MAEDN-406

Educational Psychology: Learning, Intelligence and Personality

MA EDUCATION
2nd Semester

Educational Psychology: Learning, Intelligence and Personality

MA [Education]

Second Semester

MAEDN 406

RAJIV GANDHI UNIVERSITY

Arunachal Pradesh, INDIA – 791112

BOARD OF STUDIES

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About the University

Rajiv Gandhi University (formerly Arunachal University) is a premier institution for higher education in the state of Arunachal Pradesh and has completed twenty-five year of its existence. Late Smt. Indira Gandhi, the then Prime Minister of India, laid the foundation stone of the university on 4th February, 1984 at Rono Hills, where the present campus is located.

Ever since its inception, the university has been trying to achieve excellence and fulfill the objectives as envisaged in the University Act. The University received academic recognition under Section 2(f) from the University Grants Comission on 28th March, 1985 and started functioning from 1st April, 1985. It got financial recognition under section 12-B of the UGC on 25th March, 1994. Since then Rajiv Gandhi University, (then Arunachal University) has carved a niche for itself in the educational scenario of the country following its selection as a University with potential for excellence by a high-level expert committee of the University Grants Commission from among universities in India.

The University was converted into a Central University with effect from 9th April, 2007 as per notification of the Ministry of Human Resource Development, Government of India.

The University is located atop Rono Hills on a picturesque tableland of 302 acres overlooking the river Dikrong. It is 6.5 km from the National Highway by the Dikrong Bridge.

The teaching and research programmes of the University are designed with a view to play a positive role in the socio-economic and cultural development of the State. The University offers Undergraduate, Post-graduate, M.Phil and Ph.D programmes. The Department of Education also offers the B.Ed Programme.

There are fifteen colleges affiliated to the University. The University has been extending educational facilities to students from the neighbouring states, particularly Assam. The Strength of students in different departments of the University and in affiliated colleges has been steadily increasing.

The faculty members have been actively engaged in research activities with financial support from UGC and other funding agencies. Since inception, a number of proposals on research projects have been sanctioned by various funding agencies to the University. Various departments have organized numerous seminars, workshops and conferences. Many faculty members have participated in national and international conferences and seminars held within the country and abroad. Eminent scholars and distinguished personalities have visited the University and delivered lectures on various disciplines.

The academic year 2000-2001 was a year of consolidation for the University. The switch over from the annual to the semester system took off smoothly and the performance of the students registered a marked improvements. Various syllabi designed by Boards of Post-graduate Studies (BPGS) have been implemented. VSAT facility installed by the ERNET India, New Delhi under the UGC-Infonet program, provides Internet access.

In spite of infrastructural constraints, the University has been maintaining its Academic excellence. The University has strictly adhered to the academic calendar, conducted the examinations and declared the results on time.The students from the University have found placements not only in State and Central Government Services, but also in various institutions, industries and organizations. Many students have emerged successful in the National Eligibility Test (NET).

Since inception, the University has made significant progress in teaching, research, innovations in curriculum development and developing infrastructure.

About IDE

The formal system of higher education in our country is facing the problems of access, limitation of seats, lack of facilities and infrastructure. Academicians from various disciplines opine that it is learning which is more important and not the channel of education. The education through distance mode is an alternative mode of imparting instruction to overcome the problems of access, infrastructure and socio-economic barriers. This will meet the demand for qualitative higher education of millions of people who cannot get admission in the regular system and wish to pursue their education. It also helps interested employed and unemployed men and women to continue with their higher education. Distance education is a distinct approach to impart education to learners who remained away in the space and/or time from the teachers and teaching institutions on account of economic, social and other considerations. Our main aim is to provide higher education opportunities to those who are unable to join regular academic and vocational education programmes in the affiliated colleges of the University and make higher education reach to the doorsteps in rural and geographically remote areas of Arunachal Pradesh in particular and North-eastern part of India in general. In 2008, the Centre for Distance Education has been renamed as "Institute of Distance Education (IDE)."

Continuing the endeavor to expand the learning opportunities for distant learners, IDE has introduced Post- Graduate Courses in 5 subjects (Education, English, Hindi, History and Political Science) from the Academy Session 2013-14.

The Institute of Distance Education is housed in the Physical Sciences Faculty Building(First floor) next to the University Library. The University campus is 6 kms from NERIST point on National Highway 52A. The University buses ply to NERIST point regularly.

Outstanding Features of Institute of Distance Education :

(i)   At per with Regular Mode.
        Eligibility requirements, curricular content, mode of examination and the award of degrees are on par with the colleges affiliated to the Rajiv Gandhi University and the Department(s) of the University

(ii)   Self-Instructional Study Material (SISM)
        The students are provided SISM prepared by the Institute and approved by Distance Education Council (DEC), New Delhi. This will be provided at the time of admission at the IDE or its Study Centres.SISM is provided only in English except Hindi subject.

(iii)   Contact and Counselling Programme (CCP)
        The course curriculum of every programme involves counsellig in the form of personal contact programmes of duration of approximately 7-15 days. The CCP shall not be compulsory for BA. However for professional courses and MA the attendance in CCP will be mandatory.

(iv)   Field Training and Project
        For professional course(s) there shall be provision of field training and project writing in the concerned subject.

(v)   Medium of Instructions and Examination
        The medium of instruction and examination will be English for all the subjects except for those subjects where the learners will need to write in the respective languages.

(vi)   Subject /Counselling Coordinators
        For developing study material, the IDE appoints subject coordinators from within and outside the University. In order to run the PCCP effectively Counselling Coordinators are engaged from the Departments of the University, The counseling-Coordinators do necessary coordination for involving resource persons in contact and counseling programme and assignemt evaluation.The learners can also contact them for clarifying their difficulties in then respective subjects.

SYLLABI-BOOK MAPPING TABLE

Educational Psychology: Learning, Intelligence and Personality

Syllabi	Mapping in Book

UNIT-I Theories of Learning and Motivation
- Learning: Concept and principles of learning
- Theories of learning, Kurt Lewin's field theory, Tolman's Sign theory
- Bruner's concept attainment theory), Hull reinforcement theory, Gagne's hierarchy of learning.
- Meaning, kinds and importance of motivation in learning
- Theories of motivation (Maslow's self-actualisation and Achievements Motivation)
- Transfer of learning and its theories

UNIT –II Intelligence
- Concept Nature and Types of intelligence
- Theories of intelligence (Thurstone, Guilford and Piaget)
- Emotional Intelligence: Concept and Theory
- Multiple Intelligence : Concept and Theory
- Measurement of Intelligence

UNIT –III Personality and Mental Health
- Meaning, Nature and determinants of personality
- Theories of personality (Psychoanalytical Type and Trait approaches)
- Mental Health
- Personality and Mental Health
- Inclusive Education

UNIT –IV Test Administration and Interpretation
- Performance Test of Intelligence
- Aptitude Test
- Personality Test/Questionnaire
- Attitude Scale

CONTENTS

INTRODUCTION

INTRODUCTION

No teacher can teach effectively without trying to understand the psychology of proper instruction. Each student has and individual set of characteristics that influence his ability to comprehend, register and process information. Also, the effectiveness of teaching is influenced by the assessment techniques and the school's overall environment, rules and attitude with regard to tests. The style and method used to teach are greatly affected by the background and experience of the teacher. The manner of teaching, in turn, greatly influences the way the student is shaped and prepared to take on future challenges.

This book, Psychology of Learning and Development, deals with all the psychological aspects of teaching. It discusses the biological, behavioural, cognitive, humanistic and psychoanalytical schools of psychology. The book also throws light on the importance of educational psychology. It, in general, discusses the general principles of growth and development, the stages of development, the theories of child development and the dimensions of adolescent development. Cognitive development and the cognitive process have been discussed with emphasis on attention, inattention, distraction and sensation. Thorndike's laws and the theories of learning, factors influencing the process of learning, the learning curve, theories of intelligence, multiple intelligence, Guilford's structure of the intellect and emotional intelligence are some other important topics covered in this book. The book also discusses the theories of personality, along with the concepts of mental health, conflict, frustration, adjustment and defence mechanisms in detail.

The book has been divided into eight units:

Unit 1 Theories of Learning and Motivation

Unit 2 Intelligence

Unit 3 Personality and Mental Health

Unit 4 Test Administration and Interpretation

UNIT 1   THEORIES OF LEARNING AND MOTIVATION

Structure

1.0   INTRODUCTION

Learning implies acquiring new or modifying existing knowledge, behaviour, skills, values or preferences and may involve synthesizing different types of information. Humans and animals possess the ability to learn. Human learning may occur as part of

education, personal development or training. It may be goaloriented and may be aided by motivation. Progress of learning over time tends to follow learning curves.

Various theories have been proposed to explain the process of learning. This unit focuses on various aspects of learning and motivation in detail.

1.1   UNIT OBJECTIVES

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

- Explain the nature and importance of learning
- Discuss Thorndike's laws of learning
- Explain various theories of learning
- Describe the processes of transfer of learning, remembering and forgetting
- Explain the concept of motivation
- Describe theories of motivation, with special coverage on Maslow's self-actualization and achievement motivation theory
- Discuss the concept of transfer of theories and various theories related to it

1.2   CONCEPT OF LEARNING

Learning is the most common activity each one of us is involved in. At every point of time in our life, we are learning something. An individual starts learning from the very first day of his life that is just after he is born. A small child cries when he is hungry, and he is given food, now next time he associates being hungry with crying and he learns that whenever he will cry he will be given food. Similarly, a man touches a naked electric wire, he gets an electric shock, only then he immediately withdraws. The next time when he sees the naked electric wire, the man immediately withdraws from there. That means learning has taken place that electricity can be harmful under certain circumstances.

From these examples, it is clear that there is change in behaviour because of learning. Learning is certainly a universal experience. Kids learn to talk, to dress and to feed themselves. Adults must learn how to perform their jobs and how to meet the responsibilities of family life. Thus, learning means to discover or invent and to become efficient. Thus, learning is change in behaviour because of experience. Learning can be defined as 'the relatively permanent change in behaviour brought about as a result of experience or practice'. John B. Watson (1878-1958) was the first psychologist to study the process of learning, and he formed the school of thought known as behaviourism. Behaviourists identify learning as an internal event. However, it cannot be termed that learning is presented by an overt behaviour.

There are three components of behaviour: (i) conative, (ii) cognitive and (iii) affective. The conative aspect refers to act or doing part. Learning related to this part of behaviour means acquiring skills to perform tasks like cooking, playing, dancing, knitting, jumping, crawling, talking, walking, singing, etc. The cognitive domain means the meaningful aspect of behaviour. The activities which require mental thinking like reasoning, analysing, interpreting, concluding, illustrating are included in this dimension of learning. The affective domain is related to emotional or feeling part of the behaviour. Changes that are brought about by performing activities related to emotions and feelings like happiness, sadness and anger are included in this domain.

Why is learning important?

There can also be changes in behaviour because of maturation, but there is slight difference between maturation and learning. In case of human learning, they are closely related. In case of animals, the birds start to fly because of maturation.

If the change in behaviour is due to development through different stages, then the change in behaviour is because of maturation and not learning. If the change in behaviour does not improve with training or practice, then the change is because of maturation. For example, the child cannot speak until he attains a certain age (because of maturation), but the child cannot speak fluently if he does not learn to speak the language; this proves that maturity and learning are closely related.

Learning involves new ways of doing things. It operates in the individual's attempts to overcome obstacles or to adjust to new situations. It represents a progressive change in behaviour as the individual reacts to a situation in an effort to adapt his behaviour effectively to the demands made upon him. It enables him to satisfy certain interests or to attain certain goals.

Learning is vertical when precision in performance is increased or when information is added to what has been already learned and it is horizontal when what is learned is integrated and organized as a part of a functional unit of expanding experience.

As an individual goes about his daily activities, he unconsciously acquires many changed modes of thought and behaviour that grow out of his experiences. These may exercise a powerful influence upon his conduct and his relations with people around him.

Learning, therefore, means change in response or behaviour including emotional behaviour; it means the acquisition of knowledge or motor skills.

There are various types of abstract learning. These include memorizing learning material with little or no understanding of its meaning (formulae or equations, for example), learning simple concepts like addition or subtraction, discovering and understanding relationships involving responses that are logical and psychologically sound.

1.2.1 Definitions of Learning

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

Hilgard (1958): 'Learning is the process by which an activity originates or is changed through reacting to an encountered situation, provided that the characteristics of the change in activity cannot be explained on the basis of native response, tendencies, maturation, or temporary states of the organism (e.g., fatigue of drugs etc.).'

Gardner Murphy (1968): 'The term learning covers every modification in behaviour to meet environment requirements.'

Henry P. Smith (1962): 'Learning is the acquisition of new behaviour or the strengthening or weakening of old behaviour as the result of experience.'

Garrrett: 'Learning is that activity by virtue of which we organize our response with new habits.'

Kingsley and Garry: Learning process of learning

Learning is a process and it is not product by itself. Learning starts with a need or drive. Unless there is a need, the individual is not motivated to act.

When the needs of an individual are strong, he is compelled to act to satisfy those needs. So the process of learning starts with a need and then there is a drive to strive for its satisfaction.

The next step is formation of the aim or goal because the goal motivates to learn. Then there are obstacles in achieving the goal. These hindrances can be removed by acquiring the right skills.

The internal attributes of the learner affect the learning process. The environment and learning situation also influence learning. If there are favourable learning conditions; the learning is highly effective, in the sense that it is retained for a longer period of time. Thus, learning is a continuous ongoing process which changes the behaviour of a learner.

1.2.2 Characteristics of Learning

The change in the behaviour of the individual is more or less permanent change. These changes because of training or practice can be observed and therefore, the process of learning has special characteristics which are as follows:

• **Learning is a change in behaviour:** It is believed that because of learning there is a change in behaviour. The changes in behaviour should help the learner to develop because learning is always directed to achieve some aim.

• **Learning is the process involving stimulus and response:** The process of learning starts when the individual responds to the stimuli present in the environment. If the individual does not respond actively to the stimulus, learning will not take place.

• **Change in behaviour is a relatively permanent change:** The change in behaviour because of learning should neither be too permanent (e.g., because of maturation) nor too temporary (e.g., because of illness or fatigue).

• **Learning is an ongoing process:** Learning is an activity which starts from birth and continues till a man dies. Sometimes, it is believed that learning starts much early when the child is in the womb of the mother; such instances are referred to in Hindu Mythology when Abhimanyu learned the art of *chakravyueh* when he was in the womb of his mother.

• **Learning is a goaldirected activity:** All learning takes place because of a goal or aim. Because of the aim, the individual starts learning to perform certain tasks. If there is no purpose or aim, the learning will be difficult.

• **Learning helps in the development and growth:** Learning helps an individual to achieve his full potential by learning the skills. The individual can learn physical, moral and social skills.

• **Learning helps in adjustment:** Learning helps an individual to adjust to his environment and self also.

• **Learning can be transferred from one situation to another:** The important characteristic of learning is that it can be transferred from one situation to another. This can have positive as well as negative effects. The learning in one situation can help in learning in another situation, but sometimes learning in one situation may cause obstacles in learning in other situation.

• **Learning is universal:** Every organism has the ability to learn irrespective of caste, colour, region, religion, culture and country. Thus, learning is a universal process, the organisms learn according to their needs.

• **Learning is not always positive:** Learning leads to development, but it is a fact that learning can be both in a positive direction and in negative direction. According to Woodworm, as a result of learning the pattern of development is free to move in either direction positive or negative. A small child may learn to cheat, disrespect elders, which is all negative learning.

Characteristics of animal learning are as follows:

1. **Animals learn by doing and not by reasoning:** Human beings learn by observation. Animals learn by doing.

2. **New attachments and linking a particular stimulus with definite response:**

The animals learn by experience and they avoid the responses that led to negative results and link a particular stimulus with a definite response so that it leads to positive results.

3. **Animal learning is characterized by trial and error learning:** Thorndike was of the view that learning occurred through trial and error.

Thorndike's Trial and Error Learning

In trial and error learning, the subject is strongly motivated to achieve the aim. The solution to reach the aim is not very clear. The animal made many responses, many of them wrong or ineffective, and eventually learned to repeat those that got desirable results, so that the process is learnt and the goal is achieved. Some examples of trial and error learning are the maze learning experiment and the puzzle box experiment.

In the maze learning experiment, a hungry rat is placed in an enclosure from which it can reach the food kept on the maze by taking a complicated path. The rat takes all possible paths by entering into blind alleys and finally by a lot of effort it reaches the food, Thus, it is clear that rat learns the fixed path by observation and paying attention, by eliminating the unsuccessful responses and learning by repeating the successful ones.

Puzzle box experiment

In this experiment, a hungry cat is placed in a cage with a fish outside. The cat tries to reach the food by pushing the mouth behind the bars but fails to reach the food. There was only one exit from the box: the cat could open the latch by manipulating it. There were a lot of random movements made by the cat. By making one of the movements the cat could manipulate the latch and was able to find the way out to food. In reaching to the solution the cat made errors. In due course of time the cat started opening the door without making any errors. This type of learning was named by Thorndike as trial and error learning.

1.2.3 Types of Learning

Learning has been classified in a number of ways in various categories. It is very difficult to dichotomize learning into clearcut categories because one category overlaps the other important categories are as following is the process by which behaviour is organized or changed through practice or training.

• **Deliberate or conscious learning:** For example, learning of a skill or subject. This is of two types:

(a) *Primary learning:* This includes learning of facts, principles and theories, etc., which are the main cores of lessons.

(b) *Associated learning:* This consists of the facts and other objective materials that are learned because they are related to the primary learning and are logically brought into the lesson.

• **Unconscious or concomitant learning:** This includes learning of likes and dislikes, attitudes, etc. It is equally important as conscious learning.

(i) Development learning: According to the type of development, learning is classified as: academic learning, (ii) emotional learning, (iii) intellectual learning, (iv) moral learning, (v) motor learning, (vi) sensory learning, and (vii) social learning.

- **General learning:** It includes knowledge learning, skills learning and attitude formation, etc.
- **Hierarchical learning:** R.M. Gagne (1970) has classified learning into eight categories: (i) signal learning, (ii) S-R learning, (iii) chain learning, (iv) verbal associate learning, (v) discrimination, (vi) learning of concepts, (vii) learning of principles, and (viii) problem-solving.
- **Signal learning:** It is usually termed as classical conditioning which was developed by a Russian physiologist Pavlov. In classical conditioning, unconditioned stimulus (food) and conditioned stimulus (sound of the bell) are paired together and presented to a dog a number of times with the result that when conditioned stimulus CS (Sound of the bell) is presented alone, it elicits saliva from the mouth of the dog. This modification of behaviour which causes salivation to the sound of the bell, is called conditioning.
- **Operant conditioning:** Thorndike initiated the study of operant or instrumental conditioning with the puzzle box experiments on cats. B.F. Skinner conducted a series of experiments on animals and prepared ground for the use of the principles in human learning.
- **Chain learning:** Chain learning consists of motor and verbal chaining. Verbal chaining is a matter of connecting together in a sequence two or more previously learned stimulus responses (S's - R's). The first member or element of the sequence seems firmly tied with the second. Examples are boy and girl, daddy and mummy, horse and buggy, etc. Motor chaining may be illustrated with the following stimulus response connections in the process of unlocking a door:

o Key in hand

o Facing the lock

o Checking the side of the key to be inserted

o Inserting the key into the lock until the stop of the lock is reached

o Pushing the door to open it.

It must be remembered that for establishing a chain, the individual must be capable of performing the individual links.

- **Verbal associate learning:** The simplest type of verbal associate learning is explained as: 'A child is shown an object, say a doll. The next time he sees this particular object, he will be able to say that it is a doll.' Two chains are involved here.

(a) Observing response S-R connection that connects, the appearance of the object and distinguishes it from other objects.

(b) S-R connection that stimulates the child himself to say "doll".

- **Discrimination:** When the behaviour shows a specificity of response to one given stimulus to the exclusion of others, we may say that discrimination has

taken place from the very beginning, an infant learns to discriminate between a feeding bottle and a simple bottle, between walking and talking, etc. Gradually, the child learns to discriminate more objects and ideas.

- **Concept learning:** In concept learning, we deal with classes of objects as the stimuli. We form concepts by finding properties which a class of objects share in common. Thereafter, we learn generalizations within classes and gradually learn discrimination between classes. First, we learn about a dog, then various classes of dogs and then cats, etc.
- **Learning of principles:** Learning of principles depends on learning of concept formation and other forms of learning. Principles denote regular relationship among two or more concepts.
- **Problem-solving:** Problem-solving comes at the higher stage in the hierarchy of learning process. In fact, all the earlier steps lead to problem-solving.

1.3 PRINCIPLES OF LEARNING

Koffka suggested that the laws of perception were equally applicable to learning. A learning situation is a problem situation and the learner has to see the problem as a whole and find its solution by insight. The law of organization of perception as applicable to learning is the law of Pragnanz and four laws of organization subordinate to it—the laws of similarity, proximity, closure and good continuation.

- **The Law of Pragnanz:** The German word *"Pragnanz"* means "compact but significant". The law suggests the direction of events. Psychological organization tends to move in one general direction, always towards the state of Pragnanz, towards good gestalt. A good gestalt has the properties as regularity, simplicity, stability, etc.

So, this law speaks of the movement of our psychological organization towards the direction of stability i.e., we accept only those experiences which do not disturb our psychological organization (equilibrium). How good the Pragnanz is, is examined by the following subordinate laws:

- **The Law of Similarity:** This law says that 'other things being equal, the stimuli that are more similar to one another will have greater tendency to be grouped'. Thus, learning similar things is easier than learning dissimilar things.
- **The Law of Proximity:** According to this law, 'perceptual groups are favoured according to the nearness of the parts'. This means that we perceive all closely situated or located things as groups.
- **The Law of Closure:** This law states that 'closed areas are more stable than unclosed ones and therefore more readily form figures in perception'. It is similar to the Thorndike's law of effect. Unless the work is finished, the individual does not feel satisfied. He is under tension which is over only when the work is completed.
- **The Law of Good Continuation:** This law states that 'organization in perception which appears to go in a particular direction appears to be going infinitely in the same direction'. So there is a tendency of factors to give direction, movement and continuation to perceptual organization. Koffka believes in the trace theory of memory. The function of learning is to strengthen those traces and create new ones. The essential features of the trace theory are as follows:

(i) Trace is the result of past experience so that it represents past in the present, (ii) The present process can select, reactivate or communicate with the trace, (iii) There is a resulting new process of recall or recognition.

Factors upon which insight depends

Insight involves the following:

1. The learner perceives the situation as a whole.

2. The learner tries to understand the relationships between various factors involved in a situation.

3. As a result of the understanding of the relationship, the learner is helped in the sudden grasping of the solution of the problem.

On the whole, insight depends upon the following factors:

(i) *Experience*—Past experiences assist in the insight of the problems.

(ii) *Intelligence*—Basic intelligence of the learner is an important factor in insight learning.

(iii) *Learning Situation*—A common observation insight occurs when there is ample scope for observation in a learning situation.

(iv) *Initial Efforts*—Initial efforts in the form of trial and error open the way of insight learning.

(v) *Reception and Generalization*—Learning gained in one situation helps the learner to react insightfully in other identical situations.

The distinctive criteria for insightful solutions are given by Yerks (1927) as:

(a) Survey of the problem followed by critical solutions.

(b) Repetition of the solution after a single critical solution.

According to Werthenier, insight can be developed by productive thinking. Productive thinking helps in the systematic solution of the problem in line with the true structure of the situation.

1.4 THEORIES OF LEARNING

Theories of learning attempt to explain the mechanism of behaviour involved in the learning process. Experts have formulated different theories of learning with the result that it is not possible to give a theory which satisfies all interested persons. Before taking up theories of learning, we may consider the meaning of a theory. The most acceptable definition of a theory is that of Melvin H. Marx (1970). A theory is "a provisional explanatory proposition or set of propositions, concerning some natural phenomena and consisting of symbolic representation of : (1) the observed relationships among independent and dependent variables, (2) the mechanisms or structures presumed to underlie such relationships, or (3) inferred relationships and underlying mechanisms intended to account for observed data in the absence of any direct empirical manifestation of the relationships".

A theory provides detailed systematized information of an area of knowledge. It serves as guidelines to conduct further research in the area. The theory produces new facts or supplements the previous facts. It gives an organized explanation about a phenomenon. It provides practical wisdom. The theory provides effective guidelines.

Important characteristics of a theory are: (a) Testability of its principles (b) Predictability of the outcomes of the actions (c) Comprehensiveness, (d) Brevity, and (e) Simplicity.

A learning theory is supposed to find answers of the following:

1. Role of drill and practice in learning.

2. Utility of rewards and punishments or other incentives/motives in learning.

3. Place of insight and understanding in the process of learning.

4. Role of transfer of learning in various situations.

5. Limits of learning with regard to the capacity of an individual in various aspects—i.e., individual differences of age, intelligence and sex etc.

Learning theories may broadly be divided into two categories as noted below:

I.   Stimulus Response (S-R) Theories

A.   S-R Theories without Reinforcement

(i) Pavlov's Classical Conditioning Theory of Learning (ii) Watson's Learning Theory (iii) Guthrie's Learning Theory

B.   S-R Theories with Reinforcement

(i) E.L. Thorndike's Theory (ii) Hull's Theory (iii) Skinner's Theory

II.   Cognitive Field Theories

(i) Gestalt Theory of Learning or Kohler's Insight Theory of Learning *(ii)* Lewin's Field Theory of Learning (iii) Tolman's Sign Theory of Learning

1.4.1 Kurt Lewin's Field Theory

Kurt Lewin (1890-1947), unlike Pavlov, Skinner and Gestltian psychologists, conducted experiments on the study of behaviour of children. He utilized an elaborate experimental set-up with a view to control the child's total environment during the course of the investigation for getting detailed information. Lewin emphasized the study of behaviour as a function of the total physical and social situation. Lewin holds that psychological laws need not be formulated soley on the basis of statistical averages. Rather, the individual case is equally important. Even if all general psychological laws were known, we would still need to understand the specific individual and "total situation" in which he exists before we could make any prediction about his behaviour. Thus Lewin favours an *idiographic* psychology in which the focus is on the *individual,* as opposed to *nomothetic* psychology, where the emphasis is on *Statistical average.* Lewin describes his viewpoint in the following formula:

B=f(PE)

B represents behavior is a function

P is the person

E is the total environmental situation

Lewin explains the individual behaviour on the basis of life-space. An individual's life-space depends on his psychological force. It includes the person, his drives, tensions, thoughts and his environment, which consists of perceived objects and events. Lewin represents his theory through a diagram in which an individual is in the centre. He moves through his life-space which consists of the totality of facts that determine his behaviour at a given time.

A life-space contains the individual himself, the goals he is seeking (positive valence) or avoiding (negative valence), the barriers that restrict the individual's movements and the path he must follow to reach his goal. Desire creates tensions in the individual and

tensions come to a balancing state and the person acts. After the goal has been achieved, the organism (individual) returns to a state of repose until a new desire activates him.

In Lewin's theory, threat, goal and barrier are the main factors. An individual who has to achieve some goal has to cross a barrier. The barrier may be psychological or physical. Because of the changes in the barrier in the life-space of an individual, continuous reconstruction takes place.

Lewin's theory is called field theory as to a psychologist *field* means the total psychological world in which a person lives at a certain time. It includes matters and events of past, present and future, concrete and abstract, actual and imaginary—all interpreted as simultaneous aspects of a situation. Lewin states that each person exists within a field of forces. The field of forces to which the individual is responding or reacting is called his *life-space.*

Lewin's theory regards learning as a relativistic process by which a learner develops new insight or changes old ones. According to the theory, learning is not a mechanistic process of connecting stimuli and responses within a biological organism. Field psychology explains development of insight as a change in cognitive structure of life-space.

Lewin's theory may be explained as under: Suppose a person P is moving towards a goal of getting social recognition. But to achieve the goal, he has to apologize. Now asking for apology is the barrier coming in his way. The barrier may be physical or psychological forces preventing him from reaching the goal. These forces organize themselves into a pattern which determines his future behaviour.

Lewin has classified learning into the following categories:

(i) Learning is a change in cognitive structure.

(ii) Learning is a change in motivation, i.e. in valences and values.

(iii) Learning is acquisition of skills.

(iv) Learning is a change in group belonging.

Learning of all types involves change in perception.

Changes in cognitive structure are caused by the forces in the psychological field—needs, aspirations and valences. Lewin thinks that level of aspiration depends upon the potentialities of an individual and on the influences of the group to which he belongs. Too higher or too level of aspiration discourages learning.

Lewin's system leans heavily on concepts derived from *topology,* a branch of higher mathematics that deals with transformation in space, from *vector analysis,* or the mathematics of directed lines and from the sciences of chemistry and physics concepts as *valence, equilibrium stadfieldforce.* Lewin's most important publication is *Principles of Topological Psychology* (1936).

The main concepts used in Lewin's field theory are as follows:

1. **Topology:** It is also called topological. Two basic concepts which topological space denotes are: *(i)* connectedness, and *(ii)* part-whole relationships. Topological concepts are used to represent the structure of life-space in such a way as to define the range of possible perceptions and actions. This is accomplished by showing the arrangements of the functional parts of life-space. The parts are shown as various regions and their boundaries. When an individual structures his life-space, he divides it into regions.

2. **Vector:** The term "vector" represents a force which is influencing movement towards a goal or away from it. If there is only one vector (force), there is movement in the direction of the vector. However, if there are two or more vectors acting simultaneously in different directions, the movement is in the direction of the resultant force

3. **Life-Space:** It is also called the psychological field. The psychological field is the space in which the person moves psychologically. It contains the whole of one's psychological reality—one's self and what one thinks of or what one gains from one's physical and social environment.

4. **Person in Life-Space:** The person is often represented as a point moving about in his life-space, affected by pulls and pushes upon him, circumventing barriers in his locomotion in his own life-space.

5. **Valence:** When a person is attracted by an object, that object is said to have a positive valence. When a person is repelled by an object that is said to have a negative valence. The person tends to move towards a region in life-space that has positive valence and he tends to move away from a region in life-space that has negative valence. Because life-space may contain regions with several valences active at a time, these give rise to conflict, especially when the opposing forces are approximately in balance. Lewin specifies three chief kinds of conflict:

(i) *Two Positive Valence:* Such as when a child has to choose between going

to picnic and playing with his friends, (ii) *A Simultaneous Positive and Negative Valence:* Such as when a child is

offered for a reward for the school task he does not wish to perform, (iii) *Two Negative Valence:* Such as when a child is threatened with punishment

if he does not do a task which he does not wish to perform.

6. **Distance and Direction:** When there is a close correspondence between life-space and physical space, physical distances and directions may be used for experimental purposes as approximations of distances and directions in life-space.

7. **Behaviour:** Lewin regards behaviour as a function of present life-space. He insists that behaviour depends upon the present and not upon the past or future.

8. **Barrier:** It is a dynamic part of an environment which resists motion through it. It stands in the way of a person's reaching his goal.

9. Goal: Goal is a region of valence-region of life-space to which a person is psychologically attracted.

10. **Tension:** It is very closely to and is descriptive of psychological needs. Release of tension may be achieved either through reaching a goal or through reconstructing a life-space.

11. **Cognitive Structure:** It is an environ mean including a person as known by the person. It is synonymous with insight or understanding.

Classroom implications of field theory

Taking into consideration, the field theory as a whole, the classroom teaching-learning implications include the significance of seeing the total situation at the beginning of the lesson or an activity. The teacher should preview the activities involved and the

problem to be encountered. Moreover, from the point of view of a field theorist, the teacher should keep in mind that the student, the teacher himself, other teachers, the school arid the peer group—are all parts of the total situation.

The need for seeing the whole and details of the situation is very necessary. The teacher must assist the students to perceive the goal and the barrier. The goal must be presented in an easier and simplified way. Sometimes, partial insight of a situation may provide partial relief from tension.

Following are the major educational implications of this theory:

1. Reward and Punishment: According to Lewin, the learner because of attraction to rewards may resort to shortest methods. For example, to get distinction in the examination (record) the student may like to cheat (short-cut method). It is, therefore, necessary to put some barriers over the reward situation, to avoid access to such short methods. In the case of punishment, however, there is a tendency to leave the field because of the unpleasantness of the task unless some strong barriers are there to keep one in the field. Reward activities often become interesting and are liked so that motivation is no longer extrinsic, while the activities controlled by the threat of punishment tend to become extremely hated.

2. Success and Failure: Psychological analysis of success from the point of view of the learner shows the following possibilities to:

• Reach a goal constitutes success,
• Get within the region of the goal may be a success experience,
• Make some progress in the direction of the goal also constitutes a success experience, and
• Select a socially approved goal is also a success experience.

Psychological success or failure depends upon ego involvement and the level of aspiration. Success in easy task is not a success experience, since it does not involve the ego of the person. Similarly, failure in a very difficult task is no failure experience.

3.   Motivation: The repetition of an activity brings change both in the cognitive structure and in the need-tension systems. As a result of this, goal attractiveness changes. Lewin calls goal attractiveness valence and valence change. The valence may change in any of the following ways:

(1)   Attractive goals may lose attention if the activity related to them is repeated to the points of satiation.

(2)   Choice of goals is influenced by previous experiences of success and failure.

The field theory states the following regarding memory:

(1)   Tasks which have no sense in completion are not remembered.

(2)   Unfinished tasks are remembered better than finished tasks because of psychological tension.

(3)   Tasks which lead to the satisfaction of man's needs are remembered better than tasks which lead to the satisfaction of one need.

1.4.2 Tolman's Sign Theory

Edward C Tolman (1886-1959), like behaviourists rejected the idea of introspection as a method of studying human behaviour. On the contrary, he believed the objective method of collecting data. He remarked that we do not only respond to the stimulus but we act on beliefs, and express attitudes. Behaviour can be modified by experience and training.

Tolman's theory combines the advantages of stimulus-response theories and cognitive field theories.

Tolman published his major work entitled *Purposive Behaviour in Animals and Men* (1932), and recorded the results of his experiments. He revised his theory in 1949, According to the findings of these experiments, the learner does not reach the goal in a fixed sequence of movements but changes his behaviour according to the variation in conditions.

Tolman's theory of learning is known by several names such as "sign significance theory", "expectancy theory", "purposive behaviourism" or simple "sign theory". The main features of this theory are as follows:

1.   It accepts behaviourism as basis. Main characteristics of behaviour are as follows:

(a)   Behaviour is goal-directed i.e., it is purposive.

