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Lesson No.

2.1: Individual difference

2.2: Intelligence: concept, theories-spearman, thurstone and Gardner.

2.3: Uses and Limitatons of Intelligence test

2.4: Learning: Meaning, factors influencing learning relatated to learner, teacher, process and tasks, Trail & error Theory and classical conditioning theory.

2.5: Motivation : meaning, types and techniques of motivating the learner.

2.6: Learner with special needs (Exceptional children): Concept, types-gifted, creative, delinquent, educationally backward-their identification, characteristics and education

Lesson No-2.1

Individual Differences

2.1.1 Objectives

1. Recall the concept of Individual Differences
2. Explain the dimensions of Individual Differences
3. Discuss the educational Implications

2.1.2 Introduction

Perhaps the first task of every teacher in the classroom should be to know the individual differences among his pupils. No two individuals are alike. Individuals differ in Physique (i.e. size, shape, appearance), intelligence, attitudes, aptitudes, achievements memory, thinking, resoning imagination, problem solving, creativity, concentration, habbits, skills, sentiments, aims, ambitions, aspivations philosophy of life, socialibility and various other types and traits of personality .Individuals can be easily distinguished from one and there by their gestures, their way of talking, acting, walking and appearance. It is these differences b/w individuals which separate them from others and wake them unique individuals.

2.1.3 Concept of Individual Differences

All human persons differ from each other, so far as their physical dimensions are concerned or in their psychological endowments. Everybody differ form each others in

their likes or dislikes, habits thinking, attitudes or other characteristics or traits. We differ from each other in out abilities, intelligence, capabilities and capacities as well as in our aptitude and interests. These differences lead to different type of behavior among individuals. It is due to these individual differences, which led to the origin of the discipline of Psychology more specifically, called as differential Psychology, which encouraged the thinkers and scientists to develop testing field in psychology. Individual differences were measured with the help of Intelligence tests, Personality inventories and attitudes scales. These individual differences have also affected the sport behavior i.e. how sports performance is affected. Hence it is important to understand the differences and to recognize the similarities and also to know their causes.

2.1.4 Type of Individual Differences

There are different types of individual differences which are given below:

1. **Physical Differences:** There are differences on account of physical appearances and also otherwise. A few examples of differences are in height, weight structure, facial expressions etc.
2. **Mental differences:** In a class or even in a family, there are mental differences between the different individuals. Some others are not. Of the type some students are more imaginative than others and some are more than others in intelligence, again there are too many varuations.
3. **Emotional Differences:** In every group we come across learners having a lot of emotional differences. Some individuals are more emotional than others. Some are able to express their emotional behavior while others are unable to express it.
4. **Differences in Learning:** Some individuals are able to learn a few subjects easily. Whereas some other students find it very difficult to learn those very subjects. Some have more speed of learning than others. In a group of some class, a few students may be eye-minded. This type of students are able to learn by looking at the subject matter. Some students may be touch-minded. They are able to learn when they write the subject matter. Than there is no more category of students who are ear-minded. They are able to learn by speaking or by reading again and again.
5. **Differences in Achievement:** In every group or a class, there are always differences in achievements of the students. We see that same teachers teach all the students of a class, but when we see the achievements of the students, there are so many variations.
6. **Differences in Development:** We notice marked differences. When we compare the differences in different type of development such as moral development, social development, cultural development, a good deal of differences are noticed. Some become socially efficient, while others become anti-social element. Some

of them are morally very sound while others lack in this respect. The reasons behind may be any such as family background but the differences are always there.

7. **Differences in Attitude:** In every class, when we examine the students, some may have positive attitude and the others have a negative attitude and there may be still others who have neither positive attitude nor negative attitude.
8. **Differences in Interests and Aptitude:** Individuals differ from each other in terms of interests and aptitude. In the same class, we can have students who are more interested in academic while some may be interested in co-curricular activities. Some of the students have aptitude in science, others in maths and some others might be good in languages.

2.1.5 Causes of Individual Differences

Man is the product of nature and nurture, i.e., heredity and environment. Both heredity and environment play important role in the development of the personality, of an individual though in some cases, heredity may assert itself due to relative weakness of environment while in certain other cases environment may become so strong that it may completely wipe off the marks of heredity. For example, a son of a dacoit may become a civilized person in his life due to good and congenial environment, whereas on the other hand, a son of a saintly person may become a decoit due to bad environment.

Role of Heredity and Environment in Creating Individual Differences

Man's behavior is influenced by two forces: heredity and environment. The biological or psychological characteristics which are transmitted by the parents to their off-springs are known by the name of heredity. Heredity is, in other words a biological process of transmission of certain traits of behavior of the parents to their children, by means of the fertilized egg. Heredity traits are innate, they are present at birth.

Some biologists claim that the differences in traits and qualities of individuals are due to differences in traits and qualities of individuals are due to differences in their heredity. But there are others who explain that the variations in human beings are due to differences in environment. Thus a great controversy has been going on since long about the relative importance of heredity and environment in determining the behavior of heredity and environment in determining the behavior of individuals.

Interaction of Heredity and Environment

Thus both heredity and environment forces are said to play their own decisive roles in causing exceptionality and differences in one form or the other. Heredity sets the path as the starting base and environment forces make use of this starting base in their own ways for developing the child in one or the other form of normality or abnormality or exceptionality in one or the other developmental aspects of one's personality. Hence it is stated that individual .differences are caused through a progressive interaction of one's heredity and environmental forces.

The problem of nature verses nature defines satisfactory solution. It is futile to argue that which of the two factors, heredity or environment, is more important. The truth is that there is interaction between the two. They are inseparable. Both the factors have been operative to produce every particular situation. It cannot be judged or concluded that the personality development is the result of heredity or environment alone.

Heredity, no doubt, has its influence on the physiological traits but environment is also important in the development of personality. Heredity is no avail if environment is not there. The capabilities of man are hereditary but their manifestation is the work of the environment. According to Landis and Landis, "Heredity gives us the capacities to developed but opportunity for the development of these capacities comes from the environment.

2.1.6 Dimensions of Individual Differences

1. **Differences in Physical growth and development:** No two new born are alike in height, weight and appearance. The variations between them way be attributed to assortment of genes with which they are born, type of parent environment general health and diet of mother, birth experience, birth order the first born is likely to be smaller than the later-born.
2. **Differences in motor skills and related abilities:** Motor development is meant by the development of strength, speed, integrity, co-ordination and steadiness in using limbs and muscles. There is a marked increase in strength, speed and accuracy of motor ability in individuals. Each year brings improvement in motor activity.
3. **Differences in Emotional development:** Emotions play a tremendous role in the physical, mental and social development of the child, such as usually there are emotions of fear, anger and love as well as joy and affection. The emotions of the child are not specific as birth. They occur in diffused states. He cannot show specific emotions life anger, fear and joy. It takes time to develop them.
4. **Differences in Interests:** There are wide variations of interests among children. Some are interested in mathematics, while some may be more interested in learning science, and still others may not be interested in both these subjects and have strong inclination for language and history. It is likely that some children want to play football, others are interested in playing cricket or hockey, but some others may not be interested in playing any game but like the most to sit in a coach and enjoy watching cricket match with peers.
5. **Differences in Aptitudes:** Similarities and dissimilarities of aptitudes among people is a common phenomenon. We differ to one another with regard to the possession of our aptitudes. In common parlance the term aptitude connotes "fitness", "ability" or "talent, which makes individual better fit for one type of activity than for the other.

6. **Differences in Values:** We as human beings have certain commonalties and wide variations with respect to possession of different values like economic, social, political and ethical and moral values. Different people value certain things or phenomena over the others depending upon their preferences or needs.
7. **Differences in Goel-Setting Behaviour:** Goal-setting behavior is considered to be related to dynamics of personality. A wide variety of differences in 'goals' and setting of goals are found among individuals. To set the goal at certain level the individual is likely to have an aspiration for its achievement. Thus aspiration is the key of goal-setting behavior.
8. **Differences in Study Habits:** A wide variation is found in the study habits of students. Almost all students have their individual habits of studying things, which later become a permanent part of their life throughout the schooling.
9. **Differences in Motivation and Achievement:** Individuals are seen differing vary widely in their achievements in the same or differing areas-educational, occupational, social or economic area of life. Some persons are likely to have the record of to achieve higher and excel whenever they get the opportunity in the different areas of their interest. Some others are always found trying to seek adequate achievement only in one area. Still some others may be found meeting failure everywhere.

2.1.7 Educational Implications

1. **Education Implication for the students:** When the students of wide individual differences study together in the same classroom, both cannot be benefited equally. Their learning in the class will depend upon the capability of the teacher. In the hands of a more capable teacher, the students with less intelligence will lag behind. On the other hand, if the teacher is an average teacher who is fit for the average students, will fail to give satisfaction to the bright group of students.
2. **Educational Implications for the Teachers:** Teachers for the bright students and average teachers for the slow learners will be suitable. It is very difficult for the school authorities to make arrangement of suitable teachers fully fitted for this type of peculiar situations. This gives rise to another type of problem for the head of the institution. Suppose the school has one very good teacher capable of teaching bright students, but the school in one particular session may not have sufficient number of bright students.

   It is worthwhile to suggest here that the persons with average abilities should not be allowed to become teachers. Only those persons who have throughout a brilliant career and they have also love for the teaching profession should be allowed to become teachers. The scheme of four years integrated B.Sc., B.Ed. or B.A., B.Ed. programme after +2 will be all right while selecting would be teachers.

3. **Educational Implications for the Schools and the organisors:** Keeping in view individual differences of the learners. Whoever is admitted in the school will be provided suitable type of facilities. The schools will keep in mind the following suggestions:
   (a) All the students to be admitted in the school will be tested thoroughly. The school authorities will find out the capability of each student, his interest, attitude, aptitude and intelligence etc.
   (b) The students will be grouped according to their interest and ability etc.
   (c) The school will ask the teachers to use the fully suitable techniques of teaching for the students.
   (d) Every school will provide a suitable type of curriculum for the students. The curriculum will serve the purpose of providing education to all types of children.

2.1.8 Educational Applications of Individual Differences

1. **Individualistic Teaching-Learning Pattern:** Knowledge of individual differences has proved beneficial in bringing about in educational practice the use of individualistic teaching-learning strategies.
2. **Knowledge of Individual Abilities:** It is imperative that teacher should have an adequate knowledge of the mental abilities-intelligence, attitudes and interests, potentials and personality dynamism and general personality characteristics of children. Then only it can be possible for him to render adequate guidance and counseling services whenever any of the students feels need of them.
3. **Strong Belief in Existence of Individual Differences:** The teacher should strongly believe that there are wide variations of characteristics in students of his class. Some of the students of the class may certainly deviate from the average or normal. So it will be wrong on his part to assume that there should be complete uniformity in achieving proficiency in any particular subject.
4. **Method(s) of Instruction:** Variation in the methods of teaching different school subjects should be considered as one important requirement of school system. All students of a particular class cannot be expected to benefit equally from one particular method of teaching and 'one for all times to come' curriculum.
5. **Students' Groupings:** Dividing students in various groups is one characteristic feature of every school and it is also desirable for different reasons. A teacher needs to keep in view and thus the students of one class can be divided into homogenous groups on the basis of their some particular ability.
6. **Provision for Guidance and Counseling:** In the modern educational system guidance and counseling should be considered an inseparable part of instruction.

Different students are likely to have their individual problems pertaining to personal, social, emotional and educational needs.

7. **Dynamism in Framing and Changing Curriculum:** Though it is not generally in the purview of the teachers' responsibilities either to frame of to change the particular curriculum meant for school level classes. But a teacher can exercise his skill to rearrange the items/sections of the curriculum to match the students' acceptability and correlating effectively some parts of different subjects.
8. **Manageable size of the Class:** There should be a limited number of students in one class so that individualized instruction can be practiced.
9. **Individual Attention**: The very notion of individual differences purport that as far as possible attention to the individual needs of the students in the class, should be paid.

2.1.9 Summary

Psychology of individual differences examines how people are similar and how they differ in their thinking, feelings and behavior. For example, people can be classified according to intelligence and personality characteristics. People are complex, however, and there are multiple theories and evidence as to what are the prevailing aspects of psychological differences. Parents as well as teacher should keep individual differences in mind while providing education to the children to cater to the differing needs of individuals. Thus, whatever may be the cause, individual differs in their learning abilities. It is the duty and responsibility of any school system to provide adequate schooling or learning experiences for every learner according to his individuality.

