At the middle of the line will be the individual who is average in that trait which is being measured. In actual measurement of the traits by rating scale many types of errors are committed. One such error is the generosity error. This means that the raters are liable to put their acquiantance on the more desirable side of the average. In this respect, some raters may be more generous than others. But this error can be corrected by statistical means provided the same rater rates a larger number of individuals.

A second error which can also be committed is known as the "halo effect". If an individual creates a favourable impression by excellence in one trait, one is more inclined to rate him near the top in every other trait without further discrimination. Similarly, if the subject has created a bad impression at one time the rater finds it quite difficult to shake off that impression when he is rating in various other traits.

The advantages of using such scales are also many. First of all through a rating scale, the intermediate degrees of a trait can be better expressed. Secondly, judgements of two or more rates can be pooled and averaged. If the rating is to be done by a single rater only there is every possibility that the results may be affected by prejudices, but if there are many raters, the prejudices of different raters will often be in different directions and thus, will neutralize each other. In this way, a fairly unbiased average rating can be obtained. Apart from neutralizing prejudice another advantage of having different raters is that they observe the subject in different situations and get different impressions of him. In the final rating, all these are combined and so a better and more correct picture of a particular trait of the individual is obtained.

The 'validity' of these methods cannot be easily checked. The observer's own bias, prejudice etc, will have influence on the final rating. The observer will like to gauge others' personality traits on the basis of his own personality. However, if there are many observers and other independence judgments are pooled together, the conclusions drawn may have enough validity.

The reliablity of ratings can be checked by seeing how closely different observers working independently agree in rating the same individual. Fairly good reliability can be obtained if the rating scales can be carefully prepared and the raters employed are well trained and have sufficient acquintants with the persons judged.

7.9 THE CLINICAL METHOD

The clinical method is primarily used to collect detailed information on the the behaviour problems of maldjusted and deviant cases. The maladjustment may be in the form of anti-social behaviour, emotional disturbances or in the area of learning and backwardness in school subjects. The main objective of clinical method is to study individual case or cases of group to detect and diagnose their specific problems and to suggest therapeutic measures to rehabilitate them in their environment. To collect complete data pertaining to a case, it utilizes various

techniques to compile relevant information which has some direct or indirect bearing on the specific problems of the case. The case is studied intensively in temporal sequence from birth of the individual to the present manifestation of the behavioural problems in overt activities.

The objective of the clinicican is to dive deep into the unconscious of the individual to pinpointedly locate the underlying causes of maladjustment and to suggest remedial measures. The complete and detailed study of a case may involve the use of observation, interview, medical examination and use of various tests of intelligence, personality, aptitude and interest etc. The clinician collects the material about the case in totallity. The past and present experiences, conditions in home, school and society are given due importance. Information from all sources is pooled together in a sequential order to prepare a comprehensive case history and locate the causes of maladjustment, clinicians generally use two different procedures to develop case study which are described in brief as follows :

7.9.1 The Clinical Case study or Case History

This method is specifically followed in learning difficulties, emotional disturbances, delinquencies and other behaviour problems. This techniqe has been borrowed from medical science in social science. The psychologist or the teacher as the case may be collects detailed information on the problems of a maladjusted or deviant case and analyses and interprets the data to find out the causes of the problem. The complete information of past history and present conditions is collected. The development history is reconstructed after the events from the memories of the case (individual), his family and friends. The preparation of a case study isnot the work of a single individual but the combined venture of social worker, teacher, parents, medical men and psychologists. In preparing a clinical study the information is collected from the following sources :

1. **Preliminaly information :** Name, age, sex, parents; age, education, occupation, income, number of children, social status.

2. **Post history :** Condition of mother during pregnancy, any incident—child's development after birth-physical mental, emotional, social-illness, relation between parents and other members of the familly, achievement of the child, parent's death, birth order, etc.

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

   (i)   **Physical :** Results of medical examination of any diseases.

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

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

   (iv) **Emotional :** Anxiety, fear, temperament, attitude.

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

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

We have given above a tentative list of various sources from which information may be collected to prepare a case history. The sources of information can vary in individual cases depending upon the type of behaviour problems of the case. Briefly we can summarize that case study method helps to understand the root cause of maladjustment and is a very valuable method in suggesting remedial measures for the rehabilitation of maladjusted cases.

7.9.2 Limitations of Clinical Case Study :

1. In the preparation of a case study, the clinician collects descriptive account of the individual from his past life and present experiences. The accounts given by the individual, parents and friends may or may not be true since all the disadvantages of crude observation and aneodotal report are involved. The information is not verifiable and is highly subjective. In India, parents, particularly illiterate, hide the defects and problems of their sons and daughters and exaggerate their qualities if there is any. Information supplied by them may hardly be relied upon to reach some definite conclusions. The veracity of the subject, his memory, embellisments of vivid details and so on can influence the case history.

2. Complex behaviours are observed under complex conditions, some of them in the past and in spite of his clinical insight the observer has no guarantee from his procedure that the events and the uniformities observed are relevant and crucial ones. Some striking aspect of the case may distract his attention away from others that may be more critical but less spectacular and there is nothing inherent in the method to prevent this error.

3. The third limitation involves the question of theoretical interpretation of the data. The clinician sets the stage for his investigation according to the theoretical position he espouses (Freudian vs Rogerian) and often has to make his inter pretation after the event of observing. Since his observation is likely to be coloured by his theoretical preference, so, too are the conclusions.

4. The procedure is largely intuitive and impressionistic. Interpretation may depend on the aspects of the case that make the bigger impact on the observer as positive instances. There is nothing about the method to minimize the common sources of errors.

7.9.3 Developmental Case study :

In developmental study of genetic method as it is usually called two approaches are generally followed to collect the data :

(a) Longitudinal approach : In this approach select a sample of children (from birth to maturity or of any specific age level) and observe their developmental characteristics continually from year to year. Ideally it would necessitate observation for 24 hours a day, year in and year out but in practice this is not possible for the clinician to devote so much time to record observation. Developmental studies on animals have been conducted but their results

can not be generalized for human beings. Continuous developmental studies are time consumling so psychologists record substantial segments or sampling or behaviour throughout the principal developmental periods of the child. Tests are applied and assessment is made at regular intervals. This technique can be used to study physical, mental, language, interest, emotional, and social developmental characteristics of children.

