likewise any programme of mental hygiene is useless if it does not lead to the development of desirable mental health.

The purpose of mental health in conjunction with mental hygiene is to lead the individual towards a happier and fuller life. In other words, mental health aims at obtaining the fullness of life and harmonious functioning of personality with the help of mental hygiene.

The relationship between mental health and mental hygiene is made more meaningful when we study the concept of mental health and its underlying meanings. Mental health involves the following :

1. Continuous adjusting rather than a static condition is, therefore a progressive goal.
2. Physical, mental and emotional phases of adjustive behaviour as well as habits of work and attitudes towards situations and obstacles.
3. A point of view one takes of all phases of living.
4. A social phase that is socially considerable behaviour, satisfaction with social order and contributions to society.
5. A process of optimum functioning and maximum realization.

Mental hygiene aims at developing self-understanding within the individual. It also makes an effort to use the individual's potential for his good mental health. Mental hygiene in education provides conditions for achieving good mental health.

Dimensions of Mental Hygiene (Mental Health) :

Concept of mental hygiene can also be studied in the light of dimensions of mental hygiene:

1. **Attitudes towards self:** It relates to self-acceptance and self-evaluation particularly in regard to the weak points as well as his strong points.

2. **Perception of reality:** It refers to the ability of a person to have a realistic view of himself and his social and cultural environment. It involves his being attentive to and concerned with the welfare of others.

3. **Integration of personality:** It involves a balance of psychic forces, a unified outlook on life, and some capacity for withstanding anxiety and stress.

4. **Competencies:** It refers to physical, mental, social and emotional competencies which a person should have in order to face the problems of life.

5. **Autonomy of action:** There is autonomy of action in which the person determines behaviour from within. There is adequate self-reliance, responsibility and self-direction together with sufficient independence of social influences.

6. **Self-actualization**: In multiple developments of potentialities to the maximum and to express in words, deeds and thoughts to the best ability.

7. **Mastery of environment through :**

   (1) The ability to love,

   (2) Ability to draw satisfaction from one's environment,

   (3) Being adequate in love, work and play,

   (4) Competence in human relations,

   (5) Capacity to adjust oneself to charging circumstances, and

   (6) Willingness to use problem solving approaches in the process.

3.4.2 DEFENCE MECHANISM

1. **View of Shaffer and Shoben :** "Adjustment mechanisms are the habits by which people satisfy their motives, reduce their tensions and resolve their conflicts."

2. **View of English and English:** Defense mechanism is "any enduring structure of the psyche that enables a person to avoid awareness of the unpleasant or the anxiety arousing."

3. **Coleman's view:** Ego defense mechanism is a "type reaction designed to maintain the individual's feelings of adequacy and worth rather than to cope with reality with the stress situation, usually unconscious and reality distorting."

In the light of various definitions it can be concluded that defence mechanisms are those which help the individual in protecting himself against psychological dangers. They save the ego from being torn into pieces, help in maintaining mental health, making adjustment mental health, making adjustment and keeping the personality of the individual stable.

- **Characteristics of Defence of Adjustment Mechanism :**

1. **Unconscious methods:** Adjustment mechanisms are unconscious methods which a person uses.

2. **Uses by all:** Adjustment mechanisms are almost used by all people. They are constructs which are inferred from the behaviour of the persons.

3. **Protective orientation:** Adjustment mechanisms have protective orientation. All mechanisms are used to protect or enhance the person's self-esteem against dangers. They save the person against anxiety and frustration. They increase satisfaction and help in the process of adjustment if used within limits.

4. **Self-deception:** Adjustment mechanisms are forms of self-deception and the person making use of them is not aware of either presence or purpose.

5. **Distortion of reality:** Adjustment mechanisms, when used in excess, distort realities of life and the person making use of them feels secure in a world of fantasy.

6. **Indicative of abnormality:** In the exaggerated forms adjustment mechanisms are indicative of mental abnormality. According to *Page*, when adjustment mechanisms become ends in themselves they are to be taken as abnormal symptoms.

<u>Some Important Adjustment or Defence Mechanisms</u> :

1. **Projection:** Projection means to project one's *feelings*, thoughts, hopes, ambitions, aspirations, frustrations, fears, interests and urges on *some external objects*. The common tendency of blaming others for our mistakes is a simple illustration of projection. Thus it is a technique of substituting one's drawbacks on others. The causes of getting low marks in the examinations are ascribed due to lack of

books, incompetent teachers or falling ill etc. i.e., a bad works man always quarrels with his tools. In this way we save our ego from maladjustment.

2. **Rationalization:** Rationalization is an attempt to *justify something which is otherwise unjustified.* It saves the ego from frustration. For example a student who has failed in an examination may say "Only crammers pass such an examination." Similarly an individual, who does not know how to play football well, may not participate in the game and may justify his non-participation by saving. "I do not want to play football because it is not a good game." Another example of this mechanism is "*Grapes are sour and lemons are sweet."* The idea is that whatever we cannot get, we unconsciously think that we do not want to get that. It is self-deception.

3. **Compensation:** Compensation is another way to escape from hard realities of life. Compensation is an *attempt to cover up one's deficiency* in one field by exhibiting his strength in another field. For example a person who is physically not attractive may work hard to excel in studies. Similarly a person who is not good in studies may show his ability in sports. By doing so he may get satisfaction and remain mentally stable.

4. **Identification:** In the words of *Cruze*, identification is "an adjustment mechanism which enables one to achieve satisfaction from the successes of other people, groups or organizations." A businessman who has not achieved success in business may identify himself with well-known and well established businessmen. Students generally identify themselves with their favorite teachers and save themselves from maladjustments.

5. **Regression:** Regression means going backward. It is a defense mechanism in which we adopt that behavior which belongs to the earlier age. The poem's beginning "Make me a child again just for tonight" is nearly an expression of a desire which is universal and which lies at the basis of child regression.

6. **Sympathism :** Sympathism is a defence mechanism in which the person invites sympathy and pity from others in any difficult situation. A failed candidate may feel dejected and disappointed so that others may feel pity on him. Many people get satisfaction when others feel pity on them.

7. **Day-dreaming or fantasy:** Day-dreaming is another defence mechanism which sometimes helps in making adjustments. Day-dreaming means to indulge in building castles in the air or imagination. With the help of his mechanism we achieve that in imagination what we fail to achieve in reality. A Youngman who has been jilted in love, dreams of becoming a bridegroom and feels satisfaction in the imaginary world. Thus day-dreaming provides satisfaction in the world of imagination to a person who has been

frustrated in the actual world. Sometimes daydreaming creates self-confidence, but sometimes it is injurious for the individual as well as for the society.

8. **Sublimation:** Sublimation is a defence mechanism in which our unacceptable desires are redirected into socially desirable channels. For example, sex desire may be sublimated in painting, music, poetry, dancing, drama etc. Sublimation gives personal satisfaction to the individual and hence helps him in making adjustments..

9. **Repression:** Repression is a process of unconscious forgetfulness of our unpleasantness and conflict producing emotions and desires. The person tries to forget what makes him feel inferior, ashamed, guilty, anxious and unworthy. Thus the person protects itself from anxiety by forcing into the unconscious those experiences which have been unpleasant and which threaten the emotional well being of a person.

   It should be noted that in suppression we consciously decide to exclude painful and anxiety producing ideas from our thoughts, action and conversation whereas in repression painful and anxiety producing experiences are unconsciously and automatically excluded from the conscious thought process.

10. **Reaction formation:** It is also reversal formation. It is to substitute opposite reaction formation which causes anxiety. Here the person thinks and acts in a manner directly opposite to the unconscious impulse. For example, hate is replaced by love. The original impulse still exists but it is marked by one that does not cause anxiety. It was observed that a mother, who unconsciously rejected her ugly child, manifested her over-indulgence for this child in her conscious state. In reaction formation the unconscious desire is socially unacceptable but in his conscious state the person may protest against it openly.

11. **Displacement:** The person does something as a substitute for something else. An example of displacement is found in the behaviour of a teacher who is rebuked by his principal, and when comes back home, he rebukes his wife , who in turn punishes her daughter ,and the daughter displays her displaced anger by beating her dog.

12. **Substitution:** Substitution is an adjustive mechanism in which the original goals or desires are substituted by others, The original goals are difficult to achieve and an attempt at achieving them may end in failure .The person tries to evade this failure or lessens the effects of actual failure, by selecting a new goal or a new situation which is easier to attain .A student who has not been accepted for admission by a medical college may satisfy herself by becoming a nurse.

13. **Negativism:** Some persons react to frustrating situations by becoming negative .This means they refuse to attack the problem or obstacle which confronts them. Instead, they become contradictory, stubborn and rebellious. They become uncooperative and do the opposite of that

which should be done .Children who are treated unfairly and discriminately , who are discouraged , who are pampered too much, are likely to develop un-cooperative and negative behaviour. Disobedience, temper -tantrums and deficiency are expressions of children's negativism.

14. **Withdrawal :** Some persons withdraw themselves from dangerous , difficult or distressing situations .They avoid coping with their responsibilities .If they refuse to face their problems there is no danger of failure in connection with them .By withdrawing the person hopes to protect the integrity of the ego. Because the person who withdraws does not cause social annoyance, his problems may go unnoticed and unsolved until they have become so numbered by life's shocks and disappointments that he resigns himself to a world of inner living.

15. **Introjections:** Introjections is the contrary of projection . In projection we see in others that which we have in ourselves. While in introjections we find in ourselves what we find in others .We see their thoughts, desires and wishes in ourselves. A husband with this tendency looks upon the wishes of his wife as his own wishes, and never quarrels with her. He has no desires and thoughts apart from the thoughts and desires of his wife.

These adjustment mechanisms are psychological devices to maintain the mental health of an individual. Their use ,if made sparingly can save the individual from being mentally unbalanced and maladjusted .But if their use is made too frequently , so that they become a sort of habitual behaviour , then they become dangerous and may lead to serious mental complications. These are just like medicines, only the proper quantity of dose is beneficial. Taking too much of a medicine and becoming addicted to it may lead to serious consequences.

It should be noted that adjustment mechanisms cannot take the place of robust and sound health .A healthy personality does not need making use of these mechanisms. Their conscious use should be avoided. They are the inbuilt mental mechanism to preserve the mental health of the individual.

Check your progress:

1) Explain the concept of mental health and mental hygiene.

2) Discuss the various strategies to maintain mental health (Deference mechanism)

3.5 LET US SUM UP:

Learning styles are the preferential way in which a student processes and retains information while thinking styles are the students' preferred ways of applying their intellectual abilities and knowledge to a problem. Awareness of the students' learning and thinking styles will help

teachers to create a conducive and effective learning-teaching class environment. It will help the teachers in engaging their learners in the most efficient manner.

Mental health is concerned with an optimum level of emotional and behavioural adjustment of the individual. While maintaining mental hygiene helps every individual to become a well-adjusted being in his society. To maintain a sound mental balance, we often adopt defence mechanisms. We use defence mechanisms to protect ourselves from feelings of anxiety or guilt.

3.6 UNIT END EXERCISE:

1. Explain the meaning of Learning Styles.

2. Name the four different learning styles given by Kolb.

1. Explain the development stages identified by Kolb.

2. Discuss Kolb's model of learning styles.

3. How would a teacher use Kolb's learning model in a classroom?

4. Define Thinking.

5. Explain different Thinking Styles propounded by Bramson.

6. Discuss Sternberg's Tri-archic Model of Intelligence.

7. Illustrate the application of Sternberg's Tri-archic Model in a classroom.

8. Explain the concept of mental health and mental hygiene.

9. Discuss the various strategies to maintain mental health.

4

LEARNER DIVERSITY

Unit Structure:

4.0 OBJECTIVES:

After reading this unit you will be able to explain:

- Ellis's Theory of personality
- Berne's Theory of personality
- Vedic concept of personality
- Buddhist concept of personality
- Guilford's Structure of Intellect
- Goleman's theory of Emotional Intelligence
- Gardner's Theory of Multiple Intelligence
- Define Creativity
- Highlight the contribution of E.D. Bono.

4.1 INTRODUCTION :

We are already aware of the nature and implications of individual differences among learners. Learner diversity is seen in various aspects such as personality, intelligence, creativity, aptitude and attitude. It is necessary for a teacher to understand learner diversity in order to design learning experiences that would lead to a holistic development of their students.

4.2 PERSONALITY – THEORIES OF PERSONALITY

Introduction to Personality

The word personality is derived from the Latin word 'persona' which means mask. The study of personality can be understood as the study of masks that people wear. Personality usually refers to that, which is unique about a person, the characteristics that distinguish him or her from other people. Thought, emotion, and behavior as such do not constitute a personality, which is, rather, the dispositions that underlie these elements. Personality implies predictability about how a person will act or react under different circumstances.

Definitions:

1. 'The dynamic organization within the individual of those psychophysical systems that determine his unique adjustment to his environment' –- **(Allport, 1937)**

2. 'That which permits a prediction of what a person will do in a given situation.' – **(Cattell, 1965)**

3. 'One's habits and usual style, but also ability to play roles.' –- **(Cronbach, 1984)**

4. 'Personality traits are the key antecedent of an individual's cognitions and affective states that may influence his or her task and interpersonal or socio-emotional role behavior (in teams). – **(Moynihan and Peterson, 2001)**

A brief definition would be that personality is made up of the characteristic patterns of thoughts, feelings and behaviors that make a person unique. In addition to this, personality arises from within the individual and remains fairly consistent throughout life.

Characteristics of personality:

1. Consistency - There is generally a recognizable order and regularity to behaviors. Essentially, people act in the same ways or similar ways in a variety of situations.

2. Psychological and physiological - Personality is a psychological construct, but research suggests that it is also influenced by biological processes and needs.

3. Impact behaviors and actions - Personality does not just influence how we move and respond in our environment; it also *causes* us to act in certain ways.

4. Multiple expressions - Personality is displayed in more than just behavior. It can also be seen in our thoughts, feelings, close relationships and other social interactions.

Determinants of Personality:

1. Heredity: - There are some genetic factors that play a part in determining certain aspects of what we tend to become. Whether we are tall or short, experience good health or ill health, are quickly irritable or patient, are all characteristics which can, in many cases, be traced to heredity. How we learn to handle others' reactions to us (e.g. our appearance) and the inherited traits can also influence how our personality is shaped.

2. Culture: - The culture and the values we are surrounded by significantly tend to shape our personal values and inclination. Thus, people born in different cultures tend to develop different types of personalities which in turn significantly influence their behaviours. India being a vast country with a rich diversity of cultural background provides a good study on this. For example, we have seen that people in Gujarat are more enterprising than people from other states, Punjabis are more diligent and hardworking, people from Bengal are more creative and with an intellectual bend etc.

3. Family Background:-The socio-economic status of the family, the number of children in the family and birth order, and the background and education of the parents and extended members of the family such as uncles and aunts, influence the shaping of personality to a considerable extent. First-borns usually have different experiences, during childhood than those born later.

Members in the family mould the character of all children, almost from birth, in several ways -by expressing and expecting their children to conform to their own values, through role modeling, and through various reinforcement strategies such as rewards and punishments which are judiciously dispensed. Think of how your own personality has been shaped by your family background and parental or sibling influences!

4. Experiences in Life: - Whether one trusts or mistrusts others, is miserly or generous, have a high or low self esteem and the like, is at least partially related to the past experiences the individual has had. Imagine if someone came to you and pleaded with you to lend him Rs. 100 which he promised to return in a week's time, and you gave it to him even though it was the last note you had in your pocket to cover the expenses for the rest of that month. Suppose that the individual never again showed his face to you and you have not been able to get hold of him for the past three months. Suppose also that three such incidents happened to you with three different individuals in the past few months. What is the probability that you would trust another person who comes and asks you for a loan tomorrow? Rather low, one would think. Thus, certain personality characteristics are molded by frequently occurring positive or negative experiences in life.

5. People We Interact With:- "A Person is known by the company he or she keeps" is a common adage. The implication is that people persuade

each other and tend to associate with members who are more like them in their attitudes and values. Beginning childhood, the people we interact with influence us. Primarily our parents and siblings, then our teachers and classmates, later our friends and colleagues, and so on. The influence of these various individuals and groups shapes our personality. For instantly, if we are to be accepted as members of our work group, we have to conform to the values of that group which may not always be palatable to us; if we don't, we will not be treated as valued members of the group. Our desire to be a part of the group and belong to it as its member will compel many of us to change certain aspects of our personality (for instance, we may have to become less aggressive, more cooperative, etc.). Thus, our personality becomes shaped throughout our lives by at least some of the people and groups we interact with. Thus, our personality is a function of both heredity and other external factors that shape it.

There are a number of different theories about how personality develops. Different schools of thought influence many of these theories.

Western Theories of Personality:

Majority of the Western theories regard the psychophysical self as the basic unit of personality. An individual's personality is that pattern that distinguishes him as an individual and accounts for his unique and relatively consistent ways of interacting with his environment.

A) Rational-Emotive-Behavior Therapy by Ellis':

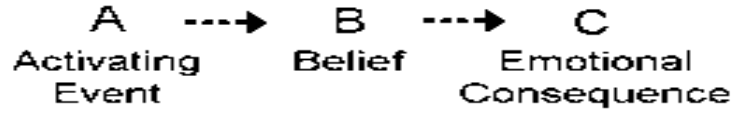
Cognition means to perceive, comprehend, and conceive or to know. The basic premise behind cognitive theory of personality is the idea that the way we think about or perceive ourselves and others, determines how we respond to the world with our emotions and behaviors. Hence any treatment would have to include changing the way a person thinks about himself and / or the world.

Rational-Emotive-Behavior Therapy (REBT), developed by Albert Ellis, is a therapy that consciously uses cognitive, emotive, and behavioral techniques to help clients. REBT theorists stress that human beings have choices. The control of ideas, attitudes, feelings, and actions is specific to the person who arranges a life according to personal dictates. Having little control over what happens or what actually exists, people do have choices and control over how they view the world and how they react to difficulties.

Behavioral techniques to help people:

REBT is based on the premise that whenever we become upset, it is not the events taking place in our lives that upset us; it is the beliefs that we hold that cause us to become depressed, anxious, enraged, etc.To illustrate this, Dr. Ellis developed a simple **ABC** format to teach people how their beliefs cause their emotional and behavioral responses:

A. Something happens.
B. You have a belief about the situation.
C. You have an emotional reaction to the belief.



D, E and F are aimed at the promotion and maintenance of change.

D. Counselor disputing the client's irrational thoughts

E. Presumed consequences of the counselor's intervention

F. New feelings the client has regarding situation

For example:
A. **Your employer falsely accuses you of taking money from her purse and threatens to fire you.**
B. You believe, "She has no right to accuse me. She is a @#$%$."
C. You feel angry.
If you had held a different belief, your emotional response would have been different:

A. Your employer falsely accuses you of taking money from her purse and threatens to fire you.
B. You believe, "I must not lose my job. That would be unbearable."
C. You feel anxious.

The ABC model shows that A does not cause C. It is B that causes C. In the first example, it is not your employer's false accusation and threat that make you angry; it is your belief that she has no right to accuse you, and that she is a @#$%$. In the second example, it is not her accusation and threat that make you anxious; it is the belief that you must not lose your job, and that losing your job would be unbearable.

Although we all express ourselves differently, according to Albert Ellis the beliefs that upset us are all variations of three common irrational beliefs.

The Three Beliefs / Musts That Contribute to Making People Miserable:

1. I must do well and/or be approved of by significant others.

2. I must be treated fairly by others and in exactly the way I want

3. I must get what I want, when I want it; and I must not get what I don't want

The first belief often leads to anxiety, depression, shame, and guilt. The second belief often leads to rage, passive-aggression and acts of

violence. The third belief often leads to self-pity and procrastination. It is the demanding nature of the beliefs that causes the problem. Less demanding, more flexible beliefs lead to healthy emotions and helpful behaviors

Disputing

The goal of REBT is to help people change their irrational beliefs into rational beliefs. Changing beliefs is the real work of therapy and is achieved by the therapist disputing the client's irrational beliefs.

Techniques Used by Therapist to Reduce or Eliminate Irrational Thinking

Active disputation –asking questions in Socratic Style

Why is _____ so terrible or awful?

Where is it written that you can't stand the situation?

Is there another way you can think about this?

What is preventing you from doing so?

Why must you have it this way?

What is the worst that can happen if you give up this belief?

What is the best that can happen? When the client tries to answer the therapist's questions, s/he sees that there is no reason why s/he absolutely must have approval, fair treatment, or anything else that s/he wants.

Insight

Albert Ellis contends that although we all think irrationally from time to time, we can work at eliminating the tendency by developing three insights:

1. We don't merely get upset but mainly upset ourselves by holding inflexible beliefs.

2. No matter when and how we start upsetting ourselves, we continue to feel upset because we cling to our irrational beliefs.

3. The only way to get better is to work hard at changing our beliefs.

Acceptance

REBT therapists strive to help their clients develop three types of acceptance: (1) unconditional self-acceptance; (2) unconditional other-acceptance; and (3) unconditional life-acceptance. Each of these types of acceptance is based on three core beliefs:

Unconditional self-acceptance:

1. I am a fallible human being; I have my good points and my bad points.

2. There is no reason why I must not have flaws.

3. Despite my good points and my bad points, I am no more worthy and no less worthy than any other human being.

Unconditional other-acceptance:

1. Other people will treat me unfairly from time to time.

2. There is no reason why they must treat me fairly.

3. The people who treat me unfairly are no more worthy and no less worthy than any other human being.

Unconditional life-acceptance:

1. Life doesn't always work out the way that I'd like it to.

2. There is no reason why life must go the way I want it to

3. Life is not necessarily pleasant but it is never awful and it is nearly always bearable.

Ellis believes that when people have achieved all three types of insight, "elegant" change takes place as they have not only made changes but also know why the changes have been made.

B) Transactional Analysis by **Eric Berne:**

Humanistic theorists believe that each individual is motivated to develop and tries to develop his full potential and capabilities.

