3 Intelligence

Man is the most extraordinary living creature in the entire universe. In comparison to other living things it has got some special physical and mental capacities. As per the theory of evolution, a human brain is more developed in comparision to other animals. As a result he has mental capacity like reasoning, thinking, imagination, memory, creativity etc. Out of the various mental capacities that humans have intelligence is one of the most valuable asset.

Generally we use terms like sensible, clever, ability, acumen, caliber, sharpness, shrewdness, understanding, talent etc. as synonyms of intelligence. In our daily behaviour and communication we make use of these words again and again.

Intelligence is a complex mental process. It provides adequate understating about how to behave. Intelligence in not limited to a single activity but is associated with various activities tasks, situations. The daily activities like brushing, bathing, wearing clothes, remembering day-date – festivals, social relationships, aptitude in sports and competitions, solving simple or complex problems in life, to be able to understand the depth of scientific rules etc. are all related to intelligence. Intelligence is associated with physical, mental, emotional, social, political, scientific, cognitive etc. aspects of human behaviour.

There are various types of intelligence test developed in Psychology to measure the intelligence of an individual. On the basis of the score attained in an intelligence test, we can know about intelligence capacity of an individual. As per international standards intelligence can be classified as border line, dull, average, bright normal, superior or gifted in a scientific way.

Definition and Nature of Intelligence :

What is intelligence ? To know it more clearly and specifically, let us understand the definition and nature of intelligence.

1. Definition of Intelligence: Different Psychologists have tried to define intelligence from different perspective. In 1879 a German Psycholigst Ebbinghaus, had first tried to define intelligence on the basis of differences in two individuals. Intelligence is derived from Sanskrit word 'Budh'-metal. It also means to understand or attain knowledge. On its basis, intelligence means ability to understand or ability to gain knowledge.

The English word intelligence is derived from Latin word “intelligere’. Intelligere means to be able to understand. So intelligence also means understanding. The following are the definitions of intelligence.

“ Intelligence means the ability to understand or apperception of mind to know about an object”.

Sarth Gujarati (2008)

“ Intelligence means the ability to judge well, understand well and to reason will”.

Binet and Simon (1904)

" A person is intelligent to the extent that he has the ability to think abstractly".

Ierman (1916)

" Intelligence is the aggregrate or global capacity of individual to act purposefully to think rationally, and to deal effectively with the environment". **Wechsler (1939)**

" Intelligence is the ability or skill to solve problems which are considered important in one or more cultural settings or to create valuable things". **Gardner (1986)**

"Intelligence comprises the mental abilities necessary for adaptation to as well as shaping and selection of any environment context."

Sternberg (1997)

"Intelligence is the sum total of all cognitive processes. It entails planning, coding of information and attention, as well as arousal." **J.P. Das (2004)**

2. Nature of Intelligence

On the basis of the different definitions given by Psychologists, the following is the nature of intelligence

I. Cognitive Differences : Sum total of mental powers

Intelligence is a sum total of different cognitive processes. It includes mental processes like reasoning, understanding, imagination, decision making etc. So we can say that intelligence is a global mental ability.

II. Ability to think abstractly : Intelligence means to be able to think abstractly. Abstract reasoning or thinking is such a mental ability that with its help an individual can easily understand verbal, mathematical and scientific rules. Certain words like justice, honesty, nobility can not be put in a concrete way or in the form of a figure. So intelligence is the ability to make one understand the meaning of such abstract words.

III. Ability to solve problems : An intelligent individual by his insight can find solution for his problem. He can also take help of past experiences in finding solution for a problem. Practice, training and experience can help in bringing a change in behaviour in an effective manner.

IV. Setting up goals and capacity to make decision

Because of intelligence an individual can have goal oriented behaviour. Realistic goals can be set up by the individual by properly evaluating the situations, by reasoning effectively and in making proper decisions related to his daily work.

V. Helps to make adjustment with environment

With the help of intelligence, we can understand our environment correctly and can select our behaviour which is appropriate to the requirements of the situation.

3. Normal Probability Curve:

Intelligence means ability to gain knowledge solve problems and do abstract reasoning because of learning and understanding. We can observe individual differences in measurement of intelligence. For measuring intelligence, Psychologist William Stern in 1912 has given the concept of intelligent quotient

IQ which is as follows :

$$\text{IQ (Intelligence Quotient)} = \frac{\text{MA (Mental Age)}}{\text{CA (Chronological Age)}} \times 100$$

Levels of intelligence can be known on the basis of intelligence quotient. Terman was the first one to give classification of intelligence.

What is the level of intelligence in general population can be studied on the basis of intelligence test. On the basis of different studies done by psychologist, we get the following curve which is "bell shaped".