(b) **Cross-sectional approach :** The second approach is cross-selection in which we select sample fron different age levels to study specific aspect of development e.g. we study reading interests, play activities or emotional and social characteristics of children of different ages. Both approaches have their advantage and disadvantages.

7.10 The Interview

Interview represents a mixed bag as an assessment technique, since there are many types of interview which are used for varied purposes. Maccoby 1954 defined interview as "The interview is a face to face verbal interchange, in which one person, the interviewer attempts to elicit information on expression of opinion or beliefs from another person or persons. Generally most of the selections for different posts and admissions in various courses are made on the basis of interview. It is one of the most simple and widely used techniques of personality assessment. Our opinion regarding one's personality is formed on the impression of the performance he makes in interview. In addition to academic record in the selection of candidates for jobs and admission, we assign weightage to the performace in interview. It is the cheapest means of evaluating one's personality.

7.10.1 Types of Interview :

(a) **Free Interview :** In such interview, there is no limit on the area and field of subject-atter to be asked from the interviewer. The interview may freely roam over a wide variety of topics t· get general impression of the knowledge of the subject along with his way of expression and use of language. The interviewee has to ask leading questions. He says as little as possible.

(b) **Non-directive interview :** Carl Rogers has stressed the importance of non-directive interview to get more and more information about one's phenomenal world. Such type of interview is valuable to get deep information. An atmosphere of peace and confidence is created to facilitate the subject to express the facts of his behaviour and the truth about his attitudes, conflicts and other problems. Generally this technique is used by clinician to obtain deep information from patients.

(c) **Standardized structured interview :** In order to reduce the unreliability and bias of interviewers, standardized interview technique has been developed in recent years. In this technique, the questions are predetermined and the same or similar questions are uniformally asked to all the subjects. A standard condition is set for all the interviewers. Surveys on the reliability of standardized interview technique show that this technique yields higher agreement

between interviewers. The only difficulty is that this technique does not allow for a free interchange of views between interviewer and the subject on the problems of the subjects unique feelings. Interview is the most important technique to elicit personal information for several purposes such as job, admission, mental disturbances and research etc. but its worth depends on the experience and skill of the interviewers. The first requisite condition of interview is to establish perfect rapport with the subject so that he may express his feelings freely. The personality of the interviewer can influence the performance of the subject in the interview.

Though recently video-tape has been introduced to compile interview data to facilitate the systematic analysis of the total interview including non-verbal communication, speech and relationship to the interviewer, but still his personality characteristics influence his decision. Interview works better when used in conjunction with other devices.

7.11 Summary

1. Educational Psychology is comprised of two words : 'psychology' and 'education'. Psychology is the science of behaviour of the leaving things and education is meant for the modification of such behaviour. So educational psychology is a scientific study of human behaviour which is understood and predicted by education to achieve goals of life.

2. Educational Psychology is applied to the educative process from birth to death of individual. The scope of educational psychology includes learner, learning process and learning performance, intterlinked with teaching material methods and skill of the teachers i.e. what to teach, when to teach, how much to teach and how to teach.

3. Educational psychology has contributed to the theory of education and to practice of education. Regarding its contribution to theory of education, it contributed in understanding developmental characteristics, the nature of class-room learning, individual differences, effective teaching methods, problems of children, knowledge of mental health, curriculum construction, measurment of learning outcome, research guidance for the education of exceptional children, helps to develop positive attitude, and understanding of group dynamics.

In practice the educational psychology deals with the problem of discipline, use of audio-visual aids, schools and class administration, curriculum, co-curricular and extremientation activities, use of innovation technique and production of standard text books.

4. The main objects of educational psychology are (i) to provide teachers with some basic skills related to teaching, and various problems of teaching, learning process, (ii) to help teachers to understand the scientific knowledge and (iii) to inculcate in teachers a spirit of inquiry for their professional growth.

5. The rating scale of educational psychology is a technique designed to make estimates of personality characteristics a little less subjectively and little more accurately than the usual methods of estimating and judging personality subjectively. There are several types of rating scales such as checklist, forced checklist, self rating devises, Q sorting technique and graphing rating scale.

There are various advantages of rating scales. First of all through a rating scale, the intermediate degree of a trait can be better expressed. Secondly, judgements of two or more rates can be pooled and averaged.

6. The case study of educational psychology is specifically followed in learning difficulties emotional disturbances, delinquency and other behaviour problems. The preparation of a case study is not the work of a single individual but the combined venture of social worker, teacher, parents, medical men and psychologistee. Case study method helps to understand the root cause of maladjustment and is a very valuable method is suggesting remedial measures for the rehabilitation of maladjustment cases.

There are several limitations of case study. They are as under :

(i) Here theinformation is not verifiable and is highly subjective.

(ii) There is a change of error because complex behaviours are observed under complex conditions.

(iii) The third limitation involves the questions of theoretical interpretation of the data.

(iv) The procedure is largely intuitive and impressionistic.

7. The interview as a tool of education of Psychology is also important. The interview is a face to face verbal interchange, in which one person, the interviewer, attempts to elicit information on expression of opinion or beliefs from another person or perosns. There are several kinds of interview, like free interview, Non-directive interview and standardized interview.

7.12 Key words used

Individual differences	material	validity
constant	contemporary	biological
inheritance	development	adjustment
adequate	behaviour	systematic
contribution	research	childhoc 1
techniques	eliminate	acquainted
knowledge	maladjustment	fundamental

guidance,	education	contribution
organization	attitude	activities
adaptability	dynamics	discipline
traditional	philosophical	assessment
reliable.		