Eric developed Transactional Analysis (TA) which is basically a statement describing the human personality. He believed that life is a series of decisions to be made and problems to be solved, and that people have the rationality and the freedom to do both. TA is a theory of personality and a systematic psychotherapy for personal growth and personal change. As a theory of personality, TA describes how people are structured psychologically. Berne believed that when we interact with other people, our state of mind affects what happens. There are three states of mind in all humans, no matter how old they are, called ego states.

The Ego-State (or Parent-Adult-Child, PAC) model

At any given time, a person experiences and manifests their personality through a mixture of behaviors, thoughts and feelings. There are three ego-states that people consistently use:

1. Parent: The authoritative and directive core in each of us, learned from our parents and other authority figures when we were young. The parent is

concerned with rules and guidelines. For example, a person may shout at someone out of frustration because they learned from an influential figure in childhood the lesson that this seemed to be a way of relating that worked.

2. Adult: The reasoning core in each of us. The adult seeks to understand and rationalize external stimuli and react appropriately to such stimuli.

3. Child: The emotional core in each of us. The child in us reacts to external stimuli in an emotional manner such as happiness, sorrow, anger etc. For example, a person being told off by the boss at work may look down and feel shame or anger, as they used to when being told off as a child.

Within each of these are sub-divisions. Thus parental figures are often either nurturing (permission giving, security giving) or critical (finds faults, displays prejudices, disapproves and prevents others from feeling good about themselves), childhood behaviors are either natural (free, spontaneous, impulsive, feeling oriented, self-centered & pleasure loving) or adapted (compliant, conforms to the wishes & demands of parental figures) . Each of these tends to draw an individual to certain patterns of behavior, feelings and ways of thinking, which may be beneficial (positive) or dysfunctional/counterproductive (negative).

Transaction

When people are in their different ego states and they interact with other people, three main types of transaction (or interaction) can happen.

Types of Transaction

Complementary – both people are operating from the same ego state

Crossed – the other person reacts from an unexpected ego state

Ulterior – two ego states within the same person but one disguises the other

At the core of Berne's theory is the rule that effective transactions (i.e. successful communications) must be complementary. They must go back from the receiving ego state to the sending ego state. For example, if the stimulus is Parent to Child, the response must be Child to Parent, or the transaction is 'crossed', and there will be a problem between sender and receiver.

Life positions

Many people get stuck in one ego state more than the other two and this may be due to early childhood experiences.

Types of Life positions

Four basic life scripts:

1. I'm OK, you're OK – ideal
2. I'm OK, you're not OK – get away from me
3. I'm not OK, you're OK – I'll never get anywhere
4. I'm not OK, you're not OK – get rid of each other

Everyone is born in the same Life Position **I'm not OK, You're OK**

The reason you are not OK when you are born is because you are dependent on others for all your needs. They are OK, because they have the ability to satisfy their own needs and your needs.

The ideal life position to reach is I'm OK, You're OK, where you are in a position to satisfy your own needs and are happy that others are able to satisfy their needs. However, not all people progress to this happy state, they get stuck in either" I'm not OK, You're not OK" or "I'm OK, You're not OK" on account of childhood experiences which result in either very low self esteem or too high self esteem.

Transactional Analysis helps to create, develop and maintain better relationships in every situation, by enabling one to understand more clearly what is going on, and use this knowledge in the choice of what ego states to adopt, which signals to send, and where to send them.

Indian Perspective of Personality:

The Indian theories of personality opine that man is essentially a spiritual being, and each individual's true identity lies outside the personality complex in the Jivatman or spirit. Indian philosophical-psychologists perceive some 'life force' in an individual which persists amidst biological, psychological and environmental changes. It has been referred to as 'self consciousnesses or 'self illumination'. The western concept of 'self 'refers to 'ME' reaction of an individual as a mental process whereas the Indian concept the Indian concept of 'self consciousness' refers to something deep, inherent, intuitive, the transcendental self in the individual as a part of the universal self.

A) VEDIC PERSPECTIVE OF PERSONALITY

"Veda" means knowledge in the Sanskrit language. According to the Vedic psychological philosophy consciousness is 'the essence of personality' and only through proper integration of One's body, mind, ego and spirit can one strengthen one's personality. The integration of the different cells in the body is essential to prevent disharmony or ill health. Hence the body must be nourished with pure food, fresh air and exercise so that one becomes stronger and healthier and cheerful. Similarly our mind is a 'synthetic whole' consisting of the faculties of cognition, feeling and will. These faculties of the mind are often at war with one another and

create confusion within the individual which may lead to the individual battling a whirlpool of emotions. Hence integration of the mind is essential to ensure purity, strength and harmony of the mind. Likewise 'ego' which is constantly changing if perverted may make an individual egocentric, selfish and mean; which is detrimental for himself, his family and to the society. Integration of the internal components of the ego can thus prevent the individual from being maladjusted.

Thus 'Integration' has its physical aspects, mental aspects as well as its spiritual aspects. In a properly integrated personality the 'ego' or the individual's consciousness is in tune with the universal consciousness which guides the mind and the body in a harmonious, intelligent and spontaneous manner. The individual feels harmonized and integrated when s/he is the master of her/his mind and spontaneously follows the spiritual life without conflicts. The process of mental purification is called 'sublimation' in psychological terms. It is a process of giving a higher turn to the desires of primary instincts. Such a blessed personality sees the supreme spirit in him and in all beings. His mind is not shaken by misery nor upset by happiness. He does not get affected by joys and sorrows, censure and praise, love and hatred. For him there is no difference between a piece of log and a piece of gold. He looks upon honor and dishonor, friendship and enmity as the same, and shuns initiative in all matters, for he has nothing to ask for. This state of perfect liberation or 'supreme consciousness' is hard to attain. It can be achieved only through long-sustained endeavor and a strong sense of detachment.

Objectives of Vedic education:

1. Ultimate aim is to be one with the almighty or to be 'free'
2. Education for character formation
3. Development of:

Self restraint

Self confidence

Self respect

Discrimination and Judgment

Stress on social duties

Preservation and promotion of culture

B) BUDDHIST PERSPECTIVE OF PERSONALITY

Buddhism began in India in the 6th century BC. based upon the Teachings of Siddhartha Gautama, the Buddha. Buddhism maintains that every person possesses the 'Buddha-nature.' Everyone is capable of developing into a Buddha **(Buddha** = One who is awake, one who has achieved full humaneness) In Buddhism, a human being is perceived to be made up of five components i.e. the skanda, namely that of the material form (rupa), cognition (samjna), sensation (vedana), disposition

(samkharas), and consciousness (vijnana). According to Buddhism a person is the dynamic aggregation of these five different elements (*skandhas*), together called *Nama-Rupa* . The *skandhas*, constitute an individual personality

Personality in Buddhism means the characteristics that are specific to an individual. These characteristics are manifested by his/her good and bad behaviors through body, speech, and mind. In other words, good and bad behaviors were the manifestations of mental motivation.

Personality is divided into two categories:

1. Implicit Personality and

2. Explicit Personality

Implicit Personality is described as the characteristics of an individual who has wholesome and unwholesome mental conduct. Explicit Personality is described as the characteristics of an individual who has wholesome and unwholesome behaviors through body and speech that are manifested in outward appearances.

Buddhism essentially talks about the four noble truths: The world is full of suffering, that suffering is caused by desire, that suffering can cease, and that there is a path to freedom, or Nirvana. This path is the eightfold path of right views, right intentions, right speech, right conduct, right livelihood, right effort, right mindfulness and right concentration.

The essence of Buddhism's teachings is therefore to understand the basic element behind what makes life and living. The Buddha understood this to be the dukha factor. Dukha is in a state of wanting with a sense of restlessness, unfulfilled and incomplete, a state of dissatisfaction, a feeling of unfinished and unsettled matter, and this is a form of misery. This feeling exists and develops because people have tanha which appears in the form of needs and wants, desire and aspirations, and unless these are fulfilled, there is always the feeling and sense of striving and therefore of dukha. Thus, this situation ought to be addressed and repressed and this can be done through the Eight-fold Paths.

The Eightfold Path trains an individual to attain a very high sense of self-discipline, including at the levels of the mind, feeling and action, which are also in correspondence to the five components of man, i.e., the skanda. Numerous techniques are developed to assist Buddhists to attain this perfection of personality. The objective of this discipline and training is to assist the individual to get rid of tanha and so ultimately to abrogate dukha altogether. Nonetheless, tanha and dukkha can only be completely annihilated from a person upon his or her achieving Nirvana a situation where there is no more tanha and dukkha, a state of being fully fulfilled, satisfied and contented.Personality development in Buddhism is the improvement of internal and external characteristics. The improvement of internal characteristics is emphasized in Buddhism as it leads to the

enlightenment of the ultimate goal of Buddhism, Nirvana. A state of mind in which all cravings and desires have been extinguished. Nirvana can only be achieved through self-discipline, meditation, and realization of the impermanence of selflessness.

The person who continuously underwent personality development according to Buddhist teaching benefited in 3 ways. Physically he changed his unwholesome bodily action and bad speech to wholesome bodily action and good speech. Mentally his mental unwholesome tendencies changed to wholesome tendencies. Spiritually he destroyed his worldly knowledge and obtained sublime wisdom that eradicated greed, hatred, and delusion. He finally attained the highest goal in Buddhism, of e.g. the total eradication suffering which is Nirvana.

4.3 INTELLIGENCE

Intelligence derives from the Latin verb *intelligere* which derives from inter-legere meaning to "pick out" or discern. Intelligence is a term that is easier to recognize than to define, and it can mean many different things to different people. In fact, it has divided the scientific community for decades and controversies still rage over its exact definition and form of measurement.

In the popular sense, intelligence is often defined as the general mental ability to learn and apply knowledge to manipulate your environment, as well as the ability to reason and have abstract thought. Other definitions of intelligence include adaptability to a new environment or to changes in the current environment, the ability to evaluate and judge, the ability to comprehend complex ideas, the capacity for original and productive thought, the ability to learn quickly and learn from experience and even the ability to comprehend relationships.

A superior ability to interact with the environment and overcome its challenges is often seen as a sign of intelligence. In this case, the environment does not just refer to the physical landscape (Eg. Mountains, forests) or the surroundings (eg. school, home, workplace) but also to a person's social contacts, such as colleagues, friends and family – or even complete strangers.

Researchers when asked about the aspects of intelligence felt that factors like problem-solving ability, mental speed, general knowledge, creativity, abstract thinking and memory all played important roles in the measure and standard of intelligence. Most agree that intelligence is an umbrella term which covers a variety of related mental abilities.

Definitions:

1. 'Intelligence is the ability to judge well, reason well and act well.' - **Binet.**

2. 'Intelligence is the cognitive ability of an individual to learn from experience, to reason well, to remember important information, and to cope with the demands of daily living'. Sternberg 'the global capacity of a person to act purposefully, to think rationally, and to deal effectively with his/her environment.'- **Wechsler.**

Based on the definitions, Intelligence is:

1. Cognitive – Examples of cognitive ability: memory, perception, concept formation, problem solving, mental imagery, action, association, language and attention.
2. The ability to learn from experience
3. The ability to live and cope with the demands of daily life.
4. Rational thought and reasoning
5. The ability to act purposefully in an environment.
6. The ability to deal with situations, in an effective manner, within an environment.

Intelligence thus, may be thought of as an organization of activities to learn, to grasp broad and subtle facts especially abstract facts with alertness and accuracy to exercise mental control and to display flexibility while seeking solutions to problems.

A) COGNITIVE J.P. GUILFORD

J.P.Guilford views intelligence as a systematic collection of abilities or functions for the processing of information of different kinds in various ways.

In (1986) J.P. Guilford proposed the structure of- intellect model which classifies intellectual traits among three **dimensions** namely:

1. **Operation**: concerned with how the mind goes about the task/ the style or approach it adopts
2. **Content** : concerned with the type of mental operation or mental representation which is involved
3. **Product**: type of outcome which can result from the mental task

The Operation Dimension

This consists of five (later six when memory was separated into recording and retention) kinds of operations or general intellectual processes:

1. Cognition - The ability to understand, comprehend, discover, and become aware of information.

2. Memory - The ability to encode information and recall information. Later divided into,

Memory Recording - The ability to encode information.

Memory Retention - The ability to recall information.

3. Divergent Production - The process of generating multiple solutions to a problem

4. Convergent Production - The process of deducing a single solution to a problem.

5. Evaluation - The process of judging whether an answer is accurate, consistent, or valid.

The Content Dimension

This dimension includes the broad areas of information in which operations are applied. It was divided into four categories, later five when auditory and visual were separated:

1. Figural - Information that is non-verbal or pictorial. Later divided into

   Auditory - Information perceived through hearing.

   Visual - Information perceived through seeing.

2. Symbolic - Information perceived as symbols or signs that have no meaning by themselves; for example, Arabic numerals or the letters of an alphabet.

3. Semantic - Information perceived in words or sentences, whether oral, written, or silently in one's mind.

4. Behavioral - Information perceived as acts of an individual or individuals.

The Product Dimension

As the name suggests, this dimension contains results of applying particular operations to specific contents. There are six kinds of products, they are:

1. Unit - Represents a single item of information.

2. Class - A set of items that share some attributes.

3. Relation - Represents a connection between items or variables; may be linked as opposites or in associations, sequences, or analogies.

4. System - An organization of items or networks with interacting parts.

5. Transformation - Changes perspectives, conversions, or mutations to knowledge; such as reversing the order of letters in a word.

Guilford's original model comprised of 120 components because he had not separated Figural Content into separate Auditory and Visual contents, nor had he separated Memory into Memory Recording and Memory Retention. When he separated Figural into Auditory and Visual contents, his model increased to 5 x 5 x 6 = 150 categories. When Guilford separated the Memory functions, his model finally increased to the final 180 factors .Hence these 180 factors constitute intellect and intellectual activity generally called as intelligence.

B) EMOTIONAL D. GOLEMAN

Emotional intelligence (sometimes known as emotional literacy) is a relatively new concept in the education world. By helping children to deal with their emotions and to become better listeners, it can assist teachers in the classroom and raise standards.

There is no doubt that children's emotions have a huge impact on school life. Anger affects the atmosphere in a classroom like nothing else. Similarly, in lessons where significant progress has been made, it is likely that more positive emotions were present in both teacher and pupils.

Emotions impact productivity, relationships, creativity and achievements. Philosophers such as David Hume and Adam Smith believed them to be vital to social and individual existence. More recent thinkers have examined the premise further. In *Emotion: The science of sentiment*, Dylan Evans writes that 'Intelligent action results from a harmonious blend of emotion and reason'. He adds, 'Knowing when to follow our feelings and when to ignore them is a valuable talent that some have called "emotional intelligence".'

Emotional Intelligence, emotional literacy is a relatively new concept in the education world. By helping children to deal with their emotions and to become better listeners, it can assist teachers in the classroom and raise standards.

Emotional Intelligence (**EI**), often measured as an **Emotional Intelligence Quotient** (**EQ**), describes a concept that involves the ability, capacity, skill or (in the case of the trait EI model) a self-perceived ability, to identify, assess, and manage the Emotions of one's self, of others, and of groups.

Aspects of Emotional intelligence

1.Understanding yourself, your goals, intentions, responses, behaviour and all.

2.Understanding others, and their feelings.

Concept

Emotional Intelligence - EQ - is a relatively recent behavioral model, rising to prominence with **Daniel Goleman's 1995** Book called

'Emotional Intelligence'. In 1994 Daniel Goleman stated in a report on the current state of **emotional literacy** in the U.S;

"...in navigating our lives, it is our fears and envies, our rages and depressions, our worries and anxieties that steer us day to day. Even the most academically brilliant among us are vulnerable to being undone by unruly emotions. The price we pay for **emotional literacy** is in failed marriages and troubled families, in stunted social and work lives, in deteriorating physical health and mental anguish and, as a society, in tragedies such as killings. EQ is the personal, social, and survival dimensions of Intelligence. EQ is concerned with understanding oneself and others, relating to people, and adapting to and coping with the immediate surroundings • A dictionary definition might include “an array of noncognitive capabilities, competencies, and skills that influence one’s ability to succeed in coping with environment

Goleman identified the five 'domains' of EQ as:

1.Knowing your emotions.

2.Managing your own emotions.

3.Motivating yourself.

4.Recognizing and understanding other people's emotions.

5.Managing relationships, ie., managing the emotions of others.

Goleman includes a set of emotional competencies within each construct of EI.

Emotional competencies are not innate talents, but rather learned capabilities that must be worked on and developed to achieve outstanding performance. Goleman says that individuals are born with a general emotional intelligence that determines their potential for learning emotional competencies

Five yardsticks to measure EI

1.Your **ability to identify and name one's emotional states** and to understand the link between emotions, thought and action

2.Your **ability to manage your emotional states** — to control your emotions or to shift undesirable emotional states to more reasonable ones

3.Your **ability to enter into emotional states** associated with **achievement and success**

4.Your **ability to read, be sensitive to and influence other people's emotions**

5.Your **ability to enter into and to sustain positive interpersonal relationships**

The Southampton Emotional Literacy Interest Group (SELIG) defines emotional literacy as: 'The ability to recognise, understand, handle and appropriately express emotions'. According to SELIG, such an important skill should not be marginalized or contained in one small dimension of the curriculum. Emotional literacy can be used to encompass:

1.Learning and achievement

2.Social and health education

3.Spiritual, moral and cultural development

4.Equal opportunities

5.Citizenship

6.Behaviour and discipline

7.Social inclusion

8.Crime and disorder

9.Music, art, dance and drama

Role of Schools:

Schools that seek specifically to promote emotional literacy amongst pupils have provided evidence that it helps to raise achievement. Teachers will often use certain approaches. For example, they might adopt key emotions such as anger and happiness or fear and excitement each half term. This encourages awareness of the impact that emotions can have on our lives. Children can be asked to think about contrasting emotions: when they might experience them and how they might express them differently. Fiction, themed displays or music and colour imagery can all help children of any age feel more connected to their emotions.

Role of the Teacher

The teacher's level of EQ is by far the single most important variable in creating a classroom where EI can be developed healthily. and the single most important variable in the teacher's EQ is how they handle their own emotions, especially their negative emotions. An effective, successful teacher is largely one who can handle his or her negative feelings in an authentic, real and healthy way.

As a new teacher in a school your role can be central. The impact of both your own, and your pupils', emotions might play a strong role in the development of your personal teaching style. The following methods will begin developing emotional intelligence in your pupils:

1. Offer pupils a part of each lesson to explain what they have learned or researched to others in their group.

2. Let personal reflection play a strong role in your lessons. Encourage pupils to think about what they are achieving and how they are making progress. They might consider how they are helping or hindering themselves and how they might do things differently.

3. Develop tasks and activities that nurture listening skills.

4. Offer pupils' choices within your lessons, as far as is practical. This helps them to develop a sense of responsibility for, and commitment to, their actions.

5. Give praise and positive encouragement as frequently as possible and encourage pupils to do this for themselves and for each other.

Why does emotional literacy matter?

In *Nurturing Emotional Literacy*, educational psychologist Peter Sharp explains what we can expect to see if schools are successful at nurturing emotional literacy:

Children who recognise and understand their feelings and so become more adept at handling and expressing them appropriately Children and teachers who are less unduly stressed, and are able to manage competing demands more effectively Children who have become better listeners, and who are more likely to see the other person's point of view Children with an increased attention span Children who have greater prowess at forming and maintaining relationships Children will have learned problem-solving methods that lead to enhanced interpersonal skills as adults Children who have learned to manage conflicts and are therefore less likely to be involved in crime, particularly those crimes involving violence Children who have learned skills that enhance their future parenting skills

INTRODUCING EMOTIONAL INTELLIGENCE IN SCHOOLS:

What would be the consequences of introducing emotional intelligence in schools? Are schools the right place for it? Is it even possible? Scientific research, in particular on how the brain works, indicates that the formation of emotional skills is much easier in the "formative" years from birth to the late teens. Looking at existing structures, school is **the** major activity in that age group. However, emotions rarely have a place in schools. Beyond infants school and early primary school, almost all efforts are concentrated on cognitive skills (reading, writing, mathematics,...). What's more, there is little or nothing in the standard training of teachers that prepares them from such a task. Yet there is no subject where the quality and ability of teachers would be more crucial.

Introducing emotions in schools would be a radical change! Yet schools do not change so readily. Those well-meaning people who have tried to introduce innovations in schools have come up against considerable resistance from teachers, students and parents alike. Yet

without their active participation, no such far-reaching change is possible. One possible solution, if such essential skills prove too difficult to develop in schools, would be to start by introducing them in the spaces around school. During the breaks for example. Daniel Goleman describes how appointed pupil mediators, once all involved know the rules of the game, resolve conflicts in the playground. Such a "school for emotions" could be a local, community-based activity in conjunction with other activities like scouts, parent-teachers associations, artistic expression groups, clubs etc.

What skills?

But what exactly might such skills be? In his book, Daniel Goleman gives a considerable list. Here are some indications inspired by a list quoted by Goleman from a book called *Self Science: The Subject is Me* (2nd edition) by Karen Stone McCown et al. [San Mateo, Six Seconds, 1998]

Self awareness

One of the basic emotional skills involves being able to recognise feelings and put a name on them. It is also important to be aware of the relationship between thoughts, feelings and actions. What thought sparked off that feeling? What feeling was behind that action?

Managing emotions

It is important to realize what is behind feelings. Beliefs have a fundamental effect on the ability to act and on how things are done. Many people continually give themselves negative messages. Hope can be a useful asset. In addition, finding ways to deal with anger, fear, anxiety and sadness is essential: learning how to soothe oneself when upset, for example. Understanding what happens when emotions get the upper hand and how to gain time to judge if what is about to be said or done in the heat of the moment is really the best thing to do. Being able to channel emotions to a positive end is a key aptitude.