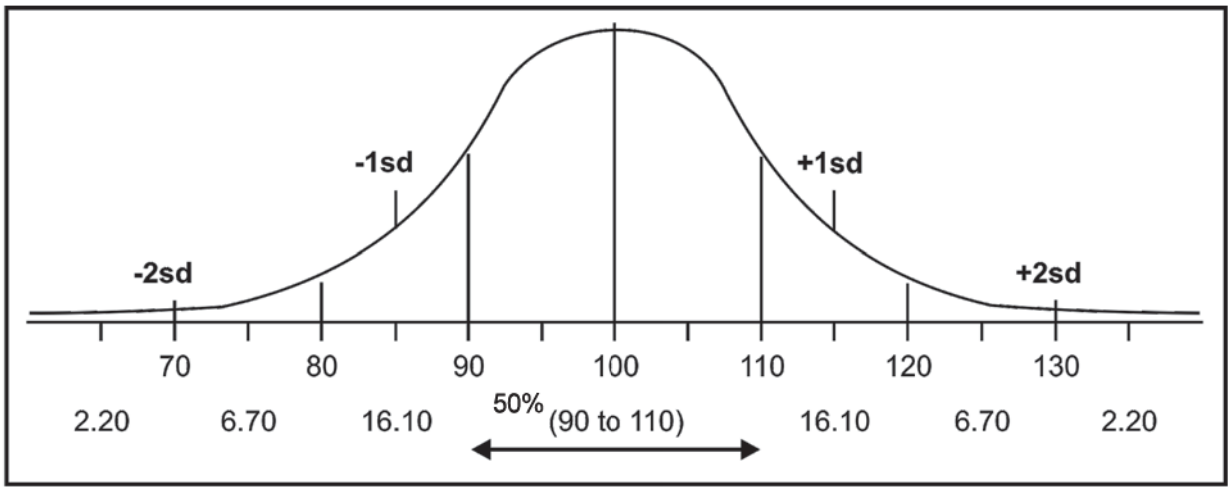

Figure 3.1 : Normal Probability Curve of Intelligence

In general population, we find differences in the level of intelligence which is classified on the basis of their intelligence quotient which is a bell shaped curve. This curve is also called as normal probability curve of intelligence. As per the above curve it is observed that majority of the people in the society possess an average intelligence. 50% of the general population come under average intelligence (90 to 110). Whereas the population of dull normal or bright normal is quite less. Mentally challenged and gifted or superior intelligence population is just 2.2%. Distribution of IQ scores is given in table 3.2.

Contemporary Approaches to Intelligence

Intelligence is a sum total of different cognitive processes. An individual adapts or makes adjustment with his environment on the basis of his intelligence capacity. Intelligence is inter–related. Various studies have been done by Psychologists on its nature, measurement, development and the way it works. Different psychologists have tried to study intelligence in depth and than given their views in the form of the following approaches.

The following are the contemporary approaches to intelligence :

1. Spearman's two factor theory
2. Sternberg's Triarchic theory
3. Guilford's three Dimensional theory
4. Gardner's theory of multiple intelligence
5. J. P. Das PASS theory

Now we will get detailed information about these approaches.

1. Spearman's two factor theory

British Psychologist Charles Spearman in 1904 presented the principle of nature and power of intelligence. It is known as "Two factor theory".

According to spearman intelligence is based on two factors :

I. General intelligence

II. Special intelligence

General intelligence in known as G- Factor and special intelligence is known as S- Factor. The cognitive abilities or intelligence in an individual is the result of G – factor and S- Factor Entire level of intelligence is the sum total of G – factor and S – Factor. Both have their specific characteristics which are as follows –

- **G - Factor general characteristics :**

  - It is inborn ability.
  - It is general mental power or energy.
  - it is consistent.
  - There are individual differences observed in G – factor.
  - This ability is used in all the daily activities.
  - Individual who have high G – factor are more successful in life.

- **S – Factor general characteristics :**

  - This factor is not inborn, hence it is learned.
  - It is obtained from the environment and it is a learned ability.
  - In one individual, various activities differences have been observed in S- factor.
  - Differences are observed in the S – Factor of any one individual and their degree is also different. All the special abilities are not of the same level like language ability, mathematical ability are not same.
  - With education and training, change can be brought in it to a certain extent.

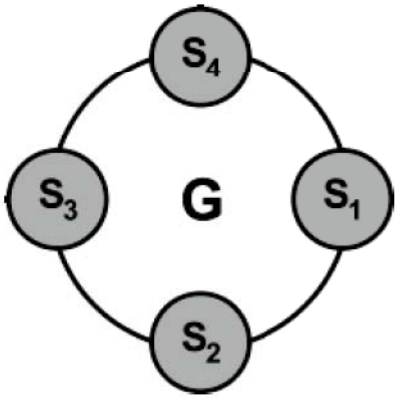

Figure 3.2 : Spearman's Two factor Theory

2. Sternberg's Triarchic Theory

Robert Sternberg in 1985 gave the theory of intelligence. According to him intelligence in practical environment in an individuals life is the most central mental activity. A person by using his mental ability tries to select factors from the external environment, likes it to make adequate use of it than is able to achieve success in life. After 1990, Sternberg changed the name of his theory and called it "Theory of successful intelligence."