2.1.10 Key Concept

1. Concept of Individual Differences
2. Types of Individual Differences
3. Causes and Dimensions of Individual Differences
4. Educational Implications
5. Educational Applications

2.1.11 Self-check Exercise

1. Man’s Behaviour is influenced by two forces _____ and _____
2. Man is the product of nature and nurture, i.e. _____ and _____.
3. Every school will provide a suitable type of _____ for the students.

(Answers 1. Heredity and Environment 2. Heredity and Environment 3. Curriculum)

2.1.12 Suggested Questions

1. What are the educational applications of Individual Differences?
2. Discuss the dimensions of Individual Differences.

2.1.13 Suggested Books and Web Sources

1. Mathur, S.S : Educational Psychology
2. Chauhan, S.S. : Advanced Educational Psychology
3. Sodhi, T.S., Suri, S.P. : Psychological foundations of Education
4. Bhatia, K.K. : Bases of Educational Psychology
5. Aggarwal, J.C. : Psychology of learning & development
6. En.wikipedia.org
7. Books.google.co.in

B.ED. PART - I **PAPER - II**

LESSON NO. 2.2 **AUTHOR : DR. SNEH GUPTA**

INTELLIGENCE; CONCEPT: MEANING THEORY: SPEARMAN, THURSTON AND GARDNER AND USES OF INTELLIGENCE TEST

2.2.1 Objectives

After going through the lesson, students will be able to:

1. Recall the definitions of Intelligence
2. Discuss the spearman's theories of intelligence
3. Discuss the Thurston theory of intelligence.
4. Discuss the Gardeners' multiple theory of Intelligence

2.2.2 INTRODUCTION

Teacher notices some students learn quickly, some slowly. Some are bright and some are dull. Some solve problems quickly, some get upset. Man is said to be crown of creation as he has 'Intelligence' which make him a rational being. It is difficult to define intelligence. Psychologists all over the world have made attempts to define intelligence. There are different theories of intelligence. Only few are discussed here.

This lesson will contain:

- Ø Meaning and definitions
- Ø Theories-Spearman
- Ø Thurstone
- Ø Gardener

2.2.3 INTELLIGENCE–Meaning and Definitions

In contrast to animals man is considered to be endowed with certain cognitive abilities which makes him a rational being. He can reason, discriminate, understand, adjust and face a new situation. He is superior to animals in all such aspects of behaviour. But human beings are not alike. There are wide individual differences.

In our day-to-day conversation we often comment that a particular child or individual is

very intelligent or is not intelligent. All such comments are based on our observation of the performance or behaviour of the individual concerned in comparison to others of his group. What makes an individual behave or perform well or not well in his group? Interest, attitude, the desire for knowledge, communicative skill and similar other attributes contribute towards his performance or behaviour. However, there is something else which is also responsible to a large degree. In psychology this is termed as intelligence; in ancient India our great rishis and seers named it 'Viveka'.

To define intelligence is really a difficult task. Psychologists all over the world have made attempts to define intelligence in their best possible language but a satisfactory definition could not be evolved up till now. However like the blind men appraising the size of an elephant, many psychologists have defined intelligence in their own way. While the teachers try to cultivate intelligence and the psychologists try to measure it, nobody seems to know precisely what intelligence is.

2.2.4 DEFINING INTELLIGENCE

Intelligence as a concept has been understood in different ways by different psychologists and has, therefore, a wide variety of definitions.

Stren (1914):

Intelligence is a general capacity of an individual consciously to adjust his thinking to new requirements. It is the general mental adaptability to new problems and conditions of life.

Thorndike (1914):

Intelligence may be defined as "the power of good responses from the point of view of truth or fact".

Terman (1921):

An individual is intelligent in the proportion that he is able to carry on abstract thinking.

Wagnon (1937):

Intelligence is the capacity to learn and adjust to relatively new and changing conditions.

Woodworth and Marquis (1948):

Intelligence means intellect put to use. It is the use of intellectual abilities for handling a situation or accomplishing task.

Jean Piaget (1952):

Intelligence is the ability to adapt to one's surroundings.

Alfred Binet:

It is the ability to judge well, comprehend well and reason well.

Apart from the foregoing definitions, there are several more; but all of them, if taken separately, give an incomplete picture because each of them emphasizes a single aspect. For instance they define intelligence as the ability to learn, to deal with abstractions, to make adjustments, to adapt to new situation.

David Wechsler (1944):

Intelligence is the aggregate or global capacity of an individual to act purposefully, to

think rationally, and to deal effectively with his environment.

Stoddard (1943):

The ability to undertake activities that are difficult, complex and abstract and which are adaptive to a goal, and are done quickly and which have social value and which lead to the creation of something new and different.

To conclude, "Intelligence consists of an individual's those mental or cognitive abilities which help him in solving his actual life problems and leading a happy and well contented life."

It may be described as an inborn ability to see the right thing at the right moment in the right way. It is co-ordination of the psychological pattern of this individual which enable him to achieve his goal.

It is integral to human nature as a whole. Generally speaking, it is alertness with regard to actual situation of life is an index of Intelligence." It is one of the most important and vital ability and crucial to all learning and education. Teachers by their training experience, tools and techniques can do much to know the intellectual ability of their pupils as well as develop it.

Spearman's Two Factor Theory

It was advocated by Spearman. According to him, intelligence consists of two factors. The 'g' factor is always the same for the same individual but 's' factor varies from task to task. Different individuals differ both in 'g' and 's' factor. For doing any activity 'g' factor is always involved and some of the 's' factors are involved.

Some task require more 'g' factor and some require more 's'. In mathematical problem 'g' factor and for painting, music etc. 's' factor is required. Those who possess more of 'g' factor and less of 's' factor do fairly well in life.

$P = g + s$

Problem of Mathematics -

$P_m = g + S_1$

Problem of Arts -

Art = $P_A = g + S_2$

g factor is concern.

The 'g' factor is considered to play some part in almost all-human activities. General intelligence is sort of general mental energy, running through all different tasks. But in addition to 'g' factor, there are specific abilities which make an individual able to deal with particular kind of problem. For example individual performance in Hindi due to 'g' factor and partly due to 's' factor that is specific ability in language mean $g + S_1$ in mathematics $g + S_2$, in drawing $g + S_3$ and so on. The 'g' factor will enter in all activities in lesser or greater degree. The total ability or intelligence 'A' of an individual will be expressed by the following equation:

$g + S_1 + S_2 + S_3 + S_4 + \ldots\ldots\ldots\ldots = P$

Figure 1 : Presents the structure of ability in this connection.

Test	General g	Specific Factor				
		S_1	S_2	S_3	S_4	S_5
1	+		+			
2	+	+				
3	+			+		
4	+					+
5	+				+	

A look at figure 1 indicates that factor 'g' is present in all the five tests (1-5) while factor 's' is specific to a test S_1 present in test 2, S_2 present in test 1, S_3 present in test 3, S_4 present in test 5 and S_5 present in test 4 only.

It is criticized on two grounds-

1. Spearman has said that there are two factors expressing intelligence but as we have seen there are not two but several factors that G+S1 +S2+S3... and so on.
2. According to him each job requires some specific ability. This view is not proper as it implies that there is .nothing common in the jobs except a 'g' factor and professions an those of nurses, compounders and doctors can not be put in a group. In fact the factors S_1,S_2,S_3,S_4... are not mutually exclusive. They overlap and give birth to certain common factors. The idea of overlapping and grouping has given origin to group theory.

Spearman described 'g' factor as a kind of well or spring of mental energy that flows into everything the individual does. The person who is 'well endowed' is able to understand things quickly, make good decision, carry on interesting conversation and so on. Once he established this foundation, he turned to the question of special abilities. He found people are quicker in some areas than in others. Some find mathematics easy but spend hours to remember a poem. General intelligence is the fountain from which specific abilities flow like streams of water with different thought processes.

Thurstone's Group Factor Theory:

For factors not common to all intellectual abilities but common to certain activities comprising a group, the term 'group factor' was suggested.

It was put forward by Thurstone in 1938. He gave this theory after giving 56 types of tests to the students of Chicago University. All these results were subjected to factor analysis. He concluded that in all these tests, nine type of factors were working. He did not believe in G and S theories. He concluded that certain mental operations have a common 'Primary' factor that gives them psychological and functional unity and also differentiate them from other mental operations. A 2nd group of mental operation has its own unifying primary factor and so on. In all there are nine such groups, which cover the

entire range of mental abilities. Each of these primary factors, is independent of others.-

(I) Verbal factor (V) is concerned with comprehension of verbal relations, words and ideas.

(II) Spatial factor(S) is involved in any task in which the subject manipulates an object imaginatively in space.

(III) Numerical factor(N) is concerned with the ability to do numerical calculations, rapidly and accurately.

(IV) Memory factor (M) involves the ability to memorize quickly.

(V) Word fluency factor (W) is involved whenever the subject is asked to think of isolated words at a rapid rate.

(VI) Inductive reasoning factor (RI) is the ability to draw inferences conclusions on the basis of specific instances.

(VII) Deductive reasoning factor (RD) is the ability to make use of generalized results.

(VIII) Perceptual factor (P) is the ability to perceive objects accurately.

(IX) Problem-solving ability factor (PS) is the ability to solve problems with independent efforts.

Figure 2 depicts the structure of abilities as given by Thurstone.

Test	Primary Mental Abilities								
	P1	P2	P3	P4	P5	P6	P7	P8	P9
1		+	+				+		
2	+			+		+		+	
3				+	+				+
4		+					+		+
5	+		+		+	+		+	

Fig. 2 Thurstone's group factors theory

The weakest aspect of the group factor theory was that it discarded the concept of the common factor. It did not take Thurstone long to realize his mistake and to reveal a general factor in addition to the group factors.

GARDENER'S THEORY OF MULTIPLE INTELLIGENCE

A unique theory of intelligence called the "theory of multiple intelligence". It first appeared in his 1983 book, “Frames of Mind: The theory of multiple intelligence.” Through his new theory, Gardener challenged the notion of general intelligence, "g" and then questioned the very basis of prevailing intelligence tests by asking how an individual's intellectual capacities could be captured in a single measure of intelligence. He asserted that human intelligence or cognitive competence can be better described as a set of an individual's multiple abilities, talents and mental skills related to a multiple number of domains of knowledge in a particular cultural setting. He concluded that there are seven independent types of intelligence that grow and develop differently in different people,

depending upon their hereditary characteristics or environmental experiences. By cal1ing them independent, Gardener meant intelligence is relatively autonomous intellectual potential which is capable of functioning independently of the others. These different types of intelligence have been named by him as linguistic, logical-mathematical, spatial, musical, bodily-kinesthetic intrapersonal and interpersonal.

Linguistic Intelligence: This type of human intelligence is responsible for all kinds of linguistic competence abilities, talents and skills, available in human beings.. This type of intelligence is most visible in professionals like lawyers, lecturers, writers and lyricists, and a number of other professionals exploiting linguistic intelligence.

Logical-mathematical intelligence: This type of intelligence is responsible for all types of abilities, talents and skills in areas related to logic and mathematics. Broken down into components deductive reasoning, inductive reasoning, scientific thinking including solving of logical puzzles, carrying out calculations and the like. Professionals like mathematicians, philosophers, physicists, etc. are found to exhibit this type of intelligence in abundance.

Spatial intelligence: This type of intelligence is concerned with the abilities, talents and skills involving the representation and manipulation of spatial configuration and relationship. For example, painters may be seen to demonstrate spatial intelligence through their use of space when applying pigments to a canvas. This is also true for professionals like land surveyors, architects, engineers, mechanics, navigators, sculptures and chess players-who are found to rely upon the spatial intelligence in their own way.

Musical intelligence: This type of intelligence covers the abilities, talents and skills pertaining to the field of music. It is visible in a quite large proportion in professionals like musicians and composers.

Bodily kinesthetic intelligence : This type of intelligence is concerned with the set of abilities, talents and skills involved in using one's body or its various parts to perform skillful and purposeful movements. A child may be seen to demonstrate such intelligence in moving expressively in response to different musical and verbal stimuli. Among professionals, dancers, athletes and surgeons may be seen to demonstrate a high degree of bodily-kinesthetic intelligence in their respective fields.

Intra-personal inte1ligence: This type of intelligence consists of an individual's abilities to enable him to know his self. It includes knowledge and understanding of one's own cognitive strengths, styles and mental functioning, as well as one's feelings, range of emotions and skills to utilize one's fund of knowledge in practical situations. In brief, intrapersonal intelligence helps an individual to understand his own self by providing an insight into his total behaviour-what he feels, thinks or does. It is, therefore, said to be the most private of the intelligence that a person possesses.

Inter-personal intelligence: It consists of the abilities to understand individuals other than one's self and one's relations to others. The knowledge and understanding of others is the quality that is needed for social interactions in one's day to day life. This type of intelligence is most visible, among psychotherapists, teachers, sales people, politicians and religious leaders.