(b)   Behaviour makes use of environmental factors as means for getting at the goal.

(c)   Behaviour consists of the formation of cognitive maps.

(d)   The organism has a selective preference for the "principle of least effort", for arriving at the goal.

(e)   Molar behaviour is docile.

2.   According to Tolman, the behaviour depends upon:

(a)   The need system

(b)   The belief value matrix

(c)   The behaviour space

3.   This theory takes into consideration that learning is based upon some signs or clues leading to the goal. The organism learns not the movement patterns, but the sign-significative relations.

Educational Implications of Tolman 's Sign Theory

Some of the typical learning problems are as follows:,

• *Capacity*—The learning of a task depends upon the capacity of the learner.

• *Practice*—Tolman believes that practice or exercise cannot help the learner in the initial selection of a right response. Mere frequency without belongingness does not establish a connection

• *Motivation*—Motivation does not help in learning something new; it simply encourages the performance as such.

• *Understanding*—Tolman believes in learning by creative inference, inventive ideation, and so on. Insightful learning is emphasized.

• *Transfer*—Transfer of training depends upon applicability of the essential relationship perceived by the learner in one situation to some other situation.

• *Forgetting*—Repression and ratio-active inhibition cause forgetting Tolman attributes forgetting to the resistance of cathexis (relationship between a drive and object) also.

Laws of learning

Tolman stated the following laws of learning:

1. **Law of Capacity:** This relates to traits, characteristics and aptitudes of the learner which determine type of tasks and situations which can be mastered successfully.

2. **Law of Stimulus:** It deals with conditions inherent in the material itself such as belongingness of its parts and how successfully it leads to insightful solution.

3. **Law of Manner:** It is concerned with the manner of presentation of material such as frequency of presentation, distribution of practice and use of rewards.

1.4.3 Brimer's Concept Attainment Theory

J.S. Bruner has suggested a model on concept attainment and structure in teaching. He proposed that economy in thinking and responding requires that we categorize phenomena according to their common attributes. An attribute is a property or characteristic of an object which differentiates it from the other. Colour, texture, form, size, number of parts, position and sound are examples of attributes. We categorize objects having common characteristics into one group. For example, we categorize certain animals having four legs, a tail and a barking voice as dogs. Similarly, we can also categorize more abstract concepts such as enemy or friend, artisan or professional, etc. For teaching about a concept, the teacher must identify such attributes of that concept which differentiate it from others. For example, dog and cat have four legs and a tail, but cat's voice is different from a dog's voice.

Bruner studied the strategies people use in acquiring concepts. For this, he used a set of cards, some cards having borders, others without. All the cards have centre figures varying in shape (square, circle or cross), in colour (red, green or black) and in number (single, double or triple). Each card thus combines four attributes: (i) figure shape, (ii) figure number, (iii) figure colour and (iv) presence or absence of borders.

Each attribute has three values (variations) as listed above. The subject is told that the experimenter has a concept in mind, say red circles, and the subject was to identify that concept. The subject is asked to select a card and then told by the experimenter whether or not the card was an instance of the concept. With these data in mind, the subject would select another card to determine further the attributes of the concepts and would continue doing so till he finds the answer i.e., the card with red circles.

Bruner identified four strategies in concept attainment:

(1) simultaneous scanning strategy
(2) successive scanning strategy
(3) conservative focusing strategy
(4) focus gambling strategy

1. **Simultaneous Scanning:** In this type of strategy, the subject uses each positive instance (each correctly identified card), to deduce which combinations of attribute values are no longer valid. The subject must keep in mind simultaneously all the rejected combinations in order to narrow down the range of subsequent alternatives. This technique is not very efficient since it places a great deal of strain on the subject's memory.

2. **Successive Scanning:** In this technique, the subject makes an over-all estimate of each correct characteristic of the concept and test, each one by one. This is called "successive scanning" since the subject tests individual hypothesis about the correct characteristic one at a time in succession. The technique is also inefficient as the subject may choose redundant cards which give no new information.

3. **Conservative Focusing:** In this technique, each attribute is tested by selecting a card that is different from a focus card in only one attribute. If the new card is still a positive instance, then the subject knows that the varied attribute is not part of the concept. If, however, the changed attribute yields a negative instance, then the attribute is a part of the concept. For example, the concept to be attained is "red circles". Assume that the subject encounters a positive card with three red circles and two borders. This card becomes the focus card and each variable is examined by selecting additional cards. The selection sequence is given below. A plus sign in the parentheses means the card is a positive instance of the concept, a minus sign in parantheses that the card is a negative instance.

Four cards: 3 red circles, 2 borders (+) 2 red circles, 2 border + first decision, eliminate "three figures" as a relevant variable.

3 green circles, 2 borders (-) second decision: retain red as relevant attribute value.

3 red crosses, 2 borders (-) third decision: retain circle as relevant attribute value.

3 red circles, 1 border (+) fourth decision: eliminate "two borders" as relevant attribute value.

Conclusion: The concept is "red circle".

This technique is more efficient since the subject uses a correct instance as a point of reference and selects additional cards to test each attribute value individually

4. Focus Gambling: In this strategy, the subject focuses on a correct card, but varies more than one attribute at a time. This technique can give early result if cards chosen yield a positive instance. If, however, the subject encounters a negative instance, he cannot tell which attribute was essential. In that case, he has to revert to simultaneous-scanning technique to test hypotheses. This strategy is called gambling since the subject takes a chance varying two attributes at a time.

Bruner's strategies of concepts learning can be applied in science teaching. The use of discovery and enquiry techniques in teaching science provides the pupils with experiences quite similar to the card tasks used by Bruner. For example, if we want the pupils to invent their own system of classification of plants and animals, they can do it by identifying the attribute and putting the plants or animals with common attributes in one group.

Attributes/Characteristics of Concepts

1. **Difference in Learnability:** Some concepts are easily learned than others by children who even have similar cultural experiences and language.

2. **Usability:** In our daily life, we use some concepts more frequently than others.

3. **Validity:** Concepts in physical sciences are well defined than concepts in social sciences.

4. Power: There are some fundamental concepts in various disciplines which are necessary to learn in the beginning to understand other concepts. Thus, the attribute of power of a concept implies the extent which to a particular concept is essential to the attainment of other concepts.

5. **Types** of **Concepts:** Concepts are of numerous kinds. Relational concepts are smaller or bigger, shorter or taller, etc. Abstract concepts are such as gentleness, honesty, kindness and love, etc.

6. **Instances of Perceptibilty:** A plant has many instances which can be sensed, as a plant can be seen and smelled whereas eternity has no perceptible instance. Certain concepts may have imaginary rather than actual instances.

Principles of Concept Formation

HJ. Klausmeicr and Richard E. Ripple in their book. *Learning and Abilities* (1971), describe the following principles of concept formation:

1. Principle of likeness and differences among things
2. Principle of cognizance of attributes
3. Principle of correct terminology
4. Principle of proper sequence of instances
5. Principle of analysis of concepts
6. Principle of generalization of concepts
7. Principle of self discovery of concepts
8. Principle of use of concepts
9. Principle of independent evaluation

Essential Elements of Concept Learning

Concepts should be explained through as many examples as possible. Concepts should be taught through the process of connecting subject-matter; process of abstraction comes at a later stage. An analysis of a concept reduces its complexity. Positive examples are more useful. Repetition is very important at various stages.

Simple Activities Related to Concept Formation

	Concept	Activity/Experience
1.	Formation of number concept	1. Number rhymes 2. Number games 3. Number puzzles
2.	Formation of time concept	1. Time perception cards 2. Improvised clock.
3.	Formation of colour concept	1. Rhymes and songs 2. Dramatization 3. Experiences with objects, cards and clothes.
4.	Formation of concept of temperature	1. Activities with an improvised thermometer 2. Simple experiments.
5.	Formation of concept of physical environment	1. Sand and water play 2. Simple experiments with air/ water, etc.
6.	Formation of concept of social environment	Celebration of festivals.

Learning of correct concepts

From the very beginning, our efforts should be to teach concepts appropriately. It should be kept in view that faulty teaching leads to the formation of faulty concepts. Verbal explanation must be supplemented by teaching aids. In verbal talks, sufficient number of examples should be given.

There are several ways to teach concepts as follows:
• **Direct method:** One of the best ways of helping children acquire the concept of an object is to let them have direct experience. For example, if they have to learn about flowers let them see different kinds of flowers.
• **Teaching aids:** Direct experiences are not always possible. It may not be feasible to bring the lion into the classroom. Nor it is always possible to take the children to a zoo. There are several objects which are not found in children's environment. Teaching aids are helpful in teaching such concepts. Through teaching aids, like pictures and models, children can be given an idea of these objects.
• **Association:** New concepts are easily understood if they are associated with the old ones. Children should be provided with numerous instances of the concept and helped to verbalize the concept in the form of definition
• **Self discovery:** Children should be encouraged to differentiate old concepts and new concepts and to form their own concepts.

1.4.4 Hull's Reinforcement Theory

ClarkL. Hull (1884-1952), professor of psychology at Yale University, related learning to the needs of the organism. His theory holds that association between S-R is not enough for learning. According to his views, some kind of reward or other reinforcement was necessary to establish the stimulus as signal. Hull emphasized the importance of the satisfaction of the needs of the children. These needs could be reduced or satisfied through some reinforcement. Hull's theory, therefore, is known as *need reduction* or reinforcement theory of learning. Needs create behaviour and the particular behaviour that reduces need is learnt by the organism.

Men and animals are always confronted with such situations in which there is need: (i) to reinforce S-R bonds which have already been formed, (ii) to form entirely new S-R bonds. A conditioned response occurs when a child feels a need. For instance, when he is hungry or thirsty, there is response and the need or drive is rninirnized or satisfied. In a simple way, it can be stated in these words: 'Whenever a response (R) follows quickly upon a stimulus (S), and this conjunction of S and R is closely associated in time with the diminution of a need, there will be increased tendency of that S-R to recur on later occasions.'

Hull conducted experiments to frame his theory of learning. In a puzzle box, he placed a rat in one apartment. In the box, there was another apartment which was divided by a wall. The way to the department was through a hole at the top of the dividing wall. An electric current was switched on in the compartment where there was the rat. The current was also directed into the dividing wall. To the stimulus of the electric current, the rat responded in a number of ways. It started cutting bars of the box and began to jump in a haphazard manner. In the end, it jumped into the other apartment through the hole. This was repeated till the rat learnt to jump immediately to the other apartment through the hole.

This showed that learning took place on account of the law of effect.

In the next experiment, two seconds before the electric current was switched on, a bell was rung. The rat quickly learned to jump on hearing the bell. It started jumping even earlier than the switching of the electric current, only on hearing the bell. This type of learning occurs due to conditioning. It, therefore, follows that in Hull's theory, law of effect and law of conditioning are combin

Important Definitions Related to Hull's Theory

Important definitions related to Hull's Theory are as follows:
• Need: Need implies a state of the organism in which a deviation of the organism which is necessary for survival from the optimum of biological conditions, takes place. When a need arises, the organism acts with a view to reduce the need. Hence, sometimes Hull's theory of learning is called need reduction theory.
• **Drive:** Drive is a general condition or a common denominator for all primary motivation whether on account of food, water, sex or any other reason. It is a state of tension resulting from needs.
• **Reinforcement:** According to Hull, reinforcement is as 'whenever a reaction (R) takes place in temporal contiguity with an afferent receptor impulse (S) resulting from the impact upon, a receptor or stimulus (S) and this conjunction is followed closely by the diminution in a need, in the tendency of that stimulus on subsequent occasion to evoke that reaction'.
• **Postulates:** Hull stated his theory in the form of 16 postulates or general rules. Some of the postulates are given here:
1. *Postulate of hereditary responses:* Hereditary matters in learning. These are unlearned stimulus responses.
2. Postulate of primary and secondary enforcement.
3. Postulate of habit formation.
4. *Postulate of reaction potential:* It is the strength of the tendency to respond.
5. *Postulate of stimulus intensity:* The greater the intensity of the stimulus, the greater the reaction potential for a level of habit strength.
6. *Postulate of intensive motivation:* The greater the magnitude of the incentive used in reinforcement, the greater the reaction potential.
7. *Postulate of stimulus generalization:* This postulate means that there are two or more alike stimuli, they can evoke exactly the same response from the organism as was evoked by the original stimulus.

Educational Implications of Hull's Theory of Learning

Curriculum should be student-need-based. Individual differences of students should be taken care of. A reasonable anxiety should be created in students. Students with mild anxiety are easier to teach. Drive in them creates restlessness and in order to release tension a series of actions would be needed. Too much or too little of anxiety is very harmful to learning.

In the course of action, the students encounter several stimuli. They make a continuous series of responses. When these stimuli occur with a response, there is a chance for an association and the association takes place only if it is followed by reward or punishment. Rewards and punishment both reduce tension of the students.

The basic educational implications of Hull's Theory of Learning are as follows:
• Hull's theory makes drive a major factor in learning. Therefore, all learning should be as stimulating as possible. Students must be motivated as much as possible.
• Hull's theory points out the importance of adequate drill and practice in learning.
• Hull's theory emphasizes the gradual development of 'artificial incentives' In all learning situations, especially in the case of younger children, artificial incentives work wonders.

1.4.5 Gagne's Hierarchy of Learning

Gagne, in his theoretical framework, accounts for many factors of learning. However, he mainly focuses on intellectual skills. Many scholars have found his theory of prescriptive nature.

Gagne makes a distinction between the types of conditions. He saw states as the internal conditions, which included attention, motivation and recall. On the other hand, the external conditions were the factors surrounding one's behaviour, which included the arrangement and timing of stimulus events. Hence, he identified the following phases of learning:

• Phase I: Receiving the stimulus situation
• Phase II: Stage of acquisition
• Phase HI: Storage
• Phase rV: Retrieval

Gagne identified the following five major types of learning levels in his theory:

1. Verbal information
2. Intellectual skills
3. Cognitive strategies
4. Motor skills
5. Attitudes

The afore-mentioned classification is necessary because each learning level requires different internal and external conditions. In other words, each learning level requires different types of instruction. For example, in order to learn cognitive strategies, there must be a chance to practice developing new solutions to problems. In order to learn attitudes, the learner must be exposed to a credible role model or persuasive arguments.

Gagne further argues that learning tasks for intellectual skills can be organized in a hierarchy according to the increasing level of complexity: stimulus recognition; response generation; procedure following; use of terminology; discriminations; concept formation; rule application; and problem solving.

This hierarchy fundamentally provides direction for instructors so that they can identify prerequisites that should be completed to facilitate learning at each level. This learning hierarchy offers a basis for forming the sequence of instruction. Gagne laid down the following nine instructional events and corresponding cognitive processes:

1. Gaining attention (reception)
2. Informing learners of the objective (expectancy)
3. Stimulating recall of prior learning (retrieval)
4. Presenting the stimulus (selective perception)
5. Providing learning guidance (semantic encodi
6. Eliciting performance (responding)
7. Providing feedback (reinforcement)
8. Assessing performance (retrieval)
9. Enhancing retention and transfer (generalization)

1.5 THEORIES OF MOTIVATION

A teacher is daily faced with a variety of problems in his teaching-learning situations such as Mohan is naughty in the class. He does not take interest in his studies. Ashok, another boy, engages in the anti-social activities in the school and outside the school. Maneesh Kumar, a third boy, concentrates in his studies and secures high grades in the examination. These questions and many others of similar type create anxiety and curiosity in the mind of the teacher to understand the underlying factors, which explain such type of behaviour in the students. For answers to all these questions, the teacher turns to psychology of motivation for guidance.

Tremendous research has been done on psychology of motivation in the last few decades and a number of new theories have been evolved to explain human behaviour. K.B. Madson in his book *Theory of Motivation* has given 24 theories of motivation, which propose different explanations of human behaviour.

Historically, the word 'motivation' comes from the Latin root *'moveers'* which means to move. Thus, we can say that in its literal meaning motivation is the process of arousing movement in the organism. The movement is produced and regulated through the release of energy within the tissues.

1. H.W. Bernard held 'motivation refers to all those phenomena, which are involved in the stimulation of action towards particular objectives where previously there was little or no movement towards those goals'.

2. Atkinson defined motivation as, 'the term motivation refers to the arousal of tendency to act to produce one or more effects'.

3. Maslow has advanced the theory of hierarchy of needs ranging from basic physiological needs to self-actualization. According to him, 'motivation is constant, never-ending, fluctuating and complex, and that it is an almost universal characteristic of particularly every organismic state of affairs'.

4. D.O. Hebb remarked, 'the term motivation refers to the existence of an organized phase sequence, to its direction and content, to its persistence in given direction or stability of content'.

Functions of motivation

Psychologists have analysed the motivated behaviour of an organism and observed the following functions of such type of behaviour:

• **Motives energize and sustain behaviour:** Motives energize the behaviour of the organism and arouse him for action. The energy can be physiological as in drives or reintegrative resonator activity aroused by similarity between present action and residues of past ones that were emotionally significant for the person. The energy is supplied in proportion to the amount of energy output for a task. Motives not only energize the behaviour but they also sustain our interest and behaviour for a longer period in the activity. According to Hebb, efficiency and adequacy are increased in motivated state of behaviour.

• **Motives direct and regulate human behaviour:** Motivated state is often described as guided, directed and goal-oriented. The motivated behaviour moves in a specific direction. The behaviour of the organism is purposeful and persistent. The direction of motivational behaviour is, no doubt, very complex because of the structure of the situation and the action sequences, which determine the behaviour.

• **Behaviour is selective:** Under motivated condition, the behaviour of the organism does not move in a haphazard way. It is directed toward a selective goal, which the individual sets for himself. For example, the student who is motivated to secure high grades in the examination, concentrates on his studies by selecting the appropriate means to reach his goal. The motive is terminated by the achievement of the goal.

Classification of motives

In recent years, psychologists being dissatisfied with the concept of drives as an explanation of human behaviour and the concept of goal-directed behaviour as the separate explanation, introduced the concept of motive, which incorporates the meanings of both drive and goal-directed behaviour. Motives have been used in a different sense. The *Oxford Dictionary* defines a motive as 'that which moves or induces a person to act in a certain way; a desire, fear, or other emotion or a consideration of a reason, which influences or tends to influence a person's volition; also often applied to a contemplated result or object, the desire of which tends to influence volition.' In our daily life, we use the term motive as our determination to act in some specific way, to carry out an intention, to arrive at a goal.

Suppose 'A' says that he has a motive to get high grade in the examination; this conveys As determination to reach the goal he has set for himself, for which he will plan and follow specific strategy to accomplish it. According to Newcomb, motive like non-technical terms 'want and desire' is a word which points both inward and outward conditions such as dissatisfaction (tension and disequilibrium) and to something in the environment, which serves to remove the dissatisfaction. He says that an organism is motivated when and only it is characterized both by a state of drive and by a direction of behaviour towards some goal, which is selected in preference to all other possible goals. Motive is a concept that joins together drive and goal. Motives can be grouped in the following categories:

• **Physiological motives:** In this category, we can put those motives, which are essential for the survival of the organism. They include food, oxygen water, sex, elimination, warmth in the body and emotions.

• **Social motives:** Man is a social animal. He lives in groups, which shape his behaviour according to a definite pattern. Social motives are learned in the social environment. They are influenced by cultural heritage and philosophy of life of the people. They are rooted in physiological motives and emerge out of them gradually with advancing age of the child. Social motives are the sources which bind human beings and social progress depends on their proper development.

Some of the important social motives are social approval, affection, respect, prestige and money, etc.

• **Personal motives:** In addition to the social motives that are necessary for socialization, every person has special categories of motives that are dependent on the unique structure of the personality of the person. There may be a long list of personal motives depending upon the individual differences which motivate individuals for action. Some of the common personal motives include interests, attitudes, values, goals and self-concept.

Another classification of motives maybe made as conscious and unconscious. Conscious motives may be inferred from one's behaviour but unconscious motives influence our behaviour unconsciously and we are not aware of them.

Characteristics of a Motivated Learner

Most of the successful learners understand new languages very easily; they display a lot of characteristics, most of them are clearly associated with motivation. Some of them are: positive task orientation; ego involvement; need for achievement; high aspirations; goal orientation; perseverance; and tolerance of ambiguity.

Characteristics of intrinsically-motivated learners

Intrinsic motivation comes if the activity is done by the person himself, and the activity has a meaning in itself or is valued for itself.

Following are the characteristics of intrinsically motivated learners:
• They have a positive attitude.
• They know how much they are paying attention to the topic and they control it.
• They know that they can be motivated by observing others.
• They are open-minded and they believe that the learning may be worthwhile.
• They are excited by the prospect of competence.

Characteristics of extrinsically-motivated learners

Extrinsic motivators consist of pay, benefits, status, bonuses, commissions, pension plans, expense budgets, and the like. When the extrinsic motivators are used they need to be communicated in clear ways along with their advantages and disadvantages. Of course, these consequences must be real, and not just a matter of company propaganda. Hypocrisy can be easily detected and nothing turns motivation off more effectively than the realization that one has been had.

So far we have been dealing with the concept of motivation in general; now we will examine some of the specific theories of motivation and their principal views on the explanation of behaviour.

1.5.1 Physiological Theory and Murray's Theory of Motivation

This theory was developed by Morgan and is popularly known as central motive state (CMS). He held the view that there is a central motive state, which is the basis of all the activities and its behaviour can be explained in terms of CMS. Morgan conducted several experiments and gathered evidences in support of his theory of central motive state. He mentioned the following characteristic features of the theory:

(i) **Persistent:** A central motive state when once aroused remains persistent and does not require support of any stimuli, internal or external.

(ii) General activity: The motivated organism has heightened bodily activity.

(Hi) Selectivity: A central motive state results in selectivity of reaction to stimuli. The reaction does not depend upon any of the external environmental stimuli.

(iv) Emission of certain behaviour pattern: The most significant feature of central motive state is that it primes or prompts the organism for appropriate consummately behaviour.

Murray's Theory of Motivation

Murray's theory of motivation comes under need theory. His theory of motivation has been influenced by dynamic approach of psychoanalysts and field theorists. He developed a detailed system of human behaviour on the basis of his extensive work on human psychology. He put forward the concept of need to explain human behaviour a need is a construct (hypothetical force), which stands for a force (the physico-chemical nature of which is unknown) in the brain region, a force which organizes perception, apperception, intellection, conation and action in such a way as to transform in a certain direction an existing, unsatisfying situation.'

According to him, an unsatisfied need would arouse the person to work that would be sustained until satisfaction had been attained. Each need is accompanied by a particular feeling or emotion and tends to use certain modes to further its trends. It may be weak or intense, momentary or enduring, but usually it persists and gives rise to a certain course of overt behaviour or fantasy, which changes the initiating circumstances in such a way as to bring about an end situation, which still appeases or satisfies the organism. He classified all needs into two broad categories, which are as follows:

• **Vicerogenic needs:** These needs are called primary needs, which are essential for the survival of the organism. They include water, food, oxygen, sex secretion, defaecation, urination, warmth, etc.

• **Psychogenic needs:** These needs are secondary, which emerge out of primary needs. Murray has given a long list of psychogenic needs. Some of the secondary needs are:

1.5.2 Maslow's Theory of Self-Actualization

The theory of self-actualization was developed by Abraham Maslow (1908-1970), a professor of psychology. He was a humanist who believed that man can work out a better world for mankind as well as for himself. His approach to understand human personality and motivation is different from behaviourism and psychoanalysis. He critically examined the traditional approach of pain avoidance, pleasure seeking and tension reduction as the major sources of motivating behaviour. He has consistently argued that needs are arranged in a hierarchy. As one general type of need is satisfied, another higher order need will emerge and become operative in life. He developed his own system of needs and categorized them into two divisions: (i) deficit needs, and (ii) growth needs.

The needs of the first category include physiological needs, such as hunger and thirst. Once these needs are satisfied, the person seeks to satisfy safety needs—love need, belongingness need and esteem needs. Under the second category, there is only one general need called "self-actualization". The second important concept of Maslow is that each individual differs in nature, which should be supported and encouraged. He criticized the views of those psychologists who believed that man is selfish, evil and anti-social. Maslow believed that there are degrees of humanness. He went slightly beyond other need theorists by postulating an order of potency or priority with regard to structuring of needs within the person.

Maslow developed a hierarchical order of needs from physiological to self-actualization needs. The order of needs started from basic survival or lower order needs to higher order needs. The hierarchy goes follows:

• Physiological needs
• Safety needs
• Belongingness and love needs
• Esteem needs
• Self-actualization need

We can see from the hierarchy of needs that for self-actualization, it is necessary that a person should not worry about his survival needs. He should enjoy his job. The person should feel satisfied in his social relation in family, society and in his job.

Maslow's theory emphasizes that motivation to work is rooted in the mlfillment of various categories of needs which range from physiological to self-actualization.

Some of the characteristics of self-actualizers are as follows:

Demonstration of an efficient perception of reality and acceptance

Acceptance themselves and others

High degree of spontaneity and simplicity

Problem-centred orientation

Privacy and detachment

Autonomous and independent of the environment

Appreciation of 'basic goods of life' with continued freshness and pleasure;

They at times show mysticism

Identify with mankind

Development of deep interpersonal relations

Democratic in outlook

They keep means and ends distinguishable

Sense of humour

• Creative
• Non-conformists

1.5.3 Theory of Achievement Motivation

Theory of achievement motivation has drawn the attention of psychologists, sociologists and educators in recent years. Everyone is aware of the fact that wide disparities exist in the economic conditions of the various countries of the world. Psychologists thought about these problems in terms of social beliefs, political set-up, distribution of power and even their characteristic life philosophy and psychology. How can understanding of individual psychology contribute to the worldwide problems of economic growth?

This crucial problem of economic disparity among the nations of the world and psychological causes underlying this problem were attacked by David C. McClelland of Harvard University. He holds the view that psychological study of the individual and the nation can contribute a great deal in understanding this problem. He rejected the conventional explanation that economic growth can be explained in terms of economic variables. As per McClelland's viewpoint, psychological and sociological factors are major variables affecting the economic growth. He wrote a book, *The Achieving Society* in which he advanced his new concept of

economic growth of nation. He argued in his book that the rise of capitalism cannot be explained and understood on the basis of economic factor alone. He believes that changes in the fundamental beliefs and attitudes of men gave impetus to economic growth in certain countries.

According to him, human beings differ from one another in the strength of the achievement motive. It is this difference in the strength of motivation to achieve that is important in understanding the differences in the economic growth of nations.

The theory of achievement motivation was developed by McClelland and his associates in 1951 at the University of Harvard. He defined motive as, 'a redintegration of a change in a fact by a cue and anticipation of a future change in affect contingent upon certain actions'. The definition given by him has two important terms, which need further explanation. The first term is "redintegration", which means re-instatement of psychological process in the conscious as a result of the stimulation by an environmental event. Second is, "cue", which is the cause of affect in arousal in the individual. For example, if a boy sees his old teacher after a long time, the perception of the teacher works as cue, which arouses affective feelings and the whole psychological process is re-instated. Thus, for motivation two factors are important: environmental cue and the affective arousal in the individual. According to him, all human motives are learned in the environment irrespective of their nature.

Development of achievement motive is affected by a number of variables in home, school and society. Home plays an important role in the early training of children for the development of attitudes and motives. Parental expectation and guidance to a child develops need for high achievement in life.

The society and its social philosophy is an important variable in developing achievement motive. There are communities, which are achievement-oriented. There are other societies, which believe in fate and leave everything to God.

A child normally enters school at the age of five years. Before joining school, a child gathers many experiences, which become an integral part of his personality and form his attitude towards life, but even then the school can help a lot to sharpen his

already acquired experience and develop positive attitude in children. A teacher can play a very crucial role in the development of achievement motive by the following methods:

(i) The teacher should make clear the importance of achievement motive in life by means of telling the stories of great men and their achievements from all walks of life.

(ii) The teacher should provide a proper environment both inside and outside the class. The teacher's attitude and enthusiasm will create a better environment for the achievement motive in children.

(iii) The teacher will succeed in his attempt if he convinces the students that developing a new motive is realistic and reasonable.

(iv) The teacher should relate the motive with future life of the students and assign independent responsibility to them.

(v) The teacher should make clear to the students that the new motive will improve their self-image.

(vi) The teacher should emphasize upon the fact that new motive is an improvement on prevailing cultural values.

(vii) The teacher should make students committed to achieving concrete goals in life related to the newly developed motive.

(viii) The teacher should ask the students to keep the record of their progress towards their goal.

(ix) Self-study should be emphasized.

(x) The teacher should make an effort to develop conducive social climate in the class so that every individual should feel that he belongs to a group.

1.5.4 Psychoanalytic Theory of Motivation

The concept of motivation in psychoanalysis developed against the traditional rationaMstic interpretation of behaviour, which accepted the proposition that a man acts in any particular way because he has reasons for acting as he does. Freud objected to the theory of pure intellectualism as an explanation of human behaviour. He revolutionized the theory and practise of psychology by proposing unconscious motivation as an explanation of behaviour, and further advocated that reasons of behaviour can be found by analysing certain procedure of psychological analysis (psychoanalysis), which can disclose the pattern offerees and energies which led to the action. The advantage of this approach was that behaviour was explainable by psychological laws.

Freud introduced the concept that causes of behaviour can be determined by exploring the unconscious personality of the individual. He on the basis of observation of his mental patients and their treatment, developed certain concepts to explain behaviour.

One of the important concepts is equilibrium. According to this concept, nervous system discharges an increase in excitation through any appropriate action, motor or associative. In 1915, he introduced the concept of instinct. He held that instincts are the internal sources of stimulation. The individual, in order to reduce stimulation, is activated to work. He conceived two instincts—life and death instinct. The discharge of tension is called "primary process". Tension may be discharged through hallucinatory images in the absence of motor activity.

The tendency to discharge energy through pre-established channels is called "secondary process". Tension can only be reduced by finding an outlet through constraints and inhibitions that the ego places upon its discharge. Personality, according to Freud, is constituted by three major systems: id, ego and the superego. All these three systems interact with each other and behaviour is the result of the constant interaction among these three systems.

The id strives to discharge its instinctual energy for immediate gratification of its urges. It operates ontheprinciple of hedonism. The ego operates on reality principle. It formulates plans at the cognitive level to satisfy the demands of the id according to the situations in the environment. The superego inliibits the anti-social impulses of the id to persuade the ego to substitute moralistic goals for practical ones and to strive for perfection. The superego controls the id and the ego.

In a well-adjusted person, the relationship among the id, the ego and superego is normal. In a maladjusted person the relationship is disturbed. Freud claims that we can understand the behaviour of the individual if we know the components of his life.

1.5.5   Theory of Intrinsic Motivation

Traditionally, behaviourists have explained behaviour in terms of certain biologically inherent drives such as hunger, thirst, sex and maternal behaviour and a number of other physiological drives. These physiological drives are produced as tissue needs of the organism. These drives are the basis of more complex motives such as prestige, money and safety, etc. and they develop out of the physiological needs through the process of learning.

Harlow and associates (1950) have developed a new theory of motivation called theory of intrinsic motivation. Intrinsic motivation is that tendency to activity, which arises when the resolution of tension is to be found in mastering the learning task itself; the material learned provides its own reward. If the work is done because doing it is satisfying, if the work carries its own reward, if it is done for its own sake, we can say that motivation is intrinsic.

Harlow and associates (1950) have conducted experiments on monkeys to show the importance of the intrinsic motivation. They have reported that monkeys solved problems without being offered extrinsic reward. They have also reported that introducing an extrinsic reward made learning less efficient. Several experiments have been conducted on manipulative, exploratory and curious behaviour on animals and small children, which give evidence of intrinsic motivation.

1.5.6 S-R Theories of Motivation

Motivation is the explanation of human behaviour which depends on our concept of the nature of man. According to S-R theories, man is a machine which is governed by fixed principles; and motivation of behaviour originates from physiological drives. The behaviour of the organism can be predicted on the basis of the cause-effect relationship in an objective way. Motivation is an urge to act, which results from stimulus. The stimulus may be internal or external. Behaviour is not related to any purpose. S-R theorists emphasize the importance of past experiences to explain the causes of present behaviour. On the other hand, cognitive field theorists view man as a purposeful, reflective and creative self. The concept of motivation is quite different from S-R theories in cognitive field theory. Motivation emerges from psychological situation, which is created by disequilibrium in the life-space of the individual. All behaviour is goal-directed. The individual when moves towards a goal, is thwarted by barrier, following which a tension is created, which the individual tries to remove. Release of tension by proceeding towards a goal is motivating. Success and failure work as motivator. When one successfully completes an act, this motivates him for further goal. Cognitive field theories emphasize the importance of present experiences. It is, as a matter of fact, a situational approach to motivation and behaviour.

S-R theories can be classified into two broad categories: (i) S-R theories without reinforcement, and (ii) S-R theories with reinforcement. Under non-reinforcement theorists come Pavlov, Watson and Guthrie who emphasized the importance of recency and contiguity between S-R for learning to occur. Some psychologists hold the view that in classical conditioning, UCS (food) works as a reinforcer. As regards Guthrie, he dealt with motivation in purely associative terms. He did not introduce the concept of motivation as such but he talked about maintaining stimuli, which means that for each physiological condition such as hunger and thirst, there are characteristic internal stimuli, which help to maintain the behaviour of the organism throughout the learning task.

1.6 TRANSFER OF LEARNING AND ITS THEORIES

The idea of transfer is basic to education. Education is considered to be a preparation for life. Whatever students learn in educational institutions, *is* useful only when they can apply the same in the everyday life. This application or *carry over* learning from one act of learning to another is called 'transfer of learning'. The transfer of learning implies the application of knowledge in various subjects and fields. Whatever is taught in the schools, it is assumed that children will use that knowledge, skills, attitudes and information to solve problems of life after completing their formal educa-tion. Arithmetic is taught on the assumption that it will be used in day-to-day life to handle the problems involving the use of arithmetic. Civic is taught on the assumption that its knowledge would be helpful to face social problems successfully.

Children are required to do addition and subtraction of fractions in algebra. The teacher points out to them that the principle is the same as that of addition and subtraction of fractions in arithmetic. This implies that transfer of learning arithmetic takes place in the learning of algebra.

There are many educators who believe that subjects like mathematics, English language and science, etc., are superior to other subjects like economics, history, arts, crafts and home science as they are more helpful in sharpening the intellect of the students. The intellect so sharpened, they think, can be profitably employed in the performance of any other activity which may or may not be directly related to the subjects studied.

Traditionally children had been given long poems to memorize, long mathematical tables to learn by rote and a huge store of material to be committed to memory. It was believed that such learning was meant for disciplining the mind.