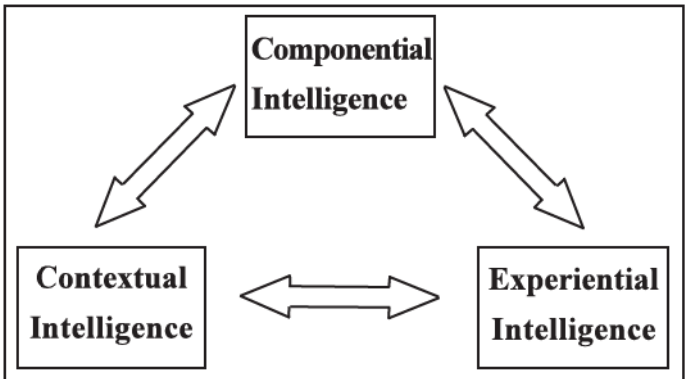

Figure 3.3: Sternberg's Triarchic Theory

According to him, three aspects have to be kept in mind in order to understand intelligence.

I. Componential intelligence

II. Experiential intelligence

III. Contextual intelligence

I.Componential Intelligence: In this type of intelligence abstract and analytical thinking is possible. It is also called as Analytical intelligence. Various cognitive aspects like analysis, Critique, Comparison, Evaluation, Assessment, Reasoning etc are part of componential intelligence.

II. Experiential Intelligence: In this type of intelligence, there is the ability to combine factors or elements to create new thoughts, innovative creations and ideas, insight and also be able to solve problems by accumulating facts. It is also called creative intelligence because it has got the ability to go beyond the given data, generate new interesting ideas. People who are creative and involved in fundamental modifications are likely to have high experiential intelligence.

III. Contextual Intelligence: A person with high contextual intelligence can rapidly adopt to any situation or environment (social, economical, emotional, cultural etc.) in his practical life and can skillfully find a solution to the problem. In this type of intelligence an individual tries to overcome his weakness and has the ability to bring change in the situation by making optimum use of the environment. It is also known as practical intelligence people with high contextual intelligence have more practical knowledge.

3. Three dimensional theory of Guilford:

J. P. Guilford criticised spearman's two factor theory and said that intelligence is made of two factors only but it is a combination from many factors together. Each factor represents a specific mental ability and is also independent of each other. So it can be said that intelligence is a combination of many factors. e.g, all the parts of the body and organs are different from each other in their look and functions but they have specific functions too. Yet their coordination and joint functioning in the body give rise to different body processes.

The theory given by Guilford to understand intelligence is called three dimensional theory. According to him the different factors of intelligence can be grouped in three dimensions :

1. Operation
2. Content
3. Product

According to Guilford, an individual's mental processes have got the central place in operations. Mainly five mental abilities are included in it. Evalvuation, convergent thinking, divergent thinking, memory and cognition.

In content he has included five aspects – Visual, Auditory, Symbolic, Semantic and Behavioural.

Output, magnitude – result or product are all interrelated. They are distributed into six parts :- Units, Classes, Relations, Systems, Transformation, Implications.

Guilford's theory of intelligence is three dimensional but there is inclusion of many factors in it. According to him there are 150 factors in intelligence.