In this way, Gardener's theory of multiple intelligence provides a broad and comprehensive view of human abilities. However, as far as the broader and global assessment of one's intellectual competencies and abilities is concerned, there is sufficient truth in the assertion of Gardener's theory that knowledge of all the seven types of intelligence is essential for the true assessment of one's level of intellectual functioning. The other striking feature and contribution of Gardener's theory of multiple intelligence is its bold declaration that the concept of measurable "g" is at best limited and at worst educationally misleading. Each type of the seven different human intelligence which are said to be quite capable of developing independently of each other and also quite independently of an all encompassing general intelligence, "g".

2.2.5 Summary

Intelligence is an inborn ability to see right thing at the right moment in the right way. It is integral to human nature as a whole. It is a capacity to adjust, ability to learn and ability to think in abstract terms. It is the aggregate or global capacity of an individual to act purposefully, to think rationally, and to deal effectively with his environment.

In Two-factor theory, Intelligence consists of two factors that is 'g' and 's'. 'g' factor is common to all activities and's' factor differs in every activity.

In **Group factor theory**, nine types of factors were working. According to this theory, intelligence contain mental operations that have a common 'Primary factor' that gives them functional unity and makes them different from other mental operations.

In theory of multiple intelligence, there are different types of intelligence that is seven types of intelligence. He did not believe in 'g' and 's' factor.

2.2.6 Key Concept

1. Intelligence- Meaning and Definitions
2. Theories of Intelligence- Spearman's theory, Thurston's Theory of Intelligence and Gardeners' Multiple factor theory of Intelligence

2.2.7 Self-Check Exercise

1. Who said, '' Intelligence consists of two factors i.e. g factor and s factor
2. In which year, Thurston put forward his theory of Intelligence
3. Name the book in which Gardener's theory of multiple intelligence was appeared for the first time.

Answer key: 1. Spearman's 2. 1938 3. Frames of Mind

2.2.8 Suggested Questions

1. Explain the two factor theory of intelligence
2. Explain the Thurston Group factor theory of Intelligence
3. Explain the Gardeners' Multiple theory of Intelligence

2.2.9 Suggested Readings and Web Sources

1. Mathur, S.S : Educational Psychology
2. Chauhan, S.S. : Advanced Educational Psychology
3. Sodhi, T.S., Suri, S.P. : Psychological foundations of Education
4. Bhatia, K.K. : Bases of Educational Psychology
5. Aggarwal, J.C. : Psychology of learning & development
6. En.wikipedia.org
7. Books.google.co.in

B.ED. PART - I **PAPER - II**

Measurement of I.Q. : Intelligence Test : verbal, Non-verbal and Performance. Uses of Intelligence Tests and its Limitations

LESSON NO. 2.3 **AUTHOR : DR. SNEH GUPTA**

2.3.1 OBJECTIVES

After going through the lesson, students will be able to:

1. Classify the intelligence test
2. Measure the intelligence of the students by using intelligence test accordingly
3. Know the uses and limitations of intelligence test
4. Able to differentiate verbal, non-verbal and performance test

2.3.2 INTRODUCTION

We all want to measure intel1igence but in fact we can not measure intelligence like a length of cloth or temperature of the body. We can assess intelligence in relation to the classified group to which one belongs. There are different types of tests to assess intelligence. This lesson will contain.

- Measurement of I.Q.
- Intelligence Test-Verbal, Non-Verbal and Performance
- Uses of intelligence tests as well as limitations

MEASUREMENT OF I.Q.

We can observe the intelligence of an individual only to the extent that it is manifested by him in one or more intelligence tests. Many such tests have been devised by psychologists for the measurement of intelligence. In reference to these, however, the term 'assessment' is preferred because, intelligence being only a concept or an abstraction rather than a substance, it cannot be measured in physical units like a length of cloth or temperature of the body.

In this context, Griffiths (1933) observes: "the standard of measurement is a group performance. Therefore, when we measure an individual's intelligence by means of an intelligence test, we try to interpret his score in terms of the norms set (group performance) by the author of the test. One's intelligence is thus determined in relation to the classified

group to which one belongs. Thus whereas a piece of cloth may be measured in absolute terms, relative measurement or assessment has to be resorted to in the case of intelligence. Intelligence, assessed through the various intelligence tests is expressed in terms of intelligence quotient or I.Q. This term was first coined by German psychologist William Stern (1914) for the ratio of mental age and chronological age, which was then multiplied by 100 in order to eliminate the decimal point. The formula for calculation of I.Q. was expressed as

$$\text{I.Q.} = \frac{\text{MA}}{\text{CA}} \times 100$$

Where MA stands for mental age and CA for chronological age of the individual whose intelligence is being tested.

The concept of mental age was earlier introduced by French psychologist Alfred Binet. It was based on the principle of the normal distribution of intelligence that the majority of children of a particular age are of normal intelligence and that they have a mental level approximating that age, which could be termed as their mental age. If a child excels in the performance of a certain task compared to the performance of the majority of children of his age, he was said to be of higher mental age. If, for instance, the performance of an eight-years old on certain adequately determined tasks is equal to that of a majority of ten-year old, then he has a mental age (MA) of ten years, whereas another child of eight years showing performance equal to that of the majority of six year old, on the same tasks would be said to .possess a mental age of six years.

In any standard test of intelligence, there is provision of a table which shows the conversion of actual scores obtained on the test into respective mental ages in months. All one has to do is to read the mental age from this table on the basis of the scores earned by the subject of the test. This mental age divided by the chronological age in months (available from the identifying data) and multiplied by 100, then yields the intelligence in terms of I.Q.

2.3.3 Classification of Intelligence tests

Intelligence tests may be classified broadly as follows: - :

1. **Individual tests -** In which only one individual is tested at a time.
2. **Group tests:-** In which a group of individual is tested at the same time.

Intelligence tests may also be classified on the basis of their form as verbal or language tests and non-verbal or non-language tests.

Verbal or language tests: In these the subjects make use of language in which the instructions are given in words, written, oral, or both. The individuals being tested are required to use language, verbal or written, for their responses. The test content is loaded with verbal material, which may include varieties of the items listed below :-

I. **Vocabulary tests:** In these the subject is required to give the meanings of words or phrases. For example, what is the meaning of the word 'eventually'? What is the difference between bear, wear and bare? What does the phrase 'many roads to Rome' convey?

II. **Memory tests:** These are designed to test the subject's immediate and long-term memory, and includes recall and recognition type of items. He may be called

upon to tell the full names of teachers who teach him different subjects; his phone number, the number of his vehicle, the dates of birth of his siblings and so on.

III. Comprehension tests: By means of these, the subject is tested for the ability to grasp, understand and react to a given situation. The questions, for example, may be like: Why do big ships float in the sea while a small needle would sink in it? Why are the nights longer and the days shorter in winter?

IV. Information tests: The subject is tested on his knowledge about the things around him by means of these tests, e.g., Where is the Taj Mahal situated? Name the countries which surround Iraq.

V. Reasoning tests: In these tests the subject is asked to provide answers which demonstrate his ability to reason-logically, analytically, synthetically, inductively or deductively as outlined below:

Complete the series: 1, 2, 4, 7, 11, 16, 22, 29, ?, ?, .? A picture is to frame as an island is to...

VI. Association tests : Through these test items the subject is tested for his ability to point out the similarities or dissimilarities between two or more concepts or objects. For example:

1. In what ways are animals and plants alike?
2. Which of the items mentioned below is the odd one ?
   ----- Gold, silver, copper, iron, glass.

Non-verbal and non-language tests: These tests involve activities in which the use of language is not necessary except for giving directions. Performance tests are a typical example of such tests. The main features of these are:

1. The contents of the tests are in the form of material objects.
2. What is required of the subject is conveyed by the tester through oral instructions.
3. The subject's responses are assessed in terms of how he reacts or what he does rather than what he says or writes.
4. Generally these are individual tests. As Pillai (1972) observes: "These cannot be used as group tests, chiefly because it is necessary to supervise the individual testee as work and give him necessary directions" .

A comprehensive representation of all kinds of intelligence tests is provided in Table 1.

Table 1 - Classification of intelligence Tests

Individual tests		**Group tests**	
Verbal Test	Performance tests (a typical form of non-verbal tests).	Verbal tests	Non-verbal tests

INDIVIDUAL VERBAL TESTS

Scientific testing of intelligence began in France. Alfred Binet, a French Education Officer is known as the father of modern psychological testing. He was shining light and genius

in developing tests of intelligence. He gave us first test of intelligence in 1905 after 15 years of hard labour. It was an individual test and meant for children only. He was assisted by Simon so it is known as Binet-Simon test of intelligence.

How the test was constructed: Then French Govt. was faced with the problem of separating mentally retarded children from the normal ones and French Ministry of education called upon Binet to do this job. It took him 15 years to complete this job what he did he collected large number of questions suiting various age groups. About administering these he deleted very easy and difficult questions depending upon the age groups. The remaining questions were re-administered and finally arranged in order of difficulty value what he got the individual intelligence test in 1905. Binet tried to measure complex mental function and not specific traits.

1. **Binet-Simon-tests:-** In this scale there are 30 tests, from the simplest to complex, prescribed in a social order. The scale was prepared to test feeble-minded children. The scale contained tests for the age group 3 to 15 years. There were six items in the test meant for each age. The scale was extensively used almost in all European countries America, Canada, Australia, New-Zealand, South Africa, China, Japan, Russia etc.
2. **Binet-test and American Revision:-** In 1910 Goddard revised, modified and translated the adopted Binet scale in English. It was used to detect mental deficiency rather than to study the intelligence of normal superior children.
3. **The Stanford Binet test:-** The revision by Terman in 1916 has been named as Stanford-Binet to give honour to the university where he worked. He made some modifications. It was here Terman introduced the concept of I.Q. as the ratio of the mental age to the C.A.
4. **Terman-merill Revision:-** In 1937 Terman revised the Stanford Binet test with the help of Merill. It becomes useful for the age range of 2 to 18 years.
5. **Stanford Binet scale :-** 1961 it is widely used as an individual intelligence test.

Individual performance tests:- The complete non-verbal or non-language tests of intelligence for testing an individual at a time come under this category. In these tests the contents and responses are in the form of performance and language is not used and include items which require responses in terms of motor activities. Generally the activities, on which the performance of an individual is tested, are of the following types:

I. **Block building or cube construction:** The subject is asked to make a structure of design by means of blocks or cubes supplied to him. The Merril Plamer blocks building, Koh's block design test, Alexander's pass-along test etc. are examples or tests involving this type of activity.

II. **To fit blocks in holes:** Test material of this type provides numerous blocks and a board on which there are holes which correspond to these blocks. The subject has to fit the blocks in their corresponding holes on the board. The Seguin form

board test and Goddard form board test belong to this category.

III. **Tracing a' maze:** The test material consists of a series of mazes of increasing difficulty, each printed on a separate sheet. The subject is required to trace with a pencil, the path from entrance to exit. The Porteus maze test is an example involving this type of activity.

IV. **Picture arrangement or picture completion:** In a picture arrangement test, the task is to arrange the given pictures 'in series, whereas' in a picture completion test the subject is required to complete the picture with the help of given pieces cut out of each picture. The Healy pictorial completion test is a good example of such a text by which a good estimate of the intelligence of the subject may be obtained without the use of language.

Wechsler Bellevue intelligence scale

Mixed tests verbal and non-verbal. This scale has two tests-one for children and other for adults. Wisc (Wechcler intelligence scall of children) is designed for the children from 5 to 15 years. WAIS (WechelerAdult Intelligence Scale) measures intelligence of adults. Each test is comprised of 10 or 11 inter-related subjects.

Verbal Scale:- It consists of following type of items.

1. **Information:-** It has 29 items covering wide range of information as what is the population of USA, who wrote paradise lost etc.
2. **Comprehension:-** It has 14 items measuring practical Judgement and common sense-why are shoes made of leather?
3. **Arithmetic reasoning :-** It has 14 maths problems presented orally. To solve without the use of paper and pencil. Speed and accuracy determine scores. As one orange 30np. What about 12 oranges.
4. **Digit forward and backward:-** It tests attention and immediate memory. The subject is asked to repeat 3 to 9 digits.
5. **Similarities:-** 13 items measure logical thinking and conceptual ability. In what way are car and boat able?
6. **Vocabulary :-** 40 words of varying difficulty as diamond microscope, winter etc.