Empathy

Getting the measure of a situation and being able to act appropriately requires understanding the feelings of the others involved and being able to take their perspective. It is important to be able to listen to them without being carried away by personal emotions. There's a need to be able to distinguish between what others do or say and personal reactions and judgments.

Communicating

Developing quality relationships has a very positive effect on all involved. What feelings are being communicated to others? Enthusiasm and optimism are contagious as are pessimism and negativity. Being able to express personal concerns without anger or passivity is a key asset.

Co-operation

Knowing how and when to take the lead and when to follow is essential for effective co-operation. Effective leadership is not built on domination but the art of helping people work together on common goals. Recognizing the value of the contribution of others and encouraging their participation can often do more good than giving orders or complaining. At the same time, there is a need to take responsibilities and recognize the consequences of decisions and acts and follow through on commitments.

Basic Steps to Emotional Intelligence in the Classroom

Managing your Own Emotions

Identify Your Feelings- Ask yourself: How am I feeling? - Answer using three word sentences beginning with "I feel..." - Label your feelings, not your children (or situation)

Take Responsibility for Them (Own them) - Don't blame the children for your feelings - Owning your feelings means not thinking in terms of:You are making me angry You kids are driving me crazy - Remember that there is a little space between stimulus and response, and in this space lies your power to choose your reaction. Don't give away this power.** If your kids are in charge of your emotions, you are in trouble! Same is true for the children especially teenagers

Use Your Emotional Awareness to Learn About Yourself

Your negative feelings reveal your unmet emotional needs. Remember that the children are not there to meet your needs, you are there to meet theirs. Thus, you must either get your needs met somewhere else, or you must "let go" of some of your needs, such as your need to have so much control, or to feel obeyed.

Do not demand respect work towards earning it. The easiest way to do this is by respecting each individual child's feelings, and reminding oneself that his negative feelings are indicative of unmet emotional needs.

Work on Keeping Your Area of Acceptance Wide Open

When you feel good about yourself you are more accepting, tolerant, patient, understanding. This helps your students feel Accepted, Approved of, Secure and Relaxed.

Feeling good about themselves ===> contribute to healthy self-esteem, openness to learn and willingness to cooperate.

Helping your Students Feel Better Through Increased Eq

A. Help them label their feelings - Teach them a wide range of feeling words - Start expressing your feelings - Start talking about feelings

B. Give them real choices - Honor their decisions - Don't issue orders in disguise as requests - Ask them to help you meet your needs; don't demand it

C. Respect their feelings - Ask them how they feel - Ask them how they would feel before taking action - Think about how you want them to feel - what feelings create a positive learning environment.

D. Encourage a positive outlook - Validation - Accept their feelings - Show understanding, empathy, caring and concern - Whenever there is a problem remember to always first validate the feelings

E. Empower them - Ask them how they feel and "What would help you feel better" - Teach them to solve their own problems using empathy, compassion and mutual respect for each other's feelings

F. Avoid Labels and Judgment - Avoid "should" - Avoid subjective labels (good/bad; nice/rude, etc.)

Creating a Positive Learning Environment:

Traits of a positive learning environment:

Safe-- Free from fear of physical, psychological or emotional pain and abuse. Free from threats, force, punishment, coercion, manipulation, pressure, stress, intimidation, humiliation, embarrassment, invalidation.

Free -- Students have real choices. Participation in activities and lessons is voluntary.

Respectful -- Students and teachers respect each other's feelings, emotional needs, beliefs, values and uniqueness

Individual/Supportive/Nurturing -- Students are treated individually. Their individual needs, talents, potential and interests are supported.

Emotionally Intelligent -- Feelings are valued, discussed, validated. EI is part of the formal and informal curriculum.

Relevant/Meaningful/Practical -- Material helps students with real problems in their lives. Life skills, relationship skills and parenting skills are taught.

Empathetic & Caring -- Students and teachers care about each other's feelings.

Interesting/Stimulating -- The material and the environment stimulate the student's natural curiosity and need to learn.

Flexible -- Changes are made frequently, easily and smoothly.

Conflict resolution skills

Setting up the atmosphere- Reassure the students that it is okay to be honest about their feelings. Tell them that if they feel hateful, hurtful, vengeful, violent or destructive, it is okay to say it.

To lighten up the tension, set a goal of finding 3-30 things that everyone can agree on. Use humor. For example, ask, "Ask them how they are feeling at that specific moment.

Ask what would help them feel better. Give them some control over something. Ask them where they want to sit for example. Suggest your chair, the floor, the desk, wherever they would feel comfortable.

Conclusion

Assisting teachers in creating a positive environment for learning, and better managing their own emotions, will help to enhance students' experiences and those of teachers. To work towards an emotionally literate learning community a whole-school approach (ethos, curriculum and partnerships) needs to be employed. This multidimensional strategy has the potential to transform pedagogy and relationships in a responsive classroom approach, increasing the capacity for improved learning outcomes.

C) MULTIPLE H. GARDNER

Theory of Multiple Intelligences by Gardner

The theory of multiple intelligences was developed in 1983 by Dr. Howard Gardner, professor of education at Harvard University. Using the definition of intelligence as “the capacity to solve problems or to fashion products that are valued in one or more cultural settings” (Gardner & Hatch, 1989), Gardner developed a list of seven later nine intelligences.

These intelligences are:

1. Linguistic intelligence ("word smart")

2. Logical-mathematical intelligence ("number/reasoning smart")

3. Spatial intelligence ("picture smart")

4. Bodily-Kinesthetic intelligence ("body smart")

5. Musical intelligence ("music smart")

6. Interpersonal intelligence ("people smart")

7. Intrapersonal intelligence ("self smart")

8. Naturalist intelligence ("nature smart")

9. Existential intelligence

According to Howard Gardner, intelligence is:

1. The ability to create an effective product or offer a service that is valued in a culture;

2. A set of skills that make it possible for a person to solve problems in life; the potential for finding or creating solutions for problems, which involves gathering new knowledge

Gardner says-

All human beings possess all nine intelligences in varying amounts. Each person has a different intellectual composition.

We can improve education by addressing the multiple intelligences of our students.

These intelligences are located in different areas of the brain and can either work independently or together.

These intelligences may define the human species.

1.Visual and Spatial Judgement

Strengths: Visual and Spatial Judgement

People who are strong in visual-spatial intelligence are good a visualizing things. These individuals are often good with directions as well as maps, charts, videos and pictures.

Characteristics of Visual-Spatial Intelligence

- Enjoys reading and writing
- Good at putting puzzles together
- Good at interpreting pictures, graphs and charts
- Enjoys drawing, painting and the visual arts
- Recognizes patterns easily

Potential Career Choices

- Architect
- Artist
- Engineer

2. Linguistic-Verbal Intelligence

Strengths: Words, Language and Writing

People who are strong in linguistic-verbal intelligence are able to use words well, both when writing and speaking. These individuals are typically very good at writing stories, memorizing information and reading.

Characteristics of Linguistic-Verbal Intelligence

- Good at remembering written and spoken information
- Enjoys reading and writing
- Good at debating or giving persuasive speeches
- Able to explain things well
- Often uses humor when telling stories

Potential Career Choices

- Writer / Journalist
- Lawyer
- Teacher

3. Logical - Mathematical Intelligence

Strengths Analyzing Problems and Mathematical Operations

People who are strong in logical-mathematical intelligence are good at reasoning, recognizing patterns and logically analyzing problems. These individuals tend to think conceptually about numbers, relationships and patterns.

Characteristics of Logical-Mathematical Intelligence

- Excellent problem-solving skills
- Enjoys thinking about abstract ideas
- Likes conducting scientific experiments
- Good and solving complex computations

Potential Career Choices

- Scientist
- Mathematician
- Computer programmer
- Engineer
- Accountant

4. Bodily-Kinesthetic Intelligence

Strengths: Physical Movement, Motor Control

Those who have high bodily-kinesthetic intelligence are said to be good at body movement, performing actions and physical control. People who are strong in this area tend to have excellent hand-eye coordination and dexterity.

Characteristics of Bodily-Kinesthetic Intelligence

- Good at dancing and sports
- Enjoy creating things with their hands
- Excellent physical coordination

- Tends to remember by doing, rather than hearing or seeing

Potential Career Choices

- Dancer
- Builder
- Sculptor
- Actor

5. Musical Intelligence

Strengths Rhythm and Music

People who have strong musical intelligence are good and think in patterns, rhythms and sounds. They have a strong appreciation for music and are often good at musical composition and performance.

Characteristics of Musical Intelligence

- Enjoy singing and playing musical instruments
- Recognizes musical patterns and tones easily
- Good at remembering songs and melodies
- Rich understanding of musical structure, rhythm and notes

Potential Career Choices

- Musician
- Composer
- Singer
- Music Teacher
- Conductor

6. Interpersonal Intelligence

Strengths: Understanding and Relating to Other People

Those who have strong interpersonal intelligence are good at understanding and interacting with other people. These individuals are skilled at assessing the emotions, motivations, desires and intentions of those around them.

Characteristics of Interpersonal Intelligence

- Good at communicating verbally
- Skilled nonverbal communicators
- See situations from different perspectives
- Create positive relationships with others
- Good at resolving conflict in groups

Potential Career Choices

- Psychologist
- Philosopher
- Counselor
- Sales person
- Politician

7. Intrapersonal Intelligence

Strengths: Introspection and Self-Reflection

Individuals who are strong in intrapersonal intelligence are good at being aware of their own emotional states, feelings and motivations. They tend to enjoy self-reflection and analysis, including day-dreaming, exploring relationships with others and assessing their personal strengths.

Characteristics of Intrapersonal Intelligence

- Good at analyzing their strengths and weaknesses
- Enjoys analyzing theories and ideas
- Excellent self-awareness
- Clearly understands the basis for their own motivations and feelings

Potential Career Choices

- Philosopher
- Writer
- Theorist
- Scientist

8. Naturalistic Intelligence

Strengths: Finding Patterns and Relationships to Nature

Naturalistic is the most recent addition to Gardner's theory [5] and has been met with more resistance than his original seven intelligences. According to Gardner, individuals who are high in this type of intelligence are more in tune with nature and are often interested in nurturing, exploring the environment and learning about other species. These individuals are said to be highly aware of even subtle changes to their environments.

Characteristics of Naturalistic Intelligence

- Interested in subjects such as botany, biology and zoology
- Good at categorizing and cataloging information easily
- May enjoy camping, gardening, hiking and exploring the outdoors

- Doesn’t enjoy learning unfamiliar topics that have no connection to nature

Potential Career Choices

- Biologist
- Conservationist
- Gardener
- Farmer

9. EXISTENTIAL – concerned with 'ultimate issues' learning by seeing the "big picture": "Why are we here?" "What is my role in the world?" "What is my place in my family, school and community?"

This intelligence seeks connections to real world understandings and applications of new learning.

Although the intelligences are anatomically separated from each other, Gardner claims that they very rarely operate independently. Rather, the intelligences are used concurrently and typically complement each other as individuals develop skills or solve problems. For example, a dancer can excel in his art only if he has

1. strong musical intelligence to understand the rhythm and variations of the music,
2. interpersonal intelligence to understand how he can inspire or emotionally move his audience through his movements, as well as
3. Bodily-kinesthetic intelligence to provide him with the agility and coordination to complete the movements successfully.

Strengths of Gardner's Multiple Intelligence Theory

- helps to explain the variety of individual differences in different types of mental performance
- based in developmental, clinical, case study and educational evidence

Criticisms of Gardner's Multiple Intelligence Theory

- **It's not new**. Critics of multiple intelligence theory maintain that Gardner's work isn't groundbreaking -- that what he calls "intelligences" are primary abilities that educators and cognitive psychologists have always acknowledged.
- **It isn't well defined**. Some critics wonder if the number of "intelligences" will continue to increase. These opposing theorists believe that notions such as bodily-kinesthetic or musical ability represent individual aptitude or talent rather than intelligence. Critics also believe that M.I. theory lacks the rigor and precision of a real science. Gardner claims that it would be impossible to guarantee a definitive list of intelligences.

- **It's culturally embedded**. M.I. theory states that one's culture plays an important role in determining the strengths and weaknesses of one's intelligence. Critics counter that intelligence is revealed when an individual must confront an unfamiliar task in an unfamiliar environment.

- **It defeats National Standards**. Widespread adoption of multiple intelligence pedagogy would make it difficult to compare and classify students' skills and abilities across classrooms.

- **It is impractical**. Educators faced with overcrowded classrooms and lack of resources sees multiple intelligence theory as utopian.

Multiple Intelligences in the classroom

Everyone is born possessing intelligence. Nevertheless, all students will come into the classroom with their own unique set of intellectual strengths and weaknesses. These sets determine how easy or difficult it is for a student to learn information when it is presented in a particular manner. This is commonly referred to as a learning style.

Many learning styles can be found within one classroom. Therefore, it is impossible, as well as impractical, for a teacher to accommodate every lesson to all of the learning styles found within the classroom. Nevertheless the teacher can show students how to use their more developed intelligences to assist in the understanding of a subject which normally employs their weaker intelligences. For example, the teacher can suggest that an especially musically intelligent child learn about the revolutionary war by making up a song about what happened.

ASSESSMENT

As the education system has stressed the importance of developing mathematical and linguistic intelligences, it often bases student success only on the measured skills in those two intelligences. Supporters of Gardner's Theory of Multiple Intelligences believe that this emphasis is biased, unbalanced, and unfair. Children, whose musical intelligences are highly developed, for example, may be overlooked for gifted programs or may be placed in a special education class because they do not accomplish the required math or language scores. As educators, we must seek to assess our students' learning needs in ways which will provide a clear picture of their strengths and weaknesses.

Since all children do not learn in the same way, they cannot be assessed in the same way. Therefore, it is important that an educator create an "intelligence profile" for each student. Knowing how each student learns will allow the teacher to properly assess the child's progress. This individualized evaluation practice will allow a teacher to make more informed decisions on what to teach and how to present information.

Traditional tests (e.g., multiple choice, short answer, essay, etc.) require students to demonstrate their knowledge in a predetermined

manner. Supporters of Gardner's theory claim that a better approach to assessment is to allow students to explain the material in their own ways using the different intelligences.

CONCLUSION

Gardner's Theory of Multiple Intelligences provides a theoretical foundation for recognizing the different abilities and talents of students. This theory acknowledges that while all students may not be verbally or mathematically gifted, children may have an expertise in other areas, such as music, spatial relations, or interpersonal knowledge. Approaching and assessing learning in this manner allows a wider range of students to successfully participate in classroom learning.

4.4.1 CREATIVITY

In 1980 Guilford said that of all the qualities that man possesses, those that contribute to his creative thinking have been most important for his well being and his advancement.

Torrance says that society is downright savage towards creative thinkers especially when they are young.

In every underdeveloped country the potential of Einstein and Newton are herding cattle for breaking stones.

Definitions of Creativity

1. Creativity is the capacity of the person to produce compositions, products, or ideas which are essentially new or novel and previously unknown to the producer**.- Drevdahl J.E**

2. Creative thinking means that the predictions or inferences for the individual are new, original, ingenious, unusual. He explores new areas and makes new observations and inferences.-**Skinner**

3. Creativity is a process of becoming sensitive to problems, deficiencies, gaps of Knowledge, missing elements, identifying difficulties, searching for solutions, making guesses, formulating hypotheses, modifying, retesting and finally communicating results. -**Torrance**

Nature of creativity

- Creativity is the Process as well as product
- It is a complex, dynamic and serious process
- It is the capacity to accept challenges.
- It is the freedom to exercise choice
- It is universal. Everyone has some capacity of creativity
- Creativity can be fostered and encouraged by a suitable environment.

- Creativity again is an outcome of heredity and environment.

Characteristics of a creative Individual

- Intellect
- Readiness to change self and environment.
- Motivational Interest
- Openness, independent thinking.
- Fluency- quantity of output
- Flexibility – sees alternative and unusual possibilities.
- Originality- original response for a particular situation.
- Unusual or uncommon responses emitted by a person.
- Adventurous
- Curious by nature full of questions
- Flexible in his thinking and doing
- Intuitive
- Keen to explore and investigate
- Non-conformist
- Self-disciplined
- Visionary
- Willingness to take risk

The Process of creativity

Four stages:

1. Preparation:

Purposeful study makes all efforts to accumulate that information to solve a problem or a felt need

2. Incubation:

During this period ideas churn around below the threshold of consciousness. It is during this time that unusual connections are likely to be made. Because of its mysterious quality, incubation has often been thought the most creative part of the entire process. What happens in this "dark" space defies ordinary analysis and evokes the original mystery shrouding the work of genius. How long a period of incubation is needed varies depending on the nature of the problem. It may range from a few hours to several weeks and even longer.

3. Illumination:

A clearer conception or idea of the problem emerges. The mind is rewarded with a solution that seems appropriate. When the pieces of the puzzle fall together.

4. Verification:

Deciding whether the insight is valuable and worth pursuing. This is often the most emotionally trying part of the process, when one feels most uncertain and insecure. Is this idea really novel, or is it obvious? The solution to the problem is extended to other situations. The solution is reformed and adapted in the light of its application.

Creative thought can be divided into divergent and convergent reasoning.

Divergent thinking is the intellectual ability to think of many original, diverse, and elaborate ideas.

Convergent thinking is the intellectual ability to logically evaluate, critique and choose the best idea from a selection of ideas.

Difference between Convergent and Divergent thinking

Convergent thinking	**Divergent thinking**
1.One single answer	Variety of responses
2.Solution is a commonly acceptable answer	New or an original answer not common is discovered
3. Rigid and stereotyped	Exploratory and Venturesome.
4 Convergent is stimulus bound	Divergent thinking is Stimulus free
5.Measured by means of intelligence test Emphasis on remembering, recognition and manipulation	Measured by creativity tests emphasis on flexibility and originality
6. It is known as reasoning and rational thinking	Known as creative or Imaginative
7. Non- creative people high on convergent thinking	Creative people on divergent thinking
8. Left brain dominated activity	Right brain dominated activity.
9. More focused on success	Not so focused on success
10.Conformists and conservative	Non-conformists original/risk taking

<u>Need and ways to measure Creativity:</u>

- Enhances your understanding of the person's capabilities.
- Helps in teaching and individual teaching
- Evaluation
- Emphasizes the identification and nurturing responsibility of education

- Figural
- Picture construction
- Picture completion
- Parallel lines
- Verbal
- Torrance tests of creativity 1966
- Ask and guess
- Product improvement
- Unusual uses
- Unusual questions
- Just suppose
- Passi's test of creativity
- Guilfords creativity test 1959
- Flangans ingenuity test 1966
- Baquar Mehndis test.
- Figural/verbal
- Unusual uses
- Consequence test
- Similarity
- Product improvement
- Creativity in the classroom

When students are being creative in the classroom they are likely to:

- Question and challenge- Creative pupils are curious, question and challenge, and don't necessarily follow the rules.
- Make connections and see relationships- Creative pupils think laterally and make associations between things that are not usually connected.
- Envision might be- They imagine, see possibilities, ask 'what if?', picture alternatives, and look at things from different viewpoints.
- Explore ideas and options- Creative pupils play with ideas, try alternatives and fresh approaches, keep open minds and modify their ideas to achieve creative results.
- Reflect critically on ideas, actions and outcomes- They review progress, invite and use feedback, criticize constructively and make perceptive observations.

4.4.2 CREATIVE THINKING: CONTRIBUTION OF E. D. BONO

Introduction:

Much of the thinking done in formal education emphasizes the skills of analysis--teaching students how to understand claims, follow or create a logical argument, figure out the answer, eliminate the incorrect paths and focus on the correct one. However, there is another kind of thinking, one that focuses on exploring ideas, generating possibilities, looking for many right answers rather than just one. Both of these kinds of thinking are vital to a successful working life, yet the latter one tends to be ignored until after college. We might differentiate these two kinds of thinking like this:

Critical Thinking	**Creative Thinking**
Analytic	Generative
Convergent	Divergent
Vertical	Lateral
Probability	Possibility
Judgment	suspended judgment
Focused	Diffuse
Objective	Subjective
Answer	an answer
left brain	right brain
Verbal	Visual
Linear	Associative
Reasoning	richness, novelty
yes but	yes and

What is Creativity?

Ability: A simple definition is that creativity is the ability to imagine or invent something new. As we will see below, creativity is not the ability to create out of nothing (only God can do that), but the ability to generate new ideas by combining, changing, or reapplying existing ideas. Some

creative ideas are astonishing and brilliant, while others are just simple, good, practical ideas that no one seems to have thought of yet.

Believe it or not, everyone has substantial creative ability. Just look at how creative children are. In adults, creativity has too often been suppressed through education, but it is still there and can be reawakened. Often all that's needed to be creative is to make a commitment to creativity and to take the time for it.

An Attitude. Creativity is also an attitude: the ability to accept change and newness, a willingness to play with ideas and possibilities, a flexibility of outlook, the habit of enjoying the good, while looking for ways to improve it. We are socialized into accepting only a small number of permitted or normal things, like chocolate-covered strawberries, for example. The creative person realizes that there are other possibilities, like peanut butter and banana sandwiches, or chocolate-covered prunes.

A Process. Creative people work hard and continually to improve ideas and solutions, by making gradual alterations and refinements to their works. Contrary to the mythology surrounding creativity, very, very few works of creative excellence are produced with a single stroke of brilliance or in a frenzy of rapid activity. Much closer to the real truth are the stories of companies who had to take the invention away from the inventor in order to market it because the inventor would have kept on tweaking it and fiddling with it, always trying to make it a little better.

The creative person knows that there is always room for improvement.

Creative Methods:

Several methods have been identified for producing creative results. Here are the five classic ones:

Evolution: This is the method of incremental improvement. New ideas stem from other ideas, new solutions from previous ones, the new ones slightly improved over the old ones. Many of the very sophisticated things we enjoy today developed through a long period of constant incrementation. Making something a little better here, a little better there gradually makes it something a lot better--even entirely different from the original.