Factors in intelligence. = Operations × Content × Product
= 5 × 5 × 6
= 150

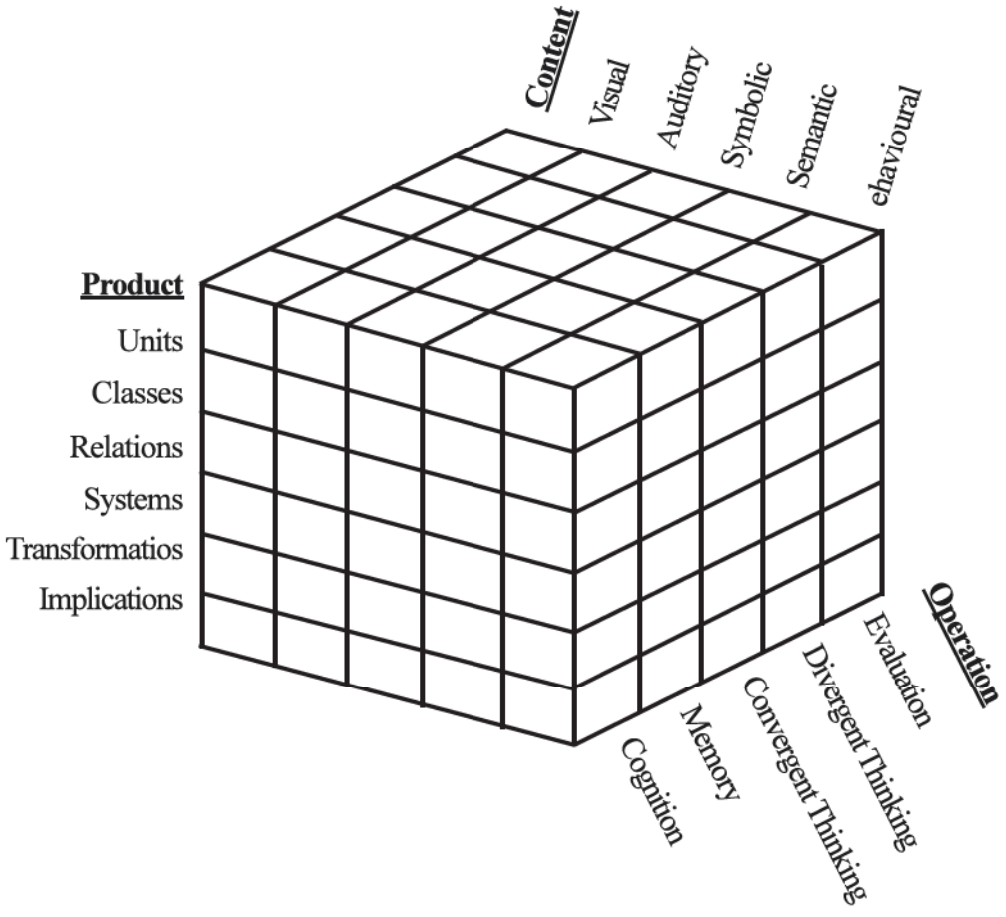

Figure 3.4 : Guilford's Three Dimensional Theory

4. Gardner's Theory of Multiple Intelligence

Howard Gardner in 1983 gave his views on intelligence. According to him intelligence is not a single measure of abilities. There are different factors in intelligence. The theory which he has given to understand intelligence is called "Theory of multiple intelligence."

According to Gardner, intelligence, plays an important role in making an individual, understand his environment and also develop his perspective. He has suggested eight types of intelligence. In any one individual, all these eight types are not seen in equal degree. A person uses the type of intelligence which is appropriate to the situation or context which has arisen before him. e.g, A student when in class uses his linguistic intelligence, logical – mathematical, intelligence, when he is on the ground he uses bodily-kinesthetic intelligence or to understand teachers-elders-ideal person etc. interpersonal intelligence is used.

The following are the eight types of intelligence suggested by Gardner :

I. Linguistic Intelligence : This type of intelligence is used in tasks like speaking, listening, reading, writing, understanding complexity of language etc. It is expressed in the work of writers, literary figures, salesmen, members of editorial staff of newspaper, magazines, announcers etc.

II. Logical – Mathematical Intelligence: This type of intelligence is expressed in reasoning and arguments, use of signals and symbols and in computational work. Such type of intelligence is higher among logicians, advocates, judges, detectives, scientists, statisticians and accountants.

III. Spatial Intelligence : Such intelligence is used in forming, modifying and using mental images, also making movements in three dimensions of space viz. left – right front – back, up- down. Drivers of train and automobiles, navigators of ship, aircraft pilots, engineers, architects, sculptors, painters, surgeons etc. have a higher level of spatial intelligence.

IV. Bodily – kinesthetic Intelligence: Such intelligence is needed for making simultaneous and compatible movements of hands, feet, head, torso, fingers etc. and for developing their dexterity. So it is essential for sportsmen, craftsman, surgeons, dancers, actors etc.

V. Interpersonal Intelligence : This intelligence is used in understanding the nature, habits, likes, dislikes, attitudes, feelings, emotions, motives and personality of other people. Therefore teachers, trainers, salesman, politicians, social workers, priests etc. have it to a greater degree.

VI. Musical Intelligence : Such intelligence is used in identifying and discovering the volume, pitch and special tones of various singers or musical instruments. Singers, players of musical instruments, music composers, conductors, directors and appreciator of music have it to a higher degree.

VII. Intrapersonal Intelligence : With the help of this type of intelligence a person can achieve self – understanding about feelings, emotions, aptitudes, attitudes, prejudices, beliefs etc. It is useful for developing self – insight and self – actualization.

VIII. Naturalistic Intelligence:

This type of intelligence is used in understating various natural objects, animal species, plants and trees and the variety of natural phenomena. Farmers, breeders, animal keepers, hunters, adventurers, jungle travellers, forest personnel, students of botany and zoology possess such intelligence in higher degrees.

5. PASS Theory of J. P. Das

Jagannath Prasad Das (J. P. Das) and his associates have opposed the theory of G – Factor. According to experimental studies and research experiences, he presented the view that the formation of the human skulls and the processes in it play an important role for cognitive abilities. He has supported the views of Neuropsychologist for intelligence. According to them the structure of the brain is extra ordinary. The centres of the brain independently perform a particular mental activity. Yet all these centers in the brain are functionally interrelated.