1.13 Questions for Exercise

1.13.1 Short answer type questions

1. Define educational psychology and explain its nature.

Ans.   See 7.2, 7.3 and 7.4

2. Explain the scope of educational psychology.

Ans.   See 7.5

3. Explain any one type of rating scale.

Ans.   See 7.8.1

1.13.2   Long answer type question :

1. What do you mean by educational psychology ? Describe its scope and importance.

Ans. See 7.4, 7.5 and 7.6

2. Evaluate the methods of rating and ranking as method of educational Psychology.

Ans. See 7.8

3. Explain different types of rating scales.

Ans. See 7.8.1

4. Evaluate case study as a method of educational psychology ?

Ans. See 7.9.1 and 7.9.2

5. What is an interview ? What are its types ? Explain.

Ans. See 7.10 and 7.10.1

7.14   Suggested reading

1.	Chauhan, S. S	:	Advanced Educational Psychology
2	Skinner, C. E.	:	Educational Psychology
3.	Mathur, S.S.	:	Educational Psychology
4.	Sulaiman, & Sinha. R.K.	:	Adhunik Siksha Manovigyan

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Measurement of Intelligence, Aptitude and Achievement

Lesson Structure

8.0   Objective of the Lesson

8.1   Meaning of Measurement

8.2   Tools of Measurement

8.3   Features of Binet's Scale

8.4   Stanford Revision of Binet's Scale

8.5   The Wechsler Scale

8.6   Difference Between WAIS and Stanford Binet's Scale

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8.13   Comparison of Individual and Group Test of Intelligence

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8.17   Measuring Aptitude and Interest

        8.17.1 Concept of Aptitude

        8.17.2 Implications of Measurment Aptitude for Teachers

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        8.17.4 Uses of Aptitude Tests

8.18   Intelligence Test and Aptitude Test

8.19   Relationship Between Intelligence and Achievement

8.20   Summary

8.21   Key Words Used

8.0 Objective of the Lesson

In this lesson the learners will learn about the meaning, nature and measures of intelligence, aptitude and achievement. Besides the two main types of intelligence i.e. Binet Scale and WAIS, Performance tests of intelligence, its types, advantages and limitations will also be discussed. In addition group test and individual test of intelligence, their comparison, advantages and limitations will be focussed upon similarly meaning, nature, methods of measurement and uses of aptitude test will also be discussed. Moreover, a difference between intelligence test and aptitude test will be presented.

8.1 Meaning of Measurement

Measurement means finding out the quantity of a thing or smallness or beigness of it or knowing how much more or less it is in comparision of others. This is done in the case of any type of measurement whether we are weighing a bag of wheat or are evaluating the achievement of the students of a class. We weight the bag or wheat in 'kilos' but in evaluating abilities we have to pay attention to the marks obtained by a student in an examination.

Thorndike says, "Anything that exists at all exists in some quantity, and anything that exists in quantity is capable of being measured." This means that we can measure anything which is found in some quantity. Hence, we can measure every type of ability. It is another thing that our method of evaluation ability etc. may not be fully reliable. But since it can be measured, every teacher must pay attention towards its evaluation.

The accuracy of every type of evaluation, depends on the thing which is to be measured. Some things, as a bag of wheat, can be measured easily, but to measure some others is very difficult, such as, the measurement of interest. In measuring some of the things we do not at all require reliable instruments of measurements, and our measurement, to the extent is possible to measure that thing or object. But there are certain other things to measure for which we require precise and accurate tools of measurement. For example, measurement of achievement is required to be done with accuracy and reliability because though this we will be able to assess as to how far the instructions given by the teacher have been successful.

The construction of tools of accurate measurement depends on two facts : (i) Knowing precisely as to what is to be measured, (ii) Constructing or obtaining such measuring tools that the thing can be measured as best as possible. It can be said that the tools of measurement depends upon what is to be measured and how it can be measured. This determines as to what type of tools are to be constructed for measurement.

8.2 Tools of Measurement

What we can measure through tests is to be clearly determined. Suppose we want to measure achievement, intelligence and aptitude etc. We require tools of measurement. We can also divide the tools of measurement on the basis of these abilities. These measurement tool for such case may be classified as follows :

1. Intelligence test
2. Aptitude test
3. Achievement test

The first scale to measure intelligence was produced by Binet and Simon in 1905. This scale consisted of thirty items arranged in order of increasing difficulty. Sample items of the scale are given below :

1. Visual co- ordination
2. Recognition of food
3. Naming of objects designated in a picture
4. Suggestibility
5. Definition of familiar objects.

The 1908 Binet-Simon Scale

The limitations of the first scale were identified and removed in the revised scale of 1908. The scale was revised on more representative sample of children. The items have been grouped at the appropriate age lelvels from 3 to 13 years. Test items of age 3 and 8 years are given below :

Age 3 Years :

1. Points to nose, eyes and mouth.
2. Repeats two digits 3,5
3. Repeats sentences of six syllables.
4. Enumerates objects in a picture
5. Gives family name.

Age 8 years :

1. Reads a passage and remembers two items
2. Adds up the value of 5 coins.
3. Names four colours.
4. Counts backwards from twenty to zero.
5. Writes short sentences from dictation.
6. Gives differencess between two objects.

The 1911 Revision of the Binet Scale

The 1903 revision created interest among psychologists of the USA, England and Switzerland. They adopted the scale in their countries and gave valuable suggestions from the improvement of the scale. Binet incorporated the suggestions in the revised scale of 1911. He died the same year. Some sample items of 1911 scale are as follows :

Age 6 years :

1. Distinguishes between morning and afternoon.
2. Difines names of familiar objects in terms of use.
3. Copies a diamond.
4. Counts thirteen.
5. Distinguishes between picture of ugly and pretty faces.

Age 8 Years :

1. Gives differences between two objects.
2. Counts backward from 20 to 0.
3. States omissions from unfinished pictures.
4. Knows the data.
5. Repeats the digits.

Age 10 Years :

1. Arranges five blocks in order of weight.

8.3 Features of Binet's Scale

Although successive revisions differed from one another and from the original Binet-Simon scale but there is a body of features that characterize all versions of the revised scales of Binet-Simon scale. Following are important features :

First, they are scales. This means that the items and tasks are grouped on the basis of their difficulty beginning with easy items. The tester asks harder and harder items as the test proceeds. A child's score chiefly depends on how far up this ladder he can go rather than how fast or fluent he is.