The evolutionary method of creativity also reminds us of that critical principle: **Every problem that has been solved can be solved again in a better way.** Creative thinkers do not subscribe to the idea that once a problem has been solved, it can be forgotten, or to the notion that "if it isn’t broke, don't fix it." A creative thinker's philosophy is that "there is no such thing as an insignificant improvement."

Synthesis: With this method, two or more existing ideas are combined into a third, new idea. Combining the ideas of a magazine and an audio tape gives the idea of a magazine you can listen to, one useful for blind people or freeway commuters.

For example, someone noticed that a lot of people on dates went first to dinner and then to the theater. Why not combine these two events into one? Thus, the dinner theater, where people go first to eat and then to see a play or other entertainment.

Revolution: Sometimes the best new idea is a completely different one, a marked change from the previous ones. While an evolutionary improvement philosophy might cause a professor to ask, "How can I make my lectures better and better?" a revolutionary idea might be, "Why not stop lecturing and have the students teach each other, working as teams or presenting reports?"

For example, the evolutionary technology in fighting termites eating away at houses has been to develop safer and faster pesticides and gasses to kill them. A somewhat revolutionary change has been to abandon gasses altogether in favor of liquid nitrogen, which freezes them to death or microwaves, which bake them. A truly revolutionary creative idea would be to ask, "How can we prevent them from eating houses in the first place?" New termite bait that is placed in the ground in a perimeter around a house provides one answer to this question.

Reapplication: Look at something old in a new way. Go beyond labels. Un-fixate remove prejudices, expectations and assumptions and discover how something can be reapplied. One creative person might go to the junkyard and see art in an old model T transmission. He paints it up and puts it in his living room. Another creative person might see in the same transmission the necessary gears for a multi-speed hot walker for his horse. He hooks it to some poles and a motor and puts it in his corral. The key is to see beyond the previous or stated applications for some idea, solution, or thing and to see what other application is possible.

For example, a paperclip can be used as a tiny screwdriver if filed down; paint can be used as a kind of glue to prevent screws from loosening in machinery; dishwashing detergents can be used to remove the DNA from bacteria in a lab; general purpose spray cleaners can be used to kill ants.

Changing Direction: Many creative breakthroughs occur when attention is shifted from one angle of a problem to another. This is sometimes called creative insight.

A classic example is that of the highway department trying to keep kids from skateboarding in a concrete-lined drainage ditch. The highway department put up a fence to keep the kids out; the kids went around it. The department then put up a longer fence; the kids cut a hole in it. The department then put up a stronger fence; it, too, was cut. The department then put a threatening sign on the fence; it was ignored. Finally, someone decided to change direction, and asked, "What really is the problem here? It's not that the kids keep getting through the barrier, but that they want to skateboard in the ditch. So how can we keep them from skateboarding in the ditch?" The solution was to remove their desire by pouring some

concrete in the bottom of the ditch to remove the smooth curve. The sharp angle created by the concrete made skateboarding impossible and the activity stopped. No more skateboarding problems, no more fence problems.

This example reveals a critical truth in problem solving: **the goal is to solve the problem, not to implement a particular solution**. When one solution path is not working, shift to another. There is no commitment to a particular path, only to a particular goal. Path fixation can sometimes be a problem for those who do not understand this; they become overcommitted to a path that does not work and only frustration results.

Edward De Bono:

Six Thinking Hats, a thinking skills training course from Edward de Bono, teaches parallel thinking as an alternative to argument. Parallel thinking guides thought processes in one direction at a time so we can effectively analyze issues, generate new ideas, and make better decisions. In traditional thinking, if two people disagree, there is an argument in which each tries to prove the other wrong. In parallel thinking, both views, no matter how contradictory, are put down in parallel. At all times the emphasis is on designing a way forward.

Six Thinking Hats helps put our opinions and egos aside so we can focus on a way forward, without argument.

Each of the six hats has a color: white, red, black, yellow, green and blue. The color provides the name for the hat. De' Bono wanted thinkers to visualize and to imagine the hats as actual hats. For this to happen, color is important. Color makes the imaging easier.

The colour of each hat is also related to its function.

- ***White Hat*:** White is neutral and objective. This white hat is concerned with objective facts and figures.
- ***Red Hat***: Red suggests anger, rage and emotions. The red hat gives the emotional view.
- ***Black Hat***: Black is somber and serious. The black hat is cautious and careful. It points out the weaknesses in an idea.
- ***Yellow hat***: Yellow is sunny and positive. The yellow hat is optimistic and covers hope and positive thinking.
- ***Green Hat***: Green is grass, vegetation and abundant, fertile growth. The green hat indicates creativity and new ideas.
- ***Blue Hat:*** Blue is cool, and it is also the color of the sky, which is above everything else. The blue hat is concerned with control, the organization of the thinking process and the use of the other hats.

Application:

Six Thinking Hats training is fast-paced, practical, and interactive. Participants learn how to separate emotion from facts, the positive from the negative and critical thinking from creative thinking.

Encourage children to **reflect upon their 'Thinking'** and learn to apply **different ways of thinking** for different situations.

Of course these concepts can be introduced in a simple form for the young ones, allowing them just to become **more aware of ways of thinking and to begin building thinking strategies...**

Use these hats as a guide to reflect upon thinking types when.....

- Brainstorming new ideas for **classroom management, classroom rules and discipline strategies.**
- **Panning class projects** such as assembly items, performances
- **Class meetings**
- **Problem solving** techniques like role playing
- **Group** projects
- **Book** reports / **character** profiles (how do others think)
- Discussing **cause and effect**

Some techniques that can be used in the classroom:

Brainstorming:

Brainstorming is a creative problem solving technique very widely used in the industries. It is now frequently used in the classrooms. Osborn (1953) developed this technique following the principle of deferred judgment because he believed that judgment and imagination cannot go together in creative thinking. They help each other only if kept apart. Evaluation is not ruled out, it is only postponed. This provides psychological safety to the children while thinking for solutions. It can be used individually as well as in a group.

- It is a technique conducted in the classroom.
- The basis of brainstorming is generating ideas in a group situation based on the principle of suspending judgment.
- A principle which is scientifically researched has proved to be highly productive in group efforts.
- The generation phase is separate from the judgment phase of thinking

- Brainstorming is useful for attacking specific (rather than general) problems and where a collection of good, fresh, new ideas are needed.

Guidelines for brainstorming:

- Suspend judgment
- Evaluation is to be reserved for later.
- Practical ideas very often come from silly, impossible ideas
- Think freely
- Tag on
- Quantity of ideas are important

Procedure to use brainstorming:

- Introduce a question, problem or topic both orally and in writing.
- Define the problem.
- Intimate participants to respond with as many ideas or suggestions as possible.
- Frame up the time limit.
- Let the ideas flow and no one may repeat or comment on any response.
- Record every response.
- There should be absolutely no criticism of any idea.
- Select the best ideas after the time limit is over.
- Select the best ideas based on some relevant criteria.
- Have a discussion.

Note: Make sure that every student participates in the brainstorming session.

E.g. 1. Invent a new game for the Olympics.

2. How to reduce road congestion?

3. How to control pollution?

4. What will happen if examinations are abolished in schools?

5. What would happen if all houses got wings?

6. How would you feel if you were a television?

Role Playing:

Moreno used this natural phenomenon to develop his socio-drama and psycho-drama techniques. As an instructional technique it was later developed into role playing which starts with imitation but then there is

imaginative transformation of reality. It is a group activity. It enables learners to adopt a self learning process by exploring, correlating, contrasting and comparing. In role playing, learning takes place not only at verbal level, but also at sense level and emotional level. The learner experiments with his behaviour without fear of punishment from harsh realities of life. It stimulates thinking, emphasizing imagination and spontaneous response to problematic situations.

Procedure:

- Defining the problem situation
- Selecting the role-players
- Warm-up
- Briefing
- Enactment
- Discussion
- Evaluation
- Replaying

E.g. Environment Degradation and ways to protect it.

Provocation:

Provocation is an important lateral thinking technique. Just like Random Input, it works by moving your thinking out of the established patterns that you use to solve problems. We think by recognizing patterns and reacting to them. These reactions come from our past experiences and logical extensions to those experiences. Often we do not think outside these patterns. While we may know the answer as part of a different type of problem, the structure of our brains makes it difficult for us to link this in.

Provocation, originally developed by Edward de Bono, is one of the tools we use to make links between these patterns.

How to Use the Tool:

We begin by making deliberately stupid statements (Provocations), in which something we take for granted about the situation is not true. Statements need to be stupid to shock our minds out of existing ways of thinking. Once we have made a provocative statement, we then suspend judgment and use that statement to generate ideas. Provocations give us original starting points for creative thinking.

Example-1: we could make a statement that 'Houses should not have roofs'. Normally this would not be a good idea! However this leads one to think of houses with opening roofs, or houses with glass roofs. These would allow you to lie in bed and look up at the stars.

Once you have made the Provocation, you can use it in a number of different ways, by examining:

- The consequences of the statement
- What the benefits would be
- What special circumstances would make it a sensible solution
- The principles needed to support it and make it work
- How it would work moment-to-moment
- What would happen if a sequence of events was changed Etc.

Example- 2

"The owner of a video-hire shop is looking at new ideas for business to compete with the Internet. She starts with the provocation 'Customers should not pay to borrow videos'."

She then examines the provocation:

- ***Consequences:*** The shop would get no rental revenue and therefore would need alternative sources of cash. It would be cheaper to borrow the video from the shop than to download the film or order it from a catalog.

- ***Benefits:*** Many more people would come to borrow videos. More people would pass through the shop. The shop would spoil the market for other video shops in the area.

- ***Circumstances:*** The shop would need other revenue. Perhaps the owner could sell advertising in the shop, or sell popcorn, sweets, and bottles of wine or pizzas to people borrowing films. This would make her shop a one-stop 'Night at home' shop. Perhaps it would only lend videos to people who had absorbed a 30-second commercial, or completed a market research questionnaire.

After using the Provocation, the owner of the video shop decides to run an experiment for several months. She will allow customers to borrow the top ten videos free (but naturally will find them for late returns). She puts the videos at the back of the shop.To use provocation, make a deliberately stupid comment relating to the problem you are thinking about. Then suspend judgment, and use the statement as the starting point for generating ideas.

Questioning:

Thinking is not driven by answers but by questions. Had no questions been asked by those who laid the foundation for a field — for example, Physics or Biology — the field would never have been developed in the first place? Furthermore, every field stays alive only to the extent that fresh questions are generated and taken seriously as the

driving force in a process of thinking. To think through or rethink anything, one must ask questions that stimulate our thoughts.

Questions define tasks, express problems and delineate issues. Answers on the other hand, often signal a full stop in thought. Only when an answer generates a further question does thought continue its life as such.

This is why it is true that only students who have questions are really thinking and learning. It is possible to give students an examination on any subject by just asking them to list all of the questions that they have about a subject, including all questions generated by their first list of questions.

That we do not test students by asking them to list questions and explain their significance is again evidence of the privileged status we give to answers isolated from questions. That is, we ask questions only to get thought-stopping answers, not to generate further questions.

Contribution:

A thinking system based on argument is excellent just as the front left wheel of a car is excellent. There is nothing wrong with it at all. But it is not sufficient. Today, there is a huge amount of experience using the hats method. The method now can be used in the field of academics with confidence as the results have been magnificent for the last one decade. It is no longer a matter of trying out something new or exotic. It is now a matter of catching up with a power thinking method that has been in use for fourteen years across all ages, cultures and abilities in academics. It has revolutionized the idea of developing thinking abilities among students of all ages.

It has come as an alternative to the argument system, which was never intended to be constructive or creative. With the Six Hats method the emphasis is on ‘what can be’ rather than on ‘what is’ and on how we design a way forward – not on who is right and who is wrong.

4.5 LET US SUM UP:

The unit describes the areas in which learner’s exhibit diversity. The knowledge of this diversity can be gained through proper diagnosis of the learners. The diagnosis will help the school provide meaningful and purposeful learning experiences so that they aid in the holistic development of the personality.

4.6 UNIT END EXERCISE:

1) Explain Ellis’s Theory of personality

2) Explain Berne’s Theory of personality

3) Explain Vedic concept of personality

4) Explain Buddhist concept of personality

5) Explain Guilford's Structure of Intellect

6) Explain Goleman's theory of Emotional Intelligence

7) Explain Gardner's Theory of Multiple Intelligence

8) Differentiate between Critical and Creative thinking.

9) Define thinking.

10) Explain the Creative methods with a suitable example.

11) Discuss the Six Thinking Hats propounded by E.De Bono.

12) How would a teacher use Edward De Bono's Six Thinking Hats method in a classroom to enhance the thinking ability of students? Illustrate.

13) Discuss the contribution of Edward De Bono's Six Thinking Hats method to education.

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5

EDUCATIONAL NEEDS OF DIFFERENTLY ABLED CHILDREN

Unit Structure

5.0 OBJECTIVES

After reading this unit you will be able to

- Explain the meaning of learner diversity
- Enumerate the characteristics of exceptional children
- Describe the educational requirements of exceptional children
- Explain the role of the teacher in dealing with exceptional children
- Explain the concept of Inclusive Education in the Indian context

5.1 INTRODUCTION

The interplay between heredity and environment has created this beautiful world which abounds in human diversity. Individuals differ from each other in their physical, intellectual, emotional and behavioral traits. This creates a confounding situation before a classroom teacher where he/she has to deal with students of different ability levels, emotional and attitudinal make-up and of varying physical characteristics within the given time frame to fulfill academic responsibilities. Catering to individual differences in the classroom thus proves to be the greatest challenge before the teacher A typical child in a classroom can either be a normal child with average capabilities or an exceptional or differently-abled one requiring more attention from the teacher.

5.2 CATERING TO INDIVIDUAL DIFFERENCES

Who is an exceptional child?

An exceptional child is the one whose performance deviates from the norm, either below or above, to such an extent that special educational programmes and intervention strategies had to be planned to fulfill their academic needs.

Types of Exceptional Children:

Students can be broadly classified to the following three categories:

a) Cognitively Exceptional Children

b) Physically Exceptional Children

c) Socio-Culturally Exceptional Children

A) COGNITIVELY EXCEPTIONAL CHILDREN

The children belonging to this category can be further subdivided in to the following types:

- The Gifted
- The Mentally Retarded
- Children With Learning Disabilities

Gifted Children:

Children possessing high intellectual level and special abilities and talents are regarded as gifted.

According to Guilford, ‘ the gifted are those students whose potential intellectual powers are at such a high ideational level in both productive and evaluative thinking that it can be reasonably assumed that they could be the future problem solvers, innovators of the culture if adequate educational experiences are provided.

Characteristics of Gifted Children:

- **Physical Characteristics:**

By and large, these children have superior physical abilities like-

1. Greater birth weight,
2. Early walk and talk,
3. Early puberty,
4. Superior motor ability, etc.

- **Intellectual Characteristics:**

1. High IQ,
2. Precocious,
3. Varied interests,
4. Higher scholastic performance,
5. Rich cognitive processes of abstract thinking, reasoning, generalizing, critical & reflective thinking and creativity.

- **Personality Characteristics:**
  1. Ambitious,
  2. Higher levels of motivation and enthusiasm,
  3. Impulsive,
  4. Confidence.

Identification of the Gifted:

- Parents, teachers and social workers can help in identifying gifted children at a very early date. Careful observation of the child in different settings and for a considerable amount of time has to be worked out for early detection of giftedness.

- General intelligence tests, creativity tests, word association tests, Achievement tests serve as useful tools.

- School records, report cards also provide valuable information on giftedness.

Education of the Gifted:

The two major approaches to teaching giftedness are acceleration and enrichment.

Acceleration: These programmes allow gifted students to move ahead at their own pace, even if this means jumping to higher grade levels.

Enrichment: These programmes allow the students to remain in the same grade but provide special programmes and special activities to cover the topics in greater detail and depth.

It is generally agreed that the education of the gifted pupils should emphasize the following objectives to cater to their giftedness.

Analytical perception

1. Methods of problem solving
2. Employing Analysis & Synthesis
3. Conceptual Thinking
4. Scientific Objectivity
5. Originality and creativity
6. Independent study habits
7. Encouragement of special interests

The Mentally Retarded Child:

The American Association of Mental Deficiency states that mental retardation exists when there is significantly subaverage general intellectual functioning existing concurrently with deficit in adaptive behaviour and is manifested during the developmental period.

This means that people classified as mentally retarded can range from those who can be trained to work and function with little special attention to those who are virtually untrainable and do not develop speech and the rest of the motor functions.

There are four levels of mental retardation. They are:

1. Mild Mental Retardation (IQ 50-70)

This is the largest group of people comprising of 80% retarded population. They are 'educable' and do not show the signs of brain pathology or other physical defects. Their retardation, therefore, is not identified, at times, even after reaching school, although their early development is often slower than the normal. It can become apparent only when the child starts lagging behind the peers in school work. With early detection, parental assistance and appropriate training, these students can reach a third to sixth grade educational level. Although they cannot carry out complex intellectual tasks, they are able to take up manual jobs and jobs involving inferior skills and function quite successfully and independently and become self supporting citizens.

Moderate Mental Retardation (IQ 35-49)

This group consists of about 12% of retarded population. These are 'trainable' and their retardation is evident early in their lives. They are slow to develop language skills and their motor development is also affected. Some of these students could be taught to read and write and

speak some broken language. Physically, they are clumsy and suffer from poor motor coordination.

1. Severe Mental Retardation(IQ 20 -34)

This is the group of 'dependent retarded' consisting of 7% of retarded population. These are the children with severe problems of speech retardation and sensory defects and motor handicaps are common.

4. Profound Mental Retardation (IQ under 20)

They belong to the category of 'life support mental retardation' consisting of 1% of the retarded population. Most of these are severely deficient in adaptive behaviours and unable to master even the simplest of tasks. Severe physical deformities along with convulsive seizures, autism, deafness and other problems are common. Such a person has a very short life expectancy.

Causes of Mental Retardation:
Biological Causes

1. In about 25 % to 35 % of the cases of mental retardation, there is a known biological cause. The most frequent being the presence of an extra chromosome causing Down's syndrome. The frequency of this disorder increases with the increasing age of the mother.

2. A birth complication like inadequate supply of oxygen to the brain is another major cause of biological mental retardation.

3. Many cases of mental retardation are classified as 'familial retardation' where there is no known biological cause, but there is a family history of retardation.

4. Cretinism is retardation due to endocrine imbalance like failed thyroid or degeneration of thyroid.

Infection & Toxic Agents:

Presence of carbon monoxide, syphilis or germ measles with mother can cause retardation in the fetus. Incompatibility between the blood types of the mother and the fetus, drugs taken by mother during pregnancy could result in mental retardation.

Prematurity and Trauma:

Babies weighing less than 1500 grams at birth, difficult labor, bleeding within the brain of the babies are some other causes.

Ionizing & Radiation:

Radiation may act directly on the fertilized ovum or may produce mutation of the sex cells of either or both parents, which may, in turn lead to defective offspring.

Malnutrition:

Protein deficiency in the mother's diet during the last five months or in the diet of the child during the first 10 months after birth can cause great harm to the child's brain.

Teaching the Mentally Retarded:

There are a number of areas, in which mentally retarded have specific difficulty, including attention span, memory, learning rate, ability to generalize, and conceptualization.

Providing a great deal of practice, making the child rehearses actively the learning material to be memorized, may improve child's retention considerably. Over learning is another useful strategy to deal with the problem. Finally, the teachers should realize that the curriculum goals and objectives should be adjusted to suit the needs of the special child. The emphasis should be on teaching the kind of skills that will best enable the child to manage him or herself independently in the society.

B) PHYSICALLY EXCEPTIONAL CHILDREN

The term physically exceptional has been used in literature in various ways: Physically disabled, crippled, orthopedically impaired, or otherwise health impaired. Physical handicaps are divided into two types: Orthopedically handicapped (OH) and Health impairments for the purpose of special education (Bigge and Sirvis, 1986). The legal definition of the term orthopedically handicapped is a severe, orthopedic impairment that adversely affects a child's educational performance. The term includes impairments caused by a congenital anomaly e.g., club foot, absence of some body organs, impairments caused by disease, e.g poliomyelitis, bone tuberculosis, and impairment from other causes e.g. cerebral palsy, amputations, and fractures or burns that cause contractures. The legal definition for other health impairments is having an acute condition that is manifested by severe communication and other developmental and educational problems, or having limited strength, vitality or alertness because of acute health problems e.g., heart condition, tuberculosis, rheumatic fever, nephritis, asthma, anemia, hemophilia, epilepsy, lead poisoning, leukemia or diabetes that adversely affects a child's educational performance.

However, there are certain neurological disorders which are not categorized as either crippling or a special health problem e.g. aphasia – a language disorder due to brain injury. Hence, from an educational point of

view, crippling and neurological impairments would include all children with non-sensory physical impairments whether they are accompanied by a neurological damage or not, and whether they resulted in chronic health conditions or not.

Basically non-sensory physical impairments may be classified as crippling and chronic health ailments. The cripples have muscular and skeletal deformities which are obvious. They may wear braces, prosthetics devices such as artificial limbs or may be moving with crutches or wheelchairs.

A teacher or educator is less interested in the physical aspects of disability but he is more concerned with the manner in which it will affect the child's functioning in a learning situation.

a. Children with muscular or neuromuscular handicaps which significantly limit their ability to get about, sit in the classroom, manipulate the materials.

b. Children with skeletal deformities which also affect movement, posture and use of hand in school work.

c. Children with temporary or chronic lack of strength, vitality or weakness.

The categorization of orthopedic disability according to extent and severity:

2. Mild -- <40%,

3. Moderate – 40% and above

4. Severe – 70% and above, and,

5. Profound – 100

Prevalence

It is estimated that physical handicaps occur to the tune of 2%. The most common physical impairments found in school are Cerebral palsy, Spina Bifida, and Muscular dystrophy. The National Sample Survey 1991 puts it at 8.93 9 million in India (orthopedic) out of 16.15 million of the physically handicapped in 80:20 rural-urban, and 60:40 male-female ratio. In 1981 physically disabled were 1.94% and 1.42% for rural and urban populations respectively. The corresponding figure in 1991 NSSO was 1.99% and 1.58% respectively.