Students, in Std. XI we have studied that brain is divided into two hemispheres. They are called the left hemisphere and the right hemisphere. Visual, auditory, olfactory etc. centres are situated in a specific part of the brain. If the specific part of the brain is damaged than it will create an obstacle in doing the mental activity associated with it. For example suppose a specific part or centre of the left hemisphere of the brain is damaged than the individual will have problem in language speaking and writing.

J. P. Das and his associates strongly believed that the extra ordinary structure of the brain is closely interrelated with cognitive ability of an individual. The theory presented by him is called as "PASS Theory". In this theory four main cognitive abilities are included. They are

P - Planning

A - Attention Arousal

S - Simultaneous processing

S - Successive processing

I. Planning: With the help of congnitive ability we can decide how to solve our problems and than also change our behaviour accordingly. It also helps in setting up goals, evaluation of the result, use of responses or feedback and so on. For this type of cognitive activity, the frontal lobe of the brain is responsible.

II. Attention Arousal: In this type of cognitive ability an individual decides on which stimulus from the environment he will pay attention and which stimulus he will ignore. People who suffer from ADD ie. attention deficit disorder are deficient in this type of cognitive ability. Attention and excitment are related to brain stem and thalamus in the brain.

III. Simultaneous processing: In this cognitive ability, different stimulus are joined together to form one complete situation. The whole process takes place at the same time. For understanding language this ability is inevitable. For eg. What is my mother's father's son called as? (Ans: Maternal Uncle) this neural activities occur in the occipital lobe and parietal lobe of the brain.

IV. Successive Processing: The ability to process the stimulus one after another. This ability is specially seen while reading a printed sentence, we attend to the words in succession. Even while writing a sentence, we write one word after another. For this frontal lobe and temporal lobe play an important role.

Measurement of intelligence : Intelligence Tests & Classification

1. Measurement of intelligence – Explanation of formula: Intellengence is the most extraordinary ability of an individual.After studying the various theories of intelligence now let us understand about measurement of intelligence; it is important to understand mental age and "Intelligent Quotient" for understading measurement of intelligence.

I. Mental Age : "Mental age of a person is his level of mental development relative to the environment in which he lives".

Let us understand it with an example. The child whose intelligence is to be measured, its age by birth has to be considered and than the test should be selected. To decide the mental age the number of correct answers given in a test are taken into consideration. For each correct answer to a test item, two months mental age is assigned. For every test there are six questions. While giving the test, if the child is able to give all correct answers to the test of the higher age than his age. Then that should be considered the basic age.

From the table given below let as understand with example of Standford Binet test.

Table 3.1 Measurement of Mental Age as Per Standford – Bitnet Test

Age of the child	**Total Questions in Test**	**No of right answers given**	**Each correct answer is given two months**	**Total** MA
Intelligence test of 8 yrs. All questions are correct base year.	06	08 x 6 = 48	48 x 02	96
9 yrs	06	03	03 x 02	06
10 yrs	06	02	02 x 02	04
11 yrs	06	01	01 x 02	02
12 yrs	06	No correct answers	00	00
			Total Mental Age	**108**

The child's chronological age is then compared with its mental age. A bright child's mental age is higher than his chronological age. A retarded child's mental age is lower than his chronological age.

- **Intelligence Quotinet – IQ**

The concept of intelligent quotient to given by Stern. An individual's level of intelligence can be

known from his IQ score. The formula for finding IQ is as follows :

$$\text{Intelligence Quotient (IQ)} = \frac{\text{Mental Age (MA)}}{\text{Chronological Age (CA)}} \times 100$$

For example, a child's chronological age is 7 years and 6 months i.e. 90 months where as its mental age is 108 months. Now lets calculate with the help of the above formula.

$$IQ = \frac{MA}{CA} \times 100 = \frac{108\ (MA)}{90\ (CA)} \times 100 = 120$$

But now days with modern technology, there is no need to find mental age yet the Intelligence Quotient (IQ) of the individual can be known.

2. Intelligence Test :

The tests that are used to measure intelligence are called intelligence test. IQ can be measured by either an individual test or a group test. An intelligence test which can be given to only a single person at a time is called individual test of intelligence. Test which can be administered to hundreds of individuals simultaneously is called a group test. IQ can also be measured with either verbal or non verbal test. A test containing only written questions to which a person has to give written answers is called a verbal test. A test in which a picture or a diagram is presented or motor task in allotted, the person is told to do something specific, where use of words is minimal is called non-verbal test or performance test of intelligence.

Let us now gain knowledge about some of the important tests. :

I. Standford – Binet Intelligence test :

This test is basically used to measure the intelligence of children. Binet and Simon developed the first individual test of intelligence in French in 1905. Professor Terman of Stanford University of U.S. 1916 prepared English adaptation of Binet – Simon and published it as Stanford – Binet test. It is also called as (SBIS) Stanford – Binet Intelligence Scale.. The 1916 test was revised in 1937,1960,1973 and 1986.