The second feature of the revised Binet's scales is that they yield a general global measure of intelligence rather than an analysis of separate special abilities.

The third is that they are grouped by age-levels and measure mental growth of the subject.

The fourth characteristic is that they are given individually by a skilled examiner and require high standard of proficiency, and finally, the system of scoring in all Binet's tests is tied to the age norms. A child's mental age (MA) indicates the age group of which his performance would be typical.

8.4 Standord Revision of Binet Scale

L. M. Terman of Stanford University revised and modified original Binet-Simon scale in America according to the needs of American Culture in 1961. This revision had the greatest impact on the field of testing and became most widely used and influential test of intelligence in America. No new principles were introduced except the concept of intelligence quotient (IQ) developed by stern. L.M. Terman and his co-workers conducted research for a number of years on normal, defective and superior children and adults. The 1916 scale includes 90 items, ranging from 3 years to 14 years of age. Of these 90 items, 54 were adapted from 1911 Binet scale, 5 from earlier Binet scale, 4 from other American tests and 27 new items were added.

8.5 The wechsler scale 1939

The 1937 Stanford-Binet scale, in spite of its merits, was not particularly well suited for work with adults. It was not standardized to any individual over 18 years of age in obtaining the I.Q. It used the same CA as the divisor for all individuals over 16 years, instead of having separate age norms, with an increasing use of intelligence tests (IT) with adults, there was a great need for an individual test standardized and constructed for adults. The Wechsler-Belleve scale was published in 1939 for this purpose. The scale was revised in 1955 and the new version was named as WAIS Wechsler Adult Intelligence Test. The WAIS retains the same formal and many of the items of the original scale but was standardized in a much more careful fashion. The age ranges from 16 to 64 years.

The scale consists of the following sub-tests which fall into two broad categories : (a) verbal tests, (b) non-verbal performance tests :

(a)   The **verbal test** contains the following types of items.

   (i) Vocabulary, a straight forward vocabulary test.

   (ii) Information

   (iii) Arithmetic

   (iv) Comprehension

   (v) Digit span

   (vi) Similarities

(b)   The **non-verbal test**, consists of the following :

   (i) Block design

   (ii) Picture arrangment

   (iii) Object assembly

   (iv) Mazes or mazes

   (v) Picture completion.

8.6 Differences between WAIS and Standford-Binet Scale

There are some differences between WAIS and Standford - Binet scale.

WAIS is a point scale rather than a mental age scale. The items are not grouped in terms of mental age. Points are given for correct.

Second difference is that in Stanford Binet scale certain types of items are interpersed throughout the test, occurring on different levels. But items of like kinds are grouped together on the WAIS form sub-tests. For example, on the Stanford-Binet test, repeating digits consists of two digits at the 2½ years and increasing in difficulty found at various age levels until 9 digits are required at the superior adult level, in contrast, on the WAIS all the memory tests for digit age grouped together as on sub-test.

The third difference is that WAIS has separate age norms for adults. On the SB, all individuals above the age 18 would be treated a similar manner in terms of computing I.Q. Thus people of various age levels would be treated with 18 years old. If mental age reached a peak at this age and then remained constant, perhaps no harm would be done by this procedure. But this does not seem to be the age several studies have indicated some rise in mental ability at various ages after 18.

The WAIS consists of 11 sub-tests which are gouped into two scales. The verbal scale has 6 sub-tests. The second scale, called performance scale consists of 5 tests.

COMPARISON BETWEEN AGE SCALE AND POINT SCALE :

Binet test	Point- scale (WAIS)
1. It is multiple group, age or year, scale.	1. It is single graded test scale.
2. Selection is made by relation of successes by age.	2. Selection is made by function measured.
3. Test items are varied, unrelated and ungraded.	3. Test items are Graded as to be available for wide range of ages.
4. The test is internally standardized and non-flexible.	4. The test is externally standardized and flexible.
5. All or non-adjustment.	5. More or less judgements.
6. It is qualitative evaluation.	6. It is quantitative evaluation.
7. Measurements only slightly amenable to statistical treatment.	7. The test scores are wholly amenable to statistical analysis.
8. Tests weight equally.	8. Tests weight unequally.
9. Implicit assumptions, that of appearing functions.	9. Implicit assumptions that of developing functions.

10. Measurements for different ages relatively incomparable.	10. Measurements for different ages comparable.

8.7 Performance Tests of Intelligence

A performance test is one in which the subject has to perform some thing or to manipulate some concrete materials without much use of the language ability. There are some categories of people and children who cannot be tested with the help of verbal tests of intelligence. Performance tests are useful for the following categories of children and people.

(1) **Deaf and Dumb :** Those children or people who cannot hear or speak, can be tested with the help of performance tests. The directions can be given in Pantomine with a minimum use of language.

(2) **Illiterates :** Illiterate adults and children who cannot write or whose language development is deficient may be tested with the help of performance tests of intelligence.

(3) **Shy and withdrawn children :** Children who are shy or fear for face to face interaction with the tester may be tested.

(4) **Educationally deficient :** Children who are educationally deficient take interest in concrete material and its manipulation can be tested.

(5) **Foreign children :** Children of foreign countries who do not understand the language may be tested with performance tests.

Generally, performance tests are used to supplement other tests of intelligence. Performance tests provide more reliable data for an individual's capabilities. They are more useful in clinical work. These tests can provide opportunity for close observation of the behaviour of testee in test situation and his method of solving problems.

8.9 Kinds of Performance Tests

(1) **Healy-Fernald group of tests** was the first measuring tool to test the intelligence by performance.

(2) **The Pintner-Paterson Scale :** This performance scale is the first organized scale. This scale was standardized in 1917. It consists of Healy-Fernald performance tests and several other tests developed by earlier psychologists. The scale includes fifteen sub-tests. The tests are administered without the use of language either by the examiner or examinee. The tests are useful for deaf, dumb and those who lack of language, ability. They have been found very valuable supplement verbal tests of intelligence.