Performance scale-Non verbal Tests

1. **Picture completion:-** It consists of 21 cards- each card having a picture from which some part, is missing. The subject has to point out missing part. It tests perceptional ability.
2. **Picture arrangement:-** To arrange a set of cards containing pictures and to make a meaningful story. Time and accuracy are noted.
3. **Block-design:-** To reproduce design with coloured blocks. It measures ability to analyse and organise.
4. **Object assembly:-** To an assemble piece of a puzzle to form a common object. It tests perceptual ability.

5. **Digit symbol :-** The subject is asked to substitute symbols for numbers. It measures flexibility and ability for new learning.

Group Tests of Intelligence

These tests are designed to test the intelligence of a group and not of an individual. All the people of the group are given the same direction and have to perform the same activities. Two types verbal as well as non-verbal.

Verbal group tests

1. **Army alpha tests:-** It is first and most famous verbal group test. This test was applied to the new recruits in the American army in First World War. It consists of

   Arithmetical problems
   Commonsense problems
   Pairs of words
   Jumbled sentences to be arranged word relationship
   Information

2. **Army General classification test:-** It was developed during IInd world war to serve the same purpose. It was administered to about 10 million army personnel. It contains a number of vocabulary, arithmetic, reasoning and block counting items.

3. **Terman-Group test of mental ability:-** It was established on the lines of Army Alpha test. It has 10 sub-tests-information, maths problem, logical selection, scrambled sentences etc.

4. **Other quick scoring mental ability tests:-** The tests are self administering and the role of the examiner in reduced to minimum. These tests include three forms :- (i) Alpha for grade 1 to 4 (ii) Beta for grades 4 to 9, (iii) Gamma for high school and college students.

Non-verbal group test

It contains pictures, diagrams, geometrical figures etc. in the form of exercises instead of words for illiterates for testing intelligence of soldiers.

1. **Army Beta test:-** It is known as paper pencil test. It includes tracing a line through mazes, counting block in given piles, solving geometrical puzzles etc.

2. **Raven's progressive matrices scale:-** It is very popular. These are specially used for children. The test has five sections each having 12 items. Items arranged according to their difficulty value. It takes about 20 minutes. It measures capacity for observation, understanding of geometrical figures and reasoning.

   It was developed in Great Britain by Raven. 60 matrices or designs, from each of which a part has been removed, the subject chooses the missing from six or eight given alternatives.

   It has been claimed as language, culture and education free test. There is no time limit. It can be given individually or in group-no age limit. It concerns choosing the right geometrical design.

3. **Progressive Matrices (coloured):-** It has been prepared for use with children between the ages of 5 and 11 and with feeble minded adults. It is available both in book and board form. The later require the subject to choose the right piece rather than choose the correct completion. It is quite a useful test to be used in India. But local norms need to be developed.

Performance test

There is no reading or writing and one has to perform some activity that is motor activity. Motor activities increase in complexity step by step.

These are useful for cross-cultural study of intelligence, for language handicaps, illiterates, foreigners and slightly retarded children.

But these do predict academic success, difficult to transport and costly. The present tendency is to have composite of tests both verbal and performance.

Bhatia's battery of performance test:- Age group 11-16. The battery was standardized by Chander Mohan Bhatia. This has been standardized to be used under Indian condition. The Battery includes five tests.

1. **Koh's block design test:-** 10 designs out to koh's block design test have been included in this battery. The subject sees the design on the card and makes a similar one out of the blocks.
2. **Alexander's Pass along test:-** 8 designs. The subject shifts coloured pieces in an open box and places their in a similar design.
3. **Pattern drawing test:-** There are 8 cards on which there is a particular form the subject draws a particular figure or pattern after seeing the form, without lifting the pencil and repeating lines.
4. **Immediate memory test:-** Some digits or letters are recited which are immediately repeated by the subject.
5. **Picture construction test:-** Five pictures in pieces and in ascending order of difficulty. The subject has to assemble the pieces.

All the sub-tests are speed test and time is noted to give credits. Battery can be used in case of persons with language or cultural handicaps.

2.3.5 USES OF INTELLIGENCE TESTS

1. **For selection of courses and careers:-** It can be made on the basis of intelligence tests. Some subjects require higher intelligence. A study conducted in the United States gave the following median I.Q. of the high school boys in different courses -

   Technical - 114
   Scientific - 108
   Academic - 106
   Commercial - 104
   Trade - 102

2. **Selection of pupils to schools:-** In good schools there is great rush for admission..

All can not be admitted. These tests solve the difficulty.

3. **Classification of pupils:-** We have different types of children that can be classified on the basis of these tests. Children having the same I. Q. may be grouped together and constitute a class.
4. **Detection of various types of pupils:-** Various types of pupils that is backward, feeble minded, dull, delinquent can be detected and causes of problematic behaviour can be found.
5. **Award of scholarship:-** The govt. of India selects some students for the award of scholarship on the, basis of intelligence and achievements tests.
6. **For the purpose of promotion:-** These can be useful instruments in promoting the individuals not only in education field but in all other occupational and social situations.
7. **Assessment of teachers work:-** When the achievement of pupils in a subject does not correspond to the scores of intelligence tests, indicates that subject has not been properly, taught by the teacher.
8. Evaluation of methods and material of instruction.
9. **Help in research work:-** These are very useful in psychological, sociological and educational research.
10. **To establish, a proper level of aspiration:-** Tellord writes, " one of the most imp. ends served by intelligence testing is that of the assisting of the individual to establish a level of aspiration that is realistic in terms of intellectual potential.
11. **It helps in learning process:-** Crow and crow," Results of intelligence tests can help a teacher to discover what the child can learn and how quickly he can learn, as well as the teaching method that should be applied and the learning contents that should be utilized to guide the learner to use his mental capacities to their utmost".
12. **We can know the intelligence level of various races and nationalities:-** The scores of Germans, Japanese and Americans are more than those of Africans and Mexicans.
13. **Uses in army and civil services:-** These are used in selection of army officers and also used in various competitive examinations as intelligence is a basic factor in all these jobs.
14. **Uses in industry:-** In the selection of employees in industry, in 1ocating workers who require training and to study working conditions which lead to efficiency of the individual and the nation.
15. **For measuring general learning readines:-** The scores of intelligence tests reveal mental age or mental level of a child. It indicates reading, or educability of a child for learning. If these are administered in the beginning of primary, secondary or college level then the teacher can know whether the child is capable of reading in that stage or not.

16. **For vocational guidance:-** Occupational success is related to intelligence. Thus intelligence tests scores can indicate the possibility of entering into an occupation and succeeding in it in future.
17. **For indicating individual difference in capacities of children of same age:-** The test will provide or indicate the need for providing teaching materials at different levels of difficulty. The teacher can guide students to choose subjects according to their capacities.
18. **Help in giving educational guidance and counselling:-** On the basis of intelligence scores, students can be directed to suitable courses of studies where they would have brighter chance of success.
19. **Help in diagnosing the causes of educational backwardness:-** The backwardness of students is not always due to the low intelligence level of the pupils. If the administration of the test reveals average or superior intelligence level of the pupils, other causes of under achievement can be investigated.
20. **Predict the future progress of the individual:-** Psychological researches have shown that children of superior intelligence start at a higher level and continue to be higher throughout the entire period of growth and also that children's intelligence tests at on early age can help in predicting future success.

2.3.5 LIMITATIONS OF INTELLIGENCE TESTS

1. **It gives birth to segregation and conflicts:-** In U.S.A. it has led to conflict between the Negro and white population. The conflict in actual sense is the result of misconception about the predictive value of these test's is high.
2. **Intelligence test and teachers:-** The teachers make a permanent idea of child's abilities. They try to see him through his I.Q. It may bring slackness on the part of teacher. He may put entire responsibility of pupil's failure on his inferior intelligence.
3. **Intelligence tests and students:-** These label some students as superior and other as inferior. It creates complex, dull become disappointed and children showing better I.Q. become over confident.
4. **Intelligence tests, put emphasis on, speed:-** Children who are original thinkers and who can give, alternative, answer are penalised.
5. **These tests are costly and specially individual tests :-** Ordinary teachers can not purchase them and make use of then.
6. **In some tests the test items, are not chosen properly:-** Thus the purpose of testing is lost.
7. **We need trained and experienced persons:-** For scoring and interpretation to make it valid. It demands a good deal of care on the part of the tester. Properly trained teachers are not available.
8. There are many things intelligence tests do not measure as special talents for

art, music, mechanics or human relationships. They do not tell us how successfully individuals will adapt to new situations.

9. Proper use of tests requires the development of local norms and the interpretation of individual scores against norms. This indeed, is a very 1aborious job.

10. **Intelligence tests are not pure measures of innate capacity:-** There are, undoubtedly, differences among individuals in their hereditary potentialities, but the answers they give to the questions we ask in intelligence tests reflect, experience as well as potential, education as well as aptitude. Therefore, a great care needs to be taken while predicting on the basis of the tests.

11. **Intelligence test scores are not a measure of many personality characteristics:-** It is true that intelligence tests measure important abilities, but the total scope of human ability and productivity can not be covered by them. They do not measure directly certain characteristic such as motivation and perseverance that are important to success, not do they provide an estimate of creativity. Some students, who make only average scores, can be quite successful academically because they work hard, others who do well on intelligence tests may not be successful scholars because of carelessness or indifference.

12. **Intelligence test scores are not proper measures of genius either:-** A very high score on an intelligence test is sometimes thought to be an indication of genius. Although many who are considered genius by society do score very high, a few do not. On the other hand, some who score very high are not recognised as geniuses.

Genius best defined in terms of unique contribution to society rather I.Q. scores. Geniuses are those who have made higher significant and unique contributions to society in some aspect of the arts or sciences. Their characteristic qualities vary according to the area of contribution.

13. **Intelligence test scores among vocations overlap:-** For example, the average intelligence test score for physicians is higher than that for truck drivers. Some truck drivers, however, score higher than some physicians.

14. **The measures given by the tests are rough and general:-** All tests are reported on averages of the groups. Individual differences are all smoothed out so that interpretation of scores of a markedly different individual may fit into the norms. Thus despite of the care and labour that goes into the making of tests, their results can not be considered infalliable.

With all the limitations, intelligence tests are an indispensable tool in modern society. We use them to help us make decisions about the placement of individuals for school/ college and work, and to help us formulate educational and social policies. A research on intelligence has continued. They have become sharper and more adaptable. But like all tools, they require skillful handling and thorough knowledge of what they will and will not do.

2.3.6 Summary

I.Q. can be expressed by using formula that is by finding out mental age, chronological age and multiplied by 100. This term was first used by German psychologist, William Stern. Idea of M.A. was introduced by French Psychologist, Alfred Binet.

Verbal intelligence test is that in which language is used and instructions are given in words. Non-verbal intelligence test are those where use of language is not necessary except for giving directions. Performance tests are the typical example of such tests where some activity is performed.

There are various uses of intelligence tests as classification of pupils, assessment of teachers work, award of scholarship, for the purpose of promotion, educational and vocational guidance, to predict the future progress of the individual etc.

If any thing has uses it is always followed by limitations. Intelligence tests are not a measure of many personality characteristics, gives birth to conflicts, need trained and experienced persons etc. Intelligence cannot be measured rather it can be assessed.

2.3.7 Key Concept

- Classification of intelligence test
- Uses of intelligence test
- Limitations of intelligence test
- Verbal, Non-verbal and performance test

2.3.8 Self-check exercise

1. How manytest items are there in Binet Simon test?
2. Who and when Stanford Binet test was revised?
3. What is the age of the children for which Wechsler Bellevue intelligence scale was designed?

Answers: 1. 30 2. Terman in 1961 3. 5-15 years

2.3.9 Suggested Questions

Q.1. How can intelligence be measured?

Q.2. What are different types of intelligence tests? Write about one of them in detail.

Q.3. What are the uses of intelligence tests? Write five limitations.

2.3.10 Suggested Books

1. Mathur, S.S. Educationa1 Psychology
2. Dash, Murlidhar Educational Psychology
3. Chauhan, S.S. Advanced Educational Psychology
4. Bhatnagar, A.B. Advanced Educational Psychology
5. K.P. Pandey Advanced Educational Psychology
6. Aggarwal, J .C. Advanced Educational Psychology
7. Mangal, S.K. Advanced Educational Psychology
8. Crow &Crow Educational Psychology
9. Sharma & Nanda Educational Psychology
10. B.C. Rai Educational Psychology
11. En.wikipedia.org]
12. Books.google.co.in

LESSON NO. 2.4

LEARNING : Meaning, Factors influencing learning related to learner,teacher, process and task, Trial & Error Thoery and Classical conditioning theory.

Structure

2.4.1 Objectives :

After going through this lesson you will be able to

1. Define learning
2. Explain the characteristics of learning.
3. Describe various factors influencing learning.
4. Differentiate between factors influencing learning related to learner and teacher
5. Discuss the process of learning.