1.6.1 Definition of Transfer of Learning

For having an adequate understanding of the term transfer of learning, we may consider the following definitions:

1. M.J. Peterson (195) — 'Transfer is generalization, for it is the extension of idea to a new field.'
2. L.D. Crow and A.C. Crow (1963) — 'The carry-over habits of thinking, feeling or working of knowledge or of skills from one learning area to another usually is referred to as the transfer of training.'
3. B.L. Bigge (1964) — 'Transfer of learning occurs when a person's learning in one situation influences his learning and performance in other situations.'
4. H.C. Ellis (1965) — 'Transfer of learning means that experience or performance on one task influences performance on some subsequent task.'
5. K. Lovell (1970) — 'Transfer of learning is the effect which some particular course of training has on learning or execution of a second performance. Such an effect may be of a helpful nature or it may hinder.'
6. Guthrie and Powers (1973) — 'Transfer may be defined as a process of extending and applying behaviour.'

A comprehensive definition of transfer of learning would mean the application or carry-over of knowledge, skills, attitudes, habits, values or other responses from the situation in which they were initially acquired to some other situation for which they were not specifically learned.

There is no doubt that almost all educational and training programmes are built upon the premise that the learners have the ability to transfer what they have learnt in one situation to another. This relationship has a great significance for any educational practice as it lends importance and faith to the usefulness of formal education. Learning becomes functional only when it enables the students feel confident that they would use their experiences and skills obtained in the school in their day-to-day life.

The very existence of our educational institutions is based on the assumption that the knowledge, skills and attitudes developed by them in the students will be transferred to life situations. The following issues arise in connection with the study of transfer of learning:

1. What are the areas in which transfer of training takes place?

2. What is the degree of transfer of training from one area to another?
3.   How best transfer of learning can take place?
4.   Is transfer of training possible in reasoning?

Areas of Transfer of Learning

The scope of transfer of learning is very wide. Some of the important areas of transfer of learning are as under:

1. Transfer from knowledge to knowledge
2. Transfer from knowledge to skill
3. Transfer from knowledge to behaviour
4. Transfer from attitude to attitude
5. Transfer from attitude to behaviour

1.6.2 Types of Transfer of Learning

Important types of transfer of learning are as follows:

• **Lateral transfer:** It is the most common form of transfer to occur. Suppose a child has been taught the addition and subtraction and he understands that 15 -8 = 7 in the context of beads or blocks or other subjects used in the classroom by the teacher, it is hoped this understanding would transfer to other situations. For example, the child at home removes 8 apples from a basket containing 15 apples and understands that there would be 7 left. This is an example of lateral transfer. In this case, the child has made use of the understanding and skill learnt in the school in learning situations outside the school.

• **Sequential transfer:** The contents of the subjects of school curriculum are divided into sequent units. One idea leads to another and both ideas have some relationship to the third idea to be taught.

• **Horizontal transfer:** Lateral and sequential transfers are called horizontal for the learner, and is within the same behavioural category in making the transfer.

• **Vertical transfer:** Vertical transfer of learning implies facilitating the higher behavioural level in vertical manner by the lower level of learning.

• **Bilateral transfer:** This type of transfer takes place when training imparted to one lateral automatically transfers to another. Training in the use of pen by the right hand transfers training to the left.

Positive, Negative and Zero Transfer

A positive transfer takes place when the learning of a particular task facilitates the subsequent-learning of another task. But on the other hand, if learning a particular task interferes with the learning of a subsequent task, it is called a negative transfer. If, however, learning of a particular task makes no difference whatsoever to the learning of a subsequent task it is said to be zero transfer or no transfer of learning from one task to the subsequent task.

Once a child has learnt to misspell a word, it is difficult to correct it, especially if the child has been writing it for a long time. Similarly, if a child has developed faulty handwriting, it is more difficult to remedy it than to teach him to write well from the beginning. These are examples of negative transfer.

1.6.3 Theories of Transfer of Learning

Important theories of transfer of learning are discussed below.

1. Theory of Mental Discipline.
2. Theory of Identical Elements or Components.
3. Theory of Generalization of Experience.
4. Theory of Ideals.
5. Gestalt or Relationship Theory.

1. **Theory of Mental Discipline:** General transfer of teaming through mental discipline is the oldest theory but hardly accepted by the modern psychologists. The principal feature of the theory of mental discipline is that the mind or its faculties such as memory, reason, will and perseverance are the muscles of the mind, and like muscles of body they are strengthened through exercise and later on function automatically in all situations and areas in which they are involved. It was thought that the rigorous study of Geometry can train the faculty of reasoning and it is so trained in a person that he can reason well in the realms of mathematics, social studies, philosophy and business. This theory was first challenged by William James. Experiments by James and Sleight show that one can hardly improve memory for all situations in which it is called for by rigorously exercising it in any one specific situation.

Thomdike did a lot of research work on this problem and came to the following conclusion: 'The notions of mental machinery which being improved for one sort of data held the improvement equally for all sorts, of magic powers which, being trained by exercise of one sort to a high efficiency, held that efficiency whatever they might be exercised upon, and of the mind as a reservoir for potential energy which could be fired by any one activity and drawn on for any other—have now disappeared from expert writing on psychology.' This sets limits of formal discipline.

A.G. Wesman (1945) concluded on the basis of his studies that there is no clear-cut superiority of any subject as regards the amount of transfer.

2. **Theory of Identical Elements or Components:** Thomdike and Woodworth were the main founders of this theory. On the basis of their experiments, carried out in 1901, Thomdike and Woodworth concluded that transfer of learning occurs from one situation to another on account of the presence of identical twins. The theory implies that learning is facilitated in the new situation to the extent that identical elements which occurred in an earlier situation are present in the new situation. The similarity of elements can be either in the subject-matter or in procedure or in attitudes.

Peter Sandiford (1941) stated: 'This theory of identical elements is a perfectly reasonable one. Out of the rmllions of specific reactions, each with its specific connection in the nervous system, some of them are bound to be common to several situations. The greater the number of these common elements, the greater will be the transfer effect.'

According to this theory, addition is supposed to improve multiplication on account of lots of additive processes required in multiplication tables. Learning of one language helps the learning of the other as the methods of learning used in two languages have the common elements of vocabulary. In a simple way, it may be stated that the transfer of learning is in terms of 'identity of content, identity of procedure and identity of ideals.

3. **Theory of Generalization of** Experience: C.H. Judd (1908) came to the conclusion on the basis of his experiments conducted on transfer of learning that transfer takes place to the extent to which a learner is able to generalize his experiences. Judd lays emphasis on the intelligence of the learner which enables him to understand and apply knowledge of principles or generalizations from one situation to another.

The theory states: 'The development of special skills, the mastery of specific facts, the achieving of particular habits or attitudes in one situation have little transfer unless the skills, facts, habits are systematized and related to other situations in which they can be utilized.' If we are trying to build good habits of study and work, it should be done in such a way that these are applicable in all subjects and not merely to one subject.

4. **Theory of Ideals:** W.C. Bagley, who gave an explanation of transfer in terms of ideals asserted that generalizations are more likely to transfer, if they are regarded as of some value as desirable. According to him, generalization is not the whole story but it must be given an emotional sanction or be elevated to a plane of an ideal worth living for. Thus, the teacher should consciously seek maximum transfer values by emphasizing ideals of neatness, of love, of learning, tolerance for difference of opinion, and so on.

5. **Gestalt or Relationship Theory:** According to Gestalt psychologists, transfer of learning means that generalizations, concepts or insights which are developed in one learning situation are employed as a whole in other situations in which they are applicable. However, the transfer of generalizations or insights does not occur automatically. For transfer to occur, the pupil must perceive the relationships between the two situations, must understand that the generalizations gained through past experience are appropriate to the new situations and must have the desire to use the generalizations and to benefit by the perceived commonality.

1.6.4 Educational Implications of Transfer of Learning

In the curriculum, utility aspect should be kept in view. In selecting and planning the curriculum, the selection and arrangement of material in subjects should be such as they are closely associated with the day-to-day needs of the learners. This implies that spellings of those words should be taught first which are used in every-day life of the learners. Similarly the kinds of readings they will use in their life should be given priority. Curriculum content should be related directly to vocational interests and ways of life. Mathematical symbols and formulas should be expressed in familiar terms to the students.

Superiority of one subject over the other in terms of transfer has little relevance. The degree of transfer depends upon the applicability of the outcomes of learning. As Thorndike pointed out: 'The differences are so small and the unreliabilities are relatively so large, that the influence of the subject studied seems unimportant. Indeed one subject was about as good as another.'

Conditions that facilitate transfer of learning are as follows:

1. Transfer of learning takes place when there is some similarity between two tasks.
2. It is not enough that there should be similarity between two tasks but the learner must realize that similarity.'
3. Transfer of learning is more likely to occur if the learner is keen to use his old learning in the new situation.
4. Transfer of learning depends on the ability of the learner. The more intelligent a learner is, the more likely it is that transfer will take place. The impact of transfer of learning on the part of the learner also depends on the intelligence of the teacher.
5. The better the first task has been learnt the more likely it is that the learning will be transferred to the new situation
6. Understanding of the underlying principles, i.e., arriving at generalizations, adds transfer of learning.

7. When children discover principles for themselves, there is greater possibility of transfer than when they are told the principles.
8. The more experience children have, of applying a principle in different situations, the easier it will be for them to apply it in a new situation.

Role of the teacher in transfer of learning are as follows:

1. Subject-matter of all subjects should be taught and learnt in close contact with its applications.
2. Adequate experiences and practice should be provided with the original task for its transfer to other situations in learning.
3. Important features of a task should be identified so that differences and similarities with other tasks should be comprehended and proper relationships established.
4. Implications of concepts and rules in actual life should be thoroughly discussed to make its applications practicable.
5. Students should be guided to discover common essential features and relationships of situations which appear to be different superficially.
6. Students should be encouraged to develop proper generalizations.
7. Students may be motivated to see the significance of identical elements and components of ideas, skills, attitudes and objects.
8. Emphasis should be on the development of desirable flexible behaviour and not merely to apply it mechanically
9. While teaching abstract concepts, a number of illustrations and practical examples of applications should be given.

10. Relationships should be emphasized and the learners guided to perceive them within a subject, between the subjects and to out-of-school life project method is very useful in cutting across several subjects.
11. Discussions and debates should be arranged to develop the students' power of understanding relationships.
12. Field trips to important places of commercial, educational, economic, historical, cultural and scientific etc., help in developing proper understanding of life situations in the context of curriculum content.
13. Logical tlirnking should be kept in constant focus. Students may constantly be asked the *why* and *how* of generalizations.
14. Goals, outputs and objects of a particular activity should be made very clear to the students.

ACTIVITY

Make a flow chart on the basic postulates of the Achievement Motivation Theory.

Did You Know

Hull's learning theories were first presented in *Mathematico-Deductive Theory of Rote Learning* (1940), which was his collaboration with many other coworkers. In this theory, Hull expressed his findings through postulates stated in mathematical as well as verbal forms.

1.7 SUMMARY

In this unit, you have learnt that:

• Basically, learning is change in behaviour because of experience.

• There are three components of behaviour: (i) conative, (ii) cognitive and (iii) affective. The conative aspect refers to act or doing part. The cognitive domain means the meaningful aspect of behaviour. The affective domain is related to emotional or feeling part of the behaviour.

• When the needs of an individual are strong, he is compelled to act to satisfy those needs. So the process of learning starts with a need and then there is a drive to strive for its satisfaction.

• The learning in one situation can help in learning in another situation, but sometimes learning in one situation may cause obstacles in learning in other situation.

• Thorndike initiated the study of operant or instrumental conditioning with the puzzle box experiments on cats. B.F. Skinner conducted a series of experiments on animals and prepared ground for the use of the principles in human learning.

• Theories of learning attempt to explain the mechanism of behaviour involved in the learning process.

• Important characteristics of a theory are: (a) testability of its principles, (b) predictability of the outcomes of the actions, (c) comprehensiveness, (d) brevity, and (e) simplicity.

• Lewin's theory regards learning as a relativistic process by which a learner develops new insight or changes old ones. According to the theory, learning is not a mechanistic process of connecting stimuli and responses within a biological organism.

• Tolman's theory combines the advantages of stimulus-response theories and cognitive field theories.

• J.S. Bruner has suggested a model on concept attainment and structure in teaching. He proposed that economy in thinking and responding requires that we categorize phenomena according to their common attributes.

• Bruner identified four strategies in concept attainment: (1) simultaneous scanning strategy, (2) successive scanning strategy, (3) conservative focusing strategy, and (4) focus gambling strategy

• Hull emphasized the importance of the satisfaction of the needs of the children. These needs could be reduced or satisfied through some reinforcement. Hull's theory, therefore, is known as *need reduction* or reinforcement theory of learning.

• Gagne argues that learning tasks for intellectual skills can be organized in a hierarchy according to the increasing level of complexity: stimulus recognition; response generation; procedure following; use of terminology; discriminations; concept formation; rule application; and problem solving.

• Murray's theory of motivation has been influenced by dynamic approach of psychoanalysts and field theorists. He developed a detailed system of human behaviour on the basis of his extensive work on human psychology.

• The theory of self-actualization was developed by Abraham Maslow; who developed his own system of needs and categorized them into two divisions: (i) deficit needs, and (ii) growth needs.

• Freud objected to the theory of pure intejlectualism as an explanation of human behaviour. He revolutionized the theory and practise of psychology by proposing unconscious motivation as an explanation of behaviour, and further advocated that reasons of behaviour can be found by analysing certain procedure of psychological analysis (psychoanalysis), which can disclose the pattern offerees and energies which led to the action.

• S-R theories can be classified into two broad categories: (i) S-R theories without reinforcement, and (ii) S-R theories with reinforcement.

• According to Gestalt psychologists, transfer of learning means that generalizations, concepts or insights which are developed in one learning situation are employed as a whole in other situations in which they are applicable.

1.8 KEY TERMS

• **Associated learning:** This consists of the facts and other objective materials that are learned because they are related to the primary learning and are logically brought into the lesson

• **Attribute:** A property or characteristic of an object which differentiates it from the other

• **Chain learning:** Consists of motor and verbal change in curriculum

• **Life-space:** The field offerees to which the individual is responding or reacting

• **Motivation:** The driving force that help causes us to achieve goals

• **Primary learning:** This includes learning of facts, principles and theories, etc., which are the main cores of lessons

• **Reinforcer:** A term in operant conditioning and behaviour analysis, which refers to the process of increasing the rate or probability of a behaviour

• **Theory:** Provides detailed systematized information of an area of knowledge; it serves as guidelines to conduct further research in the area.

• **Transfer of learning:** Application or carry over learning from one act of learning to another

1.9 ANSWERS TO 'CHECK YOUR PROGRESS'

1. There are three components of behaviour: (i) conative, (ii) cognitive and (iii) affective. The conative aspect refers to act or doing part. Learning related to this part of behaviour means acquiring skills to perform tasks like cooking, playing, dancing, knitting, jumping, crawling, talking, walking, singing, etc. The cognitive domain means the meaningful aspect of behaviour. The

activities which require mental thinking like reasoning, analysing, interpreting, concluding, illustrating are included in this dimension of learning. The affective domain is related to emotional or feeling part of the behaviour. Changes that are brought about by performing activities related to emotions and feelings like happiness, sadness and anger are included in this domain.

2. According to the type of development, learning is classified as: academic learning, (ii) emotional learning, (iii) intellectual learning, (iv) moral learning, (v) motor learning, (vi) sensory learning, and (vii) social learning.

3. Chain learning consists of motor and verbal chaining. Verbal chaining is a matter of connecting together in a sequence two or more previously learned stimulus responses (S's - R's).

4. Learning is *vertical* when precision in performance is increased or when information is added to what has been already learned, and it is *horizontal* when what is learned is integrated and organized as a part of a functional unit of expanding experience.

5. A learning situation is a problem situation and the learner has to see the problem as a whole and find its solution by insight. The law of organization of perception as applicable to learning is the law of Pragnanz and four laws of organization subordinate to it—the laws of similarity, proximity, closure and good continuation.

6. The 'Law of Similarity' says that 'other things being equal, the stimuli that are more similar to one another will have greater tendency to be grouped'. Thus, learning similar things is easier than learning dissimilar things.

7. Bruner identified four strategies in concept attainment: (i) simultaneous scanning strategy, (ii) successive scanning strategy, (iii) conservative focusing strategy, and (iv) focus gambling strategy.

8. In 'focus gambling' strategy, the subject focuses on a correct card, but varies more than one attribute at a time. This technique can give early result if cards chosen yield a positive instance. If, however, the subject encounters a negative instance, he cannot tell which attribute was essential. In that case, he has to revert to simultaneous-scanning technique to test hypotheses. This strategy is called gambling since the subject takes a chance varying two attributes at a time.

9. Need implies a state of the organism in which a deviation of the organism which is necessary for survival from the optimum of biological conditions, takes place. When a need arises, the organism acts with a view to reduce the need. Hence, sometimes Hull's theory of learning is called need reduction theory.

10. Gagne identified the following five major types of learning levels in his theory: (i) Verbal information; (ii) Intellectual skills; (iii) Cognitive strategies; (iv) Motor skills; and (v) Attitudes.

11. Motivation refers to all those phenomena which are involved in the stimulation of action towards particular objectives where previously there was little or no movement towards those goals.

12. The primary functions of motivation are as follows:

• It energizes and sustains behaviour; and
• It motivates and regulates behaviour.

13. Hierarchical order of needs from physiological to self-actualization needs has the following steps: Physiological needs; Safety needs; Belongingness; Esteem needs; Self-actualization needs.

14. Maslow's theory signifies that motivation to work is rooted in the mlfillment of various categories of needs, which range from physiological to self-actualization.

15. A "positive transfer" takes place when the learning of a particular task facilitates the subsequent-learning of another task. But on the other hand, if learning a particular task interferes with the learning of a subsequent task, it is called a "negative transfer". If, however, learning of a particular task makes no difference whatsoever to the learning of a subsequent task it is said to be "zero transfer" or no transfer of learning from one task to the subsequent task.

16. Important theories of transfer of learning are as follows:
(i) Theory of Mental Discipline
(ii) Theory of Identical Elements or Components (iii) Theory of Generalization of Experience (iv) Theory of Ideals
(v) Gestalt or Relationship Theory

1.10 QUESTIONS AND EXERCISES

Short-Type Questions
1. What are the basic principles of learning?
2. Name the various theories of motivation.
3. How can you develop achievement motive?
4. Write a short note on Kurt Lewin's Field Theory.
5. What are the educational implications of Hull's Reinforcement Theory?
6. List the basic assumptions of Maslow's 'Self-Actualization Theory oi Motivation.
7. What are the different types of 'transfer of learning' ?
8. Write a short note on the 'Theory of Ideals' of the transfer of learning.

Long-Type Questions
1. Write a detailed note on the physiological theory of motives.
2. Do you agree with the statement that Murray's theory of motivation has been influenced by dynamic approach of psychoanalysts and field theorists? Explain.
3. Explain the difference in the characteristics of the intrinsically-motivated learners and the extrinsically-motivated learners.
4. State the meaning of transfer of training. Is transfer of training possible? If so, describe its utility in education.
5. Explain various theories of training and their educational implications.
6. Describe the principles which facilitate transfer of learning.
7. Explain the meaning of transfer of learning and the role of the teacher.

1.11 FURTHER READING

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UNIT 2 INTELLIGENCE

Structure

2.0 INTRODUCTION

To quote Prof. Percy Nunn, 'you are forever you, and I, I'. It has been amply demonstrated by many psychologists that all persons do not have the same inteUigence and all cannot do same work with the same speed and efficiency. The assumption that given the same opportunities all men will be equally successful is based upon faulty foundations. The intelligence tests are of a great use in the schools. To be a successful teacher, one must know one's pupils thoroughly and one must possess an instrument with which one can measure the intelligence of one's pupils and one must know the proper use of that instrument.

For instance, the Binet's rod of mental measurement is an instrument for the teacher to find out the exact calibre of the minds of his pupils. InteUigence tests help to discover whether a child is backward or duU or intelligent. It is not possible to gauge the inteUigence of children without the use of mental tests. The clnldren's inteUigence cannot be estimated from the marks obtained by them in their school subjects. A child of 12 years and another of 14 years may be put on the same level if they obtain the same number of marks. But this is a defective method. Obviously, the child of 12 years is more intelligent than the child of 14 years in

this illustration. Similarly, a chUd may be more industrious but comparatively duU and may score more marks than another child, who may in fact be more intelligent but less industrious. In this unit, we will discuss various aspects of inteUigence in detaU.

2.1 UNIT OBJECTIVES
After going through this unit, you will be able to:
• Explain the concepts and types of intelligence
• Describe the important theories of intelligence as given by Thurstone, Guilford and Piaget
• Discuss the concept of emotional intelligence and multiple intelligence
• Discuss how to measure intelligence

2.2   CONCEPT, NATURE AND TYPES OF INTELLIGENCE
There is no agreed definition of intelligence. In fact, there are as many definitions of intelligence as there are writers on the subject. P.B. Ballard (1913) has observed: 'While the teacher tried to cultivate intelligence and the psychologist tried to measure intelligence, nobody seems to know what intelligence was'. On account of the different ways in which intelligence is interpreted, it has become less acceptable and more exposed to criticism by psychologists. Nevertheless, it is traditionally acknowledged by the parents and the teachers that intelligence is the most important single variable which affects success in school and in life. In general terms, intelligence means the manner with which an individual deals with facts and situations. Intelligence is the aggregate or the global capacity of the individual to act purposefully, to think rationally, and to deal effectively with the environ-ment. To quote Prof. R.R. Kumria: 'Call it practical wisdom; call it commonsense; call it genius, it is just the same in different names and grades.'

2.2.1 Fourfold Classification of Definitions of Intelligence

A variety of definitions of intelligence have been suggested by the psychologists, which can be classified into at least four distinct groups.

The first group of definitions places the emphasis upon the adjustment and adaptation of the individual to his total environment or to its limited aspects. According to this group, intelligence is general mental adaptability to new problems and to new situations of life.

The second group of definitions of intelligence stresses the ability to learn. The more intelligent a person, the more readily and extensively he is able to learn and enlarge his field of activity and experience.

The third group of definitions maintains that intelligence is the ability to carry on abstract thinking. This implies the effective use of ideas and efficiency in dealing with symbols, specially numerical and verbal symbols.

The fourth category refers to the operational definitions.

These categories of definitions are not, and perhaps cannot be mutually exclusive. They intersect and overlap at many points.

I. Ability to adjust
1. *Binet* (1905)—'Ability of an individual to direct his behaviour towards a goal.'
2. *Boyniton*—'It is an inherited capacity of individual which is manifested through his ability to adjust and reconstruct the factors of his environment in accordance with the most fundamental needs of himself and his group.'
3. *Burt* (1949)—'It is the power of readjustment to relatively novel situations by organising new psycho-physical coordination.'
4. *F.N. Freeman* (1937)—'Intelligence is represented in behaviour by the capacity of the individual to adjust himself to new situations, to solve new problems, to learn.'
5. *Johnson*—'It stands for an ability to solve the general run of human problems to adjust to new situations.'
6. *J. Piaget* (1926)—'Adaptation to physical and social environment.'
7. *Peterson*—'It is a mechanical means for adjustment and control.'
8. *Pinter* (1921)—'The ability of the individual to adapt himself adequately to relatively new situations to life.'
9. *Stern* (1941)—'Intelligence is a general capacity of an individual, consciously to adjust his thinking to new environment.'

10. *Van Wagemen*—'It is the capacity to learn and to adjust to relatively new and changing conditions.'
11. *William James* (1907)—'It is the ability to adjust oneself successfully to a relatively new situation.'
12. *William McDougall* (1923)—'It is the capacity to improve upon native tendency in the light of past experience.'

II. Ability to learn
13. *Buckingham* (1921)—'Intelligence is the learning ability'
14. *Calvin*—'It is the ability to learn.'
15. *Spearman* (1927)—'Intelligence may be thought of in terms of two abilities i.e., "g" or general and "s" or specific.'
16. *Thurstone* (1946) defines intelligence in terms of five primary abilities (discussed in the following pages).
17.   *Woodrow*—'It   is   the   capacity   to   acquire.'

HI. Ability to do abstract reasoning
18. *C. Spearman* (1927)—'General intelligence which involves mainly the education of relations and correlates.'
19. *E.L. Thomdike* (1931)—'We may define intelligence in general as the power of good responses from the point of view of truth or fact.'
20. *Gates and Others* (1955)—'It is a composite organization of abilities to learn, to grasp broad and subtle facts, especially abstract facts, with alertness and accuracy, to exercise mental control and to display flexibility and sagacity in seeking the solution of problems.'
21. *Henry Garrett* (1946)—'The abilities demanded in the solution of problems which require the comprehension and use of symbols, i.e., words, numbers, diagrams, equations, formulae.'
22. *J.M Hunt* (1966)—'The technique that a child acquires for processing information supplied by his senses.'
23. *L.M. Terman* (1921)—'An individual is intelligent in proportion as he is able to carry on abstract thinking.'
24. *Munn*—'Intelligence is the flexibility or versality to the use of symbolic processes.'

25. *RE. Vernon* (1927)—'Allround thinking capacity or mental efficiency.' **IV. Operational Definitions**
26. *Boring* (1948)—'Intelligence is what intelligence tests.'

27. *Dockell* (1970)—'Intelligence might be taken to mean "ability" i.e., what a person can do at a moment.'
28. *D.O. Hebb* (1949) describes three situations in which the term intelligence could be used.
29. *D. W. Wechsler* (1950)—'Intelligence is the aggregate or the global capacity of the individual to act purposefully, to think rationally and to deal effectively with the environment.'
30. *G.D. Stoddard* (1943)—'Intelligence is the ability to undertake activities.'
31. *Hein*—'Intelligence activity consisting in grasping the essentials in a situation and responding approximately to them.'
32. *RE. Vernon* (1927)—'Intelligence is what intelligence test measures.'
33. *Well*—'Intelligence is the property of recombining our behaviour pattern as to act later in novel situations.'

2.2.2 Historical Review and Evaluation of Definition of Intelligence

A. Binet (1905), a French psychologist, was the first to take interest in intelligence. He defined intelligence as the abihty of an individual to direct his behaviour towards a goal, to make adaptation in his goal-oriented behaviour when necessary, to know when he reached the goal. Comprehension, invention, direction and censorship: intelligence lies in these four words. A.L. Terman (1916) defined intelligence as an individual's abihty to carry on abstract thinking. In the words of Thompson, 'the definition presented by Terman probably reflects most adequately our present functional definition of intelligence'. E.L. Thorndike (1926) further elaborated the definition given by Terman. He defined intelligence in terms of three somewhat independent dimensions: (i) attitude, (ii) breadth, and (hi) speed. In 1946, L.L. Thurstone identified the following more or less mutually exclusive components of intelligent behaviour.

S, or *space factor,* the abihty to visualize flat or solid objects, heavily involved in mechanical aptitude.

N, or *number factor:* abihty in the carrying-out of the rather simple numerical exercise similar to those used by a cashier

V, or *verbal comprehension factor,* ability to deal with verbal concepts, e.g., verbal reasoning, and vocabulary availability.

W, or *word fluency factor:* ability to produce words in a restricted context, i.e., a child may be fluent even though he has a small vocabulary.

M, or *memory factor,* ability to store and reproduce perceptual-conceptual materials.

Induction factor: facility in discovering the principle or rule that applies to a series of problems.

Deduction factor, only a small amount of evidence for—ability to apply a given principle to a series of specific problems.

Flexibility and speed to closure: ability to interpret instructions quickly. Facility to size up a problem situation quickly; flexibility is the ability to abandon one configuration in favour of a more promising one.

G.D. Stoddard and B.L. Wellman (1934) offer a seven-category definition of intelligence:

'Intelligence is the ability to undertake activities that are characterized by:

(1) Difficulty,
(2) Complexity,
(3) Abstractness,
(4) Economy,
(5) Adaptiveness to a goal.
(6) Social value, and
(7) The emergence of originals and to maintain such activities under conditions that demand a concentration of energy and a resistance to emotional force.'

J.P. Guilford (1950) thinks that these definitions ignore the important concept of creativity and thus provide a narrow approach to intelligence

D. Wechsler (1950) concludes that general intelligence is more than a combination of the cognitive functions identified by Thurstone and others.

In Wechsler's view, general intelligence is influenced by certain conative factors like drive, will, perseverance and persistence; by certain emotional factors like anxiety and impulsiveness; and by other more general personality characteristics.

G. Thompson (1975) sums up the discussion in these words: 'There is no absolute definition of intelligence. A theoretical construct may be changed at any time. According to the law of parsimony, the simplest yet most fruitful definition will eventually prevail. Thurstone's approach to the definition and measurement of children's intelligence is challenging. Whether this approach will be more valuable than those of Binet and Terman is of course unknown.'

Intelligence and scholars of ancient India

Kautilya defines it as the ability for work.

According to Visnusarma, it is the power which enables human beings to control the world.

The *Brahmasutra* tells us that intelligence is the gift of God and it is fixed at birth.

The *Agnipurana* prescribes diet for infants to help the growth of their intelligence.

Agadhabuddhi or intelligence that cannot be measured or superior intelligence.

Mahabuddhi or great intelligence, *malin buddhi* or dull intelligence

Sthirabuddhi or calm intelligence.

Atpabuddhi or little intelligence.

In ancient India, intelligence was measured through conversation, physical features, gestures, gait, speech, changes in the eye and facial expression.

2.2.3 Chief Characteristics and Generalizations on Intelligence

Intelligence cannot be increased or decreased. The amount of intelligence that a person possesses is inherited and fixed. The amount though fixed does not reveal itself at the start of life. With the growth of the child, the amount inherited by a child also grows. The general belief is that the growth of intelligence stops and it reaches its limit at the age of sixteen or seventeen. It is true

that a man of forty knows more than he was a boy of sixteen. But this does not mean that the amount of intelligence possessed by him has increased. This may be due to his experience. As regards his intelligence, his position remains the same.

• **Intelligence and influence of environmental factors:** **It** is certainly justifiable to assume that love, affection, concern and generosity judiciously bestowed on growing children, have very desirable effects. Poor environments retard development of inteUigence.

The growth of inteUigence of certain children may be checked due to certain unfavourable circumstances and when these are removed, inteUigence begins to grow and functions normaUy.

• **Intelligence, adjustment and inventions:** An intelligent person has the ability to adjust himself to the changing circumstances with ease, effi-ciency and speed. He has the capacity to assimilate ideas very quickly and clearly. He can cope with new situations very successfully. All the inven-tions of the world can be attributed to persons of very high inteUigence.

The unintelligent or the duUard faUs to think of new situations. They are always guided by others. They lack originahty.

• **Distribution of intelligence:** The majority of the school clnldren, say about 60 per cent, are found in the I.Q. range 90-110 and are referred to as 'normal' or'average'.

• **Intelligence and sex differences:** GeneraUy speaking, the research studies show that the average scores of the sexes are strikingly sirmlar.

• **Intelligence and race differences:** Every racial and cultural group contains some gifted chUdren. Franz Boas states, 'if we were to select the most intelligent, imaginative, energetic and emotionaUy stable third of mankind, aU races would be represented'.

2.2.4   Three Broad Areas of Intelligent Behaviour

Thurstone has suggested that we may recognize at least three broad areas of inteUigent behaviour:

(i) *Abstract Intelligence*—He defined this as the 'ability to understand and manage ideas and symbols, such as, words, numbers, chemical or physical formulas, legal decisions, scientific principles and the like...' In the case of students, this is very close to what is called scholastic aptitude.

(ii) *Mechanical Intelligence*—This includes, 'the ability to clean, to understand and manage things and mechanisms, such as a knife, a gun, a moving machine, and automobile, a boat, a lathe'.

(iii) *Social Intelligence*—This is the 'ability to understand and manage men and women, boys and girls to act wisely in human relations'.

Intelligence Curve

If we plot a measure of intellectual development against chronological age from birth to adolescence using a random subject we will obtain S = shaped curve (Figure 5.1).

The following points come to light from the curve:

1. During early childhood, there is a period of relatively rapid growth of intelligence followed by a slower rate during adolescence.

2. During childhood, the curve is more or less linear.

3. Mental development reaches almost at its maximum during early adult years.

Non-definable nature of intelligence

Some argue, 'we can measure electricity without being able to define its precise nature. But we can put electricity to use and measure it. So we can use and measure intelligence.'

Intelligence and different occupations: Usually scholars, executives in business and government and scientist possess high abstract intelligence.

A successful civil engineer presumably possesses high abstract as well as high mechanical intelligence. Similarly, other types of engineers possess a combination of like abilities.

A successful criminal lawyer possesses high abstract as well as social intelligence.

Mechanics, expert carpenters and plumbers possess above normal mechanical intelligence.

Of course, these are crude generalizations.

2.2.5 Types of Intelligence

The various types of intelligence are as follows:

1.   Naturalist intelligence

This type of intelligence designates the human ability to discriminate among living things (plants, animals) as well as sensitivity to other features of the natural world (clouds, rock configurations). This ability was clearly of value in our evolutionary past as hunters, gatherers, and farmers; it continues to be central in such roles as botanist or chef. It is also speculated that much of our consumer society exploits the naturalist intelligences, which can be mobilized in the discrimination among cars, sneakers, kinds of make-up, and the like.

2.   Musical intelligence

Musical intelligence is the capacity to discern pitch, rhythm, timbre, and tone. This intelligence enables us to recognize, create, reproduce, and reflect on music, as demonstrated by composers, conductors, musicians, vocalist, and sensitive listeners. Interestingly, there is often an affective connection between music and the emotions; and mathematical and musical intelligences may share common thinking processes. Young adults with this kind of intelligence are usually singing or drumming to themselves. They are usually quite aware of sounds others may miss.

3.   Logical-mathematical intelligence

Logical-mathematical intelligence is the ability to calculate, quantify, consider propositions and hypotheses, and carry out complete mathematical operations. It enables us to perceive relationships and connections and to use abstract, symbolic thought; sequential reasoning skills; and inductive and deductive thinking patterns. Logical intelligence is usually well developed in

mathematicians, scientists and detectives. Young adults with lots of logical intelligence are interested in patterns, categories, and relationships. They are drawn to arithmetic problems, strategy games and experiments.

4.   Existential intelligence

Sensitivity and capacity to tackle deep questions about human existence, such as the meaning of life, why do we die, and how did we get here.