(3) **Form boards :** There are several performance tests in which form boards are used. The Ferguson form board was developed in 1920 and revised in 1939. It consists of six form

boards which increase in difficulty. These tests were standardized on children and college seniors who had some educational problems. They are currently used for children who come for clinical guidance.

(4) The Kent-Shaknow form board series : This performance scale was developed in 1928. It is the widely used and known scale. It has two forms. One for clinical use and the other for industrial. Basically, the scale was developed and standardized on clinical population. The scale provides an insight into the analytic synthetic and manipulative skills of the subject. It also provides close observation of the behaviour of the subject and his mode of tackling a problem.

(5) The Goodenough drawing test : This test was developed by Florence Goodenough in 1926. It is the most widely used test to measure the intelligence of children from 3½ to 13½ years. The child is asked to draw a picture of a man as best as he can, without any time limit. Draw a man test is very popular test of intelligence. It requires no training and no specific material for administration. It has been adopted in Indian conditions by several research workers. This test is a useful device as an adjunct to verbal tests when mental retardation in children in suspected.

8.9 Advantages of Performance Tests

Performance scales are most useful with older children and adults who are mentally retarded. They have clinical significance in case of older children.

Since the performance tests do not require use of language, individuals do not 'block' as a result of feeling of inadequacy from lack of schooling.

Children proceed on performance tests with confidence, since the material is visually present in concrete form. Performance tests provide an opportunity to observe the qualitative aspect of behaviour of the individual under standardized condition in a variety of test situations.

Performance scales are useful and provide valuable information when supplemented with verbal tests of intelligence.

They are useful for those who have language handicap.

8.10 Limitations of Performance Tests

1. Performance scales are more susceptible to practice effect and chance of success is more frequent than in verbal tests, hence the reliability co-efficient is low.

2. They are limited in range of mental functioning test. They fail to difference among above average children.

3. The conventional performance scales fail to test fine mental abilities such as ability to make abstraction or concept formation.

8.11 Group Test of Intelligence

A group test is one that can be given to a number of subject at the same time by single examiner. Group tests and their use was made later than individual tests. The histroy of emergence of group tests can be traced back to first world war when the USA was compelled to join the war. A great necessity was felt to construct and devise such measures of intelligence testing that can be given to a large number of prospective soldiers and officers for their classification for various jobs, consistent with their mental ability. The army asked the American psychologists to develop tests for classifying recruits.

One of Terman's students Arthur O. Otis and his colleagues be to experiment with methods by which tests of mental ability can be given to a group of subjects. The Army Alpha and Army Beta was developed in a short period. Army Alpha is verbal group test of intelligence and is meant for literate persons. Army Beta is a verbal group test of intelligence and is meant for illiterate persons. These two groups tests proved remarkably sucessful in screenless recruits. After the world War I, several psychologists devoted themselves to develop group tests of intelligence.

Characteristics of group tests of intelligence : All group tests have been developed on the assumption that intelligence is general capacity and can be measured by sampling a variety of mental activities.

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

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

Group tests are scored more rigidly and more objectively than those individually administered.

Most group tests impose limits for each of the several sub-tests or parts. Some tests are entirely non verbal in content and others are entirely verbal.

8.12 Representative Non-verbal Group Tests

1. **Pintner-Cunnigham primary mental test :** This is one of the earliest and well known group scale. It is meant for kindergarten, first and second grade of children.

2. **The Chicago non-verbal examination :** This is another early and well known scale. It was designed for use from 6 years through adulthoo. The types of items in the scale are similar in most respects to other scales.

3. **The Pressey-Primer scale :** This scale consists of four tests, requiring in all four the same type of response, namely the crossing out some superfluous member.

4. **Lorge-Thorndike grade :** This scale is meant for grades 2 and 3. The item consists of identification of animal and human figures, classification of pictured objects shown in the picture.

5. **The Haggerty delta 1 :** This test is meant for grade 1 to 3. It consists of 12 exercises, out of which six are meant to give orientation to the infants and six are the tests.

The Haggerty delta 2. This is designed for grades 3 to 9. It is an adaptation of the army intelligence test.

6. **Dearborn intelligence scale :** This scale has been designed specially for grade IV to XII. It consists of seven sub-tests.

7. **The Raven progressive matrices tests :** This test was developed in England. It is widely used test. It consists of geometric figures and designs. The subject apprehends relationship between figures and selects appropriate part for completion of each pattern or system of relations.

The Cattell Culture Free Test :

Some psychologists attempted to develop group scales which may not be influenced by verbal material and form or acquired skills and experiences in the environment of different culture. These scales have been developed with the intention of universal use in all cultures.

IPAT : This test is available for these levels : scale 1 for ages 4 to 8 and for mentally deficient scale 2 from 8 to 12 years and for unselected adults and scale 3 from the range of high school through superior adults.

8.13 Comparison of Individual Test and Group test of Intell

Individual test	Group test
1. It is administered to an individual at a time.	1. It is administered to more than one individuals at a time.
2. It is costly in terms of administration and time factor.	2. Group tests are not costly in terms of administration and time.
3. It requires trained tester to administer.	3. Highly trained personnel are not required to administer the test.
4. The examiner can study the behaviour of the individual thoroughly as there is face to face interaction.	4. There is no face to face interaction and behaviour of individuals cannot be studies
5. Individual test is most suitable for children who cannot read or write.	5. Temporary poor health, lack of motivation, poor vision may affect test score.
6. Individual test provides qualitative performance of the individual.	6. They are suitable for older children and adults who can read, write and co-operate.

7. The examiner can adapt himself to the needs of the individual child finding the level at which he can succeed. The examiner can motivate by means of praise and encouragement.

7. The examiner cannot adapt to the needs of individual students, cheating is possible.

8. There is absence of competition in individual testing.

8. There is competition in group testing situation. Speed and reading ability influence the test scores.

9. There is greater informality of administration.

9. There is formality in administration.

10. It is possible to eliminate a lot of errors as in attention and cheating.

10. A child may become bored and spending time gazing outside.

11. Instructions are made clear before starting.

11. Instructions may not be equally and clearly understood by individuals in a group situation.

8.14 Uses of Intelligence Tests

Intelligence Test is meant For :

(1) For measuring general learning readiness : We know that intelligence tests are correlated with school achievement so intelligence tests can be used to indicate the level of capacity at which the pupil has arrived. Numerous investigations have been made to discover the relationship between intelligence tests and school marks at differences level of schooling. All researches have proved, beyound doubt, the intelligence tests can be used to measure the readiness for learning at different levels.