2.4.2 Introduction :

Learning plays very important role in determining the behaviour of an individual. Learning occupies central place in the field of education. It is through learning that man brings so much changes in his instincts that it becomes difficult to recognise them. The knowledge or awareness of nature, factors, methods and laws of learning helps in giving thorough and proper education.

Teaching must cause learning. Learning is a focus of educational programmes and

activies. Man's personality, his habits, skills, knowledge, attitude, interests, behaviour, conduct and character, ambitions and aspirations are largely the outcome of learning. Even the fructification of his basic and inherited abilities like intelligence, depends upon the richness and variety of his learning experiences. In short we may say that a man is, by and large the result of his learning.

2.4.3 Meaning of Learning

To learn means, "to gain knowledge through experience" but one of the meaning of "experience" is 'to perceive directly with the senses'. But knowledge is defined as learning and as familiarity or understanding gained through experience so learning is defined as acquired knowledge. Acquisition refers to changes in possession. At one time, the organism did not 'possess' a given bit of knowledge, at later time, it did. Something happen to the organism to change its state of knowledge & this something is called learning. Learning means -to bring changes in the behaviour of the organism.

It is difficult to give a universally acceptable definition of learning because various psychologists attempt to define the term from different angles. Learning in psychology has the status of 'construct'. Construct means an idea or an image that can not be directly observed like electrons or genes but which is inferred from the behaviour of the organism. Melvin H.Marx defines learning as, "Learning is a relatively enduring change in behaviour which is a function of prior behaviour (usually called practice.)"

This definition emphasizes four attributes (qualities) of learning as a process -

(I) The first is that learning is a permanent change in behaviour. It does not include change due to illness, fatigue, maturation.

(II) Second is that learning is not directly observable but manifests in the activities of the individual.

(III) The third attribute of learning is that it results in some change of enduring nature.

(IV) Fourth is that learning depends on practice & experience.

Learning Confused with Certain Terms :

There are certain terms which are confused with learning such as instincts, imprinting and maturation.

I. **Learning & Instincts :** If we examine the behaviour on an organism, we find that some behaviour of the organism is reflective or inborn as for example we breathe, our heart pumps, (pupillary constriction of eye to light) etc. All these activities take place without the benefit of learning.

II. **Maturation vs Learning :** Maturation means physiological development of the child. Maturation and learning are closely related, for learning a definite level of maturation is essential. Training without attaining a definite level of maturation does not yield good results. The learning & training should start

when a child reaches an appropriate level of maturation, which implies concept of readiness for an activity.

III. **Fatigue and Habituation vs Learning :** When a motor act (means manual work) is repeated in rapid succession, there is often a loss in efficiency -it becomes slower & weaker in amplitude until eventually the subject may refuse to perform it. We can say that response has suffered fatigue and recovery from the fatigue occurs over a rest of time. It is not learning because fatigue is not to induce enduring and relatively permanent changes in behaviour.

Similarly, presenting a stimulus produces a perceptual reaction. If the stimulus is repeated over and over in a monotonus series, the reaction aroused by each presentation becomes weaker and weaker eventually declining to an almost undetectable level. Subjects (organisms) are said to be habituated. Habituation displays many similarities to laws of learning but it is not learning.

IV. **Imprinting :** Means impression -i.e. mark made by pressing. Another term confused with learning is imprinting. At a certain crucial time, sometime after emerging from their cells, new born ducklings follow the mother soon after hatching -perhaps on account of the stimulation provided by her movements and the noise she makes.

Imprinting thus represents an inborn perceptual process independent of any training or experience: It depends upon an instinctive & inborn species -specific behaviour mechanism rather than the experience & training.

2.4.3.1 Definitions of Learning

Following definitions of learning would help us to understand the meaning of learning, its nature and broad dimensions:

1. **Gates defines learning as,** "Learning is the modification of behaviour through experience and training."
2. **According to Munn,**"To learn is to modify behaviour and experience."
3. **Skinner's** views are, "Learning is acquisition and retention."
4. **According to Crow and Crow,** "Learning involves the acquisition of habits, knowledge and attitude."
5. **Travers J.F**. writes, "Learning is a process that results in the modification of behaviour."

2.4.3.2 Characteristics of Learning

Following are the certain characteristics of learning:

1. **Progressive change in behaviour :** Learning brings progressive change in behaviour as the individual reacts to the situation and that is why learning is known as improvement.
2. **Learning is motivated by adjustment :** The individual has to adjust to new environment.

3. **Learning is universal in nature :** All animals learn. Man is a rational animal and he learns more.
4. **Learning is never ending growth :** We always inspire to learn more and more. One achievement leads to further incentive, pursuit and effort.
5. **Learning is continuous :** learning is continuous and not restricted to childhood period but it goes with life and ends with death.
6. **Learning is goal-oriented or purposive :** When the purpose or goal is more clear, the learning becomes meaningful and effective to the learner.
7. **Learning is active :** Learning largely depends upon the activities of the learner. It is said that no learning can take place where there is no self-activity.
8. **Learning is aroused by individual & social needs :** Learning depends upon individual -his needs, interests, problems, aspirations & needs of the society. Some individuals learn quicker and faster than others. It means that learning is affected by social environment. No learning can take place in the absence of environment.
9. **Learning is transferable :** Transfer occurs when there is similarity of contents, techniques, ideals & attitudes. Transfer leads to economy in learning as it takes place from one field of study to another and from one classroom situation to life situation.
10. **Learning is a process & not a product :** Learning is a process which can be summed up in the following steps:

(a) **Motive/need :** First of all motive/need arises. Motive is a force which compells the individual to behave or react to particular task.
(b) **Goal :** If motive is there the goal is set by the Teacher.
(c) **Adjustment :** then adjustment on the part of child begins.
(d) **Changes :** then changes in the behaviour of the child takes place.
(e) **Fixation or stabilization :** Later on these changes in the behaviour of the learner are stabilized.

11. **Learning is the product of the environment :** Environment plays an important role in the growth and development of the individual. Therefore, environment should be healthy and rich in educative possibilities.
12. **True learning affects the conduct of the learner :** Calvin describes learning as the modification of the conduct of an organism through experience.
13. **Learning is organizing experiences :** Learning is not mere addition to the prior knowledge, or mere acquisition of facts and skills through drill repetition rather it is reorganization of the experiences.

Check Your Progress

Q. What do you mean by Learning? What are the characteristics of Learning?

2.4.4 Factors Influencing Learning

Learning in human beings is influenced by a number of factors & the teacher must have an adequate grasp of these factors if he is to promote learning in his students. For the sake of convenience, these factors have been classified into four main categories. These are:

(1) Factors related to learner
(2) Factors related to task
(3) Factors related with the process of learning
(4) Factors related to the teacher

2.4.4.1 Factors related to learner/individual : Among individual variables are those variables which belong to the learner. These may be further classified as:

(i) Maturation : Learning depends upon maturation. If the individual is matured enough to learn a particular activity, he will learn effectively. If individual is not mature -learning will not be effective.

(ii) Readiness : If the learner is ready to learn particular activity, he will learn better and quickly.

(iii) Capacity : Greater the capacity for learning, better will be the learning.

(iv) Motivation : Motives like rewards, success, competition, level of aspiration, punishment are powerful incentives to the learner for better learning.

(v) Memory : A learner with good memory will learn quickly.

(vi) Attention and interest : If the learner has interest in the task he will learn that task with more attention.

(vii) Mental health : A child who is mentally healthy i.e. free from frustration and conflicts, anxiety, worries, will learn better.

(viii) Food and drugs : Poor diet adversely affects learning. Alcoholic drugs - tobacco & caffeine and such addictive items adversely affect learning.

(ix) Sensation and perception : Sensation & perception are the basis of all cognitive learning. The stronger the power of perception, the greater the amount of learning.

(x) Fatigue : Fatigue cause boredom, laziness, & hence has negative effect on learning.

(xi) Physical handicaps, defects & diseases -like visual defects of hearing defects, disfunctioning of glands, paralysis, tuberculosis, etc. have adverse effect on learning.

2.4.4.2 Factors related to task

(i) Difficulty of the task : Difficult tasks take more time to learn. Sometimes they discourage children.

(ii) Length of the task : Longer the task more difficult it is to be learnt.

(iii) Meaningfulness of the task : The more meaningful the task/material, the rapid will be the learning.

(iv) Pleasantness and unpleasantness of the task : Generally pleasant tasks are learnt quickly than the unpleasant tasks.

2.4.4.3 Factors related with process of learning

Woodworth had analysed the process of learning very carefully. He has enlisted the following steps in learning. The teacher will benefit, so will his students of the endeavours to check up his teaching procedures in the light of these steps.

1. Motivation within the Learner :

All purposeful behaviour and learning is the result of motivation. Motivation may be external, created by the teacher, and motivation may be internal. A combination .of the two is essential for effective learning. The teacher should make efforts to arouse inner motivation. In fact this is a very difficult task in the present context when students are lacking inner motivation for work. Unemployment and disregard to students merit at the time of selections for jobs and increasing use of unfair means in examination, which earn easy success for many, dampens the motivation of learners. Teacher has to fight against this menace of dying motivation.

2. A goal becomes related to motivation :

Goals are contributory to the learners motives. The task set up by the teacher arbitrarily and which has no relationship to the motives of the student cannot become the real goal, and therefore cannot assure the learner's spontaneous interest. Moreover, the goal chosen by the learner is not at once attainable. There are barriers in the way. This barrier may be due to lack of knowledge or skill needed to reach the goal. Low inteligence, specific aptitude, emotional blocking of the learner through worries and fears, poor teacher techniques and many other. It is the task of the teacher to ensure connection of the goals with learner's motives and remove the barrier which stands between the learner and achievement, of his goals.

3. Release of energy :

Once the goal becomes definite and clear and the barriers are perceived, automatically energy is released within the learner and he is prepared to act. When barriers appear insurmountable, they prevent release of energy and create tension in the learner's mind. If the tension is there in the mind, it is helpful because it organizes one's energies and enables the learner to make an efficient and vigorous attack on the, problem. Strong and excessive tension may discourage and disrupt the learner. The teacher has to ensure that the task he sets up is not beyond the reach and capacity of the learner. He must proceed from known to unknown. .

4. Line of action for reaching the goal :

Effective learning means the choice for a course of action towards the goal after

deliberation. Selection have been made, action towards the goal is attempted. Journey towards the goal may be appropriate if it involves some degree of success. If it enables you to go near the goal and gives you sense of satisfaction; reducing the tension at the same time. Tension is released in proportion to the satisfaction of the motive. All this shows the importance of setting up real and interesting goals for pupils. Realistic goals would mean more activity, more motivation, less tension, less disturbance and discouragement and less indifference on the part of the teacher.

5. Actions should be appropriate :

Actions and efforts which yield no satisfaction are dropped. They do not take the learner near the goal. The learner should be positively adapted to the correct lines of action and negatively adapted to the inappropriate behaviour, reaction or responses. It has been observed that the young student finds it difficult to distinguish between desirable and undesirable modes of behaviour. He seeks the teacher's suggestion which should be given at appropriate time and in appropriate manner. Teacher should not hesitate to do so.

In conclusion we say that teaching and learning proceed side by side. Teaching involves the task of causing the pupil to learn, it is stimulation and direction of learning. It is enabling the learner to modify his behaviour and made adjustments of his environment, it is guiding the learner's acitivities and his emotions. Teaching is a planned affair with a goal and purpose to guide its movement and pace, its content and form. Teaching helps the learner in his task of self-realization and fulfillment of his potentialities.

2.4.4.4 Factors related to the teacher

The teacher would make learning effective, if he attends to the following elements carefully:

1. **Whom to teach/who is to learn?** The child is to learn and therefore his interests, abilities and aptitudes have to be taken note of. It should be remembered that he is an active being & individual differences should also keep into consideration.
2. **Who is to teach?** The teacher is to teach. Therefore, he should present a good model of teaching.
3. **Why to teach?** The purpose of teaching should be clear in the mind of the teacher. Education should be taken in terms of 7 R's i.e. reading, writing, arithmetic, recreation, rights, responsibilities and relationships.
4. **What to teach?** There should be acquisition of the knowledge, skills & behaviour on the part of the learner.
5. **How to teach?** The teacher should be well versed with the technology & methodology of teaching.

6. **How to learn?** The teacher and learner must understand that leaning will take place through mutual cooperation. When a learner is motivated only then he learns maximum. Therefore, teacher has to provide such motivational conditions so that the learner is at his best.
7. **When to teach?** This is related with providing and creating motivational environment to the learner.
8. **Where to teach?** For imparting or for receiving education, teacher can use other agencies along with school as one of them.