5.   Interpersonal intelligence

Interpersonal intelligence is the ability to understand and interact effectively with others. It involves effective verbal and nonverbal communication, the ability to note distinctions among others, sensitivity to the moods and temperaments of others, and the ability to entertain multiple perspectives. Teachers, social workers, actors, and politicians all exhibit interpersonal intelligence. Young adults with this kind of intelligence are leaders among their peers, are good at communicating, and seem to understand others' feelings and motives.

6.   Bodily-kinesthetic intelligence

Bodily kinesthetic intelligence is the capacity to manipulate objects and use a variety of physical skills. This intelligence also involves a sense of timing and the perfection of skills through mind-body union. Athletes, dancers, surgeons, and craftspeople - exhibit well-developed bodily kinesthetic intelligence.

7.   Linguistic intelligence

Linguistic intelligence is the ability to think in words and to use language to express and appreciate complex meanings. Linguistic intelligence allows us to understand the order and meaning of words and to apply meta-linguistic skills to reflect on our use of language. Linguistic intelligence is the most widely shared human competence and is evident in poets, novelists, journalists, and effective public speakers. Young adults with this kind of intelligence enjoy writing, reading, telling stories or doing crossword puzzles.

8.   Intra-personal intelligence

Intra-personal intelligence is the capacity to understand oneself and one's thoughts and feelings, and to use such knowledge in planning and directioning one's life. Intra-personal intelligence involves not only an appreciation of the self, but also of the human condition. It is evident in psychologist, spiritual leaders, and philosophers. These young adults may be shy. They are very aware of their own feelings and are self-motivated.

9.   Spatial intelligence

Spatial intelligence is the ability to think in three dimensions. Core capacities include mental imagery, spatial reasoning, image manipulation, graphic and artistic skills, and an active imagination. Sailors, pilots, sculptors, painters, and architects all exhibit spatial intelligence. Young adults with this kind of intelligence may be fascinated with mazes or jigsaw puzzles, or spend free time drawing or daydreaming.

2.3 THEORIES OF INTELLIGENCE

Psychologists have attempted to understand the structure of intelligence for which they have formulated several theories. Among the important theories, the following deserve special mention.

1. **Spearman's** Two-Factor Theory **or Electic** Theory

In 1904, Spearman, an English psychologist produced strong evidence based on his own researches that there was one fundamental ability underlying all cognitive functions. According to him, every task involving intellectual activity depended upon a general ability or "g" factor and a separate ability or "specific" factor. This view is popularly known as two-factor theory of intelligence, i.e., "g" factor and "s" factor. This "g" factor represents native intelligence. Thus, when we respond to any situation or perform an intellectual task, our general mental ability or "g" factor is responsible for part of our reactions and our specific ability in that particular task is responsible for the rest.

There is a large number of specific abilities, such as, ability to draw inferences, ability to complete sentences, ability to continue series of numbers, the ability to code messages, etc.

2. **Thurstone's Group** Factor **Theory or Anarchic Theory**

L.L. Thurstone, an American psychologist, propounded the group factor theory of intelligence. According to him, intellectual activity is neither an expression of numerous highly specific factors as claimed by Thorndike, nor the expression primarily of a general factor which prevails in all mental tasks as Spearman believed. Instead, as revealed by factor analysis, certain mental operations have in common a primary factor which gives them psychological and functional unity and which distinctly separates them from other mental operations. These mental operations are said to constitute a group 'A', similarly, another group of mental operations have their own unifying primary factor and may be said to constitute a group 'B', and so on. Thus there are a number of groups of mental abilities, each of which has its own primary factor.

Thurstone proposed seven factors and called them "primary mental abilities". These are:

(i) M—*Memory:* To be able to learn and retain information. Also to be able

to recall the learned material, (ii) N—*Number:* To be able to understand quickly and with accuracy simple

arithmetic computations, (iii) P—*Perceptual:* To be able to identify objects quickly and accurately, (iv) R—*Reasoning:* To be able to perceive and utilize abstract relationships. To be able to put together past experiences in the solution of new problems. (v) S—*Spatial:* To be able to deal with objects in space, (vi) *Verbal:* To be able to understand and utilize verbal ideas, (vii) W—*Word fluency:* To be able to think of words rapidly.

Spearman's theory is also known as the *"electic theory "* because it harmonizes elements from all the main types. Thurstone's theory is also known as the *"anarchic theory",* because he conceives of mind as consisting of a number of independent facilities.

3. Unitary Theory or Monarchic Theory

According to Monarchic attitude, intelligence is regarded as an adaptiveness which enables a creature to adjust itself to changing environment. This is a popular view which regards intelligence, as a unitary (monarch) faculty that determines the level of man's achievement in any intellectual enterprise he may take. Accordingly, inborn all-round mental efficiency is a sign of intelligence. Newton could have been a poet as well, had he turned his mind to poetry.

4. Oligarchic Theory

This theory is criticized by the advocates of Oligarchic Theory. They say a person cannot be expert in all fields. Moreover, they cannot be mentioned in any single factor which means intelligence.

This theory is sometimes known as sampling theory of intelligence. Oligarchic theory was put forward by Prof. Thompson. According to this theory, intellectual abilities belong to certain groups. This theory maintains that cognitive abilities are manifestations not of a single commanding faculty, but of a few main intellectual powers or a group of abilities. For example, a child who is intelligent in one group of knowledge may not be intelligent in the other group. But he may be equally intelligent in the various subjects of that particular group. (Figure 5.3)

Educational implications of theories of intelligence

Spearman's Theory is criticized on the main ground that it fails to take into account sufficiently for specific types of abilities and towards the later years of his life. Spearman himself had begun to realize the existence of group factors.

Thorndike's Theory accords undue weightage to abstract intelligence. Guilford Theory of Intelligence seems to be the most comprehensive theory as it attempts to take into consideration all possible aspects of intellectual activity. This theory has several educational implications.

The SOI model provides knowledge about the specific ability of the students to guide them in the right direction. An analysis of the students' abilities by the guidance worker can suggest a reliable base on which future learning could be based.

The SOI model is useful in finding out the reasons of the unsatisfactory performance of the students in spite of their adequate intelligence.

The model points out that for understanding human learning and higher mental processes of thinking, problem-solving and creativity, etc., some drastic modifications would be needed in our theory of curriculum construction and methodology of instruction.

The model has explored 120 intellectual abilities and this enables us to find out whether or not we are paying adequate attention to each of them. If not, how to improve.

The model guides us to devise enrichment programmes for the creative and the gifted children.

The model discards the ideas of transfer of learning and stresses that learning of specific skills should be our focus of attention.

2.3.1 Thurstone's Theory of Intelligence

Louis Leon Thurstone made significant contributions in many areas of psychology, including psychometrics, statistics, and the study of human intelligence by developing methods for scaling psychological measures, assessing attitudes, and test theory, among many other. The statistical techniques developed by Thurstone are his most enduring contribution to psychology.

Thurstone stressed that *g* was a statistical artifact that resulted from mathematical procedures used to study it. Thurstone found that intelligent behaviour does not arise from a general factor but emerges from seven independent factors which he called *primary abilities*— word fluency, verbal comprehension, spatial visualization, number facility, associative memory, reasoning, and perceptual speed. When Thurstone analysed mental test data from IQ samples of people with similar scores, he found-that they had different primary mental abilities.

However, when Thurstone administered his tests to an intellectually heterogeneous group of children, he was unable to find that the seven primary abilities were entirely separate, rather he found evidence of *g*. Thurstone made a mathematical solution that resolved these contradictory results and his final version of his theory was a compromise that had the presence of both a general factor and the seven specific abilities. This helped to lay the groundwork for future researchers who proposed hierarchical theories and theories of multiple intelligences.

Thurstone is responsible for introducing the standardized mean and standard deviation of IQ scores instead of the Intelligent Test system introduced by Binet. He is also responsible for developing the Thurstone Scale.

Thurstone's work in factor analysis led him to formulate a model of intelligence center around "Primary Mental Abilities" (PMAs), which were independent group factors of intelligence that different individuals possessed in varying degrees. Thurstone opposed the singular general intelligence that were part of the scores of all psychometric tests and was expressed as a mental test. In 1935 Thurstone, along with Thorndike and Guilford started the journal Psychometrika and also the Psychometric Society. He became the society's first President in 1936. Thurstone's contributions to methods of factor analysis has contributed in establishing and verifying the psychometric factor structures that came later, and has influenced the hierarchical models of intelligence in use in intelligence tests such as WAIS and Stanford-Binet IQ Test.

It was suggested that there were equally important factors or aptitudes in addition to 'G'. The multifactor theory is based on factor analysis and statistical procedure that attempts to describe as simply as possible the main factors that account for the relationship among several different tests. L.L. Thurstone was the first psychologist who used this procedure by correlating the results from approximately 60 separate tests. The factor analysis of the resulting correlation yielded the following abilities that provide the basis for the construction of the primary mental abilities (PMA) test. According to this theory, intelligence neither consists of two factors as proposed by Spearman nor multifactors as developed by Thorndike.

The six primary factors emerged are as follows:
1.   Number factor (N) Ability to do numerical calculations rapidly and
accurately.
2.   Verbal factor (V)   Found in test involving verbal comprehension.
Verbal factor may take two forms: *(i)* Verbal fluency, which is the ability to deal with relationships expressed in words, *(ii)* Verbal comprehension, which refers to on
3.   Space relations (S) Involved in any task in which the subject
manipulates an object imaginary in space.
4.   Memory (M)   Involving the ability to memorize quickly and retain
for a longer time.
5.   Reasoning (R)   Found in tasks that requires the subject to discover
a rule or principle.
6.   Word fluency (W) Involved whenever the subject is asked to think of

isolated words at a rapid rate.

7. Perceptual speed It is the ability to find out quickly similarities and differences in groups of designs.

Today there is rather general agreement among the psychologists that there are many intellectual dimensions. However, there remains a factor that might be called general scholastic aptitude, a conclusion supported by the fact that factors on such tests as the PMA are not completely independent but are correlated to some extent with each other. Despite the analytic nature of the multifactor approach, it is still based on a limited conception of intelligence since little weight is given to social intelligence, mechanical and to abilities in special fields such as athletic, music and drama, etc.

2.3.2 Guilford Theory of Intelligence

This three-dimensional theory was developed by Guilford and his associates in the psychological laboratory at the University of Southern California in 1966. The work on Guilford's Theory of Structure of Intellect began on this theory in 1956.

Guilford conceives of intellectual functioning as having three dimensions: (i) operations, (ii) content and (iii) products. *Operations* are processes involved in intellectual behaviour-cognition, memory, divergent thinking, convergent thinking and evaluation. The *content* of these operations may be figural, symbolic, e.g., letters, numbers, semantic e.g., words or behavioural e.g., information about other persons, behaviour, attitudes, needs, etc. The *products* may be—units, classes, relations, systems, transformations and implications. Thus, the model contains 120 cells (5 operations x 4 contents x 6 products); each of which represents a distinct factor which is measured by a separate test (Figure 5.4).

Guilford suggests that the five processes act on the four units to produce one of six cognitive products. The six products are units of a single word or idea, classes, a relationship between or among units or classes, systems, an organized sequence of ideas, transformations, a change or redefinition or a unit or class, and implications, predictions of the future.

Guilford believes that each person is a unique composite of a great many different intellectual abilities. Each intellectual functioning involves three components: a cognitive operation, specific content and a specific product.

Some of the elements of the structure of intellect are as follows:
- **Cognition:** It refers to discovery, rediscovery or recognition.
- Memory: It is a primary mental process. It means the retention of what is recognized.
- **Divergent thinking:** This implies thinking in different directions, seeking and searching some variety and novelty.
- **Convergent thinking:** In this type of thinking what results is the right or best answer.
- **Evaluation:** It is about reaching decisions or making judgments about the information received.

This model of Guilford is not a basic model. It can be compressed and expanded. When compressed, intelligence consists of only 18 factors (3x2x3 = 18), i.e., instead of six products, we have three; five operations can be reduced to two (for example, convergent and divergent thinking are one, memory can be deleted, evaluation is based on cognition and as such is one. As such five operations get reduced to two, and four contents to three.

When expanded by breaking, each of the products, operations and contents, intelligence composes of (8 x 12 x 10) = 960 mental abilities.

However, Guilford says that S—R bond is the real thing. Eysenck also proposed compressing in his own way. According to him, intelligence consist of nine factors. There are three products, three contents and one process or operation (3x1x3 = 9). This can be safely compared to Thurstone's model, which states that there are seven primary abilities.

A second way of classifying the intellectual factor is according to the kind of material or content involved. It involves the following factors:
- **Visual content:** It is concrete material, which is perceived through our senses, i.e., size, form, colour, etc.
- Symbolic: It consists of letters, digits and other conventional signs.
- **Semantic content:** It is in the form of verbal meanings or ideas, which we get from others.
- **Behavioural content:** It means social behaviour in society.
- **Auditory:** This relates to factors relating to the senses.

When a certain operation is applied to a certain kind of content, following products are be involved:
- Units: Understanding the meaning of words, visuals, auditory and symbolic units.
- Classes: It means classification of words and ideas.
- •. Relations: It implies discovering relations between various concepts and objects
- Systems: The ability to structure objects in space, to structure symbolic elements and to formulate problems.
- **Transformations:** The ability to look into the future lines of development or to suggest changes in the existing situations.
- **Implications:** The ability to utilize present information for future ends.

Educational implications of the SI model

The educational implications of the SI model are as follows:

1. The SI model has explored 150 intellectual abilities and this enables us to find out if we are paying adequate attention to each of these. If not, it explains how to improve.

2. The model provides knowledge about the specific ability of students to guide them in the right direction.

3. The model points out that for understanding human learning and higher mental processes of thinking, problem-solving and creativity, significant modifications would be needed in the theory of curriculum construction and methodology of instruction.

4. The model guides us to provide enrichment programmes for creative and talented students.

5. The model is useful in finding out the reasons of unsatisfactory performance of a student in spite of his high level of intelligence.

6. The model discards the idea of transfer of learning and stresses that learning of specific skills should be the focus of our attention.

2.3.3 Piaget Theory of Intelligence

The processes lie under the adaptive behaviour from birth to adolescence. Piaget studied developmental process of understanding knowledge and working of the child's mind. His system can be of great value to assess teaching, structure and sequencing of subject matter in the curriculum and organization of various activities in and outside the classroom.

Basic concepts: schema, assimilation and accommodation

Piaget was interested in the developmental process and the change in behaviour. The concept of schema applies to the sensorimotor behaviour of the infant. The infant sucks the breast of his mother; looks at the objects of environment; listens to different voices in his environment; and finally tries to comprehend, conceptualize the articles, animals, space and many other cognitive structures. The process of conceptualization is closely dependent upon the sequences of behaviour employed by the infant to adapt to the environment. Although a particular scheme derives its name from the behaviour sequence it describes, it implies some internal organizational disposition that enables the sequence to adopt itself to a variety of conditions. According to Piaget, sensorimotor sequence and cognitive structures are of the same class because they are continuous processes. As the development proceeds, each scheme enlarges and changes and is coordinated with other schemes to form more complex schemes.

The sensorimotor schemas develop out of the reflex behaviour of the infant. They are reduced and internalized as they continue to function and are gradually converted into cognitive schemes. As the sensorimotor schemas are converted to the more covert and symbolic structures, they become generally synonymous with the processes known as concepts, generalizations, principles, constructs and plans.

Piaget believed that schemas (cognitive structures) exist in primitive form at conception and progressively develop during the lifetime in certain systematic ways. According to him, cognitive structures contain all the necessary energy for their emergence and development without requiring some motivating force.

The schemas acquired in infancy are exercised and changed in later life. The process of change is accounted for by the psychological processes constantly at work called "assimilation and accommodation".

At the sensorimotor level, when the infant acquires grasping schema, he picks up things and objects and grasps them. This scheme of grasping objects is called assimilation. Suppose, the grasping schema is inadequate, the object is too small, it must change in order to manage the new situation. This is accommodation at work. The play activities of infants are the examples of the process of assimilation. The infant will take a stick and assimilate it to his available schema, making it into a horse, cow or man. The example of accommodation is imitation of others. In the process of imitation, the child suppresses the available scheme and strives to establish a new schema. The structures or the schemes change from one stage to another by the process of equilibration. Through the processes of assimilation and accommodation, the organism attempts to adapt to the environment to maintain balance with the changing environment.

Piaget's developmental stages

Jean Piaget advanced a new theory of development of cognitive abilities. He proposed that cognitive development proceeds through an orderly sequence of stages. The important concept of his theory of cognitive development is not the age at which the child moves from preferred mode of response to another but the fixed progression from one stage to another. The child cannot adopt the strategies of a later stage at an early stage of development without having first acquired and exercised the strategies of the earlier stage.

Ausbel commenting upon the development stages of Piaget writes: 'Piaget's stages are identifiable, sequential phases in an orderly progression of development that are qualitatively discriminable from adjacent phases and generally characteristic of most members of a broadly defined age range.'

The stages of cognitive development are related in that they represent forms of adoption but these forms are qualitatively different; that is the adaptive functions are transformed as the child moves from one stage to the next. This theory of development is quite different from the theory of associationists which emphasizes the gradual accumulation of responses.

Stages of cognitive development

Jean Piaget divides the stages of cognitive development into the following categories:

1. **The period of sensorimotor adaptation (since birth to 2 years):** The period from birth to 2 years is marked by an extraordinary development of the mind. The infant starts from reflex domination and reaches the stage of sensorimotor schemas. The development of this period is very important for future life. The intellectual development at this age is marked by four fundamental characteristics: *(a)* object concept formation, *(b)* coordinated space, (c) objectified causality and *(d)* objectification of time.

The objects exist in the psychological world of an adult irrespective of their physical presence before the adult but in the world of the child they only exist when they are physically present and the child looks at them, grasps them and acts with them. As soon as they move out of his range of acting, grasping and listening, they stop existing for the child. In the first year of life, the child develops the concept of permanence of objects. He then attempts to retrieve an object that disappears from his range of action.

The second characteristic of coordinated space is integrated with the formation of the object concept. The spatial world at first is totally uncoordinated. By the end of 2 years, the child develops the concept which is characterized by relationship among objects and between objects and his own body.

The infant does not have any real sense of duration at the beginning of life. By the middle of first year of life, a rudimentary sense of duration is present, but it is entirely a subjective phenomenon. By the end of the first year, the infant frees himself from this personal concept of time, and the beginning of objective existence of time takes place.

2. **The development of symbolic and preconceptual thought (2 to 4 years):**

At the end of the sensorimotor period, the child starts dealing with the world by means of ideational representations. By imitation and other forms of behaviour, he demonstrates that he is capable of extending his world beyond here and now. These actions of the child indicate the use of symbols. By the age of 4 years the child develops way of representing the environment in the absence of perceptual cues and will build a set of symbolic schemes.

3. **The period of intuitive thought (4 to 8 years):** At this stage, the child is able to use concepts as stable generalization of past and present experiences. His reasoning is not logical and is based on intuition rather than on systematic logic. The intuitive thought of the child is mainly concerned with stages or static configurations and neglects transformation. The child talks about this or that momentary static conditions but he cannot adequately link a whole set of successive conditions into an integrated totality by taking into account the transformations which unify them and render them logically coherent.

4. **The period of concrete operations (8 to 12 years)**: Concrete operation means that stage of cognitive development when the child is able to direct his attention away from the static conditions and can focus on the whole set of successive changes that occur in the process of transformation. At this stage, the child can reason well. Transformation could return to its starting point. Piaget has given a long list of operations which make possible the handling of numbers in various relations to each other, the arrangement of objects into classes and sub-classes and the ordering of objects according to one or more attributes. He has coined a term 'grouping' to describe a set of operations.

5. **The period of formal operations (from 12 years to adolescence):** At this stage, the child's thought process becomes quite systematic and reasonably well-integrated. These qualities of the child's thought process are evident when events are present. Reality guides his contemplation of possibility. He starts a form of hypothetico-deductive reasoning. The use of formal operations is what is called the controlling aspects of comprehending.

The child at this stage in his formal thinking can free himself of the here and now in a lawful and systematic way. His wisdom lies in the masterful administration of the unforeseen. When an adolescent is faced with a problem, he uses formal operations to identify the variables that seem relevant to the solutions, and then considers all the possible combinations of these variables.

2.3.4 Thorndike's Theory of Intelligence

On the basis of trial and error learning, Thorndike propounded some laws of learning.

The law of readiness

Readiness includes all those preparatory adjustments which immediately precedes the action. Reminding the learner of his past experience, mental preparation for the understanding of new things, diverting his attention towards the subject to be learned, the altering of the environment to suit the learning are all included in learning. This readiness creates a desire for learning and thus the learner's mental attitude towards learning.

According to Thorndike: 'When any conduction unit is ready to conduct for it to do so is satisfying. When any condition unit is not in readiness to conduct for it to conduct is annoying. When any condition unit is in readiness conduct, for it not to do so is annoying.'

The law of readiness states that if the learner is in a state of readiness, which means he is prepared for learning, then the process of learning will be fast and it will be retained for a longer period of time. Thus, readiness means a mental preparation for action. It is the preparatory development or physiological growth. We progress in the process of learning by the motivation furnished by our wants, interests and attitudes. A person cannot perform an activity with ease towards which he is unfavourably dispensed.

The law of effect

Thus, the simple meaning of this law is responses to a situation which are followed by a rewarding state of affairs will be strengthened and become habitual responses to that situation. So when the learner is satisfied and is happy with the learning then he will remember that for a longer period of time than a situation when the learner is not happy and is dissatisfied. If there are some unpleasant experiences associated with learning then the learner will like to forget and ultimately learning will not be effective.

Law of multiple response or varied reactions

The law states that when an individual comes across a situation he acts in a number of ways before arriving at a correct response. A person tries to solve a new problem by diversified responses in behaviour which guide him in attaining success and make learning possible. Thus, the learner reaches the solution by making variations in the responses. If a person keeps on working towards the solution of a problem in a particular manner only and does not change the approach in the case of failure also, then the person will not learn anything. The person who is learning should constantly change his style until he achieves success.

Law of attitude

Learning is conditioned by the attitudes and mental set of the learner. The response of a person in a specific situation is dependent upon his permanent adjustment in a particular setting like culture. For example, an Indian child will touch the feet and give respect to elders while an American child will not have the same gesture of respecting the elders. The response depends upon the cultural learning. The mental set decides not only the response but also the object from which a person will derive satisfaction or dissatisfaction. A bright student is not satisfied when he or she scores less marks, but an average student may have satisfaction by scoring the same marks. Learning takes place just because of attitude. If the learner has the positive attitude towards the task then learning will be better.

Law of analogy

An individual responds to a new situation on the basis of the responses by comparison or analogy. It is also called the 'law of assimilation'. The response from an individual will be similar to the one in which he has behaved previously.

Law of associative shifting

This law indicates that the position of the responses of the learner shifts. This shifting is done in respect of the basic stimulus or some related associative stimulus. For example, a dog starts salivating when he sees food and approaches the bearer with his wagging tail. The result of constant repetition of this phenomenon is that the dog wags his tail on the mere perception of the man and the shape of the dish. Thus, the response originally directed to the food is now shifted to the man and the dish because both these objects are associates of the main stimulus, the food, and we conclude that associative shifting in the response has taken place.

Law of exercise: The law of exercise is divided into two subparts, law of use and law of disuse.

• *Law of use:* According to this law, repeated application of an activity fixes it firmly in the mind. Repetitive application of the activity results in the formation of a habit in the muscles and the nerve fibres of the brain so that there is a facility in its execution in time of need.

• *Law of disuse:* According to Thorndike, 'when a modifiable connection is not made between a situation and response during a length of time that connection's strength is decreased all other things being equal.'

2.4 EMOTIONAL INTELLIGENCE AND MULTIPLE INTELLIGENCE

In this section, we will discuss the concepts of emotional intelligence and multiple intelligence in detail.

2.4.1 Emotional Intelligence

Peter Salovey, professor and psychologist at Yale University and John Mayer, professor and psychologist at the University of New Hampshire were one of the first people to coin the term 'emotional intelligence (EI). In 1995, Daniel Goleman, the leading expert in this field, reported 'IQ is only a minor predictor of success in life, while emotional and social skills are far better predictors of success and well-being than academic intelligence'.

Emotional intelligence is said to be of even greater importance than traditional IQ in learning. It is said that the emotional center of the brain has links with our long-term memory. Today it is even recommended that if learning is enhanced by emotional involvement it can fuel commitment and awaken curiosity. Emotional intelligence and its nurturing is important as they are said to facilitate the understanding of oneself and the emotional states of others. Today, emotion based learning is said to be as important as cognitive learning.

According to Goleman's work, children's emotional and social skills can be cultivated. This will lead to success in his social and personal life. He speaks of the following five crucial emotional competencies basic to social and emotional learning:

1. **Self and other awareness**: Understanding and identifying feelings; knowing when one's feelings shift; understanding the difference between thinking, feeling and acting; and understanding that one's actions have consequences in terms of others' feelings.

2. **Mood management:** Handling and managing difficult feelings; controlling impulses; and handling anger constructively.

3. **Self-motivation:** Being able to set goals and persevere towards them with optimism and hope, even in the face of setbacks.

4. **Empathy:** Being able to put yourself 'in someone else's shoes' both cognitively and affectively; being able to take someone's perspective; being able to show that you care.

5. **Management of relationships:** Making friends, handling friendships; resolving conflicts; cooperating; collaborative learning and other social skills.

The mastery of these five competencies results in the enhanced emotional intelligence.

Individual differences in distribution of intelligence

It is generally agreed upon by almost all psychologists that intelligence increases up to adolescence and declines in old age. These are general trends, but little is known with sufficient certainty to be widely accepted. The technical and theoretical difficulties, in obtaining a reliable curve of growth and decline of intelligence, are two. One that intelligence at 5 years of age is very different from intelligence at the age of 15 or 55 years and that appropriate tests for different age groups can only said to be comparable in a rather general way. Second difficulty is that cross-sectional studies, that report the result of different age groups tested at one time, often produce results that differ markedly from those of longitudinal or follow-up studies, in which the same individuals are tested at successive stages.

This later difficulty is particularly evident if one attempts to describe the general trend of intelligence through the whole life-span from childhood to old age. The extent to which intelligence in old age declines is still an open question. Many studies have shown that a decline begins in the middle or late teens. Bayley (1955) has argued that, if appropriate tests were available, intelligence could be shown to increase up to the age of 50 years. Thorndike has pointed out that measures of gains are inherently unreliable, that they are typically almost unrelated to the initial score, that the required assumption of equal units of measurement is rarely met and that there are particular dangers in correlating initial IQ and gain in IQ.

The most thorough and famous cross-sectional study that was designed to plot the trend of intelligence through adult life was that of Jones and Conrad in 1933. They administered Army Alpha to 12,000 subjects ranging from 10 to 60 years of age.

2.4.2 Gardner's Theory of Multiple Intelligence

The theory of multiple intelligence was developed by Howard Gardner Professor of Education at Harvard University. It suggests that the traditional nation of intelligence based on IQ testing is very limited.

Howard Gardner was the first to see the limits of the old way of thinking about intelligence. In his book *Frames of Mind* published in 1983, he proposed that there was not one, monolithic kind of intelligence, that was crucial for success, but rather a wide spectrum of intelligences with seven key varieties. His list includes two standard academic kinds, i.e., 'verbal' and 'mathematical logical alacrity'; it also includes 'spatial capacity' often seen in an outstanding artist or architect; the 'kinesthetic genius' displayed in physical fluidity; the 'musical or rhythmical'; the 'personaTintelligences'; 'interpersonal skills' and 'intrapsychic capacity.'

Gardner acknowledges that seven is an arbitrary figure. For the variety of intelligences, there is no magic number to the multiplicity of human talents. At one point of time, Gardner had given 20 different varieties of intelligence. Interpersonal intelligence broke down into four distinct abilities, i.e., leadership, the ability to nurture relationships and keep friends, the ability to resolve conflicts and the skill of social analysis.

Gardner's thinking about the multiplicity of intelligence continued to evolve. In 1993, he gave the summary of personal intelligences as follows:

'Interpersonal intelligence is the ability to understand other people: what motivates them, how they work, how to work cooperatively with them. Successful politicians, social workers, teachers, clinicians, religious leaders and sales people are individuals who have high interpersonal intelligence. Intrapersonal intelligence is a correlative ability, turned inward. It is the capacity to form an accurate, veridical model of oneself and to be able to use this model to operate effectively in life.'

According to Gardner, the core of interpersonal intelligence includes the 'capacity to recognize and respond appropriately to moods, temperaments, motivations and desires of other people'. In intrapersonal intelligence, he included 'access to one's own feelings and the ability to discriminate among them and draw upon them to guide behaviour.'

The theory of multiple intelligence has evolved to focus on meta cognition— that is, awareness of one's own mental processes— rather than on the full range of emotional abilities. Gardner pointed out that many people with IQ of 160 work for people with IQ of 100, if the former have poor interpersonal intelligence and the latter have a high one. The multifaceted view of intelligence offers a richer picture of child's ability and potential for success than standard IQ.

2.5 MEASUREMENT OF INTELLIGENCE

Intelligence tests are used to measure intelligence. It is important to note that intelligence is inferred from a variety of elements, i.e., behaviour and speed of doing things correctly, etc. for which inteUigence tests have been devised. An intelligence test is an objective and a standardized measure.

Intelligence is measured through a complicated process. It involves a comparison and establishment of a relationship between C.A. (Chronological Age) and MA. (Mental Age). This relationship is expressed by the term I.Q. (InteUigence Quotient). When the mental age is divided by the chronological age and the quotient is multiphed by 100, the result is I.Q.

When we want to calculate the mental age of a student aU questions assigned to the age are put to him (In the individual scale of Binet a certain number of questions are assigned to that age). If he answers aU the questions assigned to that age correctly, his mental age is equal to his chronological age and that chUd is considered to be an average one. Suppose you have to test a chUd of C.A. 8 on the Binet scale. You wiU start with questions assigned to the sixth year and then go up. The child may be successful in answering correctly aU the questions assigned to years 6, 7, 8 and may stop at 9. His mental age will be 8.

InteUigence is measured on the foUowing factors:

1. **Vocabulary**—Choosing a synonym or antonym or near-synonym or near antonym.
2. **Verbal analogies**—e.g., Branch is to a tree as brook is to river.
3. **Sentence completion**—e.g., India has—states.
4. **Arithmetic reasoning**—Simple arithmetic sums.
5. **Number series**—For example, what next? 11, 13, 15 (17, 19, 21).
6. **Picture arrangement**—Arranging disarranged pictures of a story in proper sequence.
7. **Comprehension**—For testing commonsense, certain cards or paras are given in which some absurdity is shown.
8. **Similarities,** e.g., In what way cotton and silk are alike?
9. **General information**—from everyday life.

10. **Digit span**—For testing memory, digits are spoken and the subject is asked to repeat them in the same order.
11. **Digit-Symbol substitution**—A code is given and substitution is to be done.
12. **Figure analogies**
13. **Classification**—e.g., which word on the right belongs to the group on the left? Pen, table, book, stone, pentil, radio
14. **Multimental**—e.g., which one of the figures does not belong to the other four.

Development of Mental Tests

Are all persons equally intelligent? Are all the students fit for school instruction? Are all students capable of pursuing the same courses? Are all students fit for all occupations? Is it proper to educate all students in the same way?

These and various such questions have been engaging the attention of the psychologists for the past hundred years or so. Many attempts have been made to measure intelligence possessed by individuals so that necessary arrangements may be made to give them training according to their intelligence. Thanks to the ceaseless efforts of various psychologists whose standardized tests are available which can be used to measure intelligence.

Anne Anastasi observes: 'Psychological testing is a relatively young branch of one of the youngest of the sciences.'

Pre-Binet Position

One of the first problems, which stimulated the development of psychological tests, was the identification of the feeble-minded. French physician

Esqurioi was the first person to write a two-volume work in 1828 in which over one hundred pages were devoted to feeble-mindedness.

Another French physician who made a valuable contribution was Seguin who in 1837 established the first school devoted to the education of mentally defective children. In 1848, he migrated to America where his ideas gained recognition.

The general aim of the early experimental psychologists of the nineteenth century was the formulation of generalized descriptions of human behaviour and not the measurement of individual differences. Many of the early experimental psychologists received their training in a laboratory founded by Wundt at Leipzig in 1879.

Sir Francis Galton, an English biologist, was primarily responsible for launching the testing movement on its course. In 1882, an anthropometric laboratory, was established by him in South Kensington Museum, London. In this laboratory individuals could be measured in certain physical traits by the payment of a small fee. Galton himself devised most of the simple tests. Galton also paved the way for the application of rating scale and questionnaire methods, etc. One of his disciples, Karl Pearson carried forward his work.

James McKeen Cattell of America occupies a prominent position in the development of psychological testing. He used the term "mental test" in an article in 1890. This article related to a series of tests which were being administered annually to college students in the efforts to determine their intellectual level. Cattell like Galton felt that a measure of intellectual functions could be obtained through tests of sensory discrimination and reaction time.

Among others the names of Jastrow, Krae Pelin and Ferrai may also be mentioned.

Binet-Simon Test

The father of intelligence testing is Alfred Binet, a French educator. Binet disagreed with some of his contemporaries who tried to measure general intelligence by testing reaction time, rote memory, sensory activity, or muscular movements. According to him, intelligence could be estimated, only by test of higher faculties like reasoning, comprehension, judement, adaptability. Persistence, and self-criticism. Binet worked on these lines and in collaboration with Thephile Simon, published the first intelligence test in 1905. This test had 30 items arranged in order of increasing difficulty. It took about 15 years to complete the test.

Binet tried out these items on children and in 1908, brought out a revised scale which divided the test items into age groups from 3 to 11 years. At some age levels, only 3 questions were asked, at others 5 or 6. With this scale, Binet introduced the concept of mental age. If a child's (whose chronological age is 8) score on a test is equal to the average score of children of 9 years of age, then his mental age will be nine in spite of the fact that his chronological age is eight.

In 1911, shortly before his death, Binet published a second revision of his scale. It omitted some old items and introduced some new ones. He also brought the scale up to adult level. In this revision, he included 5 tests for each age except the 4-year level.