(2) For indicating the extent of differences of IQ among the children of same chronological age.

There are great differences in terms of IQ of the pupils of same age. These differences indicate the need for providing teaching materials at differing levels of difficulty. At various levels of education, we can use the tests for educational guidance, i. e., we can advice students to select subjects keeping into consideration their intellectual abilities.

(3) Defining more accurately the degree of mental retardation or defect : Since the development of intelligence tests, we have been using intelligence tests to define more accuretaly the levels of feeblemindeness. Using the intelligence tests we may define the level of feeble mindness.

Level	IQ
(i) Idiot	20
(ii) Imbecile	20 to 40

(iii) Moron   40 to 65

We can classify the children weak and dull so that proper arrangement could be made for their schooling. It is intelligence test that can aid us in knowing just which children will probably remain in the special class.

(4) For identifying gifted children : Since 1921, when Terman used both individual and group tests of intelligence to identify the gifted, intelligence tests have been used for this purpose. Tests of intelligence have given us an accurate definition of brightness in terms of IQ. Teacher's judgement has found inaccurate in identifying gifted children as reported by Terman, Whipple and Copy in their separate studies of gifted children.

(5) For educational guidance : The essence of educational guidance resides in providing for all children materials for instruction both interesting in content and suitable to their lefvel of intellectual development. When we contemplate the magnitude of individual differences, Psychological testing can be very useful in ensuring that children's educational progress is an accord with their abilities and can be helpful in discovering those children who need vocational guidance. Vocational guidance means finding the right man for the job. Tests can be used to provide vocational guidance at different age levels in various vocations. At present in our country vocational guidance is not adequately provided. It is unfortunate that we have not yet developed a system of sound vocational guidance services. We need to develop intelligence tests, interests and aptitude tests suiting to the needs of our country. The vocational guidance programme will have considerable social consequences in our country which is developing socially, economically and technologically.

(6) For making decisions about going to college : Intelligence tests can be used to predict the subsequent success of a high school or inter college students. Teachers can use intelligence tests to make decision for individual students regarding their success in college or university.

(7) For study of mental growth : Mental abilities develop in a sequential order from birth onward. We can use intelligence tests for studying mental growth and direction of individual and group curve.

Intelligence tests have made it clear that the mental development of children is a steady consistent process from one year to the next. Use of intelligence tests in consecuting measurement has thrown the old idea that there are period of rapid mental growth at the time of adolescence followed by period of slow growth, mental growth continues until at least 18 years of age.

7. For homogenous grouping : Teachers, in the past, have experienced great difficulties inherent in attempting to teach pupils or students who are widely different in their capacities to learn. In average class-room, bright and dull children are the losers. To remedy the problems of traditional class-room, homogenous grouping of students has been suggested

and tried out in many schools of western countries with encouraging results with the help of intelligence tests.

8. Use of reasearch : Intelligence tests are used for conducting research in different areas of human abilities.

8.15 Limitations of Intelligence Tests

We know that in India very few tests have been developed or standardized. Generally, we use tests developed in foreign countries, or their adaptation local norms are not generally available.

An Intelligence test permits a person to show what he can do at a certain time with a certain carefully selected, but small set taken from all the possible items which test intelligence. No one should suppose that this small set can tell as much about him as if 100 item or as many items were available. Nonetheless, it tells a great deal and inordinate increases in length of tests, suffer the usual consequeness or the law of diminishing return. Similarly, we know that one person may be more fatigued than another when we take the test, possibly reducing his scores. They tell us what a person can do right now, hadicapped or favoured as he may be by his inherited characteristics, his home and school background, better sensori motor or bodily states. They do not tell us he would have done if tested 10 years ago or if tested ten years hence, with or without ideal conditions during those ten years. Consequently, it is always possible to second guess such a test and conclude that it does not tell what we really want to know.

Jensen reports that he often had cause to believe that the first intelligence test given to certain children underestimate their IQ after 2 to 4 days of getting acquainted with such children. He typically found that a retest on a different form of the same test yielded an IQ of 8 to 10 points higher. Children may be so frightened in a testing situation with a tester they do not know and when confronted with tasks that are completely novel that they do not exhibit nearly the intellectual capacity one would expect from other evidence about them, particularly with young children, it would be important to spend much more time building rapport for testing than few minutes that are some time employed before formal testing begins.

One of the major defects of present day testing, is that, it is unable to get below the surface of the mind. It measure what a child knows rather than how far he can go in the pursuit and discovery of ideas. It has almost no bearing on originality, on the mobilization of many ideas toward a single concept or on the ability to devote his attention over a period of time to a single line of thought. A smallering of knowledge in many fields will lead to a score equal to that of the child who could do marvellously well along certain lines, but whose accredited performance is cut off far below his mental levels. For example, a child with a 30,000 words vocabulary can scarcely get more mental credit than a child with 10,000 words vocabulary, although the differences in mental accomplishment are tremendous.

Some Misconceptions :

The following are the misconceptions regarding the use of intelligence tests in education.

(1) The first misconception is that intelligence tests measure something called "native ability," something fixed and immutable within the individual that determines his level of expectation for all time. No doubt, genetic studies of identical twins reared separately under different conditions have proved that individual inherits intellictual abilities, but intelligence tests do not measure such an entity, at least not directly. Intelligence tests measure the individual's performance on certain type of mental tasks. The type of mental tasks included in intelligence tests are influenced by experiences in school and home. The experiences depend on many factors as the education of parents, availability of books in home, socio-economic condition and a variety of experiences, the child gets in his surroundings. Thus the notion the intelligence tests measure inherent ability is absurd.

(2) The second misconception about intelligence tests relates to the notion that prediction made from test scores should be perfectly accurate.