2.4.4.5 'Trial and Error' Theory

This theory is also known as 'Hit and Miss' method and Theory of connectionism. E.L. Thorndike's famous experiments with cats and rats have thrown much light on the learning processes. In one of his experiments, Thorndike confined a hungry 'cat to cage closed by door which could be opened by a latch. Food was kept outside the door so that it could be within the sight of the animal. The cat tried to come out of the cage by biting, crawling, searching etc. After 60 seconds it succeeded in pushing the latch accidentally and came out . Thorndike repeated this experiment several times; On the 24th attempt the cat took only seven seconds to come out. Similar experiments were conducted on rats, monkeys, rabbits etc. Thorndike termed this method as 'trial and error' method because prior to the learning of a task, the animal made many trials before it has the right response . The preliminary responses were full of errors.

Thorndike concluded that when confronted with a problem situation the animal in the earlier stage makes a sense of actions and movements to achieve the goal. A large number of these movements are exploratory in nature. They are unnecessary and, to the observer, they seem to be lust blind efforts and random in nature. Gradually, with the repeated trials the unsuccessful actions are diminished and the successful actions are increased. It should be called learning by 'selection of the successful variant" for it is by the selection of the right way rather than by the elimination of the wrong one that few responses are learnt. The wrong one is usually eliminated because it cannot exist in the presence of the right one yet in hundreds of human activities, 'trial and error' method works most successfully and it is considered as one of the most significant aspect of animal: as well as human learning. Learning to play golf, to ride a bi-cycle, to do typing, to drive a car, to skate, to swim to plane wood, to write with a pen, to play upon musical instrument, to model with a clay lump and thousands of other human activities have the element

of error. In the learning of sports skills, this method plays an extremely important role. Novices try a number of method of kicking, hitting, throwing, catching the ball before they succeed in doing so correctly. In every-day life, we try many garments before we select one which fits us well, try many colours in painting before a matching is found, use many words to describe a thing before the right word is found, even though we do not lack expertness in these matters.

There are certain very subtle, as well as, very vital points involved in the basic tenets of this theory. It is necessary that these points be taken into account before any final judgement is passed on this theory first of all, by trial and error method, learning is not instant, it is gradual and a function of time. Those expecting immediate results would generally crticizing this method. If the individual is given sufficient time for exploration, learning will proceed satisfactorily. Secondly, the goal of the activity to be learnt must be clear and be in sight of learner. A clear goal or purpose normally invokes an effort response from the learner who tries to achieve it as early as possible. The total energy of the organism is mobilized for this purpose. Thirdly, the learner must be given opportunity to comprehend the situation as a 'whole' and not in fragments. Each skill action must be shown and presented as a 'whole'. The piecemeal presentation of the situation creates stumbling blocks in the way of learning to response. Fourthly, the earlier stage of learning is the stage of exploration which necessitates wastage of effort and energy because the individual himself is to 'find out' the successful variant' unaided. He is not guided, he is like a stranger who has to find his own way through the intricate lanes and bye-lanes. Fifthly, some precondition (s) must exist in the organism to receive the stimulus and try a response. For example, a satisfied cat would not make efforts to reach food, Lastly, in all types of learning trial and error is an essential element.

It trial and error is rationally analysed. We come to know that it is an essential ingredient of our natural behaviour rather than consciously devised method of learning . It is more a descriptive process of behaviour rather than a method. Establishment of the stimulus- response bond on satisfaction or annoyance and practice are the basic factors involved in trail and error method.

The theory has emphasized the role of motivation in learning. Students must see the usefulness of the lesson. The new learning should grow out of the previous knowledge. The lesson material should be arranged systematically and in an ascending order of difficulty . In additon this theory has emphasized the role of practice and reward and punishment in learning.

2.4.4.6 Learning by Conditioned Reflex/Classical Conditioning Theory of Learning

This is another important theory included in Association Theories of Learning. Learning by Conditioning of the reflex or conditioned Response theory was suggested by a Russian physiologist I.V. Pavlov. According to him, "Conditioned reflex produced by a stimulus for the original was incapable of causing this reaction but that has been substituted for originally adequate stimulus by a process of long association," In other words, conditioning the reflexes (innate response patterns) may be defined as the automatization of behaviour by repetition of stimuli which accompany a given response and which ultimately become causes for the behaviour which formerly they merely accompained . Conditioning consist of the substitution of what is called an inadequate stimulus for an adequate or natural stimulus for a given response. When conditioning is accomplished, the inadequate stimulus is sufficient to arouse activity as in the case of dog. (Pavlov's experiment with a dog).

An outstanding aspect of conditioning is association. Pavlov regarded 'conditioning' as a means by which not only normal behaviour could be studied but also an explanation could be given to the abnormal behaviour. S-R Bond is fundamental to conditioning theory. This is, in fact, a process by which habits are formed. Between the natural stimulus and natural response, un-natural stimulus is so daftly interposed that the result is natural response even in the absence of the natural stimulus. Pavlov made numerous experiments on dogs to establish and substantiate his findings.

In his words, "if a dog is given piece of meat to eat, one of the natural responses is that flow of saliva increased from the salivary glands. This flow of saliva is due to the natural connections, via the medulla, between the smell and the taste receptors and the salivary gland effectors. If now a bell is rung every time the dog is fed, the ringing of the bell eventually become an adequate stimulus for salivation so that the sound of the bell in the absence of meat will induce flow of saliva. The connection between the receptors for the sound and the effectors for salivation is not a natural one, it is a learnt reaction. The following chart represents, this situation:

S_1 (meat).....R_1 (Salivation, an original tendency)

S_2 (Sound of the bell) .....R_2 (response of sound, an original tendency)

S_1+S_2 (presented simultaneously).....R_1 (Salivary response) several trials.

S_2 (bell) .....R_1 (Salivation)

S = Stimulus R = Response

The sound of the bell leads to salivation, the salivary reflex is said to have become conditioned. At this point, it is necessary to know what conditioned means. When response for example, food, is a natural one (salivation), the reflex is said to be natural or unconditoned one, when however, it functions in response to an arbitrary stimulus, in the above case to the sound of the bell it is said to be artificial or conditioned. The unconditioned responses are more natural, permanent and regular forms of responses due to the natural growth of inherited tendencies of the nervous system. The conditioned responses are more temporary , individual, and learnt forms of behaviour due to connections, of the nervous system acquired during an individual's life time. As an over simplification, unconditoned reflexes are innate while conditioned responses are acquired depending upon the purpose and need of the situation. In the above experiment, salivation is the unconditioned response to food, the conditioned response to the bell. The sound of the bell is an unconditoned stimulus of the normal responses to sound and the condtioned stimulus for the salivary response. When food (natural stimulus) was removed the salivary response after many trials , went on decreasing and ultimately stopped . S (food), in Pavlovian explantion, is the "reinforcer". Conditoning would take place only when "reinforcer" is in the middle of the conditioning process i.e. S_2 (unnatural stimulus, bell) S_1 (food) and the response.

In numerous ways, human beings need conditioning of the innate reflexes. Most of the child's activites are of reflex type and their conditioning or training consists of helping the child to acquire control over them, for example, urination and defecation. Improvement of reaction time mainly depends on the conditioning, of the reflexes involved in motor activity.

Robb conveys that conditioning in assocation theory, is of two types- classical and operant. The example of classical conditioning has been described above with an illustration of the classical experiment on a dog's behaviour by Pavlov. In operant condtioning a response occurs without any prompting by experimenter. When the desired response occurs, it is reinforced. This increased the likelihood of the response theory in the educational field.

The application of the conditioned response theory in the educational field are numerous. Watson, the behaviourist, thinks that the principle of the conditioning is very important from the point of view of forming habits in children. It is habits that go to make one's character one's personality , in learning cycling, typing,

walking, running etc., proper conditioning of the reflexing is very important . We know that in the absence of the re- inforcer, is withdrawn. Good habits, difficult habits and initially painful response patterns are learnt by deliberate or natural conditioning of the reflexes.

Conditioning may be utilized for children in learning language, developing positive attitudes, values and sentiments and eliminating superstitions.

Educational field is replete with activities which are based on the motor activity of extremely complex nature. In skilled acquistion, the principle of conditioning of reflexes, is vitally important. Learning of various drills, dibbles, kicking, hitting, throwing etc. cannot be done without conditioning of the reflexes. More and more emphasis has to be place on the formation of good habits of executing various skill patterns.

To quote Robb again, "Critics of associationists views have been pointed out that if behaviour is a result of forces upon people, then learning is a matter of manipulating, someone must know how people should behave if we assume there is a proper response. Then the teacher or experimenter, assuming he knows the proper response, must connect it to a stimulus in order to changes in behaviour." Minor games, leadup games and drills of dribbling throwing and catching etc. have been devised keeping in view the theory of conditioning. Conditioning needs constant and proper association between the right stimulus and the desired response. Physical as well as a mental conditioning improves athlete's reaction time, precision of movement and neuro-muscular co-ordination. Complex and quick movement have to be practised for a sufficiently long time. Conditioning may also be called as 'adaptation'. Physical conditioning economises effort while mental conditioning aims at improving attention-span, developing confidence and becoming obvious of the outside influence in the activity in progress.

2.4.5 Summary

Learning occupies central place in the field of education. It helps to determine the behaviour of an individual. Learning is a focus of educational activities and programmes. Man's personality, his habits, interests, skills, knowledge, attitude, character, ambition etc. are largely the product of learning.

Learning is modification of behaviour through experience. There are various factors related to learner, teacher, task and process which influence learning a lot. The maturation of learner, his capacity, memory, attention interest, mental health and fatigue etc. are some of the learner's factors which influence leaning of the learner. Then difficulty of the task, length and pleasantness and unpleasantness of the task are some of the factors related with the task which influence learning. Factors

which are related with the process of learning also influence learning. These are, motivation within the leaner, goal related to motivation, release of energy, line of action to reach the goal and appropriate actions. A teacher can also make learning effective when he know whom to teach?, Who is to teach?, Why & What to teach?, How to teach?, and When to teach? etc.

So, we can say that learning is a progressive change in behaviour and it is a life-long process.

2.4.6 Key concepts

(1) **Behaviour :** Conduct or manners. Or Any manifestation of life is activity and behaivour is a collective name for these activities.

(2) **Learning :** Modification of behaviour through experience or acquisition of knowledge & skills.

(3) **Learner :** One, who is learning.

(4) **Modification :** The act of modifying change or alteration.

2.4.7 Self Check Exercise

Read the following statements carefully and mark them true or false

1. Learning is modification of experience. (True/False)
2. Fatigue is one of the learner's factor which influence learning.(True/False)
3. Learning is a relatively enduring change in behaviour which is a function of prior behaviour. (True/False)
4. Learning is passive and non-transferable. (True/False)
5. Learning is the product of environment. (True/False)
6. Length of the task increases learning. (True/False)
7. The more the task is difficult more will be the learning. (True/False)
8. The education should be taken in terms of 7R's. (True/False)
9. By creating motivational environment the teacher can enhance the learning of the learner. (True/False)

Ans. 1-false, 2-true, 3-true, 4-false, 5-true, 6-false, 7-false, 8-true, 9-true,

2.4.8 Suggested Questions

1. What are the factors which influence the learning
2. Discuss the Pavlov theory of learning
3. Discuss the characteristics of learning

2.4.9 Suggested Books

1. Aggarwal, J.C. - Psychology of Learning and Development
2. Suri, S.P., Sodhi, T.S. Dumral and Dumral - Psychological foundation of Education
3. Bhatia, K.K. - Bases of Educational Psychology
4. Mathur, S.S. - Educational Psychology
5. En.wikipedia.org
6. Books.google.co.in

B.Ed. PART-I

PAPER-II

LESSON NO. 2.5 **AUTHOR : Dr. MEENAKSHI SHARMA**

MOTIVATION : Meaning, Types and Techniques of Motivating the Learner

2.5.1 Objectives

After going though this lesson students will be able to known

1. The meaning of Motivation
2. Types of Motivations
3. Techiques of Motivations

2.5.2 Introduction

To make or to help the children in learning is really difficult. By and Large children are not much interested in study. Very special efforts have to make to create interest and unite students attention towards study and books.