Revised Test of 1916

The first serious revision of Binet-Simon Scales was prepared by Terman at Stanford University and was published in 1916. This revision introduced great many alternatives and new additions. The entire scale was restandardized on an American Sample of about 1,000 children and 400 adults. For the first time the term I.Q. or "intelligence quotient" was introduced. I.Q. has been defined as the ratio of Mental age to Chronological age. To avoid fraction, it is multiplied by 100. Thus:

1937 and 1960 Revisions

In 1937 and 1960, the Stanford University Test was revised by Merril and Terman. It is also known as Stanford-Binet Individual Test of Intelli-gence. It contains 129 questions suitable for a child of 2 years, 2.5 years, 3 years, 3.5 years, 4 years, 4.5 years and then for 5,6-14 years of ages. There are no questions for 5.5 as it is thought that there is not much difference in I.Q. of 5 years and 5.5 old child.

Wechsler Scales of 1939 and 1955

The 1937 Stanford-Binet Scale, in spite of its merits was not considered particularly well-suited for adults. It was not standardized on any individual over 18 years of age in obtaining the I.Q. The Wechsler Scale was published in 1939 for this purpose. The scale was revised in 1955 and a new version Wechsler Adult Intelligence Scale (WAIS) came into existence The age ranges are from 16 to 64 years.

The Scale comprises the following sub-tests which fall under two broad categories: (a) verbal tests and (b) non-verbal tests.

• **Verbal tests:** These contain the following types: (i) vocabulary, (ii) information, (hi) arithmetic items, (iv) comprehension, (v) similarities, and (vi) digit span.
• **Non-verbal tests:** These include (i) block design (ii) picture arrangement, (hi) object assembly, (iv) mazes, and (v) picture completion.

Comparison between Binet Test and Wechsler Scale

Binet	Wechsler
1. It is primarily for children.	1. Age ranges are from 16 to 64 years.
2. It is a mental age scale. Items are grouped in terms of mental age.	2. It is a point scale. Points arc given for correct responses
3. Selection is made by relation of success by age.	3. Selection is made by function measured.
4. Items are ungraded and unrelated.	4. Items are graded.
5. The test is inflexible.	5. The test is flexible.
6. It is qualitative in evaluation.	6. It is quantitative in evaluation.

Landmarks in the Development of Testing

1826
1842
1905
1908
1909
1910
1911
1912
1915
1915
1916
1917
1919
1921
1927
1933
1935
1937
1938
1937
1955
1960
Robert Owen's Rating Scale
Seguin's Form Boards

Binet-Simon Scale
Goddard Translation of Binet's Scale
Courtis Practice Test in Arithmetic
Thorndike Handwriting Scale
Healy and Fernald Performance Test
Hillegas Composition Scale
Buckingham Spelling Scale
Yerkes Point Scale
Stanford Revision of the Binet-Simon Scale
Army Group Tests, Stenquist Assembly Tests
Sea shore Tests of Musical Ability
Rorschach Test
Strong Vocational Interest Inventory
Hildreth Readiness Test
Murray Apperception Test
Stanford-Binet Revision Scale
Thurstone Primary Abilities Test
Wechsler Scale
Wechsler Adult Intelligence Scale
Revised Version of Stanford Binet Test

Classification of Intelligence Tests

These may be classified under three categories:

1. *Individual Tests*—These tests are administered to one individual at a time

These cover age group from 2 years to 18 years. These are: (a) The Binet-Simon Tests, (b) Revised Tests by Terman, (c) Mental Scholastic Tests of Burt and (d) Wechsler Test.

2. *Group Tests*—Group tests are administered to a group of people. Group tests had their birth in America—when the intelligence of the recruits who joined the army in the First World War was to be calculated. These are: (a) The Army Alpha and Beta Test, (b) Terman's Group Tests, (c) Otis Self-Administrative Tests. Among the group tests there are two types (i) Verbal and (ii) Non-Verbal. Verbal tests are those which require the use of language to answer the test items. Non-Verbal tests do not require the use of language to respond to the item.

3. *Performance 'Tests*—These tests are administered to the illiterate persons. These tests generally involve the construction of certain patterns or solving problems in terms of concrete material. Some of the famous tests are: (a) Kohs Block Design Test (b) The Cube Construction Tests, and (c) The Pass Along Tests.

Comparison of Individual Tests and Group Tests

Individual Test	Group Test
It is administered to an individual at a time.	It is administered to a group at the same time.
It is costly in terms of administration and time.	It is less costly in terms of administration and time.
A trained tester is required to administer it.	No trained person is required to administer it.
There is face-to-face interaction between the individual and the tester.	There is no such face-to-face interaction
Individual test is more reliable. Guidance can be provided to the individual on the basis of its results.	Group test may be influenced by several factors.
It is useful for small children.	It is suitable for older children and adults.
The tester can motivate the individual by means of praise and encouragement as he can adapt to the needs of the individual child.	It is not possible to do so.
There is very little scope for cheating.	Cheating, on a large-scale is possible.
There is no competition in individual testing.	Speed and reading ability may influence the test score.
No special formalities are observed in individual testing.	Several formalities are observed in administering.

Instructions can be made clear before testing.	A few members of the group may not clearly understand the instructions.

Measuring Special Ability

The I.Q. obtained as a result of performance on an intelligent test indicates general status only. It does not point to the size of strength or weakness in each of the particular mental abilities that are being measured. For example, two students showing an I.Q. of 120 on a particular test may have different positions on different sub-tests; one may do very well on arithmetic and poorly on vocabulary, while the other may do well on vocabulary and poorly on arithmetic; yet both score the same total.

Primary Mental Abilities Test (PMA Test)

To correct this sort of error we need tests which indicate differential success of a subject on various mental abilities. The tests of primary mental abilities prepared by Thurstone meet this need. The PMA test for ages 11 to 17 is based on the group factor theory of mental ability which postulates that intelligence is made up of certain distinct and more or less independent mental functions which Thurstone called the primary mental abilities.

The primary abilities as measured by this test are as follows:

1. Number facility
2. Verbal comprehension
3. Spatial perception
4. Word fluency
5. Reasoning
6. Rote memory

Differential Aptitude Test Battery (DATS)

Another test to measure the special abilities is Differential Aptitude Test Batten (DAT). " This comprises eight tests:

1. Verbal Reasoning
2. Numerical Ability
3. Abstract Reasoning
4. Space Relations
5. Mechanical Reasoning
6. Clerical Speed and Accuracy
7. Language Usage: Spelling
8. Language Usage: Grammar, punctuation and word usage

General Aptitude Test Battery (GATB)

Another test of the differential aptitude type is the General Aptitude Test Battery (GATB), developed by the United States Employment Service. It consists of 15 tests which cover 9 factors, such as intelligence, verbal aptitude, numerical aptitude, spatial aptitude, form perception, clerical perception, motor-coordination, finger dexterity and manual dexterity.

These sophisticated test batteries mentioned above give a much more clear picture of, what special abilities a person has than the general intelligence tests.

Use of Intelligence Tests

Some of the important areas in which intelligence tests may be employed are given here:

I. Selection of Students to a School: In good schools there is always rush for admission. All the applicants though eligible for admission cannot be admitted. Intelligence tests help to meet out this difficulty.

n. Classification of Pupils: Intelligence Tests help us to make a sifting at the time of first admission to school at the age of five or six. Secondary education is the next stage where another check can be provided.

HI. Detection of Superior and Inferior Intelligence: Some pupils have very superior intelligence while others not. They move at different rates. All these cannot be given instruction together. Many methods have been suggested to give instruction to the superior and the gifted. Some favour complete segregation of the gifted and the superior, while others suggest that they should be taught along with the average and an enriched course of study should be prescribed for them. To quote Prof. R R. Kumria, "If on the other hand gems of purest ray serene' are allowed to be unfathomable caves, the blame of this criminal neglect lies at the door of the parents and teachers who are making the future generation—they should pick and choose the vanguard and the rearguard of the nation. Tarring all with the same brush is not only a psychological absurdity but a political blunder."

Dr. Rice's classification of the Intelligence Quotient of the Indians is as under":

Classification	*Punjabi I. Q.*
Genius	165 and up
Very superior	140-165
Superior	120-140
Average	85-120
Dull	70-85
Borderline	55-70
Feeble-minded	Below 55

IV. **Selection of Courses':** Different subjects require different degrees of intelligence. Some call for a higher order of intelligence and the others of a low. A nation-wide study conducted in the United States gave the following Median I.Q. of the High School boys in different courses:

Courses   Median I. Q.
Technical 114
Scientific'   108
Academic   106
Commerce   104
Trade   92

Burt found the following correlation between:

Intelligence and composition 63
Intelligence and reading 56
Intelligence and arithmetic (Problems) 55
Intelligence and spelling 52
Intelligence and writing 21
Intelligence and hand work 18
Intelligence and drawing 15

V. **Selection of Suitable Occupations:** Burt draws up the following provisional scheme for occupational classification according to the degree of intelligence they require:

Higher professional and administrative work—(I.Q. 150)—lawyer, physician, architect, teacher (University and Secondary).
Lower professional, technical and executive work—(I.Q. 130 to 150).
Clerical and highly skilled work (I.Q. 115 to 130)—Shorthand typist, bank clerk, salesman, electrician, nurse.
Skilled Work (I.Q. 100 to 115)—Tailor, dressmaker, carpenter, cashier, printer.
Semi-skilled repetition work (I.Q. 85 to 100)—Barber, welder, minor, painter, baker.
Unskilled repetition work (I.Q. 70 to 85)—Manual labour, navy groom, packer.
Casual Labour (I.Q. 50 to 70)—Simplest routine work
Institutional—Under 50—Unemployable

VI. **Award of Scholarships:** Various public scholarships are awarded on the basis of the results secured through intelligence tests.

VII. Determination of the Optimum Level of Work: The intelligence tests help to measure the student's capacity to succeed in his school work and enable the teachers to make an estimate of the mental level at which the student can be expected to work most efficiently in academic subjects. I.Q is a rough index of the probable learning capacity of the various members of the class. With the aid of this test the teacher finds it easy to adjust his methods to meet the needs of the individual.

VIE. Assessment of Teacher's Work: When the achievement of the pupils in a subject does not correspond to the scores of intelligence tests, it gives indication that the subject has not been properly taught by the teacher and properly understood by the student.

IX. **Discovery of Unusual Cases**: The lack of intelligence may be the main cause of abnormal behaviour. The intelligence tests help to find other cases of abnormal behaviour.

X. **Intelligence and Success in College:** Gates and others think that an I.Q. of at least 120 is needed to do acceptable college work in a first college with an average expenditure of time and energy.

XI. **Help in Diagnosis of Backwardness:** Ordinary scholastic examinations fail to discover 'educable abilities'. The failure of a child in the examination is no indication that he lacks intelligence. This failure may be due to defective methods of teaching or it may be due to some temperamental or physical obstacles which might have stood in the way of the child. There may not be any fault with the intelligence of the child, only it has not been allowed to work itself out.

XII. Evaluation of Methods and Materials of Instruction: Intelligence tests are helpful in evaluating the results of the experiments conducted by a school in the relative importance of the different methods of instruction, i.e. achievement obtained with different textbooks or with a certain textbook as contrasted with extensive reading material not confined to any one book.

Limitations of the Intelligence Tests

It would be a great mistake to think that these tests are all in all. Intelhgence is not the only factor which determines the equipment of a man for the journey of life.

The first limitation of such tests is that they seek to measure intelligence which in itself is not a clear conception to the psychologists and about which they differ among themselves

Secondly, intelligence is not the only factor which plays a significant role in the success or failure of a man in a particular vocation The intelhgence tests fail to measure the depth, strength and qualities of a man per-training to his emotional stability. They also fail to measure his ethical, social and aesthetic qualities which play a significant part in the life of an individual.

Thirdly, intelhgence tests fail to take into account the environmental factors and the educational factors many a time and thus give misleading results. These tests may include material with which children of certain socio-economic groups have had more experience than those of other groups.

Precautions to be Taken

While interpreting test results, the teacher, however, should take certain precautions, namely:

1. General intelligence test, especially the group test measures ability to work' with abstract ideas and their relationships. This is just one type of ability. Thus a child who scores low on this test can do well or very well on other practical activities. Children with low intelhgence should therefore be encouraged to develop and strengthen their special practical skills.

2. Verbal group test of intelhgence is sufficiently dependent upon reading. So a low test score should be interpreted very carefully for a poor reader. Such a child should be tested on an individual test as well as on a non-verbal test.

3. Intelhgence test results for socially disadvantaged children should be interpreted with caution.

4. The test interpreter should always keep in mind the standard error of measurement and give due aUowance for it.

5. Intelligence tests leave untouched many important aspects such as interests, attitudes and motives, etc.

ACTIVITY
Visit a public library and write a short note on intelhgence testing in Indian education system.

Thurstone applied the law of comparative judgment in psychophysics, and later to the measurement of psychological values.

2.6 SUMMARY

In this unit, you have learnt that:

• Comprehension, invention, direction and censorship: intelligence lies in these four words.

• E.L. Thoradike defined intelligence in terms of three somewhat independent dimensions: (i) attitude, (ii) breadth, and (iii) speed.

• In ancient India, intelligence was measured through conversation, physical features, gestures, gait, speech, changes in the eye and facial expression.

• An intelligent person has the ability to adjust himself to the changing circumstances with ease, efficiency and speed. He has the capacity to assimilate ideas very quickly and clearly. He can cope with new situations very successfully.

• Logical-mathematical intelligence is the ability to calculate, quantify, consider propositions and hypotheses, and carry out complete mathematical operations.

• Intra-personal intelligence is the capacity to understand oneself and one's thoughts and feelings, and to use such knowledge in planning and directioning one's life.

• Guilford conceives of intellectual functioning as having three dimensions: (i) operations, (ii) content and (iii) products. *Operations* are processes involved in intellectual behaviour-cognition, memory, divergent thinking, convergent thinking and evaluation. The *con-tent* of these operations may be figural, symbolic, e.g., letters, numbers, semantic e.g., words or behavioural e.g., information about other persons, behaviour, attitudes, needs, etc. *The,products* may be—units, classes, relations, systems, transformations and implications.

• The SI model has explored 150 intellectual abilities and this enables us to find out if we are paying adequate attention to each of these. If not, it explains how to improve.

• Piaget believed that schemas (cognitive structures) exist in primitive form at conception and progressively develop during the lifetime in certain systematic ways. According to him, cognitive structures contain all the necessary energy for their emergence and development without requiring some motivating force.

• Emotional intelligence and its nurturing is important as they are said to facilitate the understanding of oneself and the emotional states of others. Today, emotion based learning is said to be as important as cognitive learning.

• The theory of multiple intelligence has evolved to focus on meta cognition— that is, awareness of one's own mental processes— rather than on the full range of emotional abilities.

• Intelligence is measured through a complicated process. It involves a comparison and establishment of a relationship between C.A. (Chronological Age) and MA. (MentalAge). This relationship is expressed by the term I.Q. (Intelligence Quotient). When the mental age is divided by the chrono-logical age and the quotient is multiplied by 100, the result is I.Q.

• Verbal group test of intelligence is sufficiently dependent upon reading. So a low test score should be interpreted very carefully for a poor reader. Such a child should be tested on an individual test as well as on a non-verbal test.

2.7 KEY TERMS

• **Cognition:** It is the mental process of knowing, including aspects such as awareness, perception, reasoning and judgment.

• **Empathy:** It is the capacity to recognize and, to some extent, share feelings that are being experienced by another semi-sentient being.

• **Test:** It is an attempt to learn or prove what something is like or how it will act by studying or doing.

• **Readiness:** Includes all those preparatory adjustments which immediately precedes the action.

2.8 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Spearman's theory is also known as the *"electic theory "* because it harmonizes elements from all the main types. Thurstone's theory is also known as the *"anarchic theory ",* because he conceives of mind as consisting of a number of independent facilities.

2. An individual responds to a new situation on the basis of the responses by comparison or analogy. It is also called the 'law of assimilation'.

3. The law of exercise is divided into two subparts, (i) law of use and (ii) law of disuse.

4. The law of readiness states that if the learner is in a state of readiness, which means he is prepared for learning, then the process of learning will be fast and it will be retained for a longer period of time. Thus, readiness means a mental preparation for action. It is the preparatory development or physiological growth. We progress in the process of learning by the motivation furnished by our wants, interests and attitudes. A person cannot perform an activity with ease towards which he is unfavourably dispensed.

5. The book, *Frames of Mind,* of Howard Gardner was published in 1983.

6. Some of the elements of the structure of intellect include: cognition, memory, divergent thinking,? convergent thinking, and evaluation.

7. Emotional intelligence and its nurturing are important as they are said to facilitate the understanding of oneself and the emotional states of others.

8. Two characteristics of group tests are as follows:

• In all group tests, the items are placed together in separate sub-tests or parts, beginning with the easier and progressing by intervals to the most difficult.

• Every group test is standardized for a special range of ages or school grades.

9. The intelligence tests are used for measuring general learning readiness; for indicating the extent of differences of IQ among the children of same chronological age; defining more accurately the degree of mental retardation

or   defect;   for   identifying   gifted   children;   for   educational   and   vocational   guidance; for study of mental growth and for use in research.

2.9   QUESTIONS AND EXERCISES

Short-TVpe Questions

1. What are the different types of intelligence?
2. Define 'multiple intelligence'.
3. Write a short note on Thurstone's theory of intelligence.
4. What are the educational implications of the SI model?
5. What are the advantages of the intelligence tests?

Long-Type Questions

1. Describe Gardner's theory of multiple intelligence.
2. Write a detailed note on emotional intelligence.
3. Give a detailed account on the Piaget's theory of intelligence.
4. Draw a comparison between Binet Test and Weschsler Test of Intelligence.
5. Explain the concept of intelligence tests and what are they used for.

2.10   FURTHER READING

Eysenck, H. J.; *Personality, Genetics and Behavior,* Praeger, New York, 1982.

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UNIT 3 PERSONALITY AND MENTAL HEALTH

Structure

3.0 Introduction
3.1 Unit Objectives
3.2 Meaning, Nature and Determinants of Personality

3.2.1 Development of Personality
3.2.2 Genetic and Cultural Factors of Personality
3.3 Theories of personalityTheories of personality
3.3.1 Type Theories
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3.7 Inclusive Education
3.8 Summary
3.9 Key Terms
3.10 Answers to 'Check Your Progress
3.11 Questions and Exercises
3.12 Further Reading

3.0 INTRODUCTION

Personality is a concept that we use continuously in our day-to-day routine when dealing with people. We talk about people as having a good personality or a bad personality or arrogant and aggressive personality. Sometimes we refer to disagreements among people as being due to personality conflicts.

Personality can be reflected in a person's temperament and is a key factor influencing individual behaviour in organizations. Often the wrong type of personality of a superior proves disastrous in terms of worker unrest and protests. Sometimes the personality difficulties are the root cause of labour strikes. No matter how good the superior is in technical knowledge or other behavioural characteristics, it is the "temperament" of the superior that is crucial in cordial interaction with subordinates.

Mental health refers to the level of cognitive or emotional well-being of a person. It also depicts the absence of a mental disorder. From viewpoints of the discipline of positive psychology, mental health may encompass an individual's capabiUty to enjoy life and acquire a balance between life activities and efforts to attain psychological spirit. Mental health is an expression of a person's emotions and signifies a victorious adaptation to a range of demands.

In this unit, we will discuss the concept of personality and its various aspects, some of the personality theories, mental health and inclusive education in detail.

3.1 UNIT OBJECTIVES

After going through this unit, you will be able to:
• Explain the concept of personality as a reflection of individualistic characteristics
• Discuss the nature of factors contributing toward formation of personality
• Describe the various dimensions of personality
• Differentiate between introvert and extrovert personalities
• Analyse personality as a reflection of inborn traits
• Explain personality on the basis of various theories—psychoanalytical theory, self-concept theory and social learning theory
• Describe the concept of mental health
• Explain the concept of inclusive education

3.2 MEANING* NATURE AND DETERMINANTS OF PERSONALITY

The meaning and definition of any term is arbitrary. This also holds true in case of the word personality. To arrive at its meaning, we have to trace the historical root of the word. The term personality has been derived from the Latin word *'Persona'* that was associated with Greek theatre in ancient times. *Persona* meant a mask, which the Greek actors commonly used to wear when they worked on the stage. In our own country, actors in Ram Lila and Krishna Lila use masks when they enact the role of a particular character from the epics.

The mask, worn by the actors, was called a persona. According to the concept of mask, personality was thought to be the effect and* influence that the individual wearing a mask left on the audience. Even today, for a layman, personality means the effect that an individual leaves on other people. Precisely, we can say that the mask or persona of the actor implied a cover for the real person behind it. It was developed on the basis of Plato's idealistic philosophy who believed that personality is a mere facade for some substance.

1. *Personality as a stimulus:* Some psychologists define personality in terms of its social stimulus value. How an individual affects other persons with whom he/she comes in contact, whether he/she is impressive or repulsive, whether he/she has a dominating or a submissive personality. Personality, from this point of view, becomes identical to reputation and impression, mostly in terms of physical appearance, clothing, conversation and etiquette. Generally, we use this concept of personality in selecting applicants for various jobs and courses. The interviewers take into consideration the total picture of an individual's organized behaviour.

2. *Summative approach:* The second approach of defining personality emphasizes the importance of sum total of different processes and activities of the individuals as, for example, innate dispositions, habits, impulses, emotions, etc. This approach was criticized by Gestalt psychologists who objected to the idea of aggregation or sum total of parts without introducing the concept of organization and integration of parts into a total whole.

3. *Integrative approach:* The definitions of this category lay emphasis on the integrative aspects of personality and its definite pattern of organization. Warren's dictionary defines personality as, 'personality is the integrative organization of all the cognitive, affective and physical characteristics of an individual as it manifests itsrelfin focal distinction from others.' G. W. Hartman defined it as, 'personality is integrated organization of all the pervasive characteristics of an individual as it manifests itself in focal distinctiveness from other.'

4. *Totality view:* This approach to define personality puts more emphasis on integration than the first category of definitions given above. It forgets the part. According to this view, the general characterization or pattern of an individual's total behaviour is his personality. A man's personality is the total picture of his organized behaviour, especially, as it can be characterized by his fellowmen in a consistent way. Mark Sherman in his book *Personality: Inquiry and Application* (1979) has defined personality as, 'the characteristic pattern of behaviour, cognitions and emotions which may be experienced by the individual and/or manifest to others.'

5. *Personality as adjustment:* An individual, since his birth, attempts to adjust to his environment. The behaviour of an individual can be defined.as an adjustment to his environment. Every individual develops his own unique way of adjustment in the society. According to this approach, personality is an individual's characteristic pattern of behaviour. An individual, through his continuous reactions, attempts to adjust himself in his/her environment. We can say that the sum of the individual's movements as he/she adapts himself to the environment is his personality.

We have described the various approaches to define the term personality. We now examine the important definitions of personality. Fredenburgh, in his book, *The Psychology of Personality and Adjustment,* tried to summarize the various definitions in a single definition, which is,

'Personality is a stable system of complex characteristics by which the life pattern of the individual may be identified.'

Allport (1961) who devoted most of his time for research on personality defines, 'Personality is the dynamic organization within the individual of those psychophysical systems that determine his unique adjustment to his environment.' The defimtion given by Allport is very comprehensive and includes all aspects of an individual's personality. Some terms used in the definition need explanation. A dynamic personality is one that is undergoing constant changes but is still organized. It constitutes two types of systems, i.e., psycho (mental) and physical and these two systems interact with internal and external environment. The word 'determine' emphasizes that it is the psychophysical system that activates the organism for action.

The unique adjustment of the individual to his environment means that each individual employs different methods of adjustment resulting in unique adjustment. Guilford (1959) defines personality as 'an individual's personality, then, is his unique pattern of traits. A trait is any distinguishable, relatively enduring way in which one individual differs from another.'

Thus, we see that different approaches have been taken to define personality but there is no agreement on a single defimtion of personality. Though there is diversity of views but even then all psychologists agree on certain common basic characteristics. One basic fact is that personality is unique. No two individuals, even identical twins, have the same personality. The second basic fact regarding personality is that it is the product of its own functioning. What we do today depends on our accumulated experiences of the past. The experiences are accumulated daily and shape our personality by a continuous interaction with the external environment. The third common characteristic of most definitions is that they stress on the need to understand the meaning of individual differences. Personality is what makes an individual unique. It is only through the study of personality that the relevant differences among individuals can be made clear.

3.2.1 Development of Personality

According to Allport, personality development is related to the concept of self or propium. It includes all the aspects of personality that make for internal unity. The propium develops through conditioning, reinforcement, habits and other aspects of learning. Allport outlines the following stages of the development of propium or self or personality:

1. *Bodily self (Birth to first year):* During infancy, sensations provide the anchor. It is the feelings or awareness of one's own body.

2. *Self-identity:* After about 18 months, the child is capable of recognizing himself/ herself as a distinct 'person' and not merely a 'body'. He is aware of his likes and dislikes and his relationship with others in the immediate surroundings. The continuity of experience is made possible through the development of language.

3. *Self-esteem (2-3 years):* From second through third year of life emerges a sense of autonomy. The child is no more dependent on parents and experiences pleasure (pride) over his accomplishments and humiliation over his failure. He also develops negativism, *i.e.,* refusal to obey or receive orders from others. This results in the development of self-esteem.

4. *Self-extension (4- 6years):* The child meets people and develops new interests and habits and develops self-image. He develops conscience. He learns to confirm to the expectations of others. The child develops good and naughty selves. He is sensitive to praise and reprimand.

5. *Self as a rational coper (6 - 12 years):* The individual develops reasoning power and uses problem-solving approach. Allport calls this rational coper.

6. *Propriate strivings (12years -Adolescence):* As the child reaches adolescence, he is able to distinguish between peripheral and propriate motives. Peripheral motives include impulses, drives and striving for immediate gratification of needs. Fulfilment of peripheral motives reduces tension. Propriate motives are our efforts to increase tension rather than to reduce it. The individual strives for important goals in life. The conversion of peripheral motives to propriate motives is called 'functional autonomy'.

7. *Self as knower:* It includes all the previous aspects of the propium.

According to Allport, traits differ in intensity and magnitude in general population from individual to individual. No two individuals are alike in their behaviour. They operate in their unique way in the environment. Each individual is unique in his adjustment to the world around.

3.2.2 Genetic and Cultural Factors of Personality

Genetic

Let us first explain the meaning of the term heredity. Heredity is of two types: *biological heredity,* which the child inherits from his forefathers in the form of chromosomes and second is *social heredity,* which means all that one generation gets from preceding generations in the form of social traditions, customs and skills, etc. Each generation transmits the acquired skills and knowledge to the succeeding generations.

Principles of Heredity

Even a layman knows that a cat gives birth to kittens, lions have cubs and human beings have babies. Children generally resemble their parents or relatives. But we also find that in many cases children do not resemble their parents. There are numerous instances where intelligent parents have dull children or handsome parents have not-so-handsome children. This variation is universal in nature and is called the principle of variability of inheritance. There are two principles: one is of resemblance and the other of variability.

Genetic Material

We know that a tiny seed carries within itself all the elements from which there will emerge a full grown tree. In the same way, germ cells carry all the characteristics of a potential child. This is called the biological heredity of the child.

Mechanism of Heredity

When the human sperm and egg unite, the fertilized egg is called zygote. Each parent provides twenty three pairs of chromosomes, for the process of fertilization. The literal meaning of the term 'chromosome' is 'coloured body'. Every cell in the body contains the same number of chromosomes. The number of chromosomes in a cell is constant for a given species but varies widely from one species to another. All human cells have forty-six chromosomes; half of the chromosomes come from the mother and half from the father. Within the chromosomes, there are thousands of genes. These genes are the carriers of heredity characteristics from one generation to another. Genes are minute particles located in the chromosomes.

The Genetic Code

In the year 1962, the Nobel Prize winners discovered the structure of the material of heredity which throws new light on the traditional views of the composition of chromosomes. Chromosomes are made up of long organic molecules whose substance, deoxyribonucleic acid (DNA) is found in the chromosomes as two long strands periodically connected by chemical bonds.

The most constant feature of genetic material is the order of four basic compounds connecting the two strands of DNA. Our heredity information is not in the long strands of DNA but in their order of appearance between the two strands of DNA. The sex of the individual is determined by genes. One pair of chromosomes is concerned with the sex of the child. Women have two special sex chromosomes called *X* chromosomes. Men have an *X* and a longer *Y*. Thus we see that a male has both *X* and Fchromosom.es while the female has only *X* chromosomes. If one of the *X* sperm unites with an egg, also carrying an *X* chromosome, then the child will be a girl. If a *Y* sperm meets an egg, the offspring will be a male child.

Dominant and Recessive Traits

Genes, the carriers of human traits, are of two types; dominant and recessive. Genes occurring in paired positions along the chromosomes carry contributions toward the same characteristics but can give information of development. One gene may cause development of blue eyes while matched gene in the other chromosome may act to produce brown eyes. When both genes of the chromosomes act to foster identical characteristics in the offspring, this is said to represent the homozygous condition. If the information concerning a given characteristic differed in the paired gene position, the condition is called heterozygous. In many cases, one of the tendencies of the pairs of genes found in the heterozygous condition will dominate. Thus, when a child inherits a

gene for blue eyes from one parent and a gene for brown eyes from the other, the child will have brown eyes. Therefore, we call the gene for brown eyes dominant.

Genetic Influences

Laws of Mendef: Gregor Mendel (1866) published the results of his continuous painstaking observation of cross-breeding of plants. He discovered the laws of inheritance injaybrid peas growing in the garden of an Austrian monastery. His principles of inheritance have been found applicable to plants and animals when the particular characteristic is determined by a single gene.

The Mendelian law of inheritance may be summarized as, 'If a man who is homozygous for blue eyes marries a woman homozygous for brown eyes, the children of this couple will have only brown eyes.' Now what happens if a heterozygous man marries a heterozygous woman? The distribution of children from this marriage will be such that one-fourth of them will be homozygous for brown eyes *(BB);* one-half of them will be heterozygous *(Bb),* and one-fourth will be homozygous for blue eyes *(bb).* Mendel's most valuable contribution is that all genetic information comes to the individual in units rather than in a graduated series. In other words, we receive from our ancestors genes controlling the development of specific unitary characteristics, not a mixture of various tendencies.

A second conclusion which may be drawn from the study of Mendel is that characteristics of men and animals tend to vary continuously along a dimension. As is the case with intelligence, we do not find a cluster of bright or dull people, but rather we find intelligence to be distributed in what appears to be a normal distribution among the population.

Cultural determinants

Every society is characterized by its cultural heritage which is transmitted from generation to generation in the form of social heredity. Indian society has a very rich cultural heritage and that could have a deep influence on children. Personality of an individual is gradually shaped by the culture he is born in. E.B. Tyler, the famous anthropologist, defined culture as, 'It is that complex whole which includes knowledge, beliefs, morals, law, custom and many other capabilities and habits acquired by man as a member of society.'

Culture refers to total life activities of a society. What people think or do and feel constitute the culture of a society. It is the physical way of life, social institutions and psychology of the people fused together. Biological inheritance is the same in human beings all over the world but it is the difference in their cultural conditions

which develops distinctive personality characteristics in the individuals of different cultural groups. We can easily identify people reared in different cultures by the personality patterns they possess. English, American, African and Indian can be identified by their cultural backgrounds. India is a big country having many subcultures within abroad culture. The personality of individuals within these sub-cultures is molded by the customs, beliefs, rituals and religious faiths and early childhood training of children. Culture is a great educator of human beings, sometimes directly and sometimes indirectly by the methods of training and passing on great social heritage, it leaves permanent impression on the personality of the child.

The importance of cultural forces in the development of personality is very great. The influence can be understood by an example. Suppose there are three identical twins who are adopted in three sub-cultures—homes of Muslim, Christian and orthodox Hindu. They are reared and trained in three different cultural backgrounds. It is obvious that the impact of culture will produce three distinctive types of personalities. Our attitudes, needs and aspirations are regulated by our culture. C. Kluckhohn, emphasizing the importance of culture in the life of the individual, said, 'Culture regulates our lives at every turn. From the moment we are born until we die there, whether we are conscious of it or not, constant pressure upon us to follow certain types of behaviour that other men have created for us.' In the course of development, society stabilized certain patterns of behaviour which are followed by the members of a society. It develops certain common personality characteristics in the members. Common characteristics develop in the members of a cultural group on three principles:

(a) Early experiences which the child gets in a culture.

(b) Child-rearing practices are culturally patterned so that children in a society are subjected to similar early experiences.

(c)   Similar experiences lead to similar personality configuration.

Culture influences the personality development of an individual in the following ways:

(i) Internalization of values, ideas, beliefs and customs through the process of learning. A child since his birth is reared in a definite cultural background where he is taught values, customs, and beliefs, etc. which create distinctive personality characteristics in the child.

(ii) Institutionalization: Buildings of various religious prayers, books and cultural programs.

Many religions, faiths and creeds are found in India that follow different religious faiths, beliefs, prayers and cultural programs which create unique personality characteristics among the followers of different religions.

Anthropologists have made a study of the impact of culture on personality development. Margaret Mead conducted a study on adolescents in Samoa, a primitive culture. She concluded in her study that cultural conditions play an important role in moulding the personality patterns of individuals. According to her findings, the development of the sense of security seemed to be one of the chief factors determining the formation of personality.

3.3 THEORIES OF PERSONALITYTHEORIES OF PERSONALITY

Psychologists have developed several theories of personality to study its structure and growth. Some of these are as follows:

• Type theory
• Trait theory
• Psychoanalytic theory
• Phenomenological theories
• Learning theory of personality
• Social Behaviour theory
• Rotter's Expectancy-Reinforcement model

3.3.1 Type Theories

It has been the nature of people, from ancient times, to name and classify objects of the environment and human beings into different categories called types. The old system of typology still continues and in modern times. Greek physicians were the first in 5 BC, who classified people four broad categories on the basis of emotional and temperamental characteristics. One of Aristotle's pupils theorized that human body consists of four fluids. The personality of an individual is typed by the dominance of one of them in the body. The four types of fluids are as follows:

S.No.	Humour	Temperament	Characteristics
1.	Blood	Sanguine	Active, hopeful
2.	Yellow bile	Choleric	Irritability, quick to anger
3.	Phlegm (Mucus)	Phlegmatic	Calm, temperamentally sluggish
4.	Black bile	Melancholic	Depressed, slow and pessimistic

If we study our own scriptures we find in that ancient India there existed an advanced system of Ayurveda, in which our ancient physicians broadly categorized all human beings on the basis of three elements in the body. The predominance of one of the three decided the category of the person. It appears that this system of Hippocrates and Indian physicians were, more or less, similar. The three elements, which the Indian physicians theorized are *pitt* (bile), *bat* (wind) and *kuf* (mucus). A number of typologies have been attempted for constitutional, temperamental and behavioural types of persons by philosophers and psychologists in the ancient and current literature.