(3) The third misconception is that standardized test scores are directly reliable.

(4) The fourth misconception regarding intelligence test is that tests can tell all one needs to know in making a judgement about a student's competence, present and potential and about his effectiveness as a human being. The fact is otherwise that no test or battery of tests can give a total picture of a child. No doubt, tests can illuminate many areas of a child's development. They can suggest something about his strength and weaknesses. They can show in certain respects, how he stands among his peers. But there are many areas of learning where we must still rely upon the observation and judgement of teachers if we want to get a complete description of a child as functioning individual. Any evaluation of a child that depends solely on mental test scores is bound to be misleading and incomplete. There are subtle and supremely important human elements in reaching learning situation that no combination of tests yet devised as able to capture.

8.16 Achievement Tests

"An achievement test is an instrument designed to measure relative accomplishment in a specified area of work." There are two main types of such tests : (i) General achievement tests, and (ii) Diagnostic tests. General achievement tests measure the entire field of work of an individual and yield a score indicating relative achievement. Diagnostic tests are designed to reveal a person's strength and weakness in one or more areas of the field being tested. They assist the teacher in determining exactly where the learning or teaching has been successful and where it has failed.

There are also many tests in the form of general achievement tests which when given to the class by the teacher become diagnostic in an indirect manner because low achievement in any subject makes it clear that the success of teaching in that subject is quite low.

Achievement tests can be given in four ways :

(i) Oral tests : Some achievement tests are oral in nature. The person doing the testing states each question orally. The examinee may give his reply orally or may write down his answer or may adopt a combination of the two methods.

The main defect inherent in these tests is that the teachers fail to evaluate the achievment of the child at a broad level. These tests may not be suitable to all types of children. There is also chances of favouritism in their evaluation. Moreover, the performances of the children do not remain stationary, they change with the changes in the environment.

(ii) Essay type tests : We shall deal with this topic in the latter part of this chapter.

(iii) Objective tests : These types of tests have been recently developed. They are not replacing the essay type of tests. We will take up this topic also later.

(iv) Performance tests : The achivement of the individuals is also tested by performance tests. These tests usually applied to all those instruments which measure manipulative skills primarily. Instead of writing answers on a piece of paper or answering oral questions, the student taking a performance test is required to perform an operation or carry out a job under careful direction.

There are quite a good number of achievement tests available at present. These tests have been developed for the children for each age group and also for different classes. These tests are mostly standardized.

Some of the achievement tests worth mentioning are U.S.A.F.I. tests of General Educational Development. These tests were for the army men who returned from the war. They were constructed to test their achievement of knowledge upto high school or college standard which they have acquired during their army life or before it. These tests are in the nature of general achievement tests and are different from those which are constructed to test the success of instructions after the individual has completed his education.

There are many other similar types of tests of general achivement. The tests of educational development measure other things evaluating the knowledge or performance. The other things are :

     (1)   ability to understand basic social concepts,

     (2)   ability to think,

     (3)   ability to write correctly,

     (4)   general ability of general science,

     (5)   ability to interpret their structional objects in social science.

(6)   ability to interpret the instructional objects in general science,

(7)   ability of reading of literature,

(8)   ability to apply the sources of main information,

(9)   ability to recognize the meaning of important words.

Many tests of achievement in the area of specific subjects are also available. The more common of these are Stanford achievement test.

We can also classify achievement tests in two other types. They are : (i) teacher made tests, and (ii) standardized tests. The two tests of achievement are standardized tests. In constructing standardized tests, we prepare with great caution a large number of questions and then they are tested upon a standarized group. These questions which are found suitable are retained and the others which are either too difficult or too easy or suffer from any other defect are dropped.

8.17 Measuring Aptitude and Interest

8.17.1 Meaning of Aptitude :

Bingham defines aptitude "As a condition symptomatic of a person's fitness, of which one essential aspect is his readiness to acquire proficiency–his potential ability and another is his readiness to develop an interest in excercising his ability." Aptitude is a specific ability of an individual which predicts his success under training.

8. 17.2 Implication of Aptitude for Teachers :

(1)   Aptitude includes both inborn capacity and the effects of environment on the individual.

(2)   Learning in any area is conditioned by the learner's readiness so learn.

(3)   A specific aptitude in the form of talent may show itself early and respond readily to training in future.

8.17.3 Measuring Aptitude :

An aptitude is a combination of characteristics indicative of an individual's capacity to acquire some specific knowledge, skill or set or organized responses such as the ability to become an artist or to be a mechanic. An aptitude test may be defined as a test which measures a person's potential ability in an activity of a specialized kind and within a restricted range. Aptitude means an individual's aptitude for a given type of activity, the capacity to acquire proficiency under appropriate conditions, that is his potintialities at present as revealed by his performance on selected tests have predicative, value. It reveals an individual's promise or essential teachability in a given area. Several aptitude tests have been developed by psychologists in the last fifty years. Following are some tests of aptitude in different areas :

(1) Motor and Manual Tests :

(i) Strength of grip : One of the oldest instrument to measures strength of grip was developed by Whipple. The instrument is called dynamometer, it consists of an inner and outer handle, a dial and a pointer. The subject grips the handle and presses it hard. The strengh is measured in kilograms. It is used to measure degree of handedness and rate of fatigue.

(ii) Manual dexterity : This test has been designed to measure the hand movements in terms of speed, co-ordination and manual rhythm, The test consists of small metal pins or wooden pegs of different shape. The subject places them in the whole of a tray with the help of fingers or tweezer's. This test measures accuracy with which a subject places the metal pins into wholes of small diameter cut in meter and electrically connected plate. The mistakes are recorded. The test is the measure of manual dexterity of the individual.

(2) The Purdue-Pegboard Test :

This test measures the gross movements of hands, fingers and arms as well as finger tips dexterity required in snall assembly jobs. The material consists of pins, collars and washers that are to be assembled using each hand separetly and then both hands in co-ordination.