Learning is associaed with many factors such as intelligence, need, desire, goal, likes and dislikes, interests, availability of good learning materials and techniques of teaching or modes of learning etc. Learning is a concomitant of perception and perception is need based . So need is an important factor in learning. Learning becomes automatic when there is need to learn something . If you will get a job of learning type-writing, you will automatically learn type writing. When a child understands the need behind the task of learning, he will learn the task naturally. This means that we have to make the individual conscious of the need for learning and thus motivate him for learning. Motivation initiates, promotes and accelerates learning. As a matter of fact motivation has been

called the heart of learning. Without motivation no learning takes place and motivation is required at all age levels. No teacher who hopes to promote learning can ignore motivation. Even in our homes when mother want to teach their daughters the house hold works, they motivate them by asking them to stitch frocks or cook cakes for their dolls or clean the house of their pet animals etc. How to motivate largely, depends upon what we understand by motivation.

2.5.3 Meaning:

The term 'motivation' has been derived from the Latin word 'movere' which means 'to move' It is a term used to cover all those internal conditions or stages which activate or energise the individual to a goal directed behaviour. When an individual is internally i.e. mentally moved towards doing something so as to achieve some goal, he is said to be motivated. According to Fredrick L. Modenoald (1965) motivation is an energy change within the person and is characterized by affective arousal and anticipatroy goal reaction. In other words, motivation makes a change within an individual and this change is connected with emotions and goals. Motivation is essential to the operation of organization of classroom activities.

Motivation begins with energy change in the person. The organic base for some energy change (hunger, thirst and sex for example) is desired from the physiological changes . For the psychological needs the exact organic nature of this energy change is not known.

Motivation is characterised by affective arousal. It represents the feeling state of the person. An individual feels like doing something.

Motivation is characterised by anticipatory goal reaction which means that the person makes responses when motivated. This ultimately results in the reduction of tension created by the energy change. When one is motivated he faces some tension and this tension is resolved only when goal is achieved. So one learns to be relieved from the tension.

According to H.W. Bernard, motivation refers to all those phenomena which are involved in the stimulation of action towards these goals.

D.O. Hebb, defines that motivation refers to

(i) Existence of an organised phase sequence.

(ii) Its direction and content.

(iii) Its persistence in giving directions for stablizing the content.

E.G. Murray has defined motivation as an internal factor that arouses, directs and integrates a person's behaviour.

From the above definitions it is clear that motivation is the impulsion based on a need to do something to satisfy that need.

2.5.4 Characteristics of Motivated Behaviour

(1) Energizing of behaviour; Motives energize the behaviour of organism. If we observe a child who is motivated to reach his goal, we find him

full of life and strength . The energy is supplied in proportion to the amount of energy output for a task.

(2) Behavioural vigour and efficiency.
Hebb says that efficiency and adequacy are increased in the state of motivation.

(3) Purposive and persistent

The behaviour in motivated state is goal directed and persistent. It may occur in a short sequence and extended periods of time. The behaviour in a motivated state of mind selects only such behaviour which is preferred by an individual as leads to goal realization.

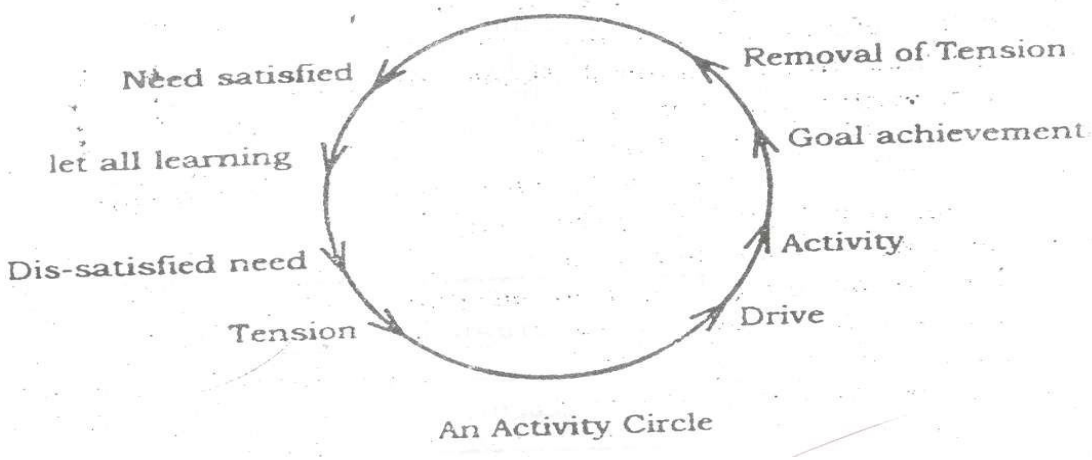
2.5.5 Motivation and learning

Learning results from action directed to the attainment of a goal which the learner usually perceives as satisfying a need. In all purposeful behaviour including learning four elements can be identified.

(a) There is a human organism with a unfulfilled or unsatisfied need.
(b) This dissaisfaction of need leads to drive a sort of movement which compels him to act.
(c) There are some goals which the organism thinks would satisfy the need, quench his thirst.
(d) There are some obstacles to be overcome. When goal is achieved, tension is reduced and need is satisfied.

The whole activity cycle can be shown as under :-

Dis-satisfied need creates tension: Tension produces a movement of a drive to act. The individual proceeds towards Goal achievement. When goal is achieved tension in removed.



An Activity Circle

From this it is clear that activity is basic to learning.

2.5.6 Need: Need occupies a very important place in the strucutre of education. The formulation of objectives, curricula, methods of teaching etc. are all dependent on the need. Need is a theoretical explanation of observed behaviour

and cannot be directly observed.

According to Tolman "A need is readiness of tendency to persist towards and perform consumatory responses. "He classified needs into three types.

(a) Primary needs or physiological needs such as hunger thirst, sex, sleep and air which are inherited.

(b) Secondary need such as affiliation, dominance, affection,, which are acquired and learnt.

(c) Tertiary needs as wealth and academic achievement.

According to Murray, "Need is a hypothetical construct. It is a resultant of forces. One need succeeds another."

According to Mursell needs are permanent trends of human nature which underlie human behaviour from birth to death under all circumstances and in all kinds of societies.

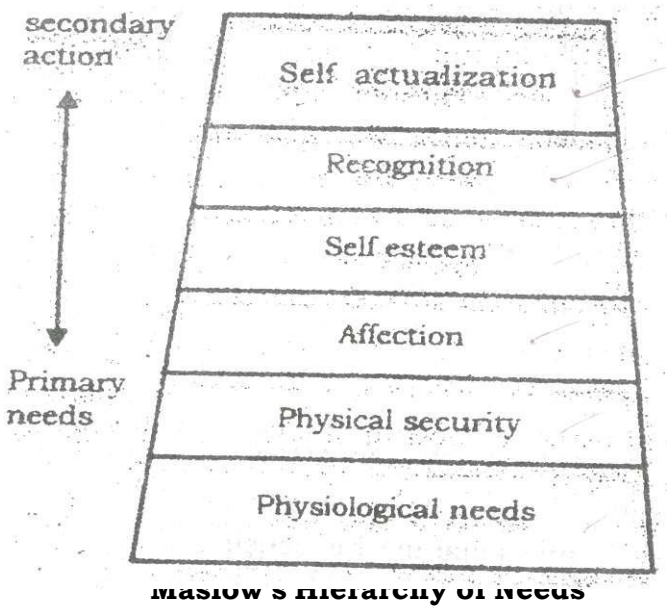
When we talk of needs in education we find needs to be interested, structural, physiological and psychological drives. A drive is an organised such as hunger, thirst and need for air. Drives occur periodically as a consequence of the organism's physiological process.

A motive is a drive to which a goal has been connected. For example when we say we are hungry, it only means we want to eat food. Motives represent a connection of response with drive. Basic drives are innate and motives are learnt.

All these needs energize , sustain and direct human behaviour.

2.5.6.1 Hierarchy of Needs: Maslow has given a hierarchy of man's needs. This means some needs are stronger than others. In order of their potency or intensity they are: Physiological well being, Safety, love, esteem, prestige and self-actualization.

A pictorial respresentation of Maslow's hierarchy of Needs



Maslow's Hierarchy of Needs

As the needs at the bottom are gratified the ones above becomes important . Thus First of all a man wants his physiological needs like food, thirst etc. to be fulfilled, then looks for security than affection, then self-esteem then recognition and finally self actualisation.

2.5.6.2 Educational Significance

Basic needs described by Maslow help in finding needs of students also.

1. Firstly, students also want their physiological needs to be fulfilled. They can only learnt if these needs are satisfied. Teachers should firstly try to locate such needs, satisfy them and then go further.
2. Physical security comes next. This refers to the health education of the students. The schools should take extra steps to ensure the health of individuals. It is not without reason that class rooms are made airy, well lit and ventilated and recess period is provided in the time table.
3. Affection is at the third step. Children want to give and receive affection. The parents and teachers should be extra careful in giving affection and love. Not only should they appear to be loving and affectionate, they should actually be loving.
4. Belongingness and self-esteem come at the fourth stage. It should be the function of the parents and teachers both to develop self-confidence in the child. For this responsibilities at school and home must be shared with children. Classroom failures and successes will also influence confidence. Partets must help children in their study and other school assignments.
5. Similiarly recognition, appreciation and prestige also motivates the individual.
6. The last stage is self-actualization. For this help the child for his fullest development, do not grude showing appreciation.

2.5.7 Intrinsic and Extrinsic Motivation

When the individual wants to learn, to do something for the sake of learning only then it is known as intrinsic motivation. A person who is intrinsically motivated performs an act because it gives him satisfaction and pleasure.

Extrinsic motivation is defined as a stage in which an individual does or learn or learn something, not for his own-sake out as a means of obtaining desired goals. When we learn something to earn, to get a reward etc. are only extrinsically motivated. But when we are motivated in the absence of reward or appreciation we are intrinsically motivated.

Intrinsic motvation is superior to extinsic motivation but it is sometimes difficult for the teacher to intrinsically motivate the child to learn. In those cases sensible extrinsic motivation is an acceptable substitute. We have to remember that extrinsic motivation surely leads to intrinsic motivation.

2.5.8 Motivational devices

Motivation is a powerful device in learning. But it is difficult to motivate all the

children by the same method. Teacher has to create needs for learning in their class in order to arouse motivation. Following are some of the steps which can be adopted to motivate children:

(a) specifying the goals.
(b) use of teaching aids-films, charts, models etc.,
(c) introducing awards, honours, prizes, medals, commendation certificates.
(d) judicious use of punishments and denials.
(e) employment of devices such as stories, puzzles, riddles, competitions, matches, comparisons, illustrations.
(f) bringing variety in teaching.
(g) public recognition of achievements.
(h) display of accomplishments, award of 'good', stars etc.

2.5.9 SUMMARY

The term motivation is derived from the Latin word 'movere' which means to move. It begins with energy change in person. The organic base for some energy change (hunger, thrust and sex for example) is desired from the psychology changes. According to H.W. Bernard, motivation refers to all those phenomena which involved in the stimulation of actions towards these goals.
Two types of motivation are there:
Extrinsic- is defined as a stage in which an individual does or learn something for the sake of obtaining desired goals.
Intrinsic is motivation is doing something for the sake of learning only.

2.5.10 Key CONCEPT

- Motivation- concept, needs, types and devices
- Educational significance

2.5.11 SELF CHECK EXERCISE (Trues/ False)

1. Affection is the third step where children want to give and receive affection
2. In Maslow's hierarchy of needs, self-esteem is secondary action.
3. According to Tolman, primary needs or physiological needs are hunger, thirst, sex, sleep and air
4. Dis-satisfied need creates tension

Answers: 1. True 2. True 3. True 4. True

2.5.12 SUGGESTED QUESTIONS

1. What is motivation? Discuss its relationship with learning.
2. What are needs? Discuss student's needs.
3. What are motivational devices? Explain them with the help of examples.

2.5.13 SUGGESTED READINGS AND WEB SOURCES

1. Bhatia , H.R. : A text book of Educational Psychology, 1977.
2. Chauhan, S.S. : Advanced Educational Psychology, 1987.
3. Maslow , A.H. : Motivation and personality, Harpet and Row, New York, 1954.
4. En.wikipedia.org
5. Books.google.co.in

LESSON NO. 2.6 **Author : Dr. Jasraj Kaur**

Learner with Special Needs (*Exceptional Children)* : Concept, Types-gifted, creative, delinquent, educationally backward–their identification, characteristics and education

STRUCTURE

2.6.1 OBJECTIVES

After going through this lesson students will be able to know -

- The meaning of exceptional children.
- Concept of giftedness, creativity, delinquency and educationally backwardness.
- Identification of exceptional children.
- Characteristics of gifted, creative, delinquent and educationally backward children.
- Education of these exceptional children.

2.6.2 MEANING OF EXCEPTIONAL CHILDREN

No two individuals are alike in this world. So in any class, we find all children are not alike. Those who are either above or below the average level are called "exceptional" children. Here exceptional means deviation from average children in any aspect of development. The class of exceptional children includes one brilliant as well as one feeble minded. The development of such children is influenced by the environment in their families, the community and the school.