Causes

The causes for physical handicap are many and varied. Brain damage, brain fever and brain anoxia lead to physical disability. Rh-

incompatibility, intoxication, viral infection for the expectant mother may also cause physical disability. Similarly, prolonged labor, lead poisoning, accidents may cause damage to the brain leading to neurological disorders. Polio, Burns and injuries are significant causes as per NSSO, 1991 for Indian society.

Identification

One or more of these disorders are manifested in the children who are physically exceptional:

1. Deformity in fingers, legs, hands, spine, neck.

2. Frequent pain in joints

3. Jerking movement in walking

4. Amputated limbs

5. Difficulty in sitting, standing, walking

6. Poor motor control

7. Shaky movements

8. Difficulty in picking, holding and putting things.

Characteristics

Physically handicapped students generally have average or above average intelligence. Dykes (1984-85) suggests 85% of health impaired and 35% of orthopedically handicapped children are served in special schools or classes. Often their needs vary. The greater needs of the physically handicapped children are in the areas of adaptive equipment. Often they require wheelchairs, crutches, head pointers, arm and leg braces. Technological gap has narrowed down the gap in providing adequate educational instruction to students who cannot speak, move or use their hands. Physically handicapped children are passive, less persistent, have shorter attention span, engage them in less exploration and display less motivation. They are more dependent on adults, and interact less with peers. Facilitating independence and building self esteem are the two requirements for the physically handicapped children.

The physically disabled have poor body image, high anxiety, and frustration. They are found to be quiet, conforming, tender minded and somewhat tense. Social relationships constitute a problem area for many crippled youngsters. Their capacity for frustration tolerance is lower than normal children.

Difficulties of orthopedically handicapped arise out of several factors. Essentially children with motor disabilities are not very different from normal boys and girls. Their handicap arises out of three factors:

a. Society's attitude towards them.

b. Child's interpretation of this reaction to his limitation.

c. Discrepancy between aspiration and achievement.

Because of neurological impairment and experimental impoverishment they do show perceptual difficulties.

Intelligence of the orthopedically handicapped children does not basically differ from those of normal except for cerebral palsy. The neuro-muscularly impaired children function 10 to 15 points between estimated intelligence. Children with cerebral palsy, muscular dystrophy, and hydrocephalic are included in the dull normal classification while other children with the orthopedic disability are within the normal range.

Educational Provisions

Orthopedically handicapped children do not need any special situation for schooling. They can be educated well in the regular school along with others. The regular classroom teacher can well handle such cases.

Integrated Education

Education of OH children has changed considerably over the past 50 years. Programs of children with orthopedic handicaps have broadened extensively to include the process of rehabilitation. This is studying the total child. Each staff member has to participate and show sensitivity and natural respect. Special educators need specific preparation for their team work role. The teacher's functions include (a) diagnosis of deprived experience and provision of what is essential (b) developmental guidance (c) coordination of habilitation programme, (d) promotion of integrated activities (e) maintenance of reality standards and discipline. Attention should be given both to individuals and groups in planning differential diagnosis. It means understanding and the study of all factors of the child's growth and his development. For example, if a child has IQ 60 and serious emotional problems due to family stress and pressure, it is not a simple case of past polio. In the total programme the vocational rehabilitation counselor also assumes major responsibility.

Partial integration is possible in special class especially if the unit is desirably located in a public school building.

The child's likelihood of success in regular classroom setting appears efficient when

a. the child is intellectually, socially and emotionally capable of participation with his peers,

b. the child can participate,

c. the child is not being denied therapy necessary for physical rehabilitation,

d. the curriculum is adapted to most of his needs,

e. the physical facilities of the school permit the child to hence access to important educational centers,

f. the teacher is willing to accept the child and prepared to move with one who deviates physically,

g. adequate physical assistance and special supervision is provided

h. periodic evaluation is included in the child's progress report,

What criteria should be used to place physically impaired children in the integrated school? The following criteria seem pertinent:

1. Average or above academic ability

2. Social and emotional ability

3. A desire to be integrated

4. Support of parents

5. Ability to communicate effectively

6. Effective management of contingency.

The Regular Teacher

For physical disabilities the regular teacher needs to make instructional adaptations so that the children communicate with teachers well. For Health Impairment he has to know the basic characteristics of disorders, medicine and their effects, precautionary measures, keeping a watch on day to day requirements and develop appropriate expectations so that children do not suffer from identification.

Three factors are responsible for deciding the teaching procedures of physically and/or neurologically impaired children namely; Task analysis, teaching towards developing independence, and use of computer instruction.

The type of content is dependent upon the degree of physical impairment. Yet certain areas are most essential.

a. Communication skills and language

b. Activities of daily living, or self care skills (eating, bathing etc.)

c. Community referenced instruction (crossing streets, using money, riding public transportation)

d. Advanced self care skills or home living skills (operating kitchen appliances etc.)

e. Vocational preparation, career awareness, works adjustment skills.

f. Continuity and generalization.

C) SOCIO-CULTURALLY EXCEPTIONAL CHILDREN

Educators categorize socio-culturally exceptional children somewhat arbitrarily into one or more of the following areas of deprivation: economic, racial, geographic, social, cultural, cognitive, and/or emotional. Historically one can identify the roots of this population in terms of their educational needs, but it was not until the mid 1960s that writers such as Riessman and Havighurst had their turns at defining the characteristics that constitute this deprived population. As indicated by Reissman (1962), the terms culturally deprived, educationally deprived, under privileged, and disadvantaged, lower class, and lower socio-economic group, could all be used interchangeably.

The disadvantaged children differ from the advantaged class in mainly six areas.

They are: self-concept, motivation, social behaviour, language, intellectual functioning and physical fitness.

Specific learning characteristics of the deprived or disadvantaged student might include many of the following;

(1) orientation towards physical and visual rather than to the oral;

(2) content-centered rather than introspective;

(3) problem-centered rather than abstract centered;

(4) inductive rather than deductive;

(5) spatial rather than temporal;

(6) slow, careful, patient, and persevering rather than quick, clever, facile and flexible;

(7) inclined to communicate through actions rather than words;

(8) deficient in auditory attention and interpretation skills;

(9) oriented toward concrete application of what is learned;

(10) short attention span;

(11) characteristic gaps in knowledge and learning;

(12) lacking experiences of receiving approval for success in tasks.

Meeting the needs of the disadvantaged child is a relatively new educational approach.

Causes

Cultural deprivation or disadvantage arise due to a complex set of conditions which create intellectual deficiency in a child. Some of these conditions are attributed to an unstimulating environment, lack of verbal interaction with adults, poor sensory experience, and other deleterious environmental factors generally associated with poverty, low social status, malnutrition, broken homes etc.

Behavioural Signs for Observation

The term 'disadvantaged' is used to indicate observable behaviours. They are-

a. Progressive decline in intellectual functioning in school.

c. Cumulative academic achievement deficits. Premature school termination and high dropout rate.

d. Reading and learning disabilities.

e. Poor language learning.

f. Inadequate social learning and observation in the absence of model,

g. Low attention span and distraction in learning.

h. Lack of proficiency in higher forms of cognitive learning and transfer.

i. Inability to classify and form logical concepts, incapacity to verbalize events and solutions.

j. Lack of analytic ability which is essential for learning.

k. Belief in external factors, i.e., luck, chance, fate etc. rather than their own self and activity.

l. Cannot delay gratification. Immediate tangible and non-contingent rewards are their needs.

m. A higher sense of avoidance for failure than striving for success.

n. Poor self concept, low achievement aspiration, and low need achievement including lack of desire for self actualization.

o. General behaviour lacks intrinsic motivation. Insecurity and anxiety are very obvious.

Assessment of Social Disadvantage

In order to identify social disadvantage the following scales and tests may be used:

1. Deprivation index – Whiteman and Deutsch (1968). This scale, even though developed in the USA yet is of relevance after appropriate adaptation.

2. Cultural Deprivation Index – Rath and Samant, (1975).

3. Prolonged Deprivation Scale – Misra and Tripathi (1977). This is most relevant and appropriate but needs shortening in terms of the length of the test. It relates to 15 areas of sociocultural experiences.

- Housing condition
- Home environment
- Economic Sufficiency
- Food and Nutrition
- Clothing
- Educational Experience
- Childhood Experiences
- Rearing Experiences
- Parental Characteristics
- Interaction with parents
- Motivational Characteristics
- Emotional Experiences
- Travel and Recreation
- Socio-cultural Experiences
- Miscellaneous

Characteristics of Disadvantaged Children

What are the characteristics of disadvantaged children? These children show poor academic performance and high drop-out rates, reading and other learning disabilities and have adjustment problems. They have lower grades, their health is poor, and they have deficiencies in the two most important skills, namely, reading and language, necessary for success in school. They have minimal training in disciplined group behaviour and educationally they are less ambitious. Children from impoverished environments are apt to have various linguistic disabilities.

They also show incapacity in cognitive processes such as : the ability to observe and stating sequences of events, perceiving cause and effect relationships, classifying concrete objects, attributing responsibility to self and in general have poor self concept. The combination of non-verbal orientation and an absence of conceptualization well account for their intellectual deficits and deficit in cognitive skills or in Piagetian terminology, formal logical thinking is absent in all such children or appear very late in the development. The consequences of the cognitive deficiencies are again complicated by their pattern of motivation and attitudes. Psychologists explain that these children have a feeling of alienation induced by family climate and experience combined with a debilitating low self concept. They tend to question their own worth, to fear being challenged, and to exhibit a desire to cling to the familiar. They have many feelings of guilt and shame. These children are wary of socialization and their trust in adults is limited. They make trigger-like responses and are hyperactive.

The lower achievement of disadvantaged children could be attributed to at least five causes: malnutrition, genetics, lack of stimulating early experience, social motivations and cultural values. In India, social and cultural disadvantage is not very clear cut. All low income group children are not necessarily at disadvantage. The high caste is supposed to have a culture superior to that of the low caste Harijan given the same low economic status. The cumulative effect of these widens the gap between Brahmins and Harijans. There are empirical findings which support the cultural effect of a high caste home.

Remedial measures

In order to reverse the ill effects of deprivation, certain remedial measures are recommended. They are:

a. Early modeling and imitation of desirable behaviour

b. Language enrichment programme and stimulation at home

c. Affective attention and acceptance

d. Providing initial success experience to build better motivation and striving for success.

e. Removal of discrimination attitudes on the part of teachers and other significant members of society

f. Humanistic approach to teaching the underprivileged in school

g. Instructional programmes may be geared to their needs and ability level

h. Giving responsibility, recognition, tangible rewards, positive remarks etc.

i. Exposure to sensitivity training, exposure to literature, discussion and group contacts, role playing, case conferences relating to their problems.

j. Presenting learning materials using images, aids, and providing adequate organizers and drill.

Compensatory education programmes have proved the validity of these recommendations.

Role of Regular Teacher

The following instructional strategies for educating the disadvantaged are suggested considering the objectives of instructions and their entering behaviour to an instructional situation. Basically, there is no difference in the learning potential between the normal and the disadvantaged group of students. But the teacher should monitor the rate, the sequence, the type of materials and presentation modes. Hence, the need for a few guidelines is obvious.

a. A continuous appraisal of progress and comprehensive measure of assessment-diagnosis via feedback should become a part of every teaching act and basis of planning the next learning experience.

b. If instruction is to be effective these students are to be simultaneously trained to achieve the three objectives: knowledge, skills and attitudes.

c. Since the students come to the school with cognitive deficits a special hour may be kept aside for remedial teaching language, training in how to increase some of their non-intellective characteristics, i.e. self-concept, level of aspiration, n-ach, sense of responsibility etc.

d. Learning of concepts and ideas may be sequenced before they are presented to the underprivileged group, using more concrete and life-like situations. Training for analytic thinking may also constitute a part of the instructional programme design.

e. The imposition of standardized expectations regarding performance should be replaced by more individualization in the rate of learning and exposure of varied materials. Instructions must be given how to pace performance according to their ability. The teacher has to ascertain the prerequisites before instructing them to move to the next step.

f. For educating the underprivileged, giving recognition, responsibility, tangible rewards, positive affective remarks encouragement have been found to be effective and are to be encouraged in schools. Affective interactions and developments to be supported in a school programme.

g. They also need to be acculturated through sensitivity training, exposure to literature, discussions and group contacts, role playing and case conferences.

h. Self-instructional materials may be used best to their advantage.

i. The culture specific curriculum relevant to their life, especially for the tribal population should be developed and used.

5.3 CONCEPT AND TYPES OF LEARNING DISABILITIES

Learning disability (LD) is a term used to denote a neurological handicap that interferes with a person's ability to receive, process, store, and retrieve information. LD creates a gap between a person's ability and performance caused by an alternation in the way information is processed. Repetition and drilling does not alter this processing, but presenting materials in a different way helps. Individuals with LD are generally of average or above average intelligence.

- LD can affect one's ability to read, write, speak or compute math, and can impede socialization skills.
- Early diagnosis and appropriate intervention and support are critical for the individual with LD.
- Because it is often a 'hidden handicap," LD is not easily recognized, accepted or considered serious.
- It is believed that LD never goes away, but can be compensated for.
- Attention deficits and hyperactivity are sometimes coupled with LD, but not always.
- LD is not the same as the following handicaps: mental retardation, autism, deafness, blindness, and behavioral disorders.

It is thought that up to 15 percent of any population anywhere contains learning disabled. Specific learning disabled (LD) persons find it difficult to succeed in conventional classrooms. Therefore, it is essential that all teachers, preschool through university, will have LD students in their classes, unrecognized, undetected and therefore considered to be the "dullards," the backbenchers.

LD is a neurological condition that is beyond the control of the individual. Such a student is more normal than different. There are degrees of LD – mild, moderate, and severe. It might go undiagnosed as late as secondary school, university, or even never at all. They younger the child when

diagnosed, greater is the possibility of remediation. When a student is older, it is coping strategies that need to be strengthened. **How it Affects the Students**

Learning disabilities affect the child from a variety of angles-but mostly, self-esteem and self-confidence. In the very early years the feedback comes from parents, but since learning at this stage is fairly non stressful, the occasions for failure are few. The situation dramatically changes when the child enters schools and encounters other children (who are not a brother, sister or a cousin), competition (in an alien atmosphere), and other adults (who are not parents). It is the latter which has a very significant and lifelong impact on all students. This involves not only the teaching of particular academic skills, but as importantly, the fostering of students' self-esteem, that is, to make them feel that they belong and are welcome in the school setting. This can be done in the classroom by providing them with responsibilities through which they perceive themselves as contributing and making a difference (e.g., distributing books to the students, helping younger children during recess, helping make charts for the class). Offering them opportunities to make choices and decisions and solve problems, communicating encouragement and positive feedback will also help the process. While these kinds of positive interventions are important for all students, they are particularly relevant for students who find learning problematic.

Negative experiences in the school, especially in terms of learning incapacity can leave long lasting scars of being demeaned, belittled, or accused of being disruptive as they struggled to understand what was being taught.

Behavior Problems

LD can present with hyperactivity and impulsive behavior with lack of reflective thought prior to action. These children have poor peer relationships and poor social judgments. They may behave inappropriately in different situations and fail to see consequences of their actions. They may be overly gullible, and easily led by peers. They show poor adjustment to environmental changes and excessive variation in mood and responsiveness.

Emotional Problems

- LDs often go unrecognized. Children may present with symptoms such as school refusal or agoraphobia, or develop somatic symptoms such as headaches and stomach-aches, especially on the school day they are expected to speak or read in front of the class.

- Undiagnosed and untreated, these problems increase till the child begins to dislike school, refuses to do homework, and perhaps develops oppositional defiant symptoms. Some children may become verbally abusive and physically provocative. Successful

intervention with these children requires the diagnosis and treatment of the learning and language problems. Behavioral and emotional problems are more likely to emerge as children mature and academic tasks become more difficult and peer interactions become more complex.

Environmental Causes

These could be poverty, inadequate housing, family dysfunction, and parental psychopathology or substance abuse, dysfunctional peers, too much television viewing, inadequate or improper schooling.

General Guidelines for Educators

- Students with LD may take much longer to learn and can also tire quickly. They have to try harder, which can be exhausting. Be aware that the pace of the normal class is likely to be too fast because they often need more to process language. Make a conscious effort not to speak too rapidly.

- Be prepared to learn from the parents. Interest, involve, and work closely with them. Use whatever works-home/schools agendas, face-to-face meetings, phone calls or emails.

Ensure that information concerning the student is passed on when the student is in transition from one teacher to another and from one year to another. Do not assume that this will be done automatically.

Suggested Strategies

- Encourage students to be aware of and to evaluate the strategies they use to study and to learn Study skills, like note taking and time organization, need to be actively taught.
- Provide structure. Lists of the day's routines and expected behaviors can be great help. Give plenty or warning when changes are made to the timetable, teacher or task.
- Teach how to ask questions. All students, especially the ones with LD, I need to feel comfortable with seeking assistance.

Break activities into small, sequential tasks. Give specific examples.

- Repeat, repeat, repeat – both old and new materials, in different ways.
- Provide the amount of structure and support that the students need.
- Do not expect the students to listen and write simultaneously.
- Mark positively- tick the good bits. Mark for content – not presentation or mark for presentation and not content.
- Do not use playtime to finish work.

- Reward any and all good behavior.
- Very important, seek opportunities to praise and build self-esteem

The three major types of LD are:

1. **Dyslexia:** A person has trouble understanding written words, sentences or paragraphs.
2. **Dysgraphia:** A person finds it hard to form letters or writes within a defined space.
3. **Dyscalculia:** A person has difficulty solving arithmetic problems and grasping math concepts.

1. DYSLEXIA

Dyslexia is a disorder manifested by difficulty in learning to read, despite conventional instruction, adequate intelligence and socio-cultural opportunity. It is dependent upon fundamental cognitive disabilities, which are frequently of constitutional origin.

Characteristics of Dyslexia

- Speech difficulties are common in children with dyslexia. Stuttering and lisping are quite common. Delayed spoken language is often an indicator of dyslexia.
- Spatial difficulties-leading to reversal of letters (B-d), words (saw, was) and sometimes even sentences and difficulty in scanning from left to right.
- Visual memory difficulties in recalling sequence of letters in words (spelling).
- Difficulties in visual and motor figure ground- resulting in illegible handwriting, difficulties in scanning lines and discrimination of letters.
- These characteristics appear more often in combination.

Apart from difficulties with phonological processing, dyslexia is also associated with differences in cognition and learning.

Language Problems

Dyslexic children have problems with reading, a lack of awareness of phonemes that make up words, difficulties with spelling, sequencing of letters in words, and difficulty with pronouncing words (may reverse sounds).

 Early warning signs are delay in speech, delay in learning the alphabet, numbers, days of the week, month, colors, shapes, and other basic information. They also have difficulties understanding subtleties of

language such as jokes or slang, concept words (forward/backward, near/far) etc. there may be mispronunciations, omission of sounds and immature vocabulary.

- Auditory and visual processing difficulties may also be present. Here children have difficulty distinguishing between words that sound alike (pig/big). There is trouble rhyming words, and in blending sounds into words. Visual processing difficulties may include inability to recognize letters, words, or other printed symbols quickly and accurately. For example, there may be confusion with b and d, or read for saw and on for no.

Motor Coordination

Motor coordination problems are common. These children may be clumsy or awkward. It may be difficult for them to write, draw, or copy with neatness and accuracy. There may be problems with fine motor skills such as tying shoes, buttoning, using scissors or learning to sew.

Diagnosis

Detailed history is most important in making a diagnosis of dyslexia. When dyslexia is suspected, a battery of standardized tests consisting of tests of reading, spelling, language, and cognitive ability must be carried out. Additional tests of academic achievement, e.g., math, language, or memory may be administered as part of a more comprehensive evaluation of academic, linguistic, and cognitive function. The diagnosis is made after careful consideration of the history, clinical observations, and testing data.

Strategies for helping the child with Dyslexia

- Teaching reading and writing simultaneously to enhance language comprehension through visual perception, auditory perception and tactile perception.
- Focusing on most basic perceptual associations that the child is familiar with.
- Teaching whole word instead of isolated letters to provide complete language experience
- Planning learning experiences that the child can perform successfully
- Constructing reading experiences that use the skills that the child has learned previously.

Emphasizing on over learning till it becomes automatic **Specific Teaching Strategies:**

- Dyslexics should be taught in a structured, logical step-by-step way, beginning with single-letter sound linked to letter names and letter shapes, working in stages through simple one-syllable words to complex multi syllable words.

- The teaching drills should be based on a multi-sensory technique. In other words, an all-around approach that utilizes the student's senses of sight and hearing, as well as involving writing down and reading back aloud what has been written-an- that is particularly successful with dyslexics.

- The association between single-letter name, sound, and shapes should be taught first, along with the knowledge that some of these letters are vowels, which will be needed in every word. Gradually, the complete range of spelling patterns and sentences is taught.

- The teacher should thoroughly understand the structure of the language and how it develops. Dyslexic students should be introduced by dictation to sentence formation in its simplest form.

- Asking the child to repeat sentences while dictating also helps to improve memory for sentences. More sophisticated sentences are introduced gradually.

- Dyslexic students have to be taught reading, and spelling in a scientific manner with every step distinctly clarified and presented in a comprehensible manner. In addition to specially tailored reading and writing tuition, specialist dyslexia therapy should also give help, when needed, with mathematics, directional confusion, telling the time and all the other typical problems for the dyslexic

- This drill is repeated with each set of new sound patterns. The association between single-letter name, sound, and shapes should be taught first, along with the knowledge that some of these letters are vowels, which will be needed in every word.