In earlier versions only a general composite score was obtained to get IQ. In 1986 version apart from overall score separate scores are obtained for verbal reasoning quantitative reasoning abstract/ visual reasoning and short term memory. This test is used world wide to measure intelligence of children upto 18 years of age.

II. Wechsler Scales:

Along with Stanford – Binet test, Wechsler intelligence scales are also used to measure individual intelligence. It is an individual test. This test measures intelligence from children to adults. Different tests have been prepared for different age groups.

(a) WAIS – Wechsler Adults Intelligence Scale – This test is used for age group 16 years to 64 years. In this test we can get overall score and even verbal and performance score.

The Adult Intelligence Scale has got 11 subtests out of which six are verbal tests and five performance tests. The verbal tests were of Information, Comprehension, Arithmetic, Digit Span,

Similarities and Vocabulary. The performance subtests were of picture arrangement, picture completion, block design, object assembly and digit symbol. In 1981, a revised form of WAIS was released which is today known as WAIS – R.

(b)WISC – Wechsler intelligence scale for children. It tests intelligence of children between 6 to 16 years of age.

(c) WPPSI – Wechsler preschool and primary scale for intelligence. It is used for testing children of 4 to 6.5 years of age. They give score of overall intelligence and also of verbal as well as performance score.

Thus, we can say the Wechsler Intelligence scale is a great contribution to measurement of intelligence.

III. Raven's Intelligence Test

Raven's Intelligence test is free from the effects of language and culture because it is a non verbal group test typically used in educational fields. It is also called as Raven's Progressive Matrices (RPM). In 1936, John, C. Raven prepared this test.

It is basically used in measuring abstract reasoning. It is the most common and popular test administered to groups ranging from 5 years olds to the adults . It is made of 60 multiple choice questions, listed in order of difficulty. In each test item, the subject is asked to identify the missing element that completes a pattern or a figure. Many patterns are presented in the form of a 6 x 6, 4 x 4, 3 x 3, 2 x 2 matrix. For people with different abilities, different types of tests have been prepared. The following figure gives us the idea about the test.

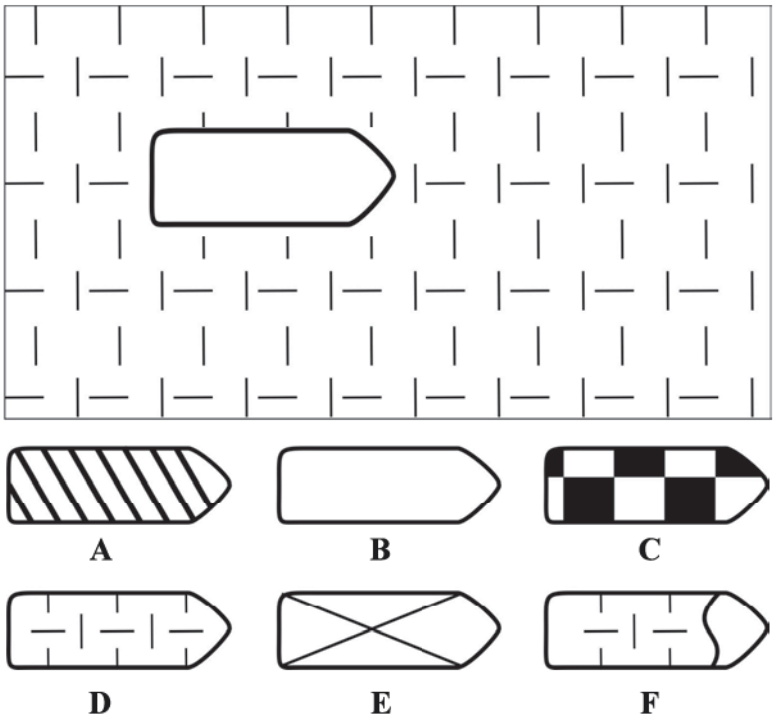

Figure 3.5 : An example of Raven's Intelligence Test

In this way Raven's test presents test items in order from simple to complex.

IV. Kaufman Intelligence Test

American Psychologist Professor Alan. S. Kaufman became world famous because of his intelligence test. He developed the original Kaufman Assessment Battery for children (KABC) and several other psychological and educational tests. He has also developed Kaufman Brief Intelligence test (K – BIT) and also prepared its second edition which is very important. For Adults measurement of intelligence he has prepared Kaufman Adolescent and Adult. Intelligence test (KAIT). The revised edition of his tests was published in 2004-2005.

Along with intelligence test, Kaufman has also prepared test of educational achievement.

3. Distribution of IQ

I. Table of mentally challenged to gifted: Individual difference are observed in IQ scores. Generally you will find that about 2 percent of people in the general population have an IQ above 130. Another 2 percent have IQ below 70. Descriptive labels and proportion in population for different IQ levels are as follows :

Table 3.2 : Distribution of IQ Score

Range of IQ	Description	% in Gen. Population
Below 70	Mentally challenged	2.20
70 to 79	Borderline	6.70
80 to 89	Dull Normal	16.10
90 to 100	Average	50.00
110 to 119	Bright Normal	16.10
120 to 130	Superior	6.70
130 & above	Gifted Intelligence	2.20

As per the above table, there is a possibility of change in intelligence depending upon time, place and situation. Mental retardation is the cause of intellectual deficiency.