Constitutional type

Ernest Kretschmer, a German psychiatrist, classified human beings on the basis of physical constitution. He attempted to establish relationship between personality characteristics and body type.

S.No.	Type	Characteristics
1.	Pyknic	Stocky, full-chested, popular
.2..	Asthenic (Leptosomic)	Weak, tail, sensitive and thin
3.	Athletic	Strong
4.	Dysplastie	Mixed type

Somato type

William H. Sheldon, an American surgeon, divided all human beings into three broad categories of physical dimensions and their corresponding temperamental characteristics. He believed that physical structure of the body is the determinant of personality characteristics.

S.No.	Physical characteristics	Temperament
1.	Endomorphie (soft, round)	Viscerotonic (Sociable, extrovert affectionable) Love of physical comfort
2,	Mesomorphic (muscular and strong)	Somatotonic (energetic and muscular, love of risk and chance)
3.	Ectomorphic (thin and tell)	Cerebrotonic (fearful, artistic introvert and restrained)

Spranger's type

E. Spranger, German philosopher, divided human beings on the basis of interest, in the following categories:

(a) *Theoretical:* Persons who are theoretical in nature neglect social and political participation (b) *Economic:* Persons who are interested in money-hoarding

(c) *Aesthetic:* Persons who are lovers of beauty and are busy in sensuous gratification

(d) *Social:* Persons who are interested in social activities

(e) *Political:* Dominating and desirous of power

(f) *Religious:* Persons who devote themselves to religious activities and mysticism

Jung's Typology

Jung, a Swiss psychiatrist, attempted to classify human beings on two behavioural dimensions: extrovert and introvert. His typology is widely known and is most influential among professional workers. The major characteristics of two types are as follows:

1. **Introvert:** Defined as a person who tends to withdraw into himself, especially when facing emotional conflicts and stress in the environment. An introvert individual is shy, avoids people and enjoys being alone. Scientists and philosophers may be termed as introverts.

2. Extrovert: In contrast to the introvert type, an extrovert person's orientation is towards the external world. He deals with people intelligently in social situations. He is conventional, outgoing, social, friendly and free from worries.

Social workers, politicians, business executives may be typed as extroverts. These two broad categories have been further classified on the basis of rational and irrational processes.

Jung's system of classification of human beings is eight-fold and not two-fold as is popularly known. A person, according to Jung, may be extrovert for one function, for example, feeling and the same person may be introvert in intuition. All persons can be divided into eight types, based on the dominance of one of the above factors. Modern writers have introduced the type 'ambivert', between two extreme poles of extroversion and introversion. Ambivert refers to those persons who can be classified as neither extroverts nor introverts.

Freud's typology

Freud, on the basis of his theory of psycho-sexual development, identified three types of personality. The type depends on the fixation of sexual energy at a particular stage of sex development. The three types are as follows:

1. *Oral-erotic type:* According to Freud, sex in infancy is located within a month of birth. There is a membrane in the mouth which, when irritated gives pleasure to the infant. Sexual gratification at this stage involves activities related to mouth. Oral-erotic type of personality shows excessive degree of pleasures associated with oral activity. Sucking, biting or putting anything in the mouth gratifies sex in infancy. Fixation at the oral stage results in two types of personality in later life.

(i) Oral passive type: This type of person is dependent, optimistic and immature in his/her thinking and other activities like a child. He/she expects help from other people. *(ii) Oral sadistic type:* This type of person is pessimistic. He/she is suspicious and aggressive. He/she is often bitter in his/her dealings with others.

2. **The anal** type: The second stage of sex development is anal, when the child obtains gratifications through anal activities. These activities generally relate tothe expulsion of fecal material through the anus or the retention of these materials in response to the social demands of toilet training. Some traits of personality develop due to fixation of sex energy at this stages include obstinacy, miserliness, orderliness, etc., in later life.

3. *The phallic type:* The third stage of psycho-sexual development is phallic. This type of person shows self-love and exhibitionism. He tries to draw the attention of others. These characteristics are found in early adolescence.

Evaluation of the type approach

Classification of human beings into types has been generally criticized by psychologists on the basis that typologies tend to place emphasis upon one or another phase of development. They deal with extreme rather than mediocrity of human nature. It is very difficult to categorize individuals under one of the types as proposed by some typologists. Two or three types are wholly inadequate to describe human varieties of behaviour into a few limited categories. The second criticism of typology is that types are discontinuous and non-scalable. There is multiplicity of type theories, which are very difficult to apply in practice.

Criticism does not mean that typology is useless. Typology has its historical value in the sense that it was the first attempt to typify people, which generated a great deal of research. The second important contribution of typology is that it attempts to assess the personality of an individual as a whole. It does not study personality in fragments of traits. The type approach is very useful for psychologists who attempt to comprehend the personality of an individual as a whole.

The third advantage of typology is that types are useful and valuable from the point of view of experiments in physical science, where attention to certain process in a relatively pure form is uncontaminated by accidental and confusing factors. Lastly, we can say that they serve one very important function as reference points or guides for the examination of dimensions of personality by different psychologists.

3.3.2 Trait Theory

Typology and trait approaches are interrelated to each other in the sense that typology includes a wide variety of traits in classifying human beings in broad types while in trait approach we label or call a person by a specific mode of behaviour, which he shows in a variety of circumstances.

In modern psychology, the type approach is not so widely used as the trait approach to understand the development of personality. In our daily life, we label traits as honest aggressive, fearful, dependent, lazy, dull, etc. In the simplest sense, by trait we mean a mode of behaviour manifested in number of life situations consistently. It is any distinguishable, relatively enduring way in which one individual varies from other. Trait may be defined, 'as a property within the individual that accounts for his unique but relatively stable reactions to the environment.'

Walter Mischel, in his book, *Introduction to Personality,* states, 'trait is a continuous dimension on which individual differences may be arranged quantitatively in terms of the amount of the characteristics, the individual has.'

Let us now explain the process of development of trait theory. 'Trait' in daily life, first, is used simply as an adjective, for instance, 'Ram behaves in a lazy way in several situations'. The description is generalized from individual behaviour to the individualRam), we say that he (Ram) is lazy. Laziness becomes a trait of Ram's personality, a characteristic mode of his behaviour.

Development of friendliness

Stimuli	Trait	Responses
i. Meeting friends	Friendliness	1. Helpful
2. Meeting with strangers		2. Pleasant
3. Dealing with poor, disabled children		3. Warm and interested

Some properties of traits
• **Scalability:** Traits are scalable. They can be measured and scaled quantitatively.
• **Inference from behaviour:** Personality traits are not directly observable but are manifested in a number of activities and verbal expression. We infer a trait from the behaviour of the individual.
• **Flexibility:** Traits are not static in nature. Traits are flexible in childhood. They become stable with the maturity of the person with age but some variability is always present.
• **Universality:** There are certain traits, which are universal in nature like height and weight.
• **Functional unity:** The trait must have functional utility. It means that there must be different indications, which may vary or are manifested consistently in the behaviour of the individual.
• **Traits are higher order habits:** Guthrie conceived that a trait is a higher order habit, which recurs in behaviour frequently.
• **Traits are mental sets:** Some psychologists define traits as a mental set. It is a readiness to respond to any variety of situations in a consistent way. Cason stated that there is a generalized tendency in some people to be annoyed easily.
• **Traits are frame of reference:** The personality of an individual is an organized whole of beliefs, emotions, etc., about the environment. In this reference, traits are organized frames of references.
• **Traits are learned:** Traits are learned during interaction with the environmental stimuli. They are biologically determined as neuroticism and other traits, which depend on the disposition and intellectual potentialities of the individual.

G.W. Allport's Classification
G.W. Allport is one of the most outstanding trait psychologists. His conception and research on trait approach to personality has had an immense influence on psychologists. He has conceived that traits have a real and vital existence. He defined a trait, 'as a generalized and focalized neuropsychic system with the capacity to render many stimuli functionally equivalent and to imitate and guide consistent forms of adaptive and expressive behaviour.' The definition given by Allport is a comprehensive one. It emphasizes that traits are not linked with a small number of stimuli but are general and enduring in nature. He classified all human traits into three broad categories as follows:
(i) **Cardinal traits:** Traits that appear the most in the behaviour of an organism are called cardinal. It may be illustrated with the example of achievement in life. Some people are so devoted to achievement that this trait pervades their entire life.
(ii) **Central traits:** Central traits are less pervasive than cardinal traits but are generalized dispositions.
(iii) **Secondary dispositions:** Secondary dispositions are specific and narrow traits. They are also known as attitudes.
According to Allport, traits differ in intensity and magnitude in general population from individual to individual. No two individuals are alike in their behaviour. People operate in their unique way in the environment. Each individual is unique in terms of adjustment to their environment.

R.B. Cattell's Classification
Raymond B. Cattell is another ardent propounder of trait theory of personality. The basic structural element for him is the trait. He stated that a trait is the structure of personality inferred from behaviour in different situations. He classified traits into four categories:
(i) Common traits: There are certain traits, which are widely distributed in general population or among all groups. They are known as common traits. Generally, aggression and cooperation can considered common traits.
(ii) Unique traits: These traits are possessed by particular persons like temperamental traits, emotional reactions, etc.
(iii) Surface traits: Traits that can be easily recognized by overt manifestation of behaviour are called surface traits, such as, curiosity, integrity, honesty, tactfulness and dependability.
(iv) Source traits: Source traits are the underlying structure of sources that determine behaviour. Dominance and emotionality are source traits. Cattell, through the factor analytic approach, determined the contribution of hereditary and learning factors in the development of traits in the individual. He emphasized on the importance of interaction between hereditary and environmental influences in personality development.

H.J. Eysenck's Classification
HJ. Eysenck, a British psychologist, devoted much of his research studies to explore the trait dimensions. He conducted extensive research on trait dimensions by applying quantitative techniques of factor analysis. He conducted research on ten thousand soldiers and by statistical analysis isolated two dimensions in personality:
(i) Introversion and extroversion
(ii) Neuroticism
Later on, he isolated another personality dimension as psychoticism. According to Eysenck, psychoticism is an independent dimension of personality. It is quite different from the introversion-extroversion, dimension. Eysenck has found three fundamental dimensions of personality.
(i) Introversion vs. extroversion (ii) Normality vs. neuroticism
(iii) PsychoticismThe first two dimensions given above may be taken as the part of normal personality. Their relationship is presented as follows:
Eysenck developed personality inventory to test the traits of personality. His findings have generated research activities by several psychologists. His most important contribution is that he tried to prove that personality is genetically caused. He traced neuroticism to the autonomic nervous system and introversion-extroversion to central nervous system. He emphasized the importance of heredity in the development of traits of personality as against the concept of American psychologists who are biased in favour of environment

Common features of trait theories
Though trait theories disagree with the specific content and structure of the traits needed to describe personality, there is still agreement on the general concept of traits:
• **Consistency of traits:** All theories agree that traits are consistent in an individual's behaviour. They are not temporary dispositions but enduring characteristics of the individual.

• **Trait dimensions:** There is agreement as regards the various dimensions of traits as source traits and surface traits, common and unique, broad and narrow. Traits vary in breadth and generality.

• **Traits are dispositions:** Traits fluctuate or change in a person's position with respect to a disposition. All psychologists are committed in their search of broad and stable traits.

Criticism of trait theory

The trait theory of personality has often been criticized by many psychologists in recent years. The main points of criticism are as follows:

• There is no agreement among psychologists concerning the use of the terms.

• There is a view that a trait is a behavioural disposition, which is consistent and does not vary from situation to situation. In daily observation, we find that if a man possesses friendliness as a trait, he does not behave in a friendly manner in all the situations of life. Trait is not a permanent or a static characteristic of the individual because personality does undergo change.

• Another difficulty is the quantification of human traits as there is no zero reference and equality of units in trait measurement. There is no suitable measuring tool of trait dimensions. Generally, traits are measured with the help of paper-pencil tests, which can be manipulated by the subject by giving fake information.

• 'Halo effect' operates when a person rates an individual very high on a specific trait. He may rate the same person on other traits equally high.

• The behaviour of an individual cannot be predicted on the basis of scores on trait inventory. Traits are the only point of references. An examination of the personality traits of an individual enables us to make only probability statements about what the individual may do.

• The last criticism against trait theory is that it is still unclear whether a trait is viewed as an inner process that causes difference among individuals or is it the situation that brings into play certain organizational tendencies, which create the behaviour.

3.3.3 Psychoanalytic Theory of Personality

We will now discuss different theories of personality that emphasize on the dynamics of human behaviour. We will outline the views of classical psycho-analysis and examine the views of neo-Freudians who deviate from Freud but claim to be psychoanalysts.

(i) Freud's theory

Basic concepts

Sigmund Freud was the first psychologist who placed great importance on instincts as the determinant of human behaviour. He proposed two instincts: (i) Eros, (love and the self-preservation), (ii) Thanatos, (death instinct, as the ultimate cause of all human activity).

Psychic structure

Psychic energy, according to Freud, comes from libido. It denotes sexual energy. When Freud revised his theory, which included two groups of instincts, sexual libido was regarded as the primary driving force of personality. The dynamics of personality is seen as largely governed by the need to gratify the libido.

Id: Implies inborn and its main function is the discharge of psychic energy, which when pent up produces tension through the personality system. Identity operates on animal level. It cannot differentiate between good and bad and operates on the principle of pleasure. The primary process of thinking and explaining id behaviour, resulting from pent up tensions is described by Freud as frustration. The primary process attempts to discharge tensions by bringing into consciousness, memories associated with the source of frustration.

The ego: The id knows only the subjective reality of the mind. The second concept of Freud is the ego, which distinguishes between subjective reality and things in the external environment. It operates on the principle of reality. The ego is called the executive of personality. It obeys the reality principle and operates by means of secondary process. The pleasure principle is only concerned with whether an experience is painful or pleasant; the principle of reality is concerned with whether it is true or false. The ego formulates a plan for the satisfaction of the need and executes it, keeping into consideration the reality principle. It often integrates the conflicting demands of id, the super ego and the external world.

The ego is an organized portion of the id, which has been modified by the contact of external reality and experience. It comes into existence to forward the aims of the id. It brings a compromise between the instinctual urges of the id and demands and forces of the external environment. Freud remarked about the function of ego: 'The poor ego has to serve three harsh masters and has to do its best to reconcile the demands of all three.'

Explaining the relationship between ego and the id, Freud once said, 'Imagine that the relationship between the ego and the id is similar to the relationship between a horse (id) and its rider (ego). While the rider usually determines the direction of the horse, there are those times when it is the horse who leads the rider.'

The super ego: The third concept is the super ego. It is the agency that internalizes the parental influences and ideals of society through early childhood experiences. It represents the ideal rather than the real and strives for perfection. It works in accordance with the moral standards authorized by the agents of society.

Let us explain it with the help of an example: Suppose there is a beautiful toy in the room, a child sees it and runs towards it, this is the id level. The second stage occurs when the parents instruct the child, not to touch the toy. The child sees the toy but does not touch it out of fear of punishment in the presence of the parents. The third stage of development is when the toy is in the room and the parents are not there but the child does not touch the toy. This is the super ego. The super ego involves the internalization of parental control in the form of self-control. We can say that id is biological and seeks pleasure; ego is a psychological test reality. The super ego represents the social-self and seeks perfection.

The super ego develops gradually by the process of reward and punishment meted out by the parents to the child in early childhood training. The parental reward and punishment is substituted by self-control. An individual with a well-developed super ego refrains

from bad or evil temptations, such as stealing or telling a he, etc., even in the absence of the punishing agent. The process of adoption of the moral and ethical standards of family and society is called the process of introjections.

Dynamics of personality

According to Freud, the human organism is a complex energy system that derives its energy from the food it consumes. The energy created by biological factors may be transformed to psychic energy. The three parts of the psychic structure, i.e., id, ego and super ego are in constant conflict. The dynamics of personahty involves a continuous interaction and clash between id impulses seeking release and inhibition imposed by the super ego. The individual is in quest for immediate gratification of impulses, seeks pleasure and avoids pain in order to reduce tension. The drive for immediate satisfaction of instinctual demands leads to early clash between the individual and environment. Conflicts develop when the parents or other members impose restriction or control on expression. There is a perpetual warfare between the pressure of the environment and the demands of the id and super ego. The ego, in order to adjust in the social environment, utilizes a number of mental mechanisms to it and the demands of the id and the super ego reduce the tensions of the individual.

Educational Implications of the Theories of Personality

Theories of personahty have important educational implications. Trait theory of personahty acquaints the teacher with the various traits that need to be adequately developed in the students.

Conscious mind is just one-tenth of the mind and unconscious mind is nine-tenth of it. Knowledge of the unconscious mind of the students is a must for the teacher. A teacher cannot take effective measures for the personahty development of the students unless he has adequate knowledge in this regard. He must understand that the students have depressed desires and it is his duty to make use of various defence mechanisms. The teacher should also under-stand the three tiers of the mind— the Id. the Ego and Super Ego. The teacher is expected to redirect the pent-up feelings of his students to healthy or normal channels" Psychoanalysis brings out the importance of proper environment for the education of students. It has given impetus to such movements as *Child Guidance, Mental Hygiene and Freedom of the Child.*

Adler has laid more emphasis on individual differences. This is a useful point for teachers.

The concept of inferiority complex is a valuable concept for the teacher.

Dream analysis of Jung indicates that disturbing complexes relate not only to the past, but also have implications for the present and the future

The concept of introversion and extroversion is very helpful to the teacher to understand the personalities of his students.

3.4 MENTAL HEALTH

Mental health of the learner is very important for efficient learning and proper development of personality. A child is born in a home where he remains in the constant company of his mother in the formative years of his infancy. Traditionally, it is said that a mother is equal to hundred teachers. The impressions and experiences which a child has in these formative years leave permanent and indelible impressions on his mind. From the point of view of psychoanalysis, early childhood experiences are very important for the future development of personality. The parents, of course, since they control children during infancy, are in the most strategic position to inculcate positive habits in their children.

The first important requisite condition is affection and love of parents and other members of the family. The infant should feel secure and loved in his home. Parents should meet the legitimate needs of their child. Proper and conducive environment should be provided in early childhood. Pleasant and satisfaction giving experiences should be provided for the harmonious development of the personality of the child. The parents should keep the following things into consideration:

1. Provide proper affection and love to the child
2. Provide a conducive environment at home
3. Avoid criticizing the child
4. Avoid comparing the child with other children
5. Avoid rejecting or overprotecting the child
6. Avoid quarrelling in the presence of the child
7. Avoid being over anxious about the future of the child
8. Being democratic in dealings
9. Meeting the legitimate needs of the child
10. Providing guidance where necessary
11. Building self-confidence in the child

All look to the school as the second line of defence. The school assumes great responsibility in the process of harmonious development of personality. Children spend six to seven hours in school. Schools are in a position to help in the development of children's potentialities by catering to their needs. The following are the various measures, which can be taken in schools for the proper development of physical, mental and spiritual abilities of children:

School environment; Democratic environment; Provision for curricular activities; Teacher's role; Freedom of expression; Variety of interests; Reading for mental health; Classes in human relations; Provision for sex and moral education; Art and craft; Guidance

So far, we have been talking about the mental health of students, causes and remedial measures to check maladjustment among students. Teachers' mental health plays an important role in the teaching-learning process. If the teacher is not in sound mental health, he can do incalculable harm to the nation in terms of poor guidance to the students. He cannot do justice to his job. His maladjustment will not only adversely affect his personality but will produce maladjustment in children put under his charge.

3.4.1 Conflict and Frustration

Frustration is the outcome of obstacles in the path of an individual's goal or objective. It is an unpleasant emotional state of mind in which the individual feels frustrated because some objects or situation create hindrance in the achievement of a particular goal. All of us have a number of needs and desires. These needs and desires differ from individual to individual and are different for different age groups. If these desires and needs are not satisfied or fulfilled, then frustration sets in.

According to Barney and Lehner, frustration refers to a failure to satisfy a basic need because of either conditions or external obstacles.

According to Good, frustration means emotional tension resulting from the blocking of a desire or need. Munn defined it as 'a state of organism resulting, when the satisfaction of motivated behaviour is rendered difficult or impossible.'

Causes of Frustration

Frustrations can be the result of many external causes such as physical, economic or social.

Social/actors

Every individual lives in a society and follows the norms, customs and traditions of that society. If the individual has a conflict with the society's customs and rules of conduct, then it leads to frustration. For example, if a man wants to do an inter-cast marriage, which is considered to be wrong according to the norms of the society in which he lives, then the individual becomes frustrated or a young girl who is not allowed to party till late night feels frustrated.

Physical factors

Every human being inhabits a physical environment. The physical environment presents obstacles like bad weather, floods, drought, etc. For example, if an individual, going for a interview, gets stuck in rain, he or she may feel extremely frustrated for being unable to reach his or her destination.

Economic factors

An individual is influenced by economic factors like economic status, demand and supply of commodities in the market, prices of essential commodities and availability of consumer goods. Any deficit in these factors may frustrate an individual. A farmer who has a bad crop gets frustrated because he cannot earn and feed his family.

Internal factors

The internal factors are those factors which are present within the individual. It also includes mental and physical deficiencies like paralysis, blindness, deafness. Sometimes, an individual's moral ethics and ideals may turn out to be a source of frustration.

Sources of Frustration

There are various sources of frustration, which are as follows:

A major source of frustration is conflict. The cause of conflict can be two desires or two types of behaviours, which are not compatible with one another. Conflict is an unpleasant state of mind. When it becomes difficult for an individual to decide which desire should be satisfied, he or she becomes frustrated. This inner state of mind is characterized by tension as a result of the presence of mutually exclusive or opposing tendencies/impulses or desires, at the same time, is described as conflict.

Thus, conflict is a painful state or condition of an individual. One feels intense emotional tension during this state. Tension is the result of the presence of two or more desires or wishes in an individual. These desires are contradictory in nature and therefore cannot be satisfied fully at a given time. The individual, being at the crossroads, is not able to choose between the two opposing desires, and becomes tense and restless. The person becomes a victim of the two opposing desires and suffers from an inner conflict.

There are three types of conflicts. These are as follows:

(i) **Approach-approach conflict:** In this type of conflict, an individual has two or more positive goals and has to choose between the two. Both these goals are equally interesting and beneficial to him or her. For example, a child may have a conflict if he or she cannot decide whether to go to the zoo or play with his or her friends.

(ii) **Avoidance-avoidance conflict:** In this type of conflict, the individual is caught in a situation in which he or she wants to avoid any of the two actions or situations. Both the actions are equally unattractive to the individual because of which he or she wants to avoid both of them. In such a situation, if one is compelled to take a decision to choose one, then it results in a state of mental conflict. For example, an individual who fears entering the boxing ring has to decide whether he should to do boxing or face the stigma of being a looser. The threats involved in both the situations are unattractive.

(iii) **Approach-avoidance conflict:** This type of conflict results when an individual is faced with a situation, which is attractive and negative at the same time. One experiences a state of conflict because one has to decide whether one wants to approach the situation or avoid it. For example, a person might be motivated to steal a few things from a shop but at the same time, he may perceive it to be wrong according to his morals. These types of conflicts are severe in nature and may result in mental tension.

Reasons leading to conflict

There are a number of factors because of which an individual may feel dissatisfied. It can be the presence of two contradictory desires, which leads to a conflict. There are also numerous other things like the family environment, school environment and social and cultural environment, which are the potential sources of conflict.

- **Family environment:** This is the most important factor that results in conflicts. Unhealthy atmosphere at home due to unpleasant relations between the parents makes children either aggressive or overly submissive. These factors lead to mental conflicts.

- **School environment:** Sometimes the school does not allow self expression in children. The child becomes shy and does not get an opportunity to take prompt decisions. These factors are sources of mental conflicts.

- **Social and cultural factors:** Many factors like social taboos, norms and forced inhibitions are potential sources of conflicts for an individual living in a traditional society. For instance, sexual desires are considered to be unethical in the traditional society, which results in conflicts in the mind of youth. Similarly, if a person is not able to fulfill the desire for social status then also he or she experiences mental conflict. Poor financial condition and career dissatisfaction are other sources of conflict.

Conflict Management Strategies

It is a fact that conflict can lead to functional as well as dysfunctional effects. There are a number of approaches that are helpful in managing the conflict. These are as | follows:

- **Ignoring the conflict (avoidance):** If the conflict is not too severe and the consequences are not very serious then it can be easily ignored. It is assumed

that it will be eventually resolved by itself. This strategy is also referred to as avoidance. It is mostly used when the issue is trivial in nature and when potential disruptions outweigh the benefits of resolution.

Thus, it is characterized by trying to put off the conflict by ignoring or changing the topic and being vague about positions or preferences. The individual who prefers this style of conflict shows little concern for his or her own goals.

• **Compromising:** There is no clear winner in this type of conflict. It is best used when temporary settlements to complex issues are required. Each party is concerned about its own goal accomplishment and is willing to engage in give-and-take exchange to reach a reasonable solution. It is an approach that results in some gains and some losses for each party. The most important benefit of compromise is that all issues get addressed without either party being in the unequal power positions.

• **Collaboration:** Collaboration is a method of handling conflict in which both the parties involved in the conflict try to handle it without making concessions and by coming up with a new way to resolve their differences that provides some kind of a solution to both.

The main perquisite to collaboration is a shared commitment to work together in order to produce steps that neither party could envision or accomplish alone.

• **Negotiation:** Negotiation is a method of conflict resolution in which both the parties of equal power try to find an acceptable solution by considering various alternatives to allocate resources to each other. In *distributive negotiation* type of conflict resolution, parties see conflict as a win-or-lose situation because they believe that the resource base of the conflict is fixed. Therefore, one party will win while the other will not win. In *integrative negotiation,* parties can increase total resources by coming up with a new solution that is a win-win for both.

Frustration can be caused due to environmental factors, personal reasons or conflicts. There are a number of consequences of this frustration. Frustration causes various types of reactions, which vary according to the intensity and the person who experiences this frustration. Some people have a tolerance to frustration while others become violent and aggressive. Some of the common reactions to.frustration are: restlessness and tension; aggression; anxiety.

3.5 CONCEPT OF ADJUSTMENT

Teachers are more concerned with the concept of adjustment because the primary purpose of education is to train children to solve life's personal, social and economic problems. If you examine the various activities of an individual's life, you will find that most of them involve adjustment of the individual to his vocational, social and , economic problems. The process of adjustment starts right from the birth of the child and continues till his death. The concept of adjustment is as old as human race on earth. Systematic emergence of this concept starts from Darwin. In those days, the concept was purely biological and he used the term 'adaptation'. The adaptability to environmental hazards goes on increasing as we proceed on the phylogenetic scale from the lower extreme to the higher extreme of life. Insects and germs, in comparison to human beings, cannot withstand the hazards of changing conditions in the environment and as the season changes, they die. Hundreds of species of insects and germs perish as soon as the winter begins.

Psychologists have interpreted adjustment from two important points of view. First, adjustment as an achievement; and second, adjustment as a process. The first point of view emphasizes the quality or efficiency of adjustment and the second lays emphasis on the process by which an individual adjusts in his external environment.

Now, let us examine both of these approaches in detail.

1. **Adjustment as Achievement:** Adjustment as an achievement means how efficiently an individual can perform his duties in different circumstances. Business, military, education and other social activities need efficient and well-adjusted men for the progress of the nation.

If we interpret adjustment as achievement then we will have to set the criteria to judge the quality of adjustment.

2. **Adjustment as Process:** Adjustment as a process is of major importance for psychologists, teachers and parents. To analyse the process, you should study the development of an individual longitudinally from his birth onwards. The child, at the time of his birth, is absolutely dependent on others for the satisfaction of his needs, but gradually with age, he learns to control his needs. His adjustment largely depends on his interaction with the external environment in which he lives. When the child is born, the world, for him, is a big buzzing, blooming confusion. He cannot differentiate among the various objects of bis environment but as he matures, he comes to learn to articulate the details of his environment through the process of sensation, perception and conception. The child in his infancy can respond and think about only concrete objects of his environment. The process of abstraction comes afterwards. Young children lack the capacity of self-control of the instinctive impulses. They try to take hold of anything that appears bright to their senses. The!:" development is purely on instinctive level. The nature of adjustive process is decided by a number of factors, particularly, internal needs and external demands of the child.

3.5.1 Adjustment Barriers

Sometimes, it is very hard to adjust to the change in the environment. For example, if due to transfer of the father to some other state, the child is admitted to a new school, it is very hard to adjust to the new friends and teachers. Thus, the child my have psychological barriers to adjust to the life and studies in the new school. Sometimes, the culture of the new school, such as timings,

new course, medium of language (English/Hindi/regional language), etc. can pose as a barrier in the adjustment and fine-tuning of a newcomer.

Implications of cross-cultural training

Although psychological barriers to adjustment could be overcome with the passage of time, immense damage may take place during the initial, setting-in period in the aforementioned situations. Therefore, it is advised to the parents and teachers of such a child that they should help the child in overcoming such adjustment barriers by giving extra attention, enhancing confidence, focusing on cross-cultural differences which they face.

Adjustment Mechanisms

There are some common ways, which the individuals use to defend or escape from conflicts and frustration. These are known as defence or adjustment mechanisms. An adjustment mechanism may be defined as 'any habitual method of overcoming blocks, reaching goals, satisfying motives, relieving frustration and maintaining equilibrium.'

3.5.2 Characteristics of Adjustment Mechanisms

The following are the characteristics of adjustment mechanisms:

1. Adjustment mechanisms are almost used by all people. They are constructs, which are inferred from the behaviour of the individuals. They have protective orientation. All mechanisms are used to protect or enhance the person's self-esteem against dangers. They defend the person against anxiety and frustration. They increase satisfaction and help in the process of adjustment if used within limit.

2. The danger is always within the person. He fears his own motives. The fear and danger are manifested in adjustment mechanisms.

3. Invariably in all adjustment mechanisms, the individual distorts reality in one way or the other, because the method of protecting against dangerous inner impulses or escaping from anxiety involves some kind of distortion of the conscious representation of the person's impulses.

4. The overall effect of adjustment mechanisms is to cripple the individual's functioning and development through falsifying some aspects of his impulses so that he is deprived of accurate self-knowledge as a basis for action. There is self-deception underlying all adjustment mechanisms. We deny and disguise the real cause of our behaviour in order to maintain the balance of our personality.

5. Adjustment mechanisms are learned in the environment. They are designed to deal with anxiety, inner conflicts and self-devaluation. They operate on habitual and automatic levels.

Some common adjustment mechanisms are as follows:

1. **Simple Denial:** The easiest way to maintain the balance of personality is to deny the fact, which could create conflict in the mind. When children are busy in play activities, if parents call them, the children will say they heard nothing. In fact, what was said was not allowed to penetrate into their consciousness.

2. **Aggression:** Aggression is a typical adjustment mechanism used as an attempt to hurt or destroy the source of frustration. It may be classified into two broad categories:

(0 *Extrapunitive:* Extrapunitive responses are those in which the individual aggressively attributes the frustration to external persons or things.

(if) Intropunitive: Intropunitive responses are those in which the individual aggressively attributes frustration to himself. Sometimes, the person feels that he himself is the source of frustration.

The release of pent-up feelings through aggression gives relief to the person. The teacher by .his sympathy, fair treatment, and by organizing positive programmes for catharsis, can reduce aggression among children.

3. **Compensation:** Every person tends to makeup deficiency of one trait or area of development in another area. When a person feels weak and fails in one area, he compensates in another field. He works hard to become strong and successful. Needs, which are frustrated and unmet, are gratified in order to release tension and conflict. Compensation is generally of the following types:

(i) Direct compensation *(ii)* Overcompensation *(Hi)* Substitute compensation O'v) Indirect compensation (v) Neurotic compensation

4. **Sublimation:** It is a substitute reaction, which may be classified as compensation. Among all the mental mechanisms of defence, sublimation is the most advanced, highly developed and constructive mechanism. Through the use of its operation, the energy of personally or socially intolerable impulses and drives is successfully directed into consciously acceptable channels.

Sublimation has been defined as a major mental mechanism operating outside and beyond conscious awareness, through which instinctual drives, which are consciously unacceptable or blocked and unobtainable, are diverted so as to secure their disguised external expression and utilization in channels of personal and social acceptability. In successful sublimation, the direction and aim of the repressed drives have been deflected into new pathways of creative endeavour.

5. **Identification:** Identification is a mental mechanism operating outside and beyond conscious awareness through which an individual, in varying degree, makes himself like someone else; he identifies himself with another person. Children identify themselves with their parents and parents frequently identify themselves with their children and with some justification, regard the achievements and successes of their daughters and sons as their personal trimphs. Hero worship is an obvious form of identification.

6. **Projection:** Attributing to and observing in others one's own impulses and traits is called projection. It is the most common adjustment mechanism, which is used by all people in daily life. Freud used projection as a process by which we ascribe to the external world the rejected impulses of the id. We defend ourselves against our repressed guilt feelings by projecting them into other things and people.

7. **Rationalization:** Rationahzation has been defined as a mechanism by which the individual justifies his beliefs and actions by giving reasons other than those, which activated or motivated him. The window dressing of motives and actions is called rationalization. In order to preserve self-respect and the good opinion of others, most people, with conscious intent, substitute

'good' reasons for real reasons so that their actions may appear justified, logical and socially acceptable. Rationalization is the most popular adjustment mechanism, which is used almost by all persons in daily life. It is a response to reality that falsify circumstances.

8. **Regression:** Regression has been defined as, 'an unconscious back tracking' either in memory or in behaviour, which might have been successful in the past. The adult who has been frustrated in fulfilling his needs may return to more primitive modes of behaviour. He may cry like a child and have temper tantrums.

9. **Repression:** Repression is a dynamism, which is fundamental in Freudian theory of personality. It has been defined as motivated forgetting. White (1964) defined repression as 'the forgetting or ejection from consciousness of memories of threat and especially the ejection from awareness of impulses in oneself that might have objectionable consequences.' It is an attempt by the individual to push into the unconscious those experiences and thoughts which are in conflict with his moral standard or which are painful to contemplate.

10. **Reaction formation:** Reaction formation is also called reversal formation. In reaction formation, an individual controls undesirable or socially unacceptable urges to deny their existence and develops diametrically opposed traits that disguise and check the more basic motives. It is to substitute opposite reaction formation, which causes anxiety. Repression is accompanied by behaviour and feelings exactly opposed to the repressed tendency.