2.6.3 TYPES OF EXCEPTIONAL CHILDREN

There are many types of exceptional children but here in this chapter we shall discuss gifted, creative, delinquent and educationally backward.

2.6.3.1 Meaning of gifted children

On the basis of their special abilities, even in childhood they perform many deeds which astonish their parents and others. In the opinion of *Terman* and *Merill*, children with an I.Q. above 140 can be called as gifted children. According to Kolesnik, "The term gifted has been applied to every who in his age group is superior in same ability which may make him an outstanding contributor to the welfare and quality of living in our society". Gifted children have special abilities so they make additional contributions to the development of the society.

2.6.3.1.1 Identification of gifted children : Gifted children can be identified by using following techniques :

(i) Intelligence tests: With the help of intelligence tests, we can find out intelligence quotient which is a clear proof for children's giftedness.

(ii) Achievement tests: They helps to indicate the range of the child's success and potential achievement.

(iii) Tests of special abilities: They are used to discover the innate talents and abilities of the gifted children.

(iv) Teacher's opinion: Teacher remains in contact with students, so he can judge their abilities.

(v) Parents' observation: Parents watch each and every moment of their children so their judgement can also be helpful in the identification of gifted children.

2.6.3.1.2 Characteristics of gifted children : A gifted child is one who shows a high potentiality to excel in various areas of life. They may be identified on the basis of certain characteristics.

- Gifted children normally receive higher grades
- They are more confident
- Their attitude is more positive
- They are more interested in studies

- They are also very good in sports
- They have multidimensional interests
- They are more aware of surroundings
- They have more enriched vocabulary
- They have more word fluency and clarity of expression
- They are of good sense of homour
- They have more ego-power
- They are socially admired
- They are curious by nature
- They have a desire to excel
- They are more social and emotionally stable
- They easily solve complex problems requiring abstract thought.

On the basis of above characteristics, the teacher can use various testing and non-testing devices to identify gifted children.

2.6.3.1.3 Education of gifted children : The following steps can be taken for providing fruitful and satisfactory education to gifted children.

(1) **Enriched curriculum**: Some psychologists opine the scheme of providing an enriched curriculum for the gifted children should be adopted. In the words of Kolesnik, "Enrichment implies that the child is given a greater variety of experiences of tasks at a more advanced level". It can be implemented horizontally or vertically. Fully equipped libraries and laboratories provide them opportunity to work according to their interests. Group activities as well as opportunities for independent work stimulates them for working on their own.

(2) **Special Schools and Classes:** Some of the psychologists favour the provision of special schools and classes for gifted children where they may be given the maximum and the best possible guidance.

(3) **Acceleration**: It is defined as progress through an educational programme at a faster rate than convention dictates. Selection for acceleration should be made on individual circumstances and all the facts should be kept into consideration.

2.6.3.2 Meaning of Creativity

Creativity means expressing new relationships among things or ideas. According to Guilford, creativity involves divergent thinking with respect to the traits of fluency, flexibility and originality of thought process. Torrence defined creativity, "As a process of becoming sensitive to problems, deficiencies,

gaps of knowledge, missing elements, identifying the difficulties, searching for solutions, making guesses or formulating hypotheses about the deficiencies, testing and retesting hypotheses, possibly modifying and retesting them and finally communicating results".

So creativity of an individual can be seen in the interaction of his intellect, personality, motivation and the biography.

2.6.3.2.1 Identification of creative children : We can identify creative children in the following way:

- By observing their behaviour
- By studying the cumulative record
- By giving informal tests
- By using standardized tests.

2.6.3.2.2 Characteristics of creative children : Creativity is based on divergent thinking of an individual. Following are some of the characteristics of a creative child:

- He is full of new ideas about things
- He is curious to know more and more
- He shows strong convictions in his beliefs and values
- He is flexible and open minded
- He invents things, create original stories, play-tunes etc.
- He concentrates all his mental energies on the task in hand
- He has risk taking capacity
- He is decision making, humorous, sensitive and responsible.

So students who possess the qualities of divergent thinking reasoning, imagination, able to redefine and reorganize the problem may be identified as creative.

2.6.3.2.3 Education of creative children : School can play an important role in developing a positive attitude for the development of creativity in students. Following educational measures can be helpful in development of creativity:

- Encouraging the spirits of inquiry among students.
- Healthy discussion should be encouraged.
- Full freedom should be provided to experiment with new ideas.
- Opportunities for the development of imaginative powers of the students.
- The teacher should make use of analogies to clarify difficult concepts, in teaching.

- Encouraging students to think over consequences.
- Encouraging students to evaluate themselves.
- Providing opportunities for developing divergent thinking.

As creative children are assets of society, so creativity among students should be developed to the maximum level.

2.6.3.3 Meaning of Delinquent Child

A delinquent child is one who has failed to internalize the code of conduct established by his parents or society. He fails to identify himself with the values of his family in particular and community in general and he seeks pleasure in violating the various norms & principles of morality and reality. According to Herbert Quay, "A delinquent child is one whose misbehaviour is a relatively more serious legal offence and which is inappropriate to his level of development and alien to the culture in which he has been reared".

2.6.3.3.1 Concept of delinquency : In the words of Bandura and Walters, "Delinquency is the manifestation of frustrated needs of the pupils or child which usually take the form of aggression".

Delinquency has been defined as an antisocial behaviour by **Hadfield.** Literally delinquency means to deviate or fall away from the normal path. The term 'Juvenile Delinquent', however usually relates to adolescents who are old enough to come under the purview of the juvenile courts; psychologically it is impossible to fix a definite age at which responsibility begins, if only because so much depends on mental age rather than chronological age.

2.6.3.3.2 Causes of Delinquency : Some of the causes of delinquency are briefly explained as below:

Home Environment

- Mutual relations of parents: Always quarreling parents would definitely make children delinquents.
- Poverty of parents: Poor parents cannot fulfill even legitimate demands of their children.
- Inability of parents: Inability for any reason will effect the rearing of children negatively.
- Illiteracy of parents: Illiterate parents are unable to understand their children's needs and aspirations.
- Lack of affection: Lack of affection and care in the family also makes children delinquents.
- Lack of recreation: Lack of recreational means at home have negative effect on the social behaviour of children.
- Lack of support: If support of family is lacking, children cannot make progress.

- Employment of parents: If both the parents are employed they can't give proper time to children.
- Company of Servants: Company of servants makes children delinquents. They learn immoral acts in their company.

School Environment

- Mutual Relationships: If there are unfavourable relations between staff members, teachers and principal and among teachers and pupils then it will negatively effect child's behaviour.
- Faulty Discipline: Too strict discipline sometimes spoils the children.
- Faulty Curriculum & Methodology: Faulty curriculum and methods of teaching do not serve the purpose for which they are meant. They spoil the child instead of improving him.
- Lack of Guidance & Counselling: Lack of guidance and counselling from teachers also negatively effect a child's social behaviour.
- Favouratism: Favouratism can create many complexes in the minds of children. It may discourage them in studies.

Social Environment

- Standard & Mode of Living: The standard of living, and mode of living has direct bearing on child's behaviour. An economically rich society will have less delinquents.
- Political Climate: Political indiscipline, corruption, police atrocities etc. have negative effect on a child.
- Social Aspirations: Sometimes too high aspirations by society may turn a child into delinquent.
- Social Disturbances: Wars, partitions, terrorism etc. may influence a child and make his behaviour delinquent.

After analyzing various environmental factors of delinquency it is advised to parents, teachers and social reformers to pay attention to these and remove these effectively.

2.6.3.3.3 Characteristics of delinquent children : Important features of delinquent behaviour are:-

- A delinquent child possess a tendency of acquisition i.e. he indulges in theft etc.
- He shows aggressive behaviour in his dealings. He is annoyed over small things.
- He is indulged into forgery i.e. He uses the signatures of others for immoral acts.
- He blames others for his own faults. He is not adjusted to his

family's values.

- He is generally a truant. He bunks classes for nothing.
- He is sometimes disturbed because of suppression of sexual desires.
- He is a maladjusted child who needs special care, education and proper treatment.

We may conclude that delinquency is a type of moral deficiency or behavioural maladjustment of an individual which makes his behaviour somewhat anti-social.

2.6.3.3.4 Prevention of Delinquency : The family, school and society can make the delinquents a normal child by following some needful methods and proper behaviour.

- In the family, children should be encouraged to develop good habits. Children should get emotional satisfaction an adequate love from their family members.
- Society can establish centres and play grounds for the entertainment of children. Provisions should be made for displaying educational films to children so that they may learn the higher values of life.
- The school can make its contribution towards preventing delinquency by providing proper arrangements for entertainment, well equipped library, impartial behaviour of teachers, democratic environment in the institution, guidance and counselling whenever necessary co-curricular activities, moral and religious education.

Intelligent teachers having balanced personality with positive attitude can make the delinquents a normal child.

2.6.3.4 Meaning of Educationally Backward Children

The children who fall at lower extreme of normal distribution of educational attainment trait, are known as backward. The causes of backwardness may be due to heredity and environmental factors. According to Cyril Burt, "The backward child is one who is unable to do the work of the class next below that which is normal of his age".

Some students may have general backwardness means unsuccessful in every subject whereas others may have specific backwardness.

2.6.3.4.1 Identification of Educationally Backward Children : Backwardness may be identified by employing formal and informal methods. Some of these are:

- Observation: Teachers and parents observe their pupils and

wards daily in classroom and at home.

- Intelligence tests: By applying intelligence tests, we can identify backward children.
- Achievement tests: These can be used to assess the level of achievement in school subjects.
- Personality inventory and case study: The maladjustment indicates backwardness. Case study can also be used for locating the backwardness.

2.6.3.4.2 Education of Educationally Backward Children : Some suggestions for education of backward children are given below:

- They require individual attention in every class. It is the responsibility of the teacher that he should help them to deal with them.
- The special classes can do a lot for them. Teachers should use appropriate methods and techniques for such classes.
- The special school can be established for such students. In such schools curriculum, objectives methods of teaching and teachers are to the managed according to their needs and problems.

In addition routine medical checkup, provision of handicrafts should be arranged for such children.

2.6.4. SUMMARY

Exceptional children are those who deviates from the normal or average children in mental, physical and social characteristics to such an extent that they requires a modification of school practices or special educational services in order to develop to their maximum capacity. They may be gifted, creative, delinquents or educationally backward. Every type of exceptional children should be identified as early as possible so that proper educational provisions can be made for them. Gifted children are those who are above average students. They have excellent heredity, high I.Q., need less guidance, have abstract thinking but socially and emotionally stable. Creative children are those who have uniqueness, fluency, flexibility and elaboration in their views and actions. We should provide psychological security as well as independence to our children so that they can become creative. Delinquency is an antisocial behaviour of children. The family, school and society can make the delinquents normal children by following some needful methods. Backward children are those who lag behind in their educational studies. There are more factors responsible for this backwardness. Education can be given through individual attention, arrangements of special classes, physical tests and provision of handicrafts.

2.6.5. KEY CONCEPT:

- Meaning of Exceptional C hil dren
- Meaning and charact eri stics of Gifted C hildren
- Meaning and characteristi cs of Creativity

- Meaning and characteristi cs of Delinquent C hildren
- Meaning and charact eri stics of Educational Backwar d C hildren

2.6.6. Self Check Exerci se

1. Gi fted children have _____ interest
2. children with creativity have the qual ities of _____, imagination, able to redefine and recognize problem .
3. D elinquency has been defi ned as an antisocial behavi or by _ ____
4. D elinquent child indulged into _____
5. Educationally backw ard children required _____ attention i n every class

Answers 1. Multi dimensi onal 2. Divergent thi nking 3. Hadfiel d 4. Forgery 5. Indivi dual

2.6.7 SUGGESTED QUESTIONS

Q1. Define exceptional children. How can we educate educationally backward children.

Q2. Write short notes on the following:
- Concept of delinquency
- Who are gifted children?
- Enlist various characteristics of a creative child.
- Enlist some preventive measures for delinquency.

2.6.8 SUGGESTED BOOKS

S.S. Chauhan : Advanced Educational Psychology
R.A. Sharma : Fundamentals of Educational Psychology
R.N. Sharma : Educational Psychology
Suresh Bhatnagar : Advanced Educational Psychology &
Anamika Saxena
Morgan, King, Weisz : Introduction to Psychology &
Schopler
En.wikipedia.org
Books.google.co.in

Mandatory Student Feedback Form

https://forms.gle/KS5CLhvpwrpgjwN98

Note: Students, kindly click this google form link, and fill this feedback form once.