II. Gifted:

(a) Nature and Identification of Giftedness

We use words like genius, talented, extraordinary etc. for such gifted children. A person having very high or exceptional mental ability through heredity is called a gifted person. Many psychologists have given the definition of gifted child. Such talent of (gifted ness) can be seen in all people from different socio-economic strata and cultural groups.

In present time, giftedness is defined as superior ability in any worth while line of human endeavour, including moral, physical, emotional, cognitive, social, intellectual or aesthetic life. Terman in 1925 began a study of such gifted people. Their high cognitive ability was measured by such intelligence tests.

According to Joseph Renzulli, giftedness depends on high intelligence high creativity and high motivation.

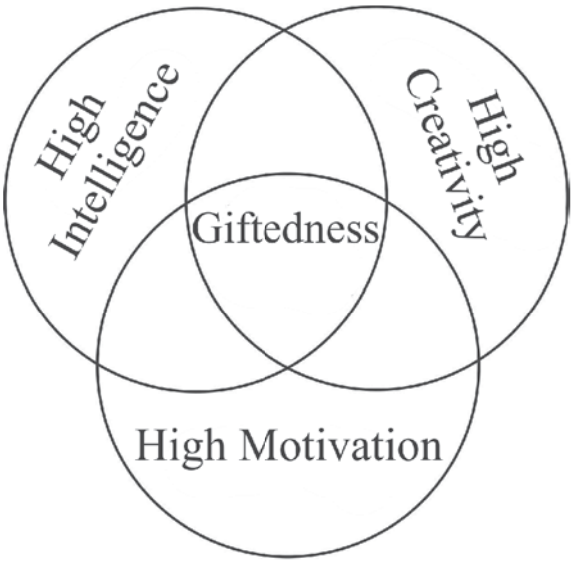

Figure 3.6: Aspects of giftedness

Merely having cognitive abilities is not giftedness but the nature and organization of abilities compose giftedness. In comparison to others such children are highly exceptional. They have high self-efficacy and self-esteem. Such gifted people work more hard to get name and fame. This is a natural gift which is found in all socio-economic groups of the world.

- **Identifying the gifted person**

A gifted person can be found out by various means. At present, intelligence tests and achievement tests are more frequently used for that purpose. At some places, a specific IQ score is taken as a base, eg. a person with IQ above 130 is considered to be a gifted person.

Recently the following types of data are taken as indicators of giftedness :

- His IQ in a individual or group test of intelligence.
- Teacher's judgment about his abilities and grades given in school.
- Parent's judgment and evaluation through interview.
- Appraisal of his social and emotional maturity.

To recognize gifted children other factors like adjustment, his ambitions, self-evaluation, strength of motive etc. are also informative.

(b) Characteristics of gifted children

Gifted children have high level of cognitive intelligence and extraordinary mental capacity. Some of the major characteristics are as follows :

- High level of self-pride and self-efficacy.

- They are creative and innovative.
- They have good insight to solve problems.
- Ability to transfer skills to new problems and solve it.
- They are more matured and developed than their own age group people.
- They have creativity in fields like writing, music, art, design etc.
- High self – efficacy, can evaluate their own work by reasoning.
- Intrinsically motivated to achieve and get pleasure from work.
- They have high selfe steem because of high level of intelligence.
- They are introverted and so prefer solitude.

III. Nature, Characteristics and Types of Intellectual Deficiency

Intellectual Deficiency is called as mental retardation. As intelligence of such children is very low, they face a variety of additional challengers from the environment.

According to American Psychiatric Association (APA – 1968) mental retardation is defined as follows – "An intelligence test performance which is two or more standard deviation, below the mean accompanied by limitations in adaptive functioning such as failure to cope with the common tasks of daily living appropriate to one's age and situation".

Normally, People with below 70 IQ cannot cope with daily activities of life and so are considered as retarded. They are different from normal individuals.

The American Association on mental retardation and the American Psychiatric Association have developed norms and diagnostic schemes to find the level of mental retardation.

(I)Such mental deficiency has four levels :

(A) Mild : A mildly deficient person has IQ between 50 and 69.

(B) Moderate : A moderately deficient person has IQ between 35 and 49.

(C) Severe : A severely deficient – person has IQ between 20 and 34.

(D) Profound : A profoundly deficient person has IQ below 20.