11. **Negativism:** Negativism is a mechanism by which an individual draws the attention of other persons. It is partly a defence and partly an escape mechanism. The person develops strong and irrational resistance in accepting the suggestions of others. The use of this mechanism is at a peak at the age of two to three years.

Students have some negative feelings toward their teachers. Negative feelings do not serve some useful purpose but they hinder the achievement of goals.

12. **Fantasy:** It is a fact that, mostly, we think to reduce our frustrations. Our thoughts can be a realistic effort to remove the obstacles that make us anxious. They can also provide an escape from frustration by giving us imaginary satisfaction, hungry men dream of food, unsuccessful men dream of success. Fantasy is a mechanism of wish-fulfilling.

Neurotic Adjustment Mechanisms

The behaviour that deviates from conventional ways of responding is called neurotic behaviour. It implies that something is wrong either with the functioning of a person's nervous system or with his psyche.

1.   Neurotic anxiety

An anxiety is a vague but enduring fear. Some anxiety is natural, rational and useful in leading a person to deal constructively with the causes of his fears. But when the amount of anxiety becomes disproportionate to the situation and persists for a longer period than we refer it as neurotic anxiety.

2.   Obsessive-compulsive reactions

An obsession may be defined as a recurring thought or desire that a person regards useless or false but cannot help. A compulsion is an irresistible tendency to perform some action. A person who is obsessed with an idea, finds himself unable to get rid of the idea. For example, there was a lady who got uprooted her teeth because of an incurable disease, and was obsessed with the idea of teeth for more than five years. The compulsive person knows that his actions are unnecessary and absurd but he cannot resist the temptation of doing those acts. There are technical terms for various kinds of compulsions. Some of them are as follows: Kleptomania (compulsion to steal); Pyromania (compulsion to set fire); Poriomania (compulsion to move from place to place); Dipsomania (uncontrollable desire to drink); Nymphomania (excessive sexual desire in females).

Hypochondria

It is neurosis when a person, in anticipation of some failure, develops a tendency to be sick. Actually, the person is not sick but he pretends to be sick to avoid painful situation to maintain the balance of bis personality. For example, a boy who feels that he will not pass in the examination, pretends to be sick on the eve of examination.

Psychotic adjustment mechanisms

A psychosis is any form of mental disturbance that is so severe as to make a person incapable of adjusting to his social environment. There are two types of psychotic disorders, which have been detected by clinicians. A brief description of the two types of psychotic disoders is as follows:

(1)   Organic psychoses: There are different causes of organic psychoses but one common cause is damage to brain or interference with the functioning of the brain. The behaviour of a psychotic is characterized by the impairment of intellectual functions, sensori-motor disturbances such as aphasia, paralysis, deterioration of conduct, etc.

The main types of psychoses are as follows:

(a)   Infectious diseases as general paresis, encephalitis and meningitis

(b)   Psychotic disorders caused by brain tumour and head injuries

(c)   Psychotic disorders caused by toxic and metabolic disturbances *{d)* Epilepsies

(e) Senil psychosis

(2)   Functional psychoses: Functional psychoses are broadly classified into three classes: schizophrenia, paranoia and affective disorders.

(a) *Schizophrenia:* Schizophrenia was formerly known as dementia praecox. It is the most puzzling and serious disease. It is used for a wide variety of mental disorders characterized by disturbances of thought process, distortion of reality, delusion and hallucinations and the loss of integrated and controlled behaviour.

(0 *Simple schizophrenia* is the preliminary stage marked by loss of interest, social withdrawal and flatness of emotional expression.

{ii) Catatonic: Schizophrenia is, generally, marked by two patterns of behaviour: stupor and excitement.

{Hi) The hebephrenic: The individual suffering from hebephrenic schizophrenia behaves like a child.

{iv) Paranoid: The patient sees delusions of being persecuted. He hallucinates as if he is being followed by someone, delusions of grandeur can also be seen.

(b) Paranoia: Paranoia is an intellectualized system of defences, which is characterized predominantly by delusions. Persons suffering from paranoia are hypersensitive. They maintain limited social functioning, have sufficient self-control and judgement to avoid hospitalization.

(c) *Affective psychoses:* There are two major states of affective psychoses: manic state when the patient feels elated, extreme overactivity and tremendous energy. The second form is depressive reaction, which shows loss of enthusiasm and slowing down of physical and mental activity.

3.6 MALADJUSTMENT

There is a difference of degrees between maladjustment and adjustment. It is difficult to differentiate adjusted and maladjusted children only on the basis of observation in the classroom or in the school. There are certain symptoms, which give some indication of maladjustment if excessively used by children. These symptoms can be divided into the following three categories:

1. Physical symptoms: Stuttering, stammering, scratching head, facial twitching, biting nails, rocking feet, restlessness, drurrrming with fingers and vomiting.

2. Behaviour deviations: Aggression, lying, bullying, poor school achievement, hyperactivity, negativism and sex disturbances.

3. Emotional symptoms: Excessive worry, fear, inferiority, hatred, extreme timidity, temper tantrum, persistent anxiety, conflicts and tension.

6.6.1 Detection of Maladjustment

Though the detection of maladjustment requires professional skills of a psychiatrist, which we cannot expect from a teacher, the teacher at the preliminary stage can help in detecting maladjustment in the following ways:

1. Observation and interview: The teacher can observe the behaviour of children in the classroom, outside the classroom, on the playground, library and dramatics, etc. He can hold interview with those whom he suspects maladjusted and can reach definite conclusions regarding individual cases of maladjustment.

2. **Use** of **tests:** There are a number of psychological tests, inventories and rating scales, which have been developed by psychologists to screen maladjusted children. The teacher may use any of the following tests to detect maladjustment:

(a) Haggerty-Olson Wickman behaviour rating schedules: It may be used to rate various traits of the behaviour.

(b) The Bell adjustment inventory: The teacher can use the Bells' Adjustment Inventory adopted to Indian conditions. The inventory measures the adjustment of an individual in major life situations such as home, physical, emotional, school and social situations.

(c) *The moony check-list:* The teacher, on the basis of observation, may find out maladjusted children in his class. He can use the check-list.

(d) *The Rogers' test of personality adjustment:* The teacher can also use the Rogers' test to screen adjusted and maladjusted children.

(e) Taylor anxiety scale: The scale may be used to screen children who have excessive anxiety. There is a great need for developing inventories or

other measures that can screen adjusted and maladjusted children and adults in Indian conditions. The tests used at present were developed mostly in foreign countries where the socio-economic conditions are quite different from ours.

Maladjustment is a complex problem of human behaviour; no single factor can be pin-pointedly named as its cause. It is the outcome of various factors interacting with the developing personality of the child. There are numerous factors in home, society and school, which lead to maladjustment. The following are the various conditions which lead to frustration of needs which is the basic cause of maladjustment:

1. Physique; 2. Long sickness and injury; 3. Poverty; 4. Broken home; 5. Personal inadequacies; 6. Parental attitudes; 7. Value placed on sex of the child; 8. Adoption; 9. Emotional shock.

Social Conditions such as: 1. Religious beliefs; 2. Lack of clubs, playgrounds and libraries; 3. Mobility; 4. Class differences; 5. Employment insecurity

Maladjustment and conditions in school

No doubt, adjustment is a lifelong process starting from the birth of the child to his old age. A school can develop good habits, which may help in future adjustment of the child, but there are many conditions in school also, which may lead to maladjustment of children. The important conditions are as follows: 1. Inadequate training of teachers;

2. Inadequate curriculum; 3. Lack of recreational facilities; 4. Classroom climate; 5. Restrained relationship between administrator-teachers, teacher-teacher and student-teacher; 6. Examination system.

Defence Mechanisms

When the psychological equilibrium is threatened or there is a state of conflicts or frustration and an individual does not find any direct adjustment with the situation then the mind resorts to balancing devices called defence mechanisms. The individual is generally not fully aware of their presence or purpose. They are considered to be temporary defences against anxiety and inadequacies. We all want self-acceptance and acceptance of others. These devices try to defend the esteem, prestige and dignity of an individual against the encountered defeats and failures.

These devices are required in moderation and are frequently used by normal human beings. These mental mechanisms provide some relief when one is distressed. They preserve inner harmony and permit some degree of adaptation. They can be treated as shock absorbers and healthy adjustive mechanisms. In exaggerated form, however, they indicate abnormal behaviour.

According to Carroll, 'a defence mechanism is a device resorted to, in order to achieve an indirect satisfaction of a need so that tension will be reduced and self-respect maintained.'

Arkoff observes that the patterns of behaviour that are employed for protection against threat or anxiety are called defence mechanisms or adjustment mechanisms. Sometimes, they are referred to as ego defence mechanisms since they serve to defend the ego or the self from threat.

Thus, we can say that defence mechanisms are devices in the form of particular patterns of behaviour. These mechanisms provide protection against whatever threatens our self-esteem and ego. Some of the major defence mechanisms are as follows:

1. **Apathy:** According to Page, 'apathy is more than absence of emotion. It is a positive attitude of indifference towards all experiences and situations. Events that normally evoke joy, grief, shame or sympathy have no effect upon the apathetic person. Apathy serves as an effective insulator against an uncongenial world and in certain cases may be a passive act of defiance or scorn.' This process of becoming apathetic is also called intellectualization. It means detachment from a situation which may be emotionally disturbing. For example, a doctor cannot get emotionally involved and attached with every person she examines and treats. She needs to be detached to perform her job properly.

2. **Displacement:** Sometimes, the direct expression of an emotion is inhibited and the emotion is indirectly expressed through a neutral object. Thus, this transfer of emotions from the original to a netural object is called displacement. A manager, when scolded by his boss, cannot talk back; the resulting anger or frustration is displaced upon and taken out on wife or children at home.

3. **Stereotypying:** It is the tendency on the part of an individual to repeat similar behaviour in all situations and decision-making. It is believed that some amount of flexibility is required to solve different types of problems'. When an individual becomes frustrated with solving problems, he or she tries to make similar efforts again and again.

4. **Reality evasion:** This mental mechanism of reality evasion is the one in which an individual tries to escape the realities of life. Some people feel that they will be criticized by other people around them. They want to avoid and ignore their defects. Such kind of people resort to this type of mechanism, and often postpone the need to make difficult decisons. It may be due to lack of confidence or some physical problem. They also feel that they are not competent enough to live up to the expectations and are not intelligent enough to take the decisions. Thus, they evade reahty and face the problems of adjustment.

5. **Withdrawal:** Whenever one suspects that one is likely to be criticized, ridiculed or disgraced because of one's behaviour and activities, one may resort to withdrawal tendencies. These tendencies are reflected in the behaviour when one is extremely shy, solitude loving and has nervos temper. Such a person avoids all hard work and believes that he or she cannot perform particular types of activities. One may go so far as to hide or may be content merely by avoiding chances of pain, shame or frustration. Some people also avoid associating with people who are superior to them in any way.

6. **Selective forgetting:** One simple way of avoiding pain or distressing circumstances is forgetting them. The forgetting is selective in nature. Many studies have concluded that painful experiences are forgotten sooner than soothing and pleasurable experiences. For example, we forget the promises that we do not want to remember or fulfill.

Defence mechanisms also involve rationalization, projection, reacting formation, repression, Fantasy and day dreaming, regression, compensation, sublimation, negativism and identification.

Problem Children

All teachers face the problem of those children who lag behind from other children in their school work. There are such children who deviate from their classmates in school achievement. They do not benefit from teaching in the class. The teacher can identify them by their facial features, inattention and their failure to respond simple questions in the class. These children are great liability for the society. The teachers, parents and social workers all are concerned with this typical group of children called backward or problem children. Backwardness may be of different types and is caused by multifactors.

Backwardness may be in physical, emotional, social and intellectual developments of an individual. As regards its causes, there is a constant struggle between the hereditarians and environmentalists claiming different causes of it. Generally, backward children are classified into two distinct categories—in one category, backwardness is determined on the basis of IQ of the child and in the other category, the backward child is treated in terms of his academic achievement in the school subjects. The first category is called mental retardation and the second category comes under educational retardation.

With the help of intelligence tests, we can understand the degree of backwardness. If we administer an intelligence test to a large portion of unselected population and plot the scores, the result is a smooth curve and IQ will range almost 25 to 200 and, generally, we classify children as follows:

1. Idiots = 0 to 25
2. Imbecile = 25 to 50
3. Morons = 50 to 75
4. Dull normal = 75 to 90

The backward child has the following problems:

1. A backward child has adjustment problems in regular classes. Generally, the assignments given to him either are too difficult or he has fallen too far behind his grade level to understand and perform the task required of him in regular classes.

2. He lacks the motivation to learn, either because his background has been too deprived, his home-induced emotional problems are too severe or his learning attempts have received no suitable encouragement or consistent reinforcement by the teacher.

3. He has become failure oriented because of repeated defeats and thus no longer believes himself capable of learning. He fears failure and lacks ability and confidence to initiate new activities.

4. The material, he is assigned, has not been made meaningful to him, so he sees little purpose in learning it.

5. He is flooded with anxiety produced by the defences he has created against self-devaluation.

6. He is bitter and hostile towards school and society because of the humiliation he has suffered. The school environment provides him no motivation to work.

3.7 INCLUSIVE EDUCATION

Inclusion in education is an approach to educate students with special educational needs. Under this model, students with special needs interact and spend time with non-disabled students. Implementation of these practices varies. Schools usually use them for selected students with mild to severe special needs.

Inclusive education is different from the previously held notions of integration and mainstreaming, which was mainly concerned with disability and 'special educational needs'. This implied that learners change or become 'ready for' to get accommodated in the mainstream. Inclusion in fact is about a child's right to participate and the duty of a school to accept the child. Inclusion rejects the use of special schools or classrooms for students with disabilities and to differentiate them with students without disability. A premium is placed upon full participation by students with disabilities and upon respect for their social, civil, and educational rights. Inclusion gives students with disabilities skills they can use in and out of the classroom.

• Inclusion is an effort to make sure that diverse learners—those with disabilities, different languages and cultures, different homes and family lives, different interests and ways of learning—are exposed to teaching strategies that reach them as individual learners.

• Inclusive schools ask teachers to provide appropriate individualized supports and services to all students without the stigmatization that comes with separation.

• Teachers in inclusive classrooms vary their styles to enhance learning for all students.

The purpose of education is to ensure that all students gain access to knowledge, skills, and information that will prepare them to contribute to America's communities and workplaces. The central purpose becomes more challenging as schools accommodate students with increasingly diverse backgrounds and abilities. As we strive to meet these challenges, the involvement and cooperation of educators, parents, and community leaders is vital for the creation of better and more inclusive schools.

Inclusion is an educational approach and philosophy that provides all students with community membership and greater opportunities for academic and social achievement. Inclusion is about making sure that each and every student feels welcome and that their unique needs and learning styles are attended to and valued.

Fully inclusive schools, though rare to find, does not distinguish between 'general education' and 'special educational' programmes. Instead, the school is restructured so that all students learn together.

Inclusion has two sub-types:
• Regular inclusion or partial inclusion
• Full inclusion

Inclusive practice is basically integration. For example, students with special needs are educated in regular classes throughout the day or at least for more than half of the day. Whenever possible, the students receive additional help or special instruction in the general classroom. At the same time the student is treated like a full member of the class. At the same time most specialized services are provided outside regular classroom, particularly if special equipment is required or if it disturbs the rest of the class (such as speech therapy). In such circumstances the students occasionally leave the regular classrooms to attend smaller and more intensive instructional sessions or other related services, such as speech and language therapy, occupational or physical therapy and social work.

In the 'full inclusion' setting, the students with special needs are educated alongside students without special needs. Some educators are of the view that this method might be more effective for the students with special needs. Full inclusion is the integration of all students, even those that require substantial educational and behavioural support and services to be successful in regular classes. Special education is considered a service, which are integrated into the daily routines of the classrooms, environment, curriculum and strategies and offered to the students, instead of removing the student to meet his or her individual needs. However, this approach to full inclusion is somewhat controversial, and it is not widely understood or applied to date.

Local educational agencies provide a number of settings from special classrooms to mainstream inclusion and help students to achieve his or her individual educational goals. Students with mild or moderate disabilities, as well as disabilities that do not affect academic achievement, such as using wheelchair are most likely to be fully included. However, students with all types of disabilities have been successfully included in general education classes, working and achieving their individual educational goals in regular school environments and activities.

Students with disabilities who are not included are typically either mainstreamed or segregated. A student who is differently disabled attends some general education classes for less than half the day and often for less academically rigorous classes. For example, a young student with intellectual disability might attend physical education classes, art classes and storybook time, but spend reading and mathematics classes with other students with similar disabilities.

The proportion of students with disabilities who are included in the mainstream varies by place and by type of disability. Students with milder disabilities are included more than those with certain kinds of severe disabilities. In Denmark, 99 per cent of students with learning disabilities like dyslexia are placed in general education classrooms. In the United States, three out of five students with learning disabilities spend majority of their time in the general education classroom.

At no time does inclusion require the classroom curriculum, or the academic expectations, to be watered down. On the contrary, inclusion enhances learning for students, both with and without special needs. Students learn, and use their learning differently; the goal is to provide all students with the instruction they need to succeed as learners and achieve high standards, alongside their friends and neighbours.

ACTIVITY

Write a comparative note on the personality theories discussed in this unit. You may research on the Internet.

Did You Know

High self-esteem people are very friendly, affectionate, find it easy to form interpersonal attachment and find good in other people.

3.8 SUMMARY

In this unit, you have learnt that:

• Personality is considered to be a set of characteristics that are stable and do not change either over a period of time or from situation to situation. These characteristics account for consistent pattern of behaviour. It is the stability of these characteristics that sometimes assists us in predicting behaviour of a given person.

• Psychoanalytical theory is based upon Freudian concept of personality being founded on unconscious framework of id, ego and superego where id is the unconscious animalistic urge to seek pleasures at any cost and ego and superego keep id in check through social and moral values. Depending upon the strength of ego and super ego, some personality traits can be identified.

• The trait theory of personality describes people on the basis of traits such as aggressive, flexible, humorous, sensitive, sentimental, impulsive and so on. By observing some of these traits, we may be able to identify a personality.

• The self-concept theory of personality promotes the idea that a person's behaviour reflects his own image about himself. For example, a known flirt is expected to flirt in social situations.

• The social learning theory of personality is based upon the premise that personality development is more a result of social variables than biological drives or unconscious desires. Accordingly, personality is a sum total of all that a person has learned so that the learning process can be manipulated to develop or change a personality.

• From the point of view of psychoanalysis, early childhood experiences are very important for the future development of personality.

• According to Barney and Lehner, frustration refers to a failure to satisfy a basic need because of either conditions or external obstacles.

• A major source of frustration is conflict. The cause of conflict can be two desires or two types of behaviours, which are not compatible with one another.

• If the conflict is not too severe and the consequences are not very serious then it can be easily ignored.

• Business, military, education and other social activities need efficient and well-adjusted men for the progress of the nation.

• There are some common ways, which the individuals use to defend or escape from conflicts and frustration. These are known as defense or adjustment mechanisms.

• Rationalization has been defined as a mechanism by which the individual justifies his beliefs and actions by giving reasons other than those, which activated or motivated him.

• Inclusion is an educational approach and philosophy that provides all students with community membership and greater opportunities for academic and social achievement. Inclusion is about making sure that each and every student feels welcome and that their unique needs and learning styles are attended to and valued.

3.9 KEY TERMS

• **Conflict:** The inner state of mind, which is characterized by tension because of the presence of mutually exclusive or opposing tendencies/impulses or desires, at the same time

• **Frustration:** The outcome of obstacles in the path of an individual's goal or objective

• **Mental health:** Refers to the level of cognitive or emotional well-being of a person

• **Neurotic behaviour: It** is the behaviour that deviates from conventional ways of responding

• **Obsession:** It is recurring thought or desire that a person regards useless or false but cannot help

• **Psychoanalytical theory of personality:** Behaviour has been based primarily on the Freudian concept of unconscious nature of personality

• **Self-esteem:** A measure of self-confidence and respect for one's abilities and motivation

• **Trait theory:** Visualizes personality as a reflection of certain traits of the individual

3.10 ANSWERS TO 'CHECK YOUR PROGRESS'

1. Trait theory visualizes personality as a reflection of certain traits of the individual. Even though there are many traits that are common to most people, there are many other traits that are unique to a person and are not shared by other individuals. One the basis of the traits theory, people can be described as aggressive, loyal, pleasant, flexible, humorous, sentimental, impulsive, cool and so on. Traits are the basic elements of personality and can be used to summarize behaviour. For example, if we see people behaving in an extrovert and forceful manner in most situations, we could label their personality as aggressive. While social learning theory uses "reinforcement and punishment" approach in understanding personality. For example, frustration caused by external environment, causes and reinforces aggression as a personality trait. Also, good behaviour is rewarded by the society in terms of praise that further reinforces good behaviour. Thus, behaviour and external environment have mutual interaction.

2. Each generation transmits the acquired skills and knowledge to the succeeding generations. Cells carry all the characteristics of a potential child. This is called the biological heredity of the child. Genes, the carriers of human traits, are of two types; dominant and recessive. Genes occurring in paired positions along the chromosomes carry contributions toward the same characteristics but can give information of development. Culture refers to total life activities of a society. What people think or do and feel constitute the culture of a society. It is the physical way of life, social institutions and psychology of the people fused together. Biological inheritance is the same in human beings all over the world but it is the difference in their cultural conditions which develops distinctive personality characteristics in the individuals of different cultural groups.

3. A situation in which a child may have a conflict if he or she cannot decide whether to go to the zoo or play with friends is an example of the approach-approach type of conflict.

4. The common reactions to conflict are as follows: (i) restlessness and tension, (ii) aggression, and (iii) anxiety.

5. Psychologists have evolved the following criteria to judge the adequacy of adjustment:

• Physical health
• Psychological health
• Work efficiency
• Social acceptance

6. The following are the different types of compensation:

• Direct compensation
• Overcompensation
• Substitute compensation

- Indirect compensation
- Neurotic compensation
7. Schizophrenia was formerly known as dementia praecox.
8. Emotional symptoms such as excessive worry, fear, inferiority, hatred, extreme timidity, temper tantrum, persistent anxiety, conflicts and tension depict maladjustment.
9. Apathy means detachment from a situation, which may be emotionally disturbing.
10. Stereotyping is the tendency on the part of an individual to repeat similar behaviour in all situations and decision-making.

3.11 QUESTIONS AND EXERCISES

Short-Answer Questions

1. Define 'personality'. What are the specific traits that constitute the concept of personality?
2. What are the primary hereditary factors that contribute towards formation of personality? How can we be sure that all such factors are hereditary in nature?
3. How is mental health of teacher critical in the mental health of students?
4. How is adjustment as achievement different from adjustment as process?
5. List the causes of maladjustment.
6. Write notes on the following terms:
- Stereotyping
- Withdrawal
- Selective forgetting

Long-Answer Questions

1. Describe in detail the psychoanalytical theory of personality. Is this theory empirically verifiable? Support your reasons
2. How does trait theory of personality differ from social learning theory? Can some of the traits be socially learned?
3. Explain in detail some of the environmental factors that form a part of the personality. Can a change in these factors change the personality as well? Support your reasons.
4. Write a short note on the concept of 'inclusive education'.

3.12 FURTHER READING

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UNIT 4 TEST ADMINISTRATION AND INTERPRETATION

Structure

4.0 INTRODUCTION

Sometimes, we take the three concepts like 'aptitude', 'skill', and 'proficiency' as synonymous. But there is difference between these. From intelligence test, we cannot judge the aptitude of an individual because intelligence is a general ability whereas aptitude is a specific ability. So, when we predict the future of an individual, we should go for aptitude testing rather than intelligence testing. Interest and aptitude both have positive correlation but it does not mean that attitude and interest are same

things. An individual with interest and aptitude for teaching profession will get success in life, but if only interest is present without aptitude the question of success will arise.

Human behaviour is a reflection of psychological traits. A person's behaviour determines his personality, and personality is the expression of his attitude, aptitude, intelligence, motivation, interest etc. The person's success in life is mostly determined by his interest in it. Interest includes all the psycho-physical dispositions which distinguishes an individual from another individual. One's interest determines his educational and vocational achievement, utilization, of leisure hours, interaction with the society and interpersonal relations.

In this unit, we will discuss the various aspects of test administration and administration.

4.1 UNIT OBJECTIVES

After going through this unit, you will be able to:
- Explain the uses of aptitude test
- Compare the individuals of different aptitude on the basis of their academic and occupational success
- Identify the aptitude of a group of people
- Diagnose the factors affecting aptitude
- Learn the concept of personality test
- Describe the significance of attitude scale

4.2 PERFORMANCE TESTS OF INTEUJOFNCF

A performance test is one in which the subject has to perform something or to manipulate some concrete material without much use of the language ability. There are some categories of people and children who cannot be tested with the help of verbal tests of intelligence. Performance tests are similar to non-verbal tests of intelligence. Performance tests are useful for the following categories of children and people:

1. *Deaf and dumb:* Children or people, who cannot hear or speak, can be tested with the help of performance tests. The directions can be given in Pantomine with a minimum use of language.
2. *Illiterates:* Illiterate adults and children who cannot write or whose language development is deficient may be tested with the help of performance tests of intelligence.
3. *Shy and withdrawn children:* Children who are shy or fear for face to face interaction with the tester may be tested.
4. *Educationally deficient:* Children who are educationally deficient take interest in concrete material and its manipulation can be tested.
5. *Foreign children:* Children of foreign countries who do not understand the language may be tested with performance tests.

Generally, performance tests are used to supplement other tests of intelligence. Performance tests provide more reliable data for an individual's capabilities. They are more useful in clinical work. These tests provide an opportunity for close observation of the behaviour of testee in test situation and his method of solving problems.

4.2.1 Some Performance Tests

1. *Healy-Fernald group of tests:* It was the first measuring tool to test the intelligence by performance.
2. *The Pintner-Paterson scale:* This performance scale is the first organized scale. This scale was standardized in 1917. It consists of Healy-Fernald performance tests and several other tests developed by earlier psychologists. The scale includes fifteen sub-tests. The tests are administered without the use of language either by the examiner or examinee. The tests are useful for deaf, dumb and

those who lack in language ability. They have been found very valuable supplement to verbal tests of intelligence.

3. *Form boards:* There are several performance tests in which form boards are used. The Ferguson form board was developed in 1920 and revised in 1939. It consists of six form boards which increase in difficulty. These tests were standardized on children and college seniors who had some educational problems. They are currently used for children who come for clinical guidance.
4. *The Kent-Shaknow form board series:* This performance scale was developed in 1928. It is a widely used and known scale. It has two forms. One for clinical use and the other for industrial use. Basically, the scale was developed and standardized on clinical population. The scale provides an insight into the analytic-synthetic and manipulative skills of the subject. It also provides close observation of the behaviour of the subject and his mode of tackling a problem.
5. *The Goodenough drawing test:* This test was developed by Florence Goodenough in 1926. It is the most widely used test to measure the intelligence of children from 3ˣ/2 to 13Vfe years. The child is asked to draw a picture of a man as best as he can, without any time limit. 'Draw a man' is a very popular test of intelligence. It requires no teaming and no specific material for administration. It has been adopted in Indian conditions by several research workers. This test is a useful device as an adjunct to verbal tests when mental retardation in children is suspected.

Advantages of Performance Tests
- Performance scales are most useful with older children and adults who are mentally retarded. They have clinical significance in case of older children.
- Since the performance tests do not require use of language, individuals do not 'block' as a result of feeling of inadequacy resulting from lack of schooling.
- Children proceed on performance tests with confidence, since the material is visually present in a concrete form. Performance tests provide an opportunity to observe the qualitative aspect of behaviour of the individual under standardized condition in a variety of test situations.
- Performance scales are useful and provide valuable information when supplemented with verbal tests of intelligence.
- They are useful for those with language handicap.

Disadvantages of Performance Tests

1. Performance scales are more susceptible to practice effect and chance success is more frequent than in verbal tests. Hence their reliability co-efficient is low.

2. They are limited in range of mental functioning tested. They fail to differentiate among above-average children.

3. The conventional performance scales fail to test fine mental abilities such as ability to make abstraction or concept formation.

4.2.2 Uses of Intelligence Tests

1. *For measuring general learning readiness:* We know that intelligence tests are correlated with school achievement so intelligence tests can be used to indicate the level of capacity at which the pupil has arrived. Numerous investigations have been made to discover the relationship between intelligence tests and school marks at different levels of schooling. All researches have proved, beyond doubt, that intelligence tests can be used to measure the readiness for learning at different levels.

2. *For indicating the extent of differences of IQ among the children of same chronological age:* There are great differences in IQ of pupils of same age. These differences indicate the need for providing teaching materials at differing levels of difficulty. At various levels of education, we can use the tests for educational guidance, i.e., we can advise students to select subjects keeping into consideration their intellectual abilities.

3. *Defining more accurately the degree of mental retardation or defect:* Since the development of intelligence tests, we have been using intelligence tests to define more accurately the levels of feeblemindedness. Using the intelligence tests we may define the level of feeblemindedness.

Level   IQ

1.   Idiot 20
2.   Imbecile   20 to 40
3.   Moron   40 to 65

We can classify children weak in mind so that proper arrangement can be made for their schooling. It is intelligence test that can aid us in knowing just which children will probably remain in the special class.

4. *For identifying gifted children:* Since 1921, when Terman used both individual and group tests of intelligence to identify the gifted, intelligence tests have been used for this purpose. Tests of intelligence have given us an accurate definition of brightness in terms of IQ. Teacher's judgement has been found inaccurate in identifying gifted children as reported by Terman, Whipple and Coy in their separate studies of gifted children.

5. *For educational and vocational guidance:* The essence of educational guidance resides in providing for all children materials for instruction both interesting in content and suitable to their level of intellectual development. When we contemplate the magnitude of individual differences, psychological testing can be very useful in ensuring that children's educational progress is in accord with their abilities and can be helpful in discovering those children who need vocational guidance. Vocational guidance means finding the right man for the job. Tests can be used to provide vocational guidance at different age levels in various vocations. At present in our country vocational guidance is not adequately provided. It is unfortunate that we have not yet developed a system of sound vocational guidance services. We need to develop intelligence tests, interests and aptitude tests suiting to the needs of our country. The vocational guidance programme will have considerable social consequences in our country which is developing socially, economically and technologically.

For making decisions about going to college, intelligence tests can be used to predict the subsequent success of high school or inter-college students. Teachers can use intelligence tests to make decision for individual students regarding their success in college or university.

6.   *For study of mental growth:* Mental abilities develop in a sequential order from birth onward. We can use intelligence tests for studying mental growth and direction of individual and group curve.

Intelligence tests have made it clear that the mental development of children is a steady consistent process from one year to the next. Use of intelligence test in consecutive measurement has thrown the old idea that there are periods of rapid mental growth at the time of adolescence followed by periods of slow growth. Mental growth continues until at least 18 years of age.

7. *For homogeneous grouping:* Teachers, in the past, have experienced great difficulties inherent in attempting to teach pupils or students who are widely different in their capacities to learn, hi average classroom, bright and dull children are the losers. As remedy to the problems of traditional classroom, homogeneous grouping of students has been suggested and tried out in many schools of western countries with encouraging results with the help of intelligence tests.

8. *Use in research:* Intelligence tests are used for conducting research in different areas of human abilities.

4.2.3 Limitations of Intelligence Tests

We know that in India very few tests have been developed or standardized. Generally, we use tests developed in foreign countries.

An intelligence test permits a person to show what he can do at a certain time with a certain carefully selected, but small, set taken from all the possible items which test intelligence. No one should suppose that this small set can tell as much about him as if 100 times as many items were available. Nonetheless, it tells a great deal and inordinate increase in length of tests, suffer the usual consequences of the law of diminishing return. Similarly, we know that one person may be more fatigued than another when we take the test, possibly reducing his scores. They tell us what a person can do right now, handicapped or favoured as he may be by his inherited characteristics, his home and school background, better sensorimotor or bodily states. They do not tell us how he would have done if tested ten years ago or if tested ten years hence, with or without ideal conditions during those ten years. Consequently, it is always possible to second-guess such a test and conclude that it does not tell what we really want to know.

Jensen reports that he has often had cause to believe that the first intelligence tests given to certain children underestimate their IQ after 2 to 4 days of getting acquainted with such children. He typically found that a retest on a different form of the same test yielded an IQ of 8 to 10 points higher. Children may be so frightened in a testing situation with a tester they are unfamiliar with and when confronted with tasks that are completely novel that they do not exhibit nearly the intellectual capacity one would expect from other evidence about them. Particularly with young children, it would be important to spend much more time-building rapport for testing than few minutes that are sometime employed before formal testing begins.

One of the major defects of present-day testing is that, it is unable to get below the surface of the mind. It measures what a child knows rather than how far he can go in the pursuit and discovery of ideas. It has almost no bearing on originality, on the mobilization of many ideas toward a single concept or on the ability to devote his attention over a period of time to a single line of thought. A smattering of knowledge in many fields will lead to a score equal to that of the child who could do marvelously well along certain lines, but whose accredited performance is cut off far below his mental levels. For example, a child with a 30,000 words vocabulary can scarcely get more mental credit than a child with 10,000 words vocabulary, although the differences in mental accomplishment are tremendous.

7.2.4 Some Misconceptions Regarding Use of Intelligence Tests in Education

The following are the misconceptions regarding the use of intelligence tests in education:

1. The first misconception is the notion that intelligence tests measure something called 'native ability,' something fixed and immutable within the individual that determines his level of expectation for all time. No doubt, genetic studies of identical twins reared separately under different conditions have proved that an individual inherits intellectual abilities, but intelligence tests do not measure such an entity, at least not directly. Intelligence tests measure the individual's performance on certain type of mental tasks. The types of mental tasks included in intelligence tests are influenced by experiences in school and home. The experiences depend on many factors as the education of parents, availability of books in home, socio-economic condition and a variety of experiences the child gets in his surroundings. Thus, the notion that intelligence tests measure inherent ability is absurd.

2. The second misconception about intelligence tests is the notion that prediction made from test scores is or should be perfectly accurate.

3. The third misconception is that standardized test scores are perfectly reliable.

4. The fourth misconception regarding intelligence tests is that a battery of tests can tell all one needs to know in making a judgement about a student's competence, present and potential, and about his effectiveness as a human being. The fact is otherwise that no test or battery of tests can give a total picture of a child. No doubt, tests can illuminate many areas of a child's development. They can suggest something about his strengths and weaknesses. They can show in certain respects, how he stands among his peers. But there are many areas of learning where we must still rely upon the observation and judgement of teachers if we want to get a complete description of a child as functioning individual. Any evaluation of a child that depends solely on mental test scores is bound to be misleading and incomplete. There are subtle and supremely important human elements in the teaching-learning situation that no combination of tests devised till date is able to capture.