- Gradually, the complete range of spelling patterns is taught and sentences are taught. The teacher should thoroughly understand the structure of the language and how it develops. Dyslexic students should be introduced by dictation to sentence formation in its simplest form.

- Asking the child to repeat sentences while dictating also helps to improve memory for sentences. More sophisticated sentences are introduced gradually.

2. DYSGRAPHIA

A neurological-based writing disability in which a person has difficulty expressing thoughts on paper and with writing associated with unreadable penmanship and problems in gripping and manipulating a pencil.

The written form of language is the highest, the most complex form of communication. In the hierarchy of language skill, writing is the last to be learned. Prerequisite to writing is a foundation of previous learning and experiences in listening, speaking, and reading. Even though dysgraphia is difficult with handwriting, the other components of written expression-spelling and written expression which are impaired in children with learning disabilities need to be considered.

Common Signs of Dysgraphia:

- Bad or illegible handwriting
- Awkward or cramped pencil grip.
- Avoidance of tasks involving writing.
- Inconsistent in the way letters and words look.
- Difficulty in expressing ideas on paper.
- Inability to properly form letter
- Writing may be slow and labored.
- Difficulty keeping letters on the line. Inability to understand the relative sizes of letters.
- Crowding of letters within words.
- Poor spacing between words.
- Difficulty in reading written work even when the spelling is correct.

Strategies for helping the child with Dysgraphia

The teacher has to pay attention to the following

Handwriting Skills

- Has a good tripod grasp.
- Able to draw horizontal lines (left to right) and vertical lines (top to bottom).
- Able to draw a circle.
- Copies letters and words

Writing Letters

- Place a little green dot at the starting position for the letter stroke and a small red dot at the termination point. Arrow clues to indicate the direction of the stroke could also be provided.

- Teach the basic strokes for most letters sequentially. For example, teach the letter "t" as two separate strokes: and Eventually, encourage the child to join the basic strokes together.
- Teach letters with easier strokes first. The following letters are considered the least difficult for children to learn: c,i,l,o,t,v.
- Tape an alphabet chart to the child's desk.
- Use clean, lined paper for children with aligning and spacing difficulties.
- Teach children to "talk out" strokes in making specific letters. For example,
    - W - Slant down, slant up, slant down, slant up.
    - I – short line, dot.

Cursive Writing

Devise games for students to practice various cursive strokes. For example:

- Stringing beads.
- Making waves
- Making curly hair. Use dot-to-dot or dash-to-dash letters to informally assess readiness for cursive writing. Gradually fade out the dots or dashes, allowing the child to make the complete letter independently
- Teach letters with similar movement patterns sequentially. The following four groups contain similar strokes: (1) a,c,d,g,o; (2) b,h,f,k,l,e, (3) i,j,p,r,s,t,u,w; (4) m,n,v,x,y,z.
- Place a heavy (possibly weighted) bracelet or wristband on the wrist of a child who had difficulty keeping his wrist in the proper position on the dest.
- Use verbal cues in teaching cursive writing. Teach letters with similar strokes in sequence so that the child can more easily follow the cues. For example, use the "a" strokes in teaching the "g" strokes: "First come around like the 'a', then go down...."

Handwriting Activities for Left-handed Students

Observe whether the child uses the right positioning. The lefthander's writing should be slightly sloped to the left-tape the student's paper in the right positioning, if necessary. Seat the child in the left corner

of the classroom away from the aisle, if possible, to ensure movement space.

LD students usually encounter many different types of written language problems. They have difficulties in handwriting (formation, size and spacing irregularities, pressure marks and erasures), spelling and written expressions. General competencies required for each of these areas are listed below:

3. DYSCALCULIA

Dyscalculia is the type of learning disability resulting in difficulty in learning numerical and mathematical ideas and concepts. **Clinical Signs of Dyscalculia**

- Difficulty with common math processes such as addition, subtraction, multiplication.
- Difficulty with math concepts such as sequencing of numbers, and sequencing of rules required in mathematical problems.
- Poor retention and retrieval of math concepts.
- Inability to work with numbers or symbols.
- Inconsistency in understanding and application of math rules. Poor sense of direction and time, e.g., difficulty with reading maps, telling time, etc.
- Difficulty in applying rules in sports.
- Trouble keeping track of scores and players during card and board games.
- Inability to handle money transactions in day-to-day living.

Difficulties in Mathematics

- Shape discrimination-confusion in recognizing shapes may cause difficulty in recognizing numbers.
- Size discrimination-concepts like, big, small, long and short are very important for mastering abstract quantitative concepts like more, less, greater than, less than, etc. This may also lead to difficulties in estimating area, perimeter, etc., at a later stage.
- Classification-categorizing objects into sets is a very important concept for mastering math. Difficulties in this can also lead to difficulties in simple operations like counting.

- One-to-one correspondence- lack of understanding of this could cause problems even with counting. This may also lead to failure in understanding ordinal numbers.

- Auditory-visual integration- necessary to remember names of symbols (numbers, signs, etc.). Memory deficits could aggravate the problem.

- Place value-confusion in this area can lead to difficulties in addition (involving borrowing and carrying over), division and multiplication.

- Computation skills – in understanding commutative properties of addition/ multiplication and concepts that subtraction is an inverse operation of addition and division in an inverse operation of multiplication.

- Problem solving- difficulties in solving word problems due to problems in language, lack of analysis, and reasoning.

Spatial concepts- difficulty in making measurements of time, distance, etc.

Strategies for Intervention

1. Identifying the problem areas in math is the first step towards helping the child. Concreting the concepts, use of multi sensory approach, repeated drill and revision exercises once understanding of the concept is ensured, will help in consolidation and retention. Gradually increasing the difficulty level of the concepts, using examples from real life and weaving stories around mathematical concepts can be attempted to get the child involved in learning.

2. It should be kept in mind that each intervention strategy is a unique instructional design based on the kind of learning difficulty the child has and the nature of the mathematical concept itself. Hence, it implies a lot of creativity and imagination on the part of the teacher handling the difficulty.

As an illustration, Strategies for Intervention to clarify some of the mathematical concepts are discussed below.

1. Teaching pre-concepts, mathematical operations

1.Prepare a worksheet with missing math signs. Ask the students to fill them in.

2.Promote understanding of the terms longer and shorter by drawing lines of various lengths on the chalkboard and asking the students to make them longer or shorter.

3.Use number lines to develop vocabulary such as before, after, between, larger than, smaller than, and the same as. Permit students to refer to the number lines in answering questions (e.g., what number comes just before

7? What number comes just after 13? What number comes between 6 and 8?)

4. Give students a set of cards numbered from 1 to 10. Instruct them to turn up one card and ask whether that number comes before or after a number that you choose at random. Also, use more or less and smaller than or larger than for this activity.

5. Print operational signs on flash cards. Let the students practice with the cards every day. Add kinaesthetic clues by cutting the signs out of sandpaper and pasting them on the cards.

6. Provide color cues for operational signs to call attention to the signs. Also, draw circles or boxes around the signs to enable students to attend more closely to the signs. **2. Teaching Fractions-**

Not only children but many adults also have difficulty in understanding fractions. To understand fractions, we should be aware that:

- Fractions make sense only when viewed in relation to a whole number. They make no sense as independent entities.
- The understanding of the symbols of the fractions: denominator-the number of parts the whole is divided into; and the numerator – the number of parts of whole which are in consideration.

Materials and experiences should be provided to the children to master these basic facts.

- Fraction and equal sharing – give children a bag of marbles, sweets, etc., and ask them to share equally between 2,4,8 and 10 children and write the fractional equivalent.
- Fractions and shapes – draw and cut symmetrical shapes and ask children to fold into 1/4, 1/2, 1/8, etc.
- Fractions/lengths – estimating or measuring length of a long strip, its 1/4 , 1/2 , 1/8, etc. This activity could be done with capacity, weight, time, etc., for generalization.
- Charts could be drawn to illustrate the relationship of fractional parts to the whole.
- Gradually introduce assignments requiring to work with fractions without visual clues.
- Use the measurements in simple recipes to reinforce fractional components.

5.4 EMOTIONAL AND BEHAVIOURAL DISORDERS

There is no one single definition of emotional and behavioural disorder as this category of exceptional children covers a range of difficulties from very mild to extremely serious ones. The definition by Bower (1969) is closely related to the school situation. According to him, a psychological disorder is said to be present when the child emits behaviour that deviates from discretionary and relative social norm in that it occurs with a frequency or intensity that authoritative adults in the child's environment judge, under the circumstances, to be either too high or too low.

The two major groups here are:

i) Attention Deficit Disorder (ADD) & Attention Deficit Hyperactivity Disorder (ADHD)

ii) Disruptive Behaviour Disorder

ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

ADHD is a neurologically based disorder, characterized by developmentally abnormal degrees of inattention, impulsivity, and hyperactivity, ADHD often interferes with the child's ability to function with success academically, behaviorally or socially. Occasionally misdiagnosed as "emotionally disturbed" or "undisciplined," these children create havoc at home and school. ADHD causes highly inconsistent performance and output. Children with ADHD live in distraction and chaos all the time-bombarded with stimuli in every direction and unable to screen it out. It can be compared to listening to a lecture in a marriage hall. The child needs tremendous effort to focus on a task.

Intervention Strategies

Minor changes in the classroom environment and teaching methodology can go a long way in helping a child to cope with ADHD. Small changes in how the teacher approaches the child or what she/he expects from the child can turn a losing year into a winning one for the child.

Intervention strategy for Inattention

Seating:

1. In a quiet area far away from doors/windows.

2. Near the teacher (to improve listening) and preferably next to a role model

Intervention strategy for completion of Assignments:

1. Allow extra time to complete assignments.

2. Shorten the assignment time to coincide with time of attention; gradually lengthen the sessions.

3.Give assignments one at a time to avoid overload.

4. Students to stay on a task.

5. Give clear, concise instructions.

6. Written instructions along with oral instructions help, as children with ADHD have difficulty in recalling what they have heard.

7. Include elements in which self-reminder can also help to improve listening skills, e.g., "mustn't talk when listening."

Intervention strategy for Impulsiveness

1. Ignore minor, inappropriate behavior.

2. Attend positive behavior with praise. Social praise helps the child to develop good self-esteem and also increases the frequency of positive behavior.

3. Set up behavior contracts and encourage self-monitoring of behavior.

Intervention strategy for Motor activity

1. Allow the child to stand at time while working.

2. Set goals for maintenance of proper posture and encourage self-monitoring. Cueing also helps.

3. Provide opportunity for movement, i.e., running errands, distributing, and collecting books etc.

4. Provide short breaks.

5. Supervise during transition times

Organization/planning

1. Send weekly/daily progress reports home. Seek parental help in facilitating organization skills.

2. Supervise writing down homework.

3. Encourage and reward neatness rather than penalize sloppiness.

4. Help students set short-term goals.

5. Do not penalize for handwriting, if visual-motor difficulties are present.

SOCIALIZATION

Structure:

External order compensates for internal chaos. Establish routine especially at potential high-stress times like breaks, lunch times, games period and after-school hours. Visual and written instructions could be used as reminders.

Supervision:

During any activity, check periodically to make sure the child is progressing correctly. Deal with problems while they are still manageable. Rules should be placed in positive terms, i.e., instead of saying "Don't grab", say "Request if you want something". Be specific in direction. Instead of saying "Don't run around, "say "Please come back to your seat," etc.

Support

To ensure continued success, provide instructions on any changes needed next time and offer encouragement.

Children with ADHD possess a lot of desirable traits. A teacher should also focus on the positive traits and use them to facilitate the child to cope better. Some of these traits include the following:

1.Creative

2.Spontaneous

3.Energetic

4.Accepting and forgiving

5.Inquisitive and imaginative

6.Innovative

7.Resourceful

8.Gregarious

9.Resilient

Understanding and respecting differences and responding to children, based on their learning styles, open up a new vista for the child, in fact for all children and not only for children with special needs. Every child has the potential and motivation to learn. The teacher should realize this fact and plan teaching and evaluation strategies to suit the needs of the child.

DISRUPTIVE BEHAVIOR DISORDER

Disruptive behaviour disorders include four clusters of behaviour problems. They are:

1.Conduct Disorde

2.Personality Disorder

1.Immaturity

2.Socialized Delinquency

Behaviour disorders also can be described in terms of severity. Most behaviour disordered children have moderate problems that can be treated effectively in the regular classroom and at home. Severely disturbed children- often called psychotic, schizophrenic or autistic – require intensive programming, usually in a more restrictive setting.

Characteristics:

1. Many of them are 'slow learners' or 'mildly retarded' with a score of about 90 on an IQ test. Autistics are most of the time untestable.

2. Aggression and acting out often with little or no provocation are the most common characteristics. Such noxious behaviour includes disapproval of others, negativism, non-compliance, yelling, teasing, attacking self or others, whining etc.

3. Withdrawn behaviour and apparent lack of social skills displaying lack of sensory response, self stimulation, echolalic or psychotic speech, self-mutilating behaviour, tantrums and behaviour deficiencies.

Causes of Disruptive Behaviour Disorder:

1. Possible biological causes more evident in severely and profoundly disturbed children. Many autistic children show neuro-chemical imbalance and genetics often seem to play a role in childhood schizophrenia.

2. Psychological factors like parent-child relationship and interaction, undesirable school experiences, inappropriate expectations, cruelty from others, unfair treatment may result in disruptive behavioural disorders.

Identification and Assessment:

There is no reliable method for sure identification of emotional disturbance. Psychological tests and interviews have limited practical value.

1. While aggressive students stand out, withdrawn may go unnoticed. 2. Screening tests for identifying disturbed students are being developed.

3. Direct and continuous observation and measurement of specific problem behaviours, within the classroom, is becoming more and more popular. It is an assessment technique that indicates directly what intervention is needed.

Educational Strategies for Disruptive Behaviour Disorder:

1. Psychodynamic Approach- This approach relies on psychotherapy and creative projects for the child rather than academic remediation. Emotional disturbance is thought of as a psychopathological process.

2. Biological Approach- It suggests that the deviant behaviour is a physical disorder with genetic or medical causes implying treatment of emotional disturbance

3. Behavioural approach- This approach assumes that the child has learned disordered behaviour and has not learnt appropriate responses. To treat the problem, the teacher uses behaviour modification techniques.

4. Ecological Approach- This approach suggests the interaction of the child with the people around him and with social institutions. Treatment involves teaching the child to function within the family, school, neighborhood, and larger community.

5. Humanistic Approach- This approach suggests that the disturbed child is out of touch with his own feelings and cannot find self fulfillment in a traditional educational setting. Treatment takes place in an open, personalized setting, where the teacher serves as a resource or catalyst.

6. Self management technique where the teacher plays a very significant role by teaching the child self- control and or self-management skills coupled with social skills is a unique approach to deal with such disturbed children. It implies a combination of professional competencies and personal characteristics to be an effective teacher for these students.

5.5 INCLUSIVE EDUCATION

The traditional approaches to Special education of the exceptional children had many disadvantages like depletion of resources as a result of duplication of efforts, labeling and the minority status attached to this group of students damaging their self concept further and more importantly, leading to 'social isolation', there by defeating the very objective of special education.

MAINSTREAMING

Mainstreaming appeared as an alternative to traditional approaches to overcome the above mentioned disadvantages. Mainstreaming is an educational approach designed to end the segregation of exceptional children by keeping these children in the mainstream of the educational

system and providing them with a broad range of educational alternatives. According to Stephens and Blackhurt, “Mainstreaming is the education of the mildly handicapped children in the regular classroom. It is based on the philosophy equal opportunity that is implemented through individual planning to promote appropriate learning, achievement and social normalization.”

INTEGRATION

The very term 'integration' signifies the process of interaction of disabled children and normal children in the same educational setting. Integrated education is an educational programme in which exceptional children attend classes with normal children on either full time or part time basis. Such a combination may be taken as social integration or academic integration. It is a broader concept which includes ‘mainstreaming’. The difference between the two terms is quite subtle. In mainstreaming, the normal school is letting the exceptional child be part of it. In integration, the normal school is the rightful place for the exceptional child to be in, learn and grow. But still the onus of adapting to the school environment lies largely with the exceptional child.

INCLUSIVE EDUCATION

Inclusive education is concerned with removing all barriers to learning, and with participation of all learners vulnerable to exclusion and marginalization. It is a strategic approach designed to facilitate learning success for all children. It addresses the common goals of decreasing and overcoming all exclusion from the human right to education, at least at the elementary level, and enhancing access, participation and learning, and success in quality basic education for all. (Education for all 2000 Bulletin, UNESCO, No.32, 1998).

The main elements of inclusive education are:

- A human rights issue (“Education for ALL children, not almost all).
- Education of All in a School for All (disabled and non-disabled children learning together in regular schools: learning to know, learning to do, learning to be and learning to live together).
- Togetherness (enabling all to participate together in society from the beginning, contributing to social harmony and stimulating the building of relationships among individuals, groups and nations).
- Breaking barriers (familiarity and tolerance reduce fear, prejudices and rejection).

Inclusion can be realized by:

1. Removing physical barriers posed by stairs, doorways, toilets, water faucets, and other architectural aspects imperative to accessing facilities in the school.

2. Removing the barriers of the teaching system, by providing facilities for accessing information related to the curriculum, by the use of modern technology like computers using specialized software and by providing awareness, sensitivity and solutions for teachers.

3. Removing the barriers of the examination system by providing means of free and fair evaluation of the students' knowledge irrespective of his/her sensory/physical status.

4. Removing the barriers of attitude developed due to lack of awareness.

Thus, it is evident that inclusion encompasses the two concepts discussed earlier, namely, 'mainstreaming' and 'integration' and goes a step further by not only opening Its doors for ALL, but also with a promise to reinvent itself to accommodate them all with their special needs and requirements.

NEED AND IMPORTANCE OF INCLUSIVE EDUCATION IN THE INDIAN CONTEXT

India is a country with abundant human capital. This important human resource should be tended properly through education and training to engage it successfully in the nation building activity. But unfortunately more than half of our youths are out of the school system due to various reasons. This is in violation to the Human Rights issue which stresses upon upholding human dignity. The main goal of the Right to Education Act is to make education available to each child irrespective of his location, class, caste, religion, status and standing mental and physical limitations and other disadvantages the child may be suffering from. Investment in education to include all is the set goal before the country and as such, there are a number of initiatives taken in pursuance of this objective. They are as following:

National Initiatives

1. **The Indian Education Commission (1964-66):** The Indian Education Commission was the first statutory body to suggest that the education of handicapped children has to be organized not merely on humanitarian ground, but also on grounds of utility. The Commission observed that although the Indian Constitution had issued specific directives about compulsory education for all, including children with disabilities, very little had been done in this regard. The Commission also emphasized that the education of children with disabilities should be "an inseparable part of the general education system". At the time when the Commission made its recommendations there were less than 250 special schools in India. The commission felt that services for children with disabilities were extremely inadequate and recommended the adoption of a dual approach, namely, the provision of special as well as integrated education to improve the situation. The commission set the following targets to be achieved by 1986: education for about 15

percent of the blind, the deaf and orthopedically handicapped and 5 percent of the mentally retarded. The Commission also specifically emphasized the importance of integrated education in meeting this target as it is cost-effective and useful in developing mutual understanding between children with and without disabilities.

2. **Integrated education for Disabled Children (IEDC, 1974):** In 1974, the Ministry of Social Justice and Empowerment, Government of India, initiated the IEDC program to promote the integration of students with mild to moderate disabilities into regular schools. Children were to be provided financial support for books, stationery, school uniforms, transport, special equipment and aides. The state governments were provided 50 percent financial assistance to implement this program in regular schools. However, the program met with little success. A criticism of this program in the state of Maharashtra reported that the (a) non-availability of trained and experienced teachers; (b) lack of orientation among schools staff on the problems educational materials, were the major contributory factors for its failure. A lack of coordination among various departments to implement the scheme was also considered a major contributor for its failure. By 1979-80, only 1,881 children from 81 schools all over the country had benefited from this program. Due to the failure of the IEDC scheme, it was revised in 1992. Until 1990, the scheme was implemented in 14 states. These were Andaman and Nicobar, Bihar, Gujarat, Haryana, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Nagaland, Orissa, Rajasthan, Tamil Nadu and Uttar Pradesh. Kerala is the only state that has shown remarkable progress in implementing this scheme. In Kerala, the scheme has been implemented in 4,487 schools and 12,961 children have been served under this scheme.

3. **National Policy on Education (NPE, 1986-92):** In 1968, the Indian Government formulated the National Policy on Education for all government schools and articulated a need to integrate students with disabilities. Again in 1986, the National Policy on Education devoted a specific section to the education of students with disabilities. It emphasized that whenever feasible, the education of children with motor handicaps and other mild disabilities should be provided in regular schools. The National Policy also stressed that those children whose needs could not be met in regular schools were to be enrolled in special schools. Children who were already in special schools could be integrated into regular schools as soon as they acquired reasonable levels of daily living, communication and basic academic skill. It also emphasized the need to restructure primary teacher training programs to prepare teachers to deal with the special difficulties of children with disabilities.

4. **Project Integrated Education for the Disabled (PIED, 1987):** In 1987, the Ministry of Human Resource Development (MHRD) in

association with UNICEF and the National Council for Educational Research and Training (NCERT) undertook "Project Integrated Education for the Disabled" (PIED). The aim of the project was to strengthen the implementation of the IEDC scheme.

5. **District Primary Education Program (DPEP, 1994):** A centrally sponsored scheme, the District Primary Education Program aims to reduce the overall dropout rates of all students enrolled in primary classes, to raise their achievement levels and to provide primary education for all children, including children with disabilities. This is probably the largest program of the central government in terms of funding.

6. **The Persons with Disabilities Act (PWD Act, 1995):** A close examination of the national initiatives discussed so far indicates that although the Indian Government had made several attempts to implement integrated education programs, it lacked a firm commitment to promote integration. This was largely because the Indian Government has considered provision for children with disabilities to be a welfare issue rather than an educational imperative. The PWD Act proposed the provision of improved educational services, medical care, vocation training, employment, and social security for all persons with disabilities. The Act further stated that whenever possible, students with disabilities should be educated in regular school settings.