(II) Characteristics of Intellectual Deficiency

Characteristics of the persons of above four types are as follows :

Table : 3.3 Levels of intellectual deficiency

Type of Function	Mild 50-69	Moderate 35-49	Severe 20-34	Profound Below 20
Self help skills	Feeds and dresses himself. Cares for own toilet needs.	Has difficulties. Needs training. Can learn adequate self help skills.	Partial skills Some can care for limited personal needs.	No Skills

Speech Communication	Is receptive, expressive. Language is adequate. Understands communication.	Is receptive, expressive language is adequate. Has problems in speech.	Good receptive language, limited expressive language.	Limited receptive language, poor expressive language.
Academic skill	In optimal learning environment, can go upto third to sixth grade (Std).	In optimal environment can go upto first or second grade std. Few academic skills	No academic skills	No academic skills
Social skills	Can learn to adjust quickly. Has friends.	Capable of making friends, but has difficulty in may social situations.	Cannot make friends. No social interoactions.	Nosocial interactions, not capable of having real friends.
Vocational adjustment	Can hold a job. Is competitive to semi – competitive. Primarily can do unskilled work.	Can work in a sheltered environment. He usually needs consistent supervision.	Generally, no employment Usually needs constant care.	Not possible
Adult living	Usually marries, has children. Needs help during stress.	Usually does not marry or have children, is dependent.	No marriage or children. Is always dependent on others. Life span is shorter.	Not possible

The IQ ranges mentioned above for various levels of deficiency are not to be taken rigidly. How does the individual perform in his daily life is also important in determining whether he is mildly, moderately, or severely/ profoundly deficient in intelligenence. The final decision about level of retardation is based more on a person's skill in functioning in daily life rather than on IQ range.

Exercises

SECTION - A

Choose the correct option from the given below and rewrite the answer:

1. Who has given the formula for measurement of intelligence?

   (A) Binet (B) Wechsler (C) Stern (D) Raven

2. Who has given the three dimensional theory of intelligence ?

   (A) Thurston (B) Guilford (C) Spearman (D) Gardner

3. Which lobe of the brain performs the cognitive activity of "Organization"?

   (A) Temporal (B) Occipital (C) Parietal (D) Hypothalamus

4. Who was the psychologist who first tried to define intelligence on the basis of individual differences?

   (A) Ebbinghaus (B) Terman (C) Binet (D) J. P. Das

5. Under which IQ score do average individual come ?

(A) 120 to 130 (B) 90 to 109 (C) 70 to 79 (D) 80 to 89

6. While calculating mental age, how many months are allotted to each correct answer?

(A) two (B) six (C) three (D) four

7. Who first presented in English the Stanford Binet test of intelligence?

(A) Binet (B) Prof. Terman (C) Simon (D) Wechsler

8. What was the IQ score of Mentally challenged children?

(A) 130 & above (B) Below 70 (C) 80 to 89 (D) 110 to 119

9. When was Raven's intelligence test created?

(A) 1920 (B) 1940 (C) 1936 (D) 1967

10. Who started the study on gifted individuals?

(A) Simon (B) Renzulli (C) Terman (D) Raven

SECTION - B

Answer the following questions in one or two sentences each :

1. By which name the graph of classification of IQ in general population is known?
2. Who gave the two factor theory of intelligence?
3. In which type of intelligence there is power of abstract and analytical thinking?
4. What is Guilford's theory also known as?
5. Who gave the theory of intelligence on the viewpoint of Neuropsychologist?
6. Which other name is intelligence quotient known as?
7. What is individual intelligence test?
8. What is a verbal test?
9. Give the full form of RPM.
10. What is the IQ score of gifted children?

SECTION - C

Answer the following in about 30 words :

1. State the factors and mental characteristics of Guilford's three dimensional theory.
2. What is the meaning of the word intelligence?
3. Explain what is interpersonal intelligence?
4. Which are the contemporaries approaches to study intelligence?
5. Explain what is experiential intelligence?

6. Define mental age.

7. Explain with example formula of IQ.

8. Give information about Wechsler intelligence scale for children.

9. What is the full name of K – BIT? What is the usefulness of this test?

10. According to Renzulli, giftedness depends upon three aspects? Explain.

SECTION - D

Answer the following in about 50 words :

1. Explain the normal probability curve of intelligence.

2. State the three aspects of Sternberg's triarchic theory and explain any one.

3. State the characteristics of intelligence as per Gardner and explain linguistic and spatial intelligence.

4. Explain musical and naturalistic intelligence.

5. State the table of distribution of IQ score in general population. .

6. Explain how mental age is calculated.

7. Explain Wechsler Adult Intelligence Scale.

8. Which techniques can help to recognise gifted individuals in today's world?

9. Explain any two types of mental deficiency.

10. How are the academic and social skills of average intelligent individuals?

SECTION - E

Answer the following in about 80 words :

1. Explain the characteristics of giftedness.

2. Explain Gardner's theory of multiple intelligence.

3. Give any one definition of intelligence and explain the nature of intelligence.

4. Explain the general characteristics of G and S factor of Spearman's two factor theory.

5. Explain J.P.Das "PASS Theory".

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