4.3 APTITUDE AND APTITUDE TEST

Bingham defined aptitude as 'a characteristic or set of conditions that are symptomatic to the individual's ability to acquire with some specified training, some knowledge or skill or a set of responses in a given field'. Aptitude refers to a special capability of an individual, which makes him distinct from others in an achievement field. It signifies the potentialities with an individual at present with future predictive reference. The word 'aptitude' is derived from the Latin word *aptos'* which means 'fitted for'. Aptitude of an individual towards some work fits him in the work like round peg in

the round hole and square peg in the square hole. The concept of aptitude does not have the good or bad value judgment. It only bothers about the degree of aptitude like high aptitude or low aptitude. It just means that an individual fits into the requirements of one profession better than into another. For example, Kavita performs wellin singing without any formal training, but after a rigorous training she does not perform well in teaching profession. So, here Kavita has higher degree of aptitude in singing than teaching.

Traxler states: 'Aptitude is a condition, a quality or a set of qualities in an individual which is indicative of the probable extent to which he will be able to acquire under suitable training, some knowledge, skill or composite of knowledge, understanding and skill, such as ability to contribute to art or music, mechanical ability, mathematical ability or ability to read and speak a foreign language.' Freeman stated that 'an aptitude is a combination of characteristics indicative of an individual's capacity to acquire (with training) some specific knowledge, skill or set of organized responses, such as the ability to speak a language, to become a musician to do mechanical work'. According to Warren, 'aptitude is defined as a condition or set of characteristics regarded as symptomatic of an individual's ability to acquire with training some specified knowledge, skill or set of responses such as the ability to speak language, to produce music etc'.

4.3.1 Characteristics of Aptitude

The characteristics of aptitude are as follows:

• Aptitude is an ability to learn.
• Aptitude is an integral part of personality.
• Degree of aptitude determines one's success in particular work.
• Aptitude predicts the future of an individual.
• Aptitude is a present condition with a future reference.
• Aptitude is the product of heredity and environment.
• Aptitude of an individual is relatively stable.
• There is inter- and intra-individual difference in aptitude.
• An aptitude must be developed by practice and training to become an ability.
• Aptitudes are normally distributed.
• Aptitude can be measured quantitatively and qualitatively.

4.3.2 Types of Aptitude

There is individual difference in aptitude. Everybody has different kinds of aptitude. Two individuals may have aptitude of one kind but the degree of aptitude will be different. So there are different kinds of aptitude which are:

• Mechanical aptitude
• Clerical aptitude

- Aptitude in music
- Aptitude in law
- Teaching aptitude
- Aptitude in medicine
- Aptitude in art
- Aptitude in science
- Aptitude in engineering
- Manual aptitude
- Aptitude for military career
- Aptitude for research

4.3.3 Aptitude Test

According to F.S. Freeman, 'an aptitude test is one designed to measure a person's potential ability in an activity of a specialized kind and within a restricted range'. Aptitude of an individual can be measured with the administration of test. Aptitude tests measure the ability of individual's to learn new tasks. Aptitude tests assess the degree of an individual's inclination towards something. Aptitude tests help the individuals in their selection of courses and careers. These tests are also helpful in provision of guidance and counselling and predicting the future development of an individual. An aptitude test of high validity, reliability and objectivity clearly predicts an individual's future.

Types of aptitude tests

Aptitude tests are divided into three types according to their quality of testing. The three types are:

(i) General Aptitude Tests (GATs): General aptitude tests are also known as scholastic aptitude tests. GATs measures the general intelligence, mental ability and learning ability of individuals. This type of test predicts the future progress of an individual to a lesser extent. This test is known as scholastic aptitude test because it predicts student's academic achievements in schools. This type of test is divided into four types:

(a) Tests of vision and hearing
(b) Tests of reading and writing
(c) Tests of remembering and forgetting
(d) Tests of understanding

Minnesota Paper-Form Board is a good example of General Aptitude Test.

(ii) Specified Aptitude Tests (SATs): This type of tests generally concentrates upon the assessment of an individual's ability in a special field. Through this test, an individual's area of special aptitude is known with the degree or level. Upon the result of this test, students are given educational and vocational guidance. Mechanical aptitude tests, musical aptitude tests, teaching aptitude tests etc., come under specified aptitude tests. Seashore Measures of Musical Talent and Horn Art Aptitude Inventory are good examples of Specified Aptitude Tests.

(iii) Differentiated Aptitude Tests (DATs): Differential Aptitude Tests are developed for measuring the fundamental intellectual abilities within individuals. The first edition of the DAT battery was published after World War n, by the Psychological Corporation.

The widely used Differentiated Aptitude Tests are: Armed Services Vocational Aptitude Battery (ASVAB), General Aptitude Test Battery (GATB), Aptitude Classification Tests (ACT) etc. The most important DAT is developed by American Psychological Corporation. The battery of tests developed by Bennett Seashore and Wesman under GAT are given below:

- Verbal Reasoning Tests of 30 minutes.
- Language-spelling and Sentences Test of 35 minutes.
- Clerical Speed and Accuracy Test of 6 minutes.
- Numerical Ability Test of 30 minutes.
- Abstract Reasoning Test of 30 minutes.
- Mechanical Reasoning Test of 30 minutes.
- Space Relation Test of 30 minutes.

Let us explain some of the important aptitude tests with their widely used tests.

(a) Mechanical Aptitude Tests: Mechanical aptitude of an individual refers to his psychomotor activities. It involves manipulation of objects and tools with a mechanical bent of mind. According to Bingham, factors in mechanical success are space relations, mechanical comprehension, perceptual acuity, and manual dexterity. Engineers and machine designers have high levels of mechanical aptitude. Persons having high degree of mechanical aptitude get success in engineering than the others. In this field, machinists or technicians are at the lower ebb and engineers at the higher ebb. Some widely used mechanical aptitude tests are:

- Bennet Tests of Mechanical Comprehension
- S.R.A. Mechanical aptitude test
- Minnesota mechanical assembly tests
- Stenquist mechanical aptitude tests I and II
- Sharma's mechanical aptitude test battery
- Jayendra's mechanical aptitude test

(b) Clerical Aptitude Tests: According to Bingham, clerical aptitude also involves several specific abilities like perceptual ability, intellectual ability and motor ability. In the words of Super, clerical aptitude refers to 'the ability of routine clerical work'. According to Bills, 'Clerical aptitude

includes the gathering, classification, and presentation of data of all sorts, analysis and use of these data in planning, executing and determining the results of operation'.Clerical aptitude includes noting, drafting, continuous routine work, knowledge of language, perceptual speed and accuracy, arithmetical calculations etc. Some widely used clerical aptitude tests are:

- Minnesota clerical aptitude tests.
- Detroit clerical aptitude examination.
- A test of clerical aptitude by T.P. Lele and others.
- A battery of clerical aptitude tests by Kiran Gupta.
- Clerical ability test by Central Bureau of Educational and Vocational Guidance, Delhi.

(c) *Teaching* *Aptitude* *Tests:* Teaching aptitude of an individual is known by his interest in communication interaction, expression, creativity, listening, speaking, reading, writing, imagination, interest in both curricular and co-curricular activities, research bent of mind etc. Aperson of high teaching aptitude becomes a good teacher. Some important teaching aptitude tests are:

- Teaching aptitude test by R.P. Singh and S.N. Sharma.
- Teaching aptitude test by Jai Prakash and R.P. Srivastava.

(d) *Tests* *of* *Scholastic* *and* *Professional* *Aptitudes:* In order to set the students in right place, some tests are developed. These tests help in the selection of students for admission to different academic and professional courses like MBA, MCA, Medical, Engineering, etc.

Some of the tests of scholastic and professional aptitudes are:

- Minnesota engineering analogical test
- Stanford scientific aptitude test by D.L. Zyve
- The American Council of Education Scholastic aptitude test

(e) *Scientific* *Aptitude* *Tests:* Scientific aptitude refers to the aptitude in deduction, induction, analysis, synthesis, judgment, understanding, logical thinking, convergent and divergent thinking etc. A scientist always looks a thing from scientific angle. The falling down of apple from the tree towards the earth is a general concept for a common man, but Newton's scientific attitude helped him to think about it which resulted in the gravitational force of earth. Men of scientific aptitude are very much creative. In order to assess the scientific aptitude, the tests used are:

- K.K. Aggarwal's Scientific Aptitude Test battery.
- Scientific Knowledge and Aptitude Test by S.Chatterjee and M. Mukherjee.
- Science Aptitude Test, Department of Science Education, NIE.

(f) *Musical* *Aptitude* *Tests:* Musical aptitude refers to the aptitude for singing, playing musical instrument, listening music etc. For success in the musical profession, a couple of things are necessary like manual skill in playing instrument, clear and sweet voice, creative imagination, emotion for music, knowledge of rhythms, etc. Renouned musicians have high degree of musical aptitude. Some examples of musical aptitude tests are:

- Seashore Measure of Musical Talent.
- Lundin's Battery of Five Tests.
- The Wing Standardized Tests of Musical Intelligence.

All the tests include Chord analysis, Melodic transposition, Pitch change, Rhythmic accent, Phrasing, Loudness, Tonal memory etc.

Merits of aptitude tests

Aptitude test has the underlined uses:

- It helps in providing guidance and counselling to the students.
- It helps the students in selection of their career and profession.
- It helps in admitting candidates for various types of academic and professional courses.
- It properly anticipates the future progress of an individual.
- It helps the students in development of special traits.
- It helps the students to become efficient personnel in their working field.
- It helps to diagnose the inter- and intra-individual difference.

4.4 PERSONALITY TEST

The purposes of assessment of personality are as follows:

1. To appraise the status of and changes in pupil's personality development.
2. To find out pupil's needs and possibilities of development.
3. To aid student-teacher planning.
4. To familiarize the teacher with the nature of pupil learning, development and progress.
5. To serve as a means of improving school-community relations.

6. To facilitate the selection and improvement of assessment instruments
7. To appraise the teacher's competence.
8. To serve as a guiding principle for me selection and application of supervisory techniques.

Several difficulties are encountered in the assessment of personality. Although for long psychologists have been trying to" develop sound techniques for measuring personality yet even to day they are far away from this goal.

There are three basic reasons for not arriving at exact conclusions.
• Complex nature of the individual whose personality is to be assessed.
• Complex nature of the person who assesses personality.
• Nature of assessment instruments.

1. Complex nature of the personality of the individual: The personality of the individual being assessed is very complex. We may peep into the child's personality here and there in some detail but a total peep of the personality eludes us.

Assessment of personality does not remain stable because an individual is ever growing and he may not respond to the same situation in the same manner. There are several internal and external forces which influence him constantly.

An individual who is being assessed is capable of employing hundreds of ways to evade being assessed. Even if he cooperates willingly with the best of bis intentions, he may be unable to tell about the elements hidden in his unconscious mind.

2. Complex nature of the assessor of personality: Subjectivity of the person who assesses can also influence assessment. Even when the same person assesses the same individual at different intervals under the same conditions, results may differ. It is also observed that when two or more persons assess the same person, results may not be identical.

3. Nature of assessment instruments: In measuring a piece of cloth, we can use units in terms of centimetres and inches. In measuring temperature, we have units in terms of degrees and so on but in psychological measurement, we do not have any regular unit of measurement. In personality assessment there is no starting point (zero) for reference. No child is born with zero personality. This also creates difficulties in the exact assessment of personality. Above all, tools of assessment of personality are not very exact, reliable and valid in terms of their results

7.4.1 Experimental Techniques

This method has helped in contributing to the theory of personality and perception. The controlled conditions in the laboratory have made it possible to study the person under conditions of stress in the laboratory leading to greater understanding of factors that lead to disorganization and breakdown.

1. Autobiography method

In this method, the child gives an account of his life experiences from early childhood to the date of writing. This method helps the teacher or the counsellor to have a glimpse of the student's personality structure, his way of thinking, his likes and dislikes. This method also gives evidence of the instructional achievement of the child. Further, this method encourages the student to read autobiographies of great persons. The method allows the writer freedom of expression, not found in certain other techniques.

While reviewing the past, a child builds his self-concepts and tries to increase his self-insight and thinks of ways and means in which he can develop himself. All these are found to be very Useful for assessing his personality.

Autobiographies provide data which can be compared with those gathered by other means. This method is very economical. The teacher or the counsellor can obtain autobiographies of the students in groups at a minimum expenditure of his time.

The autobiographies yield much evidence of the child in adjustment and aptitudes. The autobiography is a tension-releaser. It serves as a 'catharsis' or psychic safety valve' and allows the child to express his pent-up feelings.

Principles of using the autobiography method are as follows:
• Rapport with the student should be established so that the child expresses his feelings freely.
• He should be ensured that the information supplied would be kept confidential.
• Detailed instructions may be given to the child as to the way in which autobiography is to be written.
• Questions may be given to the child so that he may reveal his history.

Limitations of the autobiography method are as follows:
• Its scope is limited and it cannot be used when the child is unable to express himself correctly in speech.
• The student may present facts in a distorted way.

2. Anecdotal Method

An anecdotal is a running description of actual examples of behaviour of a student as observed by teachers and the counsellor. It is followed by comments.

According to Brown and Martin, 'anecdotes are descriptive accounts of episodes or occurrences in the daily life of the student'.

It has been defined by Randall as a record of some significant item of conduct, a record of an episode in the life of the student; a word picture of the student in action, a word snapshot at the moment of the incident; any narration of events in which the student takes such a part as to reveal something which may be significant about bis personality.

Raths Louis thinks mat "an anecdotal record is a report of a significant episode in the life of a student."

Traxler thinks, "This record, as the name implies, involves setting down an anecdote concerning some aspect of pupil behaviour which seems significant to the observer."

Zann, D. Willard regards an anecdotal record "as a simple statement of an incident deemed by the observer to be significant with respect to a given pupil." A **Specimen of an Anecdotal Record**

Name of the school

Name of pupil observed Class Subject
Observer Date and Place
Objective Description
Comments of the Observer

Objective Description. I have been finding Ram day after day in the library reading magazines, yet he never has time to correct error or to work carefully on Hindi assignments.

Comment. Ram does not like to write but likes to read. I have asked the librarian not to admit him during his free periods unless he hears from me that Ram has done his work.

We cannot set any limit on the number of anecdotes to be recorded. It depends upon the time which is at the disposal of the teachers or guidance workers. The following points should be considered in connection with these records:

1. These supplement other records and should not be considered as substitutes.
2. The objective description of the behaviour should not be mixed up with the subjective comments.
3. Any significant behaviour, be it in the classroom, in die school or outside the school, should be recorded.
4. Behaviour, whether it is favourable, unfavourable or neither favourable nor unfavourable to the child, should be recorded.
5. The facts presented in all the anecdotes must be shifted and arranged so that they may be studied in relation to one another.
6. The record should be regarded as confidential. It should not fall into irresponsible hands.
7. What is written down is what was seen or heard. Inferences, guesses, assumptions are omitted unless they are clearly labelled as inferences, guesses or assumption.
8. The observer has determined what aspects of behaviours are related to the dimension being appraised. He observes these only and records them only.
9. Words and phrases are used whose meaning is clear, and so far as possible, unequivocal.

10. Words and phrases are employed that are definable in terms of things rather than other words. Concrete statements are preferred to abstract ones. For example, "He became pale and his hands trembled," not "He was disturbed."
11. Words and phrases that have strong emotional connotations are avoided i.e., love, hate, insolvent, courteous, loyal, dishonest, etc.
12. Words and phrases are avoided which express the observer's judgement, or his opinion, and not his perception. Among the frequently encountered "judgmental terms" that should be avoided are the following.

(a) Well-behaved
(b) Delinquent
(c) Aggressive
(d) Did'nttry
(e) Industrious
(f) Nervous
(g) Happy

The usage of anecdotal records can be summed up as follows:
- They provide specific and exact description of personality and minimize generalizations.
- They are very helpful in understanding the child's behaviour in diverse situations.
- They provide a continuous record.
- They provide data for pupils to use in self-appraisal.
- A summary of these records is valuable for forwarding with a pupil when he is transferred from one school to another.
- The new members of the staff may use these records and acquaint themselves with the students.
- These records aid in clinical service.
- They stimulate teachers to use the records and to contribute to them.

3. Diary method

Diaries, if available, can be used as an important and unique tool in throwing light upon many important and vital aspects of the personality of individuals because it is the most personal of personal documents and contains the record of events, thoughts and feelings. Here, the individual is less conscious than he is elsewhere. The diary contains a delicate reflection of the emotions of an individual.

Chief characteristics of a diary are as follows: (i) Diary is useful when die writer has freely and frankly expressed himself, (ii) The writer has entered comments about the sad and happy moments of
his life, (iii) The writer has described in detail the situations of the persons which
have influenced his life, (iv) The writer has made continuous entries.

Usefulness of the diary are as follows:
- It throws light on the interests and feelings of the writer.
- It furnishes valuable clues of the philosophy of life.
- In the case of great persons, it has become an important source of history.
- It is a natural record.

4. Interview method

An interview may be defined as a face-to-face verbal exchange in which one person i.e., the interviewer attempts to elicit information on a variety of topics from the interviewer. Interviews are used for a variety of purposes and as such there are various types of interviews.

1. The assessment or evaluative interview for determining the fitness of a person for admission, for a job or for scholarship, etc.
2. The personality assessment interview of a student for finding out the status of development of his personality.

3. The diagnostic interview for getting some information about the home, environmental and school situations of the student or the client.

4. The introductory interview for preparing for further interviews.

5. The informative interview for giving some information to the students on subjects or careers, etc.

6. The research interview for collecting data about a problem.

7. The administrative or disciplinary interview for finding out the causes of indiscipline and taking further action.

8. The counselling interview for helping the counselee or the student in gaining insight into the problem and assisting him solving the same.

It is to be remembered that in educational institutions, the primary purpose of personality assessment is to find out the existing status of the development of the various facets of personality and to take further measures for bringing about improvement in the child.

Preparation for the interview
• A quiet and orderly place should be provided for interview purposes.
• The teacher or the psychologist should prepare for the interview by gathering all the data concerning the student.
• The teacher or the psychologist should prepare clear objective for the interview.
• The teacher or the counsellor should keep an open mind regarding the child.
• Each interview should be considered as a step in the process of guiding the pupil.

Merits of an interview method are as follows:
• It is the most dynamic way of understanding the individual.
• It is natural-like conversation.
• It can be made flexible so as to suit many situations
• It is relatively easy to conduct.
• It is possible to get some most confidential information from the child, which otherwise he may hesitate to reveal through writing.

Limitations of an interview method are as follows:
• It needs a trained and competent interviewer.
• It is costly in terms of labour, money and time
• It suffers from the subjective bias of the interviewer.
• The interviewee may not unfold himself.
•   The interviewee may have a language handicap to express his feeling freely.

5. Observation method

Observation is one of the most ancient and widely used instruments of assessing personality. Observation has been defined as, "measurement without instruments." In education, observation is the most commonly employed of all measurement techniques. In the present as well as in the past, students have been labelled as good, fair or poor in achievement and lazy or diligent in study, etc., on the basis of observation. Similarly, teachers have listened to speeches and ranked students 1, 2, 3 and so on.

The physicians and the psychologists depend heavily on what they observe of the patient's talk, gestures and facial expressions. Observation is one of the oldest techniques that man has made use of. Even today it is our common experience to notice that farmers feel the breeze, watch the sky, sun, moon and stars, all to determine what the weather is likely to be and what season is approaching.

Merits of direct observation are as follows:
•   Being a record of the actual behaviour of the child, it is more reliable and objective.
•   It is a study of an individual in a natural situation and is therefore more useful than the restricted study in a test situation.
•   This method can be used with children of all ages; of course, the younger the child, the easier it is to observe him. This method has been found very useful with shy children.
•   It can be used with a little training and almost all teachers can use it. It does not require any special tools or equipment.
•   It can be used in every situation.
•   It is adaptable both to individuals and groups.

Demerits of observation method are as follows:
•   There is a great scope for personal prejudices and bias of the observer.
•   Records may not be written with hundred per cent accuracy as the observation is recorded after the actions of the observed. There is some time-lag.
•   The observer may get only a small sample of student behaviour. It is very difficult to observe everything that a student does or says. As far as possible, observations should be collected from several teachers.

•   It reveals the overt behaviour only—behaviour that is expressed and not that is within.
•   Principles to be followed in making observations are as follows:
•   Observe the whole situation.
•   Select one student to observe at a time.
•   Students should be observed in their regular activities, such as in classroom, on the play ground or in going from class to class.
•   Observation should be made over a period of days.

Proper planning of observation can be done as follows:
• Specific activities or units of behaviour to be observed must be clearly defined.
• An appropriate group of subjects be selected for observation.
• Scope of observation—whether individual or group—should be decided.

- The length of each observation period, number of periods and interval between periods should be decided.
- The form of recording should be decided.
- The instruments to be used should be decided.
- Physical position of the observer should be demarcated.
- Proper tools for recording observation should be kept handy.

An expert execution demands skill and resourcefulness on the part of the investigators. This depends upon:
- Proper arrangement of special conditions for the subjects.
- Assuming proper physical position for observing.
- Focusing attention on the units of behaviour on the specific activities under observation.
- Observing discreetly the length and number of periods and intervals decided upon.
- Proper handling of the recording instrument being used.
- Utilizing suitably the training received in terms of expertness.

6. Questionnaire method

Good and Hatt point out, 'in general, the word questionnaire refers to a device for securing answers to questions by using a form which the respondent fills in himself'. Barr, Davis and Johnson define questionnaire as a 'systematic compilation of questions that are subject to a sampling of population from which information is desired'.

A questionnaire may contain two kinds of items:

(i) The Closed or Structured Form..

(ii) The Open-End or Unrestricted Form.

The Closed Form: This form requires short and check' responses. It may provide for making Yes' or No', or just a check' from a list of suggested responses. The main advantages claimed are as:

(a)   It is very easy to respond to such a question.

(b)   It takes a little time to answer.

(c)   It keeps the respondent on the subject.

(d)   It is relativeiy objective.

(e)   It is fairly easy to tabulate and analyse.

The closed form does not provide any opportunity to the respondent to express his views very clearly as there is no scope for explanatory information.

The Open-End or Unrestricted Type or Free Responses or Unstructured Form: As the name of the form indicates, the respondent is at liberty to express his attitudes, interests, preferences and decisions in his own words because no clues are provided. However, sometimes it becomes very difficult to tabulate, interpret and summarize such responses.

As far as possible, the questionnaire should be a balanced one and it should contain both open and closed type items.

Merits of using questionnaire method are as follows:

- It is less expensive and less time consuming than interview or observation.
- Its construction needs less technical skills as compared with those required in conducting interviews and observations.
- Questionnaires do not permit variations in questions and as such they help in focusing the attention of the respondents on all the significant items. The interviewing situation, on the other hand, is rarely uniform.
- A questionnaire places less pressure on the subject for immediate response. A subject has adequate time to think of the responses whereas in an interview the subject is expected to give his responses immediately:
- In an interview responses are recorded by the investigator whereas in the questionnaire, the responses are given in the language of the subjects. This brings validity to responses in the case of a questionnaire.

4.5 ATTITUDE AND ATTITUDE TEST

L.L. Thurstone states that an attitude 'is the degree of positive and negative affect associated with some psychological object'. Attitude refers to the predisposition of an individual to evaluate some aspect of his world including ideologies, objects, symbols, people etc. Attitude is the bent of mind that may be positive, negative, hostile or indifferent. One's attitude is reflected in his behaviour. In a nutshell, attitude includes the sum-total of an individual's inclination, feelings, prejudice or bias, preconceived notions, ideas, fears, threats and convictions about something.

For example, somebody's attitude towards Indian culture means his thinking about the culture of India, whether he likes or dislikes Indian culture. Social attitudes are learned from the society through interaction with the social members. Attitude of an individual changes from time to time and it is not an inborn quality, rather it is acquired.

Anastasia states, 'an attitude is often defined as tendency to react favourably towards a designated class of stimuli, such as a national or racial group, a custom or an institution. Thus defined, attitude cannot be directly observed but must be inferred from overt behaviour, both verbal and non-verbal'.

Freeman states 'an attitude is a dispositional readiness to respond to certain situation, persons or objects in a consistent manner which has been learned and has become one's typical mode of response. An attitude has a well-defined object of reference. For example, one's view regarding a class of food or drink (such as fish and liquors), sport, maths or democrats are attitudes'.

4.5.1 Characteristics of Attitude

The characteristics of attitude are as follows:

- Attitudes are not inborn but acquired.
- Attitudes differ from culture to culture.
- Attitudes are integrated into an organized system.
- Attitudes are less consistent, they can be modified.
- Attitude is a position towards outer objects, either 'for' or 'against'.
- Attitudes are socially learned.
- Attitudes are formed due to the process of differentiation.
- Attitudes are complex.

- Attitudes have readiness to respond.
- Attitudes have a time dimension.   f
- Attitudes have a duration factor.
- Attitudes are predisposition towards objects.
- Attitudes are observed from overt behaviour.
- An attitude has a well-defined object of reference;
- It implies a subject-object relationship.

4.5.2 Types of Attitude

The predispositions towards different things create different attitude. Attitude of a person varies from situation to situation, time to time etc. Some people have positive attitude towards religious thoughts and morality, but some has negative attitude towards it. In general, attitude is of two kinds: (i) positive attitude and (ii) negative attitude. For example, Gandhi was interested in non-violence, so he had positive attitude towards non-violence. On the other hand, he was against violence, so he had negative attitude towards violence. Besides this kind of classification of attitude, attitude may be classified into different categories like:

- Acquisitive attitude
- Play attitude
- Scientific attitude
- Business attitude
- Artistic attitude
- Religious attitude

The people who have interest in acquisition of something all the time, they have acquisitive attitude. At each and every time, they search for something. Play attitude refers to the interest in playing. The people with playing attitude, always give importance upon playing. Some people are more prone towards science and technology from the childhood, they involve themselves in small scientific activities. They have scientific bent of mind and this is known as 'scientific attitude'. Some people are very much interested in commerce and business activities. This refers to their business attitude. People with skill in art and craft, have artistic attitude. They have their interest in artistic plays, arts and crafts etc. Religious attitude refers to the positive bent of mind to religious activities. The people with religious attitude, believe in different forms of God, and they are known as theists. But the people who have negative bent of mind towards God and religion, are known as atheists. They do not like to involve themselves in religious activities.

4.5.3   Determinants of Attitude and Attitude Testing

Attitude is not an inborn quality. At the time of birth, child's mind is like a clean slate in which the society and environment write everything. Interacting with parents, peer group, siblings, neighbours, society and school mate, child develops his attitude towards an individual or object or anything else. So there are certain factors which determine the attitude of human beings. The determinants are as follows:

(a) Cultural or social determinant: A child acquires everything from the culture or society, to which he belongs. The cultural ethics, social norms, ceremonies, the religious and moral beliefs of the particular society are acquired by the child. His attitude towards something is framed according to that social or cultural framework. For example, tribal child receives all the aspects of his tribal culture. His language, way of living, thinking, education, all the aspects will be according to the tribal society he is concerned with. For example, the interior tribal people have their attitude that, the outside people are alien to them and they destroy their culture and civilization. So, the child of this tribe, also develops this kind of attitude towards the outsiders.

(b) Psychological determinant: One's psychology determines his attitude. The person who is kind enough and merciful has sympathetic attitude towards die poor. Emotional and personal experiences, social perception etc., contribute towards development of attitude.

(c) Functional determinant: Functional determinants are also known as situational determinants. Sometimes, the situation builds attitude in human minds. For example, when somebody is rebuked and mistrusted by his friends in a certain situation, his attitude suddenly changes towards his friends. So, situational factors are very much responsible for attitude development.

4.5.4   Purposes of Attitude Testing

Behind every action, there is purpose. When we go for testing attitude,of people or students, obviously there are some purposes behind it. In the teaching-learning situation, attitude testing has an important role to play. So the purposes of attitude testing are:

- To assess the entry attitude of the students towards a particular course.
- To assess how far the desirable attitudes have been developed in the students during the course and after the completion of the course.
- To help the students to develop positive attitude towards certain things.
- To help the students in their career plan.
- To help the management to make its administration and supervision a qualitative one.
- To help the teacher to overcome their weakness in the teaching-learning situation.
- To help the students to check their undesirable behaviours.

4.5.5 Measurement of Attitude

Attitude is a subjective concept which is not absolute, rather relative. So, when test is prepared for testing attitude, certain dimensions are to be kept in mind. The dimensions are:

- Direction
- Degree
- Intensity

From the direction point of view, there are two kinds of directions: (i) positive and (ii) negative. When an individual has positive bent of mind towards something, it is known as 'positive attitude' and when he has negative bent of mind towards something it is known as 'negative attitude'. Every student's attitude should be measured in relation to his teaching-learning situation.

Every attitude has its degree. For example, a person who sings occasionally has less degree of positive attitude towards singing in comparison to the person whose profession is singing. So at the time of measuring attitude, the degree of predisposition should be taken into consideration.

Attitudes also have an intensity dimension. At a high degree of intensity, some kind of behaviours are motivated towards a greater extent. So all these dimensions should be kept in mind at the time of attitude testing.

The methods to be followed for the measurement of attitude are:

(i) Thurstone Scale: This scale was developed by Thurstone. Thurstone's attitude scale is known as equal-appearing interval scale. In this scale, both favourable and unfavourable statements regarding a particular topic are reflected in an eleven point scale. The respondent is supposed to check the point for each item according to his attitude. The median of the judged locations for an item is its scale value. The scale position are very much a function of the judges who are chosen.

(ii) Likert Scale: This scale was developed by Likert. All the items of this scale are followed by five options. The respondents are supposed to point out the option they like. The decisions are either favourable or unfavourable on the object, or person. Judges are not appointed for this scale, and this scale is known as 'five-point scale'. Likert type scale is less time consuming and economic. Its approach is more empirical because, it deals with the respondent's score directly rather than employing judges. The sum of the item credits is the total score of the individuals, which is interpreted in terms of empirically established norms.

Example of Likert type scale:

1. 'Science is the *Scales*	5	4	3	2	1
soul of present *Values*	SA	A	U	D	SD
day society'.					

Values:

SA	-	Strongly Agree	5
A	-	Agree	4
U	-	Undecided	3
D	-	Disagree	2
SD	-	Strongly Disagree	1

Limitations of Attitude Testing

Attitude testing has certain limitations which cannot be avoided. The limitations are:

• Attitude is a subjective concept, so it is very difficult to measure attitude quantitatively.

• Attitude is such a complex affair that it cannot be represented by any single numerical index.

• Attitude is learned not inborn. So it varies from situation to situation and time to time.

• In most of cases, it is seen that there is difference between verbally expressed attitudes and attitudes reflected in behaviour.

ACTIVITY

Make a report on the characteristics of aptitude scale, and how it can change with time.

Did You Know

Interest inventory is a device which is prepared continuously to know the likes and dislikes of an individual in vocations and works.

4.6 SUMMARY

In this unit, you have learnt that:

• Aptitude of an individual towards some work fits him in the work like round peg in the round hole and square peg in the square hole.

• Aptitude is predictive in nature.

• An individual with interest and aptitude for teaching profession will get success in life; but if only interest is present without aptitude, the question of success will arise.   5

• An aptitude must be developed by practice and training to become an ability I Two individual may have aptitude of one kind but the degree of aptitude will *i* be different.

• Aptitude tests assess the degree of an individual's inclination towards something. J

• General aptitude tests are also known as 'scholastic aptitude tests'. \

• Autobiographies provide data which can be compared with those gathered by other means. This method is very economical. The teacher or the counsellor \ can obtain autobiographies of the students in groups at a minimum expenditure \ of his time.

• The personality assessment interview of a student for finding out the status of development of his personality

• An attitude is the degree of positive and negative affect associated with some psychological object. It is the bent of mind of somebody towards something, which may be positive, negative, hostile or indifferent.

• Attitude is not an inborn quality. In the teaching-learning situation, attitude testing has an important role to play.

• Thurstone and Likert scales are used to measure the attitude of the people.

• Attitude is a subjective concept, so it is very difficult to measure attitude quantitatively. A person's success in life is mostly determined by his interest in it.

4.7   KEY TERMS

• **Anecdotal:** Arunning description of actual examples of behaviour of a student as observed by teachers and the counsellor

• **Aptitude:** Refers to a special capability of an individual, which makes him distinct from others in an achievement field

• **Clerical aptitude:** Includes the gathering, classification, and presentation of data of all sorts, analysis and use of these data in planning, executing and deterrriining the results of operation

• **Differential aptitude tests:** Developed for measuring the fundamental intellectual abilities within individuals

• **General aptitude tests:** Measure the general intelligence, mental ability and learning ability of individuals

• **Mechanical aptitude:** Refers to an individual's psychomotor activities; involves manipulation of objects and tools with a mechanical bent of mind

4.8   ANSWERS TO 'CHECK YOUR PROGRESS'
1. 'Aptitude' refers to a special capability of an individual, which makes him distinct from others in an achievement field.
2. The three important types of aptitude are:
(i) Aptitude in music (ii) Aptitude in law (iii) Teaching aptitude.
3.   The types of aptitude tests are:
(i) General Aptitude Tests (ii) Specified Aptitude Tests (iii) Differentiated Aptitude Tests.
4.   An 'attitude' is the degree of positive and negative affect associated with some psychological object.
5.   The three important attitudes are:
(a) acquisitive attitude
(b) play attitude
(c) scientific attitude.
6.   The determinants of attitude are:
(a) cultural or social determinant
(b) psychological determinant
(c) functional or situational determinant.

4.9   QUESTIONS AND EXERCISES

Short-Answer Questions
1. State the characteristics and types of aptitude.
2. Classify different types of aptitude tests.
3. What is the other name for general aptitude tests?
4. What is the significance of assessing or measuring personality? Describe any method of its measurement.
5. Why are the personality tests not always valid and reliable?
6. State the purposes of attitude testing.
7. What are the limitations of attitude testing?

Long-Answer Questions
1. Explain the various aptitude tests.
2. 'Attitudes are not inborn but acquired.' Comment.
3. "Every technique of assessment of personality is a means and not an end in the assessment of personality of an individual." Discuss.
4. Discuss the determinants of attitude.

4.10   FURTHER READING

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