Challenges ahead for Inclusion

The above mentioned policy statements made under different commissions highlight the importance the government attaches to 'education' and then 'education for all'.

The current practice of focusing solely on the 3Rs approach has led to education being viewed not as a process, but as a product-the tangible reward consisting of a report, marks sheet, or degree at the end. When children fail to learn in school it is only too tempting to perceive something wrong within them. Educational activity is one of the many social entities that cannot be examined in isolation. Schooling interconnects with a more extensive and complex reality, reflecting continual changes and transformations with unpredictable outcomes. The character of school activity is not only a mirror of aspects of contemporary modes of production, but also the dominant economic priorities and political activities in society. Many have voiced fears that within this climate it is unlikely that schools will give priority to inclusive values and principles.

How can the Schools Respond?

Recognition and respect of all children have to be at the forefront while planning schools if inequalities are to be tackled. Maria Montessori, an educator far ahead of her time, in one of her lectures in India had said:

“the world of education is like an island where people, cut-off from the world , are prepared for life by exclusion”. For inclusion to move from mere rhetoric, the disadvantaged and marginalized groups of students must not only have access to opportunities and share the same space, but also like their peers, must share the commonwealth of the school and its culture. Inclusion means inviting those who have been historically locked out to ”come in”. Schools have to change from mere “teaching shops' ' to inculcating a broader change in their social climate and the way “differences” and “difficulty” is conceptualized in order to foster a “just society”. Responses to differences vary amongst communities and indeed within communities come. So, what is equality? “Equality” “sameness” and “difference” do not lie on a continuum, but are the three corners of a triangle. The notion of “equality in difference” is then to treat people as equals but not necessarily the same way. Therefore, it is imperative that schools must recognize a continuum of diverse needs amongst all children and utilize all its available resources to make appropriate provisions to meet their needs. Inclusion does not necessitate denying differences amongst people, rather, every civilized nation must strive to reduce inequalities which arise from its own structure. Ideal inclusion exists when schools work towards reducing inequalities, which arise from birth or circumstances, rather than exaggerate them. This notion of ideal inclusion therefore does not set boundaries around particular kinds of supposed disabilities. Rather, it provides a framework within which all children, regardless of ability, gender, language, ethnic or cultural origin are accepted equally at school. Ideal inclusion thus proposes a far broader yet more distinct meaning, moving from what is called an “obsession with individual learning difficulties,” to an agenda of finding solutions.

Ideal Inclusion: Building Bridges

This emphasis of meeting the challenge of the ideal school inclusion will result in making educational and social sense to all those students who drop out of schools, repeat classes, live on the streets, come from disadvantaged homes or remote tribal areas, are members of ethnic linguistic minorities, child labourers or face gender discrimination. This involves a serious commitment to the task of identifying, challenging, and contributing to the removal of education systems as they are designed today-based on homogenous delivery rather than diversity. Removing exclusion in and from education is part of the process of reducing exclusion in society. Constantly challenging inequalities of power and recognizing and removing the oppression faced by a large number of excluded children can only realize this. Mahatma Gandhi had advised many decades ago that education must become co-existent with life. Education, as it is conceived today, is estranged from social life. Interestingly, the imperative to address the issue of inclusion has been spearheaded by the need to address the value of those students, who were believed to have the least worth for many centuries.

5.7 LET US SUM UP

To quote Charles Darwin:" it is not the strongest of species that survive, not the most intelligent, but the one most responsive to change". Education must therefore reinvent the reconstruct itself so that to be "built to last" is actually "built to change." The goal of developing schools as caring communities for all students may seem a distant dream; but then are not the fantasies of yesterday, the realization of today!

5.7 UNIT END EXERCISE

1. Whom do we consider as exceptional children? How would you classify them?
2. Describe different groups of cognitively exceptional children. Explain the strategies before the class room teacher to deal with them.
3. Explain the characteristics of the physically exceptional children. Discuss the problems faced by this student group.
4. "Socio-culturally disadvantaged children need special attention and educational input." Discuss.
5. What is a learning disability? How do you deal with a dyslexic child?
6. What do you understand about the terms 'dysgraphia' and 'dyscalculia'? Describe any two activities that you can plan for helping out these students.
7. Discuss in detail ADHD and remedial measure the teacher can plan to deal with these students.
8. Differentiate between 'mainstreaming; 'Integration' and 'Inclusion'.
9. Elaborate the need for Inclusive Education in the Indian context.

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6

TEACHING FOR THINKING AND SELF-DEVELOPMENT

Unit Structures

6.0 OBJECTIVES

After reading this you will be able to,

- Explain Hilda Taba's Inductive thinking model of teaching
- Explain William Gordan's Synectics model of teaching
- Define term metacognition
- Discuss the strategies of development of metacognition
- Explain theories of self perception of various psychologists.

6.1 INTRODUCTION

Teaching is engaging learners in learning; it consists of involving learners in the active construction of knowledge. A teacher's role is to make judgments about how best to help their students learn in the environments in which they teach. It is the teacher who simplifies the complex and makes the abstract concept available to them. Academic achievement is not the sole purpose of teaching. Teachers are responsible for nurturing thoughtful, resourceful and informed individuals. This chapter deals with a repertoire of strategies developed to guide teachers towards acquisition of instructional objectives in the classroom and other settings.

6.2 MODELS OF TEACHING

A model of teaching is a plan or pattern that can be used to shape curriculums, to design instructional materials and to guide instruction in the classroom. Some definition of models of teaching is as follows:

Paul Eggan and others: "Teaching models are prescriptive teaching strategies designed to accomplish particular teaching goals."

Joyce and Weil: "Teaching models are just instructional designs. They describe the process of specifying and producing particular environmental situations which *cause* the student to interact in such a way that specific change occurs in his behaviour."

Fundamental Elements of Models of Teaching

- **Focus:** The Central aspect of teaching…it includes the objectives
- **Syntax:** It is the presentation aspect - description of the model in action
- **Social system:** It outlines the relationship between the student and teacher. It describes the role of the teacher and student
- **Principles of reaction:** It explains the reaction of the teacher to the response of students
- **Support system:** It means the facilities available to the teachers and students to implement strategies
- **Effects:** It means the achievement of goals. The models of teaching have two types of effects on the students viz. Instructional effects and Nurturant effects

Types of teaching models: Models of teaching are classified into four types depending upon the targeted outcome of the model.

1. **Information Processing Models:** Refers to the ways people handle stimuli from the environment, organize data, sense problems, generate concepts and solutions to problems, and employ verbal and non-verbal symbols. It is more concerned with intellectual growth rather than the social and emotional development of the individual.

   Some examples of Information Processing Model are Inductive Thinking Model by Hilda Taba, Inquiry Training Model by Richard Suchman, Concept Attainment Model by Jerome Bruner, and Advance Organizer Model by David Ausubel.

2. **Social Interaction Model:** These models of teaching are concerned with the attainment of the social goals belonging to the

affective domain. It gives priority for improvement of democratic processes and the improvement of the society by the improvement of the individual's ability.

Some examples of Social Interaction Model are Role Playing Model by Fannie Shaftel and George Shaftel, Social Simulation Model by Sarene Borockm, Group Investigating Model by Herbert Thelen and John Dewey, Classroom Meeting Model by William Glaser.

3. **Personal Development Models:** These models of teaching are concerned with the realization of the instructional goals belonging to the affective domain. They emphasize the process by which individuals can establish productive relationships with their environment and design their unique individuality for realizing their personal goal.

   Some examples of Personal Development Model are Non-Directive Model by Carl Rogers, Awareness Training Model by Fritz Pearls, Synectics Model by William Gordan, Conceptual System Model by David Hunt.

4. **Behaviour Modification Model:** They are related to behaviour modification theories. They have evolved from the attempts to develop efficient systems or sequencing learning tasks and shaping the behaviour through management of the reinforcement contingencies. Operant conditioning has given birth to most of the models belonging to this family.

   Some examples of Behaviour Modification Model are Mastery Learning by Benjamin Bloom and James Block, Direct Instruction by Tom Good, Jere Borphy, Carl Gereiter, Ziggy Engleman and Wes Becker, Simulation by Carl Smith, Mary Smith.

6.2.1 TABA's INDUCTIVE THINKING MODEL

The Inductive Thinking Model was developed by Hilda Taba, a curriculum theorist. She developed this model in her experimental studies conducted in the Central Costa School. She popularized the term 'Teaching strategy'. She prepared the entire social studies curriculum on the line of inductive thinking.

Taba's Inductive processing model is called information processing model because it helps the learners to develop the methods of processing information from the environment. It is more concerned with the intellectual rather than the emotional or social development of the learner. Moreover, it helps in the development of logical thinking. Hilda Taba developed a series of models to help students learn to reason inductively.

Meaning of Inductive Thinking Model:

1. Inductive means to proceed from particular to general, from examples to principles, from empirical data to generalization. Hence by Inductive thinking model of teaching we literally mean teaching in which students give (are given) particular examples which lead to formation of generation or concepts.

2. It is a teaching model for collection or/ and manipulations of data.

3. It is based on thinking. Skills should be taught using specific teaching strategies designed for those teaching skills. The model uses these teaching skills in a sequence, i.e. in correct that one thinking skill is based on the other.

4. Inductive thinking model of teaching uses three teaching strategies namely concept formation, interpretation of data and application of principles to induce inductive thinking.

Basic Assumptions (Postulates or Rationale) of the Model:

The Model has been developed on the basis of some postulates about the thinking process. Taba (1967) believes

1. Thinking can be taught.

2. Thinking is an active transaction between individuals and data. Students understand the concepts. When they organize facts, relate facts to each other (form relationship) , generalize, infer, hypothesize, predict and explain phenomena not known (taught) already.

3. Thinking process evolves a lawful sequence. Each thing is built on the previous one. To master certain skills, certain earlier ones must be mastered first. This sequence cannot be reversed.

The word 'Data' in assumption (2) Refers to classroom setting and instructional material. The object of study, apparatus, diagrams, specimens, and even historical monuments, the whole animal kingdom and vegetable kingdom are all data in this context. Thinking is generalized when the learner performs cognitive operations by organizing facts into cognitive systems, relating different points of data and making hypotheses, generalizations and inferences, and by explaining unknown phenomena. A teacher can assist the learning of the thinking process by stimulating the Students to perform complex mental processes and by offering progressively less direct support. This model provides the backbone of the social studies curriculum.

Three teaching Strategies (Steps or Stages):

Following the first assumption (i.e., thinking can be taught) Taba developed three strategies to include the three tasks of teaching skills.

Each task represents a stage in the inductive thinking process. These stages (Strategies) of the inductive thinking process are: (i) Concept formation. (ii) Interpretation of data and (iii) Application of principles.

1. **Concept formation:** This stage involves three mental processes or activities:

   (i) **Identification:** The teachers should ask the students to identify and enumerate the items that are relevant to a problem.

   (ii) **Grouping:** The teacher should ask the students to group these items according to some basis of similarity.

   (iii) **Developing:** After identifying and grouping, the teacher should ask students for developing suitable categories and labeling the groups (categories).

To engage students, Taba associated these operations with corresponding activities, which form the basis of the teaching model. Teaching moves in the form of questions. These elicited questions are matched to particular types of activity. For example :

Question	**Matched activity**
1. What did you see?	1. It induces the students to enumerate a list.
2. What belongs together?	2. It causes students to group the listed things.
3. What would all these groups be?	3. It induces students to develop labels or categories.

Each overt activity elicited by the teaching strategy reflects mental operations that are covert.

2. **Interpretation of data:** This second strategy also works on teachers eliciting questions. It also consists of three mental operation:

   (i) **Identifying relationship (Differentiation):** The teacher's questions lead students to identify certain aspects of selected data. In other words, these questions enable the students to identify or differentiate among the categories.

   (ii) **Explaining relationship:** Students are to explain items of identified information relating the points to each other. Here the teacher asks questions concerning causes and efforts.

(iii) **Generalizing:** It means the teacher should let the students go beyond the given data, generalize and to arrive at some conclusions based on inferences about them.

These mental operations give rise to activities of strategies by way of translating these operations into overt activities.

3. **Application of principles**: This stage includes:

   (i) Analyzing the nature of problems.

   (ii) Using the relevant knowledge and determining causal links leading to prediction or hypothesis and explaining the hypothesis.

   (iii) Using logical principles to determine necessary and sufficient conditions and verifying the hypothesis.

All these stages have been explained under syntax.

Principles of Inductive Thinking Model:

1. **Principle of identifying other items:** When a category is given, identify other items also. Double identification is allowed, i.e., an item may be placed in two categories if necessary.

2. **Principle of elimination:** When one category is of different order from the other, it sometimes can be eliminated once the other categories are established. Then items of the eliminated category can be written under the other category.

4. **Principle of clarification:** When the meaning of category is not clear, clarification should be sought from students. Teacher should not explain what he means. Also, the teacher should not name items which he thinks belong to the category.

5. **Principle of not pressing final decision:** In many cases, it is not necessary to press for a final decision, since the model is based on the process rather than the content. An open procedure will encourage students to offer items which are too difficult to deal with for the time being. Postpone it.

6. **Principle of mental operation:** The model has overt activities and each over activity is linked to covert (hidden) mental operation.

7. Principle of reaction.

8. **Principle of limits:** The inferences must be within the limits of the data.

Inductive Thinking Model in terms of Fundamental Elements:

1. **Focus:** The main focus of the model is to develop the mental abilities with special emphasis on concept formation. This involves cognitive tasks in concept formation.

2. **Syntax:** Teaching is organized in nine phases. The first three phases are concerned with concept formation by involving enumerating, grouping and labeling categories. The second three are related to an interpretation of data by identifying relationships, explaining relationships and drawing inferences. The last three phases are concerned with an application of principles by hypothesizing, explaining hypothesizing and verifying the hypothesizing.

All these three stages and elaborating steps are briefly given as under:

(i) **Identification and enumeration of items of data which are relevant to the problem:** In a typical example presented by Eggen and his associates (1979), teaching a group of students about Animal Kingdom, starts with exposing them to a zoo. The teacher takes them around and asks them to take note of what they see. Returning back to the classroom, the teacher makes an exhaustive list of animals with the help of students and writes the same on the black-board.

(ii) **Grouping these items:** At this stage, the teacher puts a direct question, "What belongs together?" The animals are grouped into classes on any criteria of classification. The animals such as cow, horse, dog, cat, goat group together and lion, leopard, deer, form another group. The grouping can be done in the form of a label.

(iii) **Developing category labels for the group:** At this stage, the teacher asks what these groups would be called. Difficult groups are ascribed different labels. In the above example, one group of animals may be termed as pet animals, other wild animals. For other different classes of animals, the terms could be birds, reptiles and so on.

(iv) **Identifying dimensions and relations:** The activities of this stage will have coverage around a question "What do you notice, see and find?" In the realm of the present example, the listed groups are studies for such dimensions as food, habitation and environment etc. and the observations are presented in the table. Lions and leopards live on meat and cows on grass.

(v) **Explaining dimensions and their relationship:** The central question at this stage is, 'Why did so and so happen?' The answer to this question will generate relationships and explanations.

(vi) **Making inferences:** It refers to the concluding statements about the relationships of the items, for example, animals which need an environment similar to that of human habitation are generally pet animals.

(vii) **Predicting consequences and forming hypotheses:** Here the question is asked to the students, "What would happen?" For example, what would happen to wild animals in a forest if it is converted into farmland? The discussion around this question will lead to conclusions and generalizations about the items of data.

(viii) **Explaining and or supporting predictions and hypotheses:** The discussion at this stage would be initiated by questions like "Why do you think this would happen?" The explanations in support of the predictions are extended. For example, a conclusion that "Wild animals would migrate to dense forest if their habitation is converted into farms" will be supported by some explanations, such as, "Farms do not provide the food and climate desirable for their survival."

(ix) **Verify the predictions:** The last step is concerned with the verification of the predictions and justification of explanation provided at the previous step. For example, in situations where forests are converted into farmlands, it has to check whether wild animals have actually migrated to denser forest or they have resorted to wander around the habitations.

3) Social system:

(i) Conducive environment: In the nine stages. The class-room environment is conducive to learning and cooperative.

(ii) Teacher as initiator: The teacher is usually the initiator of information.

(iii) Teacher as controller: Though co-operative, the teacher is in a controlling position. He decides the sequence of activities in advance. He manages the activities of the class. The teaching activities are arranged in a logical sequence. The instructional process of the model is moderately structured.

(iv) Pupils' activities: The students are actually involved in the activities. A good deal of freedom should be given for activities of the students. There is progress in activities under the democratic set up of control.

4) Principles of reaction: Taba provides in her teaching model clear and definite guidelines for teaching and responding to different situations within each phase. These guidelines are as under:

(i) Optimum order: The teacher matches his moves to a specific cognitive task within each category. He has to be sure that these cognitive tasks occur in optimum order.

(ii) Right time: Each task should occur at the right time. The teacher should not ask a question to the student who has not enumerated or listed the task.

(iii) Cognitive functions: Through the process of questioning. The teacher should establish cognitive functions.

(iv) Comprehended by all: The teacher must ensure that each operation (listing activity) is completed and understood by all before proceeding to grouping questions.

(v) Sense readiness: The teacher should sense the students' readiness for new experiences. He has to see carefully how far the students are ready to learn new things.

(vi) Main mental task: The primary task of the teacher is to see how students are processing (receiving) information and then to use eliciting questions.

5) Support system: Taba developed this model to build teaching strategies in social studies, but these strategies can also be used in subject areas where data are available in abundance, such as Botany, Zoology, Geography and Sociology. For such subjects outside nature, animal kingdom, social institutions and economic establishments provide support for studies in the relevant system. The main function of the teacher is to help students to process the data in more complex ways and to increase the general capacity of their systems for processing data.

6). Industrial and nurturant efforts: The main purpose of the model is to teach for concept formation. It very likely nurtures logical reasoning, comprehension, awareness of the environment and classification of concepts.

7) Application: The model has been successfully used for a wide range of subjects like Social studies, Bio-science, Geography, Sociology and Languages especially English. The model is especially applicable for young children for teaching concepts and for teaching inductive thinking processes. The learning experiences are the basis of information to arrange the content in an effective sequence. The first three phases are useful in dealing with elementary classes and the last three phases are useful for higher education, especially for science and language curriculum.

6.2.2 SYNECTICS MODEL

The synectics model of teaching owes its origin to William J.J. Gordon (1968). Initially, this method was used to develop creativity groups within industrial organizations. Later on, he adopted it for developing creativity among school children. For designing and employing synectics as a model of teaching or procedure of training. Gordon made use of certain basic assumptions regarding the nature, process and development of creativity.

Basic assumptions: The synectics model has an altogether new set of beliefs quite different from the conventional ideas about the nature, process and development of creativity. Its main ideas and assumptions are summarized as the following:

1) Creativity is not an exceptional and extraordinary thing necessarily associated with the development of great works of art or music or new inventions in one or the other field. Creative work and process are very much linked with our everyday activities. We can very much use and develop creative expression in our daily work and leisure lives.

2) Creative process is not at all mysterious. It can be described and it is possible to help the children develop their creativity through teaching or training.

3) The process and the product of creativity exhibit uniformity in all the fields or spheres of life. The arts, science, business and agriculture and craft areas are all characterized by the same underlying intellectual process. The inventions in science are, therefore, not at all different from the creation in arts from the viewpoints of creativity.

4) The notion that creativity is an intensely personal experience is erroneous. Creativity whether demonstrated by the individual on a personal basis or along with members of a group is one and the same thing. Individuals and groups generate ideas and products very much in the same fashion. Therefore, It is possible or rather advisable to teach or train the children in a group for the development of creativity.

5) Creative capacity of both individuals and groups can be well enhanced by the conscious analysis of the creative process and thereby employing appropriate means and material for its development.

6) Usually, when we are forced with a problem or asked to perform our task, we adopt old ways of solving the problem or doing a task However, sometimes it does not work. It is here that we can make use of synectics - an interesting and delightful approach leading to new ideas and innovations.

7) Creativity is essentially an emotional process, one that requires elements of irrationality and emotion to enhance intellectual processes. So, in providing training for the development of creativity we must lay more emphasis on the emotional component of the behaviour than the intellectual.

8) The individual and the group can increase their creativity by understanding and consciously controlling the elements of their emotional irrationality.

9) Metaphoric activity involving the use of analogy and compressed conflict may help in providing valuable structure for the development of imagination and insight into everyday activities for making creativity a conscious process and controlled exercise.

DESCRIPTION

Built up on the above pillars of basic ideas and assumptions, the structure and functioning of the synectics model may be explained in forms of the fundamental elements of a model as outlined in the following way.

Focus: Synectics model of teaching aims to increase the creativity of both of the individuals and the groups in all areas of the curriculum, the science and the arts.

Syntax: The synectics model makes use of two types of strategies for its functioning: (i) creating something new, and (ii) making the strange familiar. The first strategy aims to help the learners see familiar things in unfamiliar ways by using the analogy device to create conceptual distance. As pointed out by Joyce and Weil (1997:262) there are the following six phases in the operation of this strategy.

Phase One-Description of the present condition: Here the students are made to describe the situation, and present the condition or problem as seen by them at the moment.

Phase Two-Direct analogy: In this phase, the students are made to suggest direct analogies, select one, and explore/ describe it further. By direct analogy, we mean a simple comparison of two objects or concepts. For the real topic or problem situation, the students may be asked to name the similar topic, concept or situation (not necessary to be identical in all aspects) as a matter of simple and direct analogy and then select a particular analogy for describing it further. For example, to provide an analogy to a motorcycle, one can say it is like an enraged forest lion, a steel horse, and a flying bird.

Phase Three-Personal analogy: In this phase, the students themselves become the analogy they selected in phase two. For example, describing the concept of motorcycle the students may themselves consider them as a

motorcycle, or an enraged forest lion and steel horse, etc. The teacher may ask them to pretend to be a motorcycle or lion and horse, etc.

Phase Four- Compressed conflict: Here the students are required to take their descriptions from phases two or three, suggest several compressed conflicts and choose one. By the metaphorical form of compressed conflict we mean a two-word description of an object in which the words seem to be opposites or contradictory to each other, e.g. how is your motorcycle timid or brave? How does it smile and frown? Etc.

Phase Five-Direct analogy: In this phase, the students are made to generate and select another direct analogy based on the compressed conflict.

Phase Six-Re-examination of the original task: Here, the teacher tries to persuade the students in moving back to the original task or problems and use the last analogy and/ or the entire synectics experience.

The second strategy, i.e., making the stranger familiar, aims to help the students in their understanding and internationalization of substantially new or difficult subject matter. It involves seven phases:

Phase One-Substantive input: In this phase, some information on a new topic is provided by the teacher either verbally or through the presentation of a short substantive paragraph. For example, he may provide meaningful information on the topic "Human brains and its functioning".

Phase Two-Direct analogy: Here, attempts are made by the teacher to suggest some direct analogy and then ask students to describe the analogy. For example, he may provide a direct analogy to the human brain by citing the example of telephone exchange control rooms.

Phase Three-Personal analogy: In this phase, the students are persuaded to become the objects of the analogy by themselves. For example, in their attempts to get acquainted with the concept of democracy they may be persuaded to compare it with the functioning of their own body system or with the functioning of their home, school, etc.

Phase Four-Comparing analogy: Here the students are required to identify and explain the points of similarity the new material and the direct analogy. For example, they may be asked to locate similarities between the functioning of the human brain and the telephone exchange control room.

Phase Five-Explaining differences: In this phase, the students are persuaded to point out the dissimilarities and then tell where the analogy does not fit, e.g. what are the different points of differences where human brain differs with the structure and functioning of a telephone exchange system?, and so on.

***Phase Six-Exploration**:* Here, the students are persuaded to re-explore the original topic in their own ways. They may take the help of direct and personal analogy besides other types of self-thinking, understanding and discussion in the group.

***Phase seven-Generation analogy**:* In this phase, the students try to provide their own direct analogy and explore various similarities and differences for understanding and grasping the meaning and nature of an unfamiliar or new topic.

Both these two strategies are aimed to provide training opportunities for the development of creativity among the children. Which one of these two strategies should be adopted and helped in creating something new or to explore the unfamiliar?

The social system: The synectics model is regarded as a moderately structured model as, here, the teacher is supposed to initiate the sequence and guide the students in making use of this model. He is also to help the students in intellectualizing their mental process, inventing new ways of conceptualizing and solving the problems through the help of synectics exercises-analogies and compressed conflicts, etc. However, the students need freedom in discovering ways and means or discovering something new, getting familiarized with unfamiliar concepts. There stands a quite friendly and wholesome environment for the close cooperation between the teacher and the students. The students are provided full opportunity and cooperation for the proper understanding and controlling of the element of irrationality in creating or exploring something new.

Principles of reaction: The model requires the following types of reactions and responses on the part of teachers:

1) A proper knowledge about the experience and the learning background of their students regarding the topic or problems in hand.

2) Discourage the students in making use of the old ways of doing things or the set channels of thinking and help in introducing elements of irrationality and new ways of doing things for creating something new or getting familiarized with the unfamiliar.

3) Learn to accept the responses of the students no matter how unusual and bizarre they may be for ensuring that they feel no external judgements about their creative expression.

4) Encourage and sometimes directly or indirectly help the students in inculcating necessary psychological states helpful in generating creative responses.

5) The students should be given proper time and opportunities for developing fresh and new perspectives on problems. Here,

premature analysis should always be avoided for developing the desirable habit of problem solving among the students.

6) The motivation provided to the students is almost internal. Hence, they must be given the opportunity to enjoy the fruits of their creative expression.

Support system: The synectics model requires the following types of support for its proper employment.

1) Service of the competent teachers well versed in the functioning and use of this model.

2) A smaller cohesive and cooperative group for the development of creativity of the children in a democratic group learning situation.

3) Desirable help and guidance from the teacher for introducing elements of irrationality in inventing something new or getting familiarized with the unfamiliar.

4) The needed facilities in the form of laboratory, workshop, library readings, outings, audio-visual equipment, etc. for making the task of problem solving concrete and to provide opportunities for having creative expression in the real and practical form.

Application context: The synectics model has a quite wide applicability in teaching-learning situation related to almost all the subjects and experiences of the school curriculum as summarized here:

1) The synectics activities provide unique shared experiences for fostering interpersonal understanding and a sense of community and group feeling. Moreover, the delight (even the most timid and shy) contribute significantly in proving the solution of the problems or inventing something new.

2) The synectics model can be used to provide rich and vivid experiences to the students for understanding the unfamiliar and discovering the facts of the school curriculum in a quite interesting way. It is equally good for all areas of the curriculum – the sciences and arts, theoretical and practical, curricular and co-curricular, etc.

3) The synectics model can be used with the learners belonging to all ages and potential-the average, slow and fast. All types of learners may be benefited by sharing the synectics.

4) As a means for nurturing and developing creativity and creative expression, the model is credited with a number of applications and uses (Joyce and Weil, 1997:258).

   (i) In learning the art of creative writing.

(ii) Providing valuable means and techniques for the exploration of social issues, and investigations about the things and events in one's physical, social and cultural environment.

(iii) In developing the problem-solving ability of the students by breaking the set and conceptualizing the problem in a new way in order to suggest fresh approaches for its solution.

(iv) In learning the art of creating a product (such as an idea for social gathering or new means of communication).

(v) The strategies used may help in broadening the perspectives of the students related to the acquired concepts-even the difficult and abstract ones such as democracy, culture, economy, liberty, justice, discrimination, and prejudice.

Instructional effects

The synectics model can prove quite worthwhile in terms of its instructional values. In brief, we can say the following things regarding the instructional use of this model :

1) Knowledge is not power. It is the way of acquiring knowledge that is more important than the acquisition of it. The synectics model provides opportunities and training for the development of the ability of acquiring and discovering knowledge.

2) Teaching can be carried out at three different levels known as memory, understanding and reflective. The experiences gained in the synectics model may help the teacher and learners organize the instructional process at the understanding and reflective levels.

3) The joy of teaching and learning rests on the discovery and learning of new facts, investing some new ideas and ways of doing things, etc. The use of synectics model may make the process of instruction interesting and delightful.

4) Last but not the least the model may prove a very potent device not only in the development of general creative capacity but also in the specific creative capacities related to a variety of subject matter and experiences of the school curriculum among the students.

6. 3 METACOGNITION- MEANING, DEVELOPMENT AND TEACHING

Metacognition: Metacognition is probably the most actively investigated cognitive process in contemporary research in developmental and

instructional psychology (Tobias et al., 1999). Metacognition is a form of cognition, a second or higher order thinking process which involves active control over cognitive processes. It can be simply defined as thinking about thinking or as a "person's cognition about cognition" (Wellman, 1985, p. 1)

The term metacognition first appeared around 1975 in the work of developmental psychologist John Flavell from Stanford University. He used the term to denote: "One's knowledge concerning one's own cognitive processes and products or anything related to them (...) [and] refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes (...), usually in the service of some concrete goal or objective." (Flavell, 1976, p. 232).

This definition emphasizes the executive role of metacognition in the overseeing and regulation of cognitive processes. Executive processes are those responsible for the goal-directed processing of information and selection of action, and for the implementation and monitoring of task-specific cognitive processes. Flavell provides some useful examples of metacognition:

"I am engaging in metacognition if I notice that I am having more trouble learning A than B; if it strikes me that I should double-check C before accepting it as a fact; (...) if I become aware that I am not sure what the experimenter really wants me to do; if I sense I had better make a note of D because I may forget I; if I think to ask someone about E to see if I have it right." (Flavell, 1976, p. 232).

Metacognition has 3 components:

1. Metacognitive knowledge/metacognitive awareness is what individuals know about them and others as cognitive processors. It refers to having knowledge about how human beings learn and process information, as well as an individual's knowledge of one's own learning processes. E.g., You know studying in a quiet library will be more productive than studying at home.

2. Metacognitive regulation is the regulation of construction and learning experiences through a set of activities that help people control their learning. It involves the ability to monitor one's progress of learning, correcting errors, analyzing the effectiveness of the learning strategies (used) and changing the learning strategies when necessary. E.g., Planning how to approach a given learning task, monitoring comprehension, and evaluating progress toward the completion of a task.

3. Metacognitive experiences are those experiences that have something to do with the current, ongoing cognitive endeavor.

Strategies for the development of metacognition

1. **Self – questioning:** It is a common metacognitive comprehension monitoring strategy. If an individual cannot answer his/her own question or understand the material discussed. He may determine what needs to be done to ensure the cognitive goal of understanding. One may decide to go back or re-read keeping the goal in mind to be able to answer the questions.

   Self-questioning ensures the cognitive goal of comprehension is met. If it is used as a means of obtaining knowledge it is a cognitive strategy while if it is used as a way of monitoring what you have read, it is a metacognitive strategy.

2. **KWL Strategy (Know-What-Learn):** It is a teaching strategy which helps pupils to develop tactical ways of learning new material. KWL represents three principal components: K = what is "known" [K] according to prior knowledge; W = determining what pupils "want" [W] to learn; L = what pupils "learn" [L] after instructional events…..(identifying instructional events).

   Here the teacher plays a crucial role in guiding the pupils through the entire process. If the model is used for the first time, it is highly recommended that the teacher directs the process and models the steps.

3. **PQ4R:** PQ4R is a study technique developed by Thomas E.L and Robinson H.A (1972). The acronym stands for Preview, Question, Read, Reflect, Recite and Review and this strategy is used mainly to help students with difficulty in reading.

   The study technique can help students with improved understanding and recall of facts.

4. **IDEAL:** The IDEAL strategy consists of five steps: Identify problems, Define goals, Explore possible strategies, Anticipate outcomes and Act, and Look back and Learn. Identifying problems can be more than just what we see in our text. As a matter of fact, our text tells us that these are usually more than questions that are given to us and incorporate challenges that we face on a day-to-day basis.

   Once we have identified the problem, we need to know what our goal is. By defining goals and representing the problem, we eliminate any useless information while determining what our end-state will be. Exploring possible strategies involves looking at different ways in which we can get from point A to point B

5. **Paraphrasing:** The Paraphrasing Strategy is designed to help students restate the Math problem in their own words, therefore strengthening their comprehension of the problem.

How to use the strategy?

a. Read the Problem.

b. Underline or highlight key terms.

c. Restate the problem in your own words.

d. Write a numerical sentence.

6. **Skimming:** Skimming is the process of fast reading in order to take the gist of a passage. It gives readers the advantage of being able to predict the purpose of the passage, the main topic, or message, and possibly some of the developing or supporting ideas.

A kind of rapid reading is appropriate when trying to decide if careful reading would be desirable or when there is not time to read something carefully.

Teaching metacognitive skills:

Teachers can keep these simple pointers in mind to develop metacognition among their pupils:

1. **General Approach to Incorporating Metacognitive Strategies**

- Be intentional about teaching metacognitive skills.
- Be explicit when teaching metacognitive skills.
- Don’t overdo it.

2. **Instructional strategies to foster self-regulation skills**

- Encourage goal-setting.
- Build in ways for students to "stop and take stock" during class.
- Prompt students to think about how they prepare for class.
- Emphasize the importance of learning versus getting the correct answer.
- Use a lecture wrapper.

3. **Strategies for Quizzes and Midterms**

- Tell students the format of their tests and exams.
- Give practice questions and prompt students to evaluate their readiness for a quiz through frequent self-assessment.
- Before a quiz, ask students to analyze sample quiz questions.

- Use an Exam Wrapper. (Ask questions like: How did you prepare for the exam? Which questions did you find difficult to answer, and/or what kinds of errors did you make on the exam? What will you do differently to prepare for the next exam?

4. **Strategies for Assignments**

   - Use an Assignment Wrapper
   - Incorporate reflective questions at the end of an assignment.
   - Ask students to reflect on assignment feedback.

5. **Instructional strategies to foster metacognitive thinking about course content**

   - Give a diagnostic quiz early in the term.
   - Explicitly model metacognitive thinking.
   - Use a concept map.
   - Ask students to identify either the muddiest, most interesting, or most relevant point(s)
   - Link the purpose of an assignment to course objectives and professional skills

6.4.1 DEVELOPMENT OF SELF AND IDENTITY

The term self or self-concept is a general term used to refer to how someone thinks about, evaluates, or perceives them. To be aware of oneself is to have a concept of oneself. Carl Rogers defined self as "the organized, consistent set of perceptions and beliefs about oneself."The self is the humanistic term for who we really are as a person. The self is influenced by the experiences a person has in their life, and our interpretations of those experiences. Roy F. Baumeister (1999) defines self-concept as "the individual's belief about himself or herself, including the person's attributes and who and what the self is". Two primary sources that influence our self-concept are childhood experiences and evaluation by others.

According to Rogers (1959), we want to feel, experience and behave in ways which are consistent with our self-image, and which reflect what we would like to be like, our ideal-self. The closer our self-image and ideal self are to each other, the more consistent or congruent we are and the higher our sense of self-worth.

A person is said to be in a state of incongruence if some of the totality of their experience is unacceptable to them and is denied or distorted in the self-image.

The humanistic approach states that the self is composed of concepts unique to us. The self-concept includes three components:

1. **Self-worth:** Self-worth (or self-esteem) comprises what we think about ourselves. Rogers believed feelings of self-worth developed in early childhood and were formed from the interaction of the child with the mother and father.

2. **Self-image:** How we see ourselves, which is important to good psychological health. Self-image includes the influence of our body image on inner personality. At a simple level, we might perceive ourselves as a good or bad person, beautiful or ugly. Self-image affects how a person thinks, feels and behaves in the world.

3. **Ideal self:** This is the person who we would like to be. It consists of our goals and ambitions in life, and is dynamic – i.e., forever changing. The ideal self in childhood is not the ideal self in our teens or late twenties etc.

We can build positive self-esteem by following the below mentioned points:

1. **Do not compare yourself to others:** Every individual is unique and born with different capabilities and capacities. Hence it is unfair to compare yourself with others.

2. **Identify your strengths and areas for opportunity:** Accept yourself as you are. Work on eliminating your weakness and whetting your strengths.

3. **Be realistic and open to change:** Live in the present and be positive.

4. **Surround yourself with a support squad:** Supportive people accept us as we are and love us as we are. Being in the company of such people with whom we can share our feelings helps in the development of a positive self-image.

5. **Keep it positive:** Positive affirmations and positive self-talk are key to building your self-esteem.

6. **Take an internet or social media detox:** Live in the real world and not the virtual world.

7. **Do what you love:** When we are doing something we enjoy, our brains naturally release endorphins that make us happy.

Identity: Identity is formed through a process of exploring options or choices and committing to an option based upon the outcome of their exploration. Failure to establish a well-developed sense of identity can result in identity confusion.

Erikson defines identity as a “fundamental organizing principle which develops constantly throughout the lifespan.” Identity involves the experiences, relationships, beliefs, values, and memories that make up a person's subjective sense of self. This helps create a continuous self-image that remains fairly constant even as new aspects of the self are developed or strengthened over time. Identity provides the following:

- Self-sameness: A sense of continuity within the self and in interaction with others
- Uniqueness: A frame to differentiate between self and interaction with others
- Psychosocial development: Mental and physical health for adolescents

How to Strengthen Identity:

- Thinking about what your values are helps solidify your identity. Core values are those things that are really important and meaningful to you and that motivate you and guide your decisions.
- It's important to spend time alone to get to know yourself better. Those quiet moments can help you focus on your priorities and improve your sense of self. Relatedly, learn to practice self-compassion, which can help you better understand and accept your flaws and limitations.

6.4.2 CAROL DWECK SELF THEORY

Carol Dweck (currently at Indiana University) describes a series of empirically-based studies that investigate how people develop beliefs about themselves (i.e., self-theories) and how these self-theories create their psychological worlds, shaping thoughts, feelings and behaviors. The theories reveal why some students are motivated to work harder, and why others fall into patterns of helplessness and are self-defeating.

Dweck’s conclusions explore the implications for the concept of self-esteem, suggesting a rethinking of its role in motivation, and the conditions that foster it. She demonstrated empirically that students who hold an entity theory of intelligence are less likely to attempt challenging tasks and are at risk for academic underachievement.

Students carry two types of views on ability/intelligence:

1. **Entity View (Fixed mindset)** – This view (those who are called “Entity theorists”) treats intelligence as fixed and stable. These students have a high desire to prove themselves to others; to be seen as smart and avoid looking unintelligent.

2. **Incremental View (Growth mindset)** – This view treats intelligence as malleable, fluid, and changeable. These students see satisfaction coming from the process of learning and often see opportunities to get better. They do not focus on what the outcome will say about them, but what they can attain from taking part in the venture.

Entity theorists are susceptible to learned helplessness because they may feel that circumstances are outside their control (i.e. there's nothing that could have been done to make things better), thus they may give up easily. As a result, they may simply avoid situations or activities that they perceive to be challenging (perhaps through procrastination, absenteeism, etc.). Alternatively, they may purposely choose extremely difficult tasks so that they have an excuse for failure. Ultimately, they may stop trying altogether. Because success (or failure) is often linked to what is perceived as a fixed amount of intelligence rather than effort (e.g., the belief that "I did poorly because I'm not a smart person"), students may think that failure implies a natural lack of intelligence. Dweck found that students with a long history of success may be the most vulnerable for developing learned helplessness because they may buy into the entity view of intelligence more readily than those with less frequent success.

Those with an incremental view ("Incremental theorists") when faced with failure, react differently: these students desire to master challenges, and therefore adopt a mastery-oriented pattern. They immediately began to consider various ways that they could approach the task differently, and they increased their efforts. Unlike Entity theorists, Incremental theorists believe that effort, through increased learning and strategy development, will actually increase their intelligence.

6.4.3 DARYL BEM SELF PERCEPTION THEORY

Self-perception theory (SPT) is an account of attitude formation developed by psychologist Daryl Bem. It asserts that people develop their attitudes (when there is no previous attitude due to a lack of experience, etc.—and the emotional response is ambiguous) by observing their own behavior and concluding what attitudes must have caused it. Self-perception theory is counterintuitive. As per common knowledge, a person's personality and attitudes drive their actions; however, self-perception theory shows that this is not always the case. In simple terms, it illustrates that "we are what we do." According to self-perception theory, we interpret our own actions the way we interpret others' actions, and our actions are often socially influenced and not produced out of our own free will, as we might expect.

Self-Perception Experiments: Daryl Bem, the originator of the theory, conducted an original experiment in which an "observer-participant" is given a detailed description of one condition of a cognitive dissonance experiment. It involved subjects who listened to a recording of a man

describing a peg-turning task enthusiastically. One group was told that the man was paid $1 for his testimonial, while the other group was told he was paid $20 for it. The $1 group believed that he enjoyed the task more than how much the $20 group believed he enjoyed it. The two groups' conclusions correlated to the feelings that the actors themselves expressed. Because the participants were able to correctly guess how the actors felt, it was concluded that the actors must have arrived at the way they felt from observing their own behavior as well.

A number of studies since have confirmed that self-perception theory exists, and furthermore, influences us in many unexpected contexts. Tiffany Ito and colleagues conducted a study in 2006 to see if facial changes could trigger shifts in racial bias among participants. Participants were asked to hold a pencil with their mouths (thus inducing them to smile) while looking at photographs of anonymous black and white male subjects. The results showed that those who had been made to smile while looking at the black subjects showed less implicit prejudice towards black men after the fact than those made to smile while looking only at white subjects.

Jeremy N. Bailenson, founding director of Stanford University's Virtual Human Interaction Lab, reports on one study involving participants who are immersed in a virtual environment via a head-mounted display. Some participants watched a virtual doppelganger identical to their exercise, some watched someone else's virtual doppelganger exercise, and some watched their own doppelganger stand still. Those who watched their "selves" exercise reported a higher belief that they could exercise successfully and later reported in a follow-up questionnaire that they had worked out for almost one hour more than the other two participant groups. Furthermore, in a follow-up study, the self-efficacy group of participants was asked to exercise while watching their virtual avatar visibly loses weight for every minute they exercised. When told that they were allowed to use the exercise room for the next half hour, they exercised 10 minutes longer than participants in other control situations.

Current Applications

Self-perception theory lends itself to be useful in therapy or persuasion-related contexts. Traditional therapeutic approaches might consider maladjusted behaviors and actions to be motivated by inner psychological issues. By employing self-perception theory, therapists can take the approach of starting with the behavior first to result in a change of attitudes, and ultimately a more lasting change in behavior. In one example, this approach has been used to have teens perform community service, which positively alters their self-image. They are thus less likely to experience teenage pregnancies and to engage in other risky behaviors.

6.5 LET US SUM UP

The self is what you really are. Our perception of self must be in congruence with our real self to live a balanced and healthy life. We are defined by our thoughts, actions, beliefs, and attitudes. The self-perception theories open new avenues and give us a better understanding of ourselves. Understanding self and striving to become a better version of ourselves is our ultimate goal in life. Hence, development of self should never cease; it must be a continuous process of consciously improving oneself in various aspects of life. Through the models of teaching the teachers can provide opportunities to the student to focus on the development of different faculties of their students i.e. cognitive, social, emotional, behavour and personal.

6.6. UNIT END EXERCISE

- Explain Hilda Taba's Inductive thinking model of teaching.
- Explain William Gordan's synectics model of teaching.
- Define term metacognition.
- Discuss the strategies of development of metacognition.
- Explain Carol Dweck Self Theory.
- Explain Daryl Bem Self Perception Theory.

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