(3) Test of Mechanical Aptitude :

The assembly test of general ability. This test was devised by J.L. Stenquist. It was the first to measure mechanical aptitude of individuals. The material of the test consists the various parts of mechanical devices such as bicycle bell, a double action hinge, a door lock and mouse trap. This test was designed to measure the mechanical aptitude covering the age range from children in the lower grade through adulthood. The tests developed by Stenquist have been revised and and comprehensive at the university of Minnesota and now they are known as the Minnesota Mechanical Assembly Test :

(4) Clerical Aptitude Test :

Clerical aptitude test does not have an unitary function. The test consists several kinds of items which bear relation and are significant in clerical occupation. All the clerical tests developed so far have much in common.

(5) Detroit Clerical Aptitude Test :

This test is the most comprehensive test of clerical aptitude inclusive of the following items :

1. Handwriting : rate and quality,
2. Simple arithmetic.
3. Checking.
4. Motor speed and accuracy
5. Knowledge of simple commercial terms.
6. Disarranged pictures.

7. Classification

8. Alphabetical filling.

(6) Aptitude in Music :

Psychologists in order to measure aptitude in music developed tests to measure musical aptitude. The earliest of these tests was designed by Seashore measures of Musical Talents. This test is meant for grade 4 through college level. The test consists the following aspects of hearing :

1. Pitch discrimination

2. Intensity of loudness discrimination

3. Time discrimination

4. Discrimination of timer

5. Judgement of rhythm.

6. Tonal memory.

Total scores, for the six parts of the test was used to develop a profile of the individuals.

(7) The Drake Musical Aptitude Test :

This test measures two aspects of musical aptitude-musical memory and rhythm. This test is used with subjects of 8 years and olders.

(8) The Meier Art Judgement Test :

This test measures aesthetic judgement of the individual in a global manner. The material of the test consists of one hundred pairs of representational pictures in black and white. One member of each pair is a reproduction of a recognized master piece, while the second member has been altered from the original in an important aspect so as to make it inferior to the original. Subjects are informed as regards the alteration made (shape, angles) but they are not told which is the original subject is required to indicate his preference in the pair. Meier is required to indicate his preference in the pair. Meier believes that aesthetic judgement is the most singnificant index to talent in art and success in a career in art.

Aptitude tests have been developed almost in all areas of life on law, medicine, teaching, engineering and military services in recent years.

8.17.4 Uses of Aptitude Tests :

(1)   **Guidance :** Aptitude tests can be used for the purpose of guidance in selecting subjects for studying in schools and colleges. They can be used for helping the individual to select the profession of the choice. The psvchologist and the counsellor must supplement the results of aptitude tests with intelligence tests, school records, interview and interest tests.

(2) **Selection for job :** The employer can use aptitude test job selecting persons for different jobs.

(3) **Admission :** Aptitude tests can be used in admitting candiates for various types of professional training as teaching, medicines, engineering etc. Aptitudet ests should be used only as one source of information in a total picture.

8.18 Intelligence Test Vs Aptitude Test

It has been found that the correlation of intelligence tests with such abilities as motor or mechanical, ability, ability in music or artistic ability are not high. Therefore, many aptitude tests have been constructed. These tests try to locate specefic ability in various areas. In one way, every test is an aptitude test if it measures the ability of an individual in any specific field. Through aptitude tests, we cannot measure the amount of success of the individual. An individual may score very high on aptitude test, still we cannot say that we will definitely attain success but this much we can definitely say that this man is capable of doing this thing.

General tests of aptitude are intelligence tests which direct our attention towards the general learning activity of the individual. Specific aptitude tests focus our attention towards the specific abilities of the individual.

Specific aptitude tests measure the capabilities of the individual in the performance of mechanical tasks or motor tasks or in music or in the performance of the tasks assigned to a clerk and this measurement tells us in what direction the individual's abilities lie. The individual can then be told to work in those areas for which he possesses an ability. Hence, aptitude tests are very much helpful in vocational guidance.

Aptitude tests are also helpful in making a selection of soldiers and officers for the army. In our country, they are now being increasingly used for makinga selection for various posts by the selection committees etc.

8.19 Relationship Between Intelligence and Achievement

Achievement tests are measures of student's mastery of the tests he is confronted with in the class room. Many students have been conducted test to find the relation between achievement and intelligence.

These correlations indicate that students with high intelligence are generally suprior to students with low intelligence in linguistic and abstract subjects but there is nothing much to distinguish between the two in subjects like writing, hand work and drawing.

Robert Lemon found a number of corrections between intelligence and school subjects among children of different grades. A part of his results are given in table below.

These correlations indicated that intelligence, as measure by intelligence tests is fully associated with general scholistic succeess, especially in subjects that demand linguistic

ability and the acquisition and manipulation of abstract ideas.

Freeman on the basis of many studies points out that relationship between intelligence and achievement varies between 40 and 60 with a central tendency of .50. In a study by Mathur and Sachdeva the correlation between. intelligence and achievement of X class students of high schools was found to be 58. Thus it may be concluded that children with intelligence tend to have high achievement level also.

The study by Mathur and Sachdeva obtained the correlations between the school achievement, intelligence and particulation in extra class activities. Thus this study found the relationship not only between intelligence and achievement but also between intelligence and out of class activities and achievement and out of class activities.

8.20 Summary

(1)   Measurement (Means finding out the quantity of thing or smallness or bigness of it or knowing how much more or less it is in comparison others. What we can measure through are known as tools of measurement.

(2)   There are several tools to measure intelligence, aptitude and acheivement. They are Binet-simon scale for intelligence, Wechsler scale of intelligence, Performance test of intelligence, Group test of intelligence, Cattel culture free test etc. Binet scale has the feature that items are arranged in order of difficulty which yield a general global measure of intelligence. Such tests are grouped by age levels and measure the mental growth of the subject. On the other hand Wechsler scale consists of verbal and non verbal performance tests among verbal test vocabulary, arthimetric, digit span etc are important among non-verbal test they are block design, maze learning, picture completion are important.

The two tests have several differences :

(1)   Binet test is gorup test but WAIS is individual test.

(2)   Binet test is age scale which is internally standardized whereas WAIS is point scale which is externally standardized.

(3)   Performance test is one in which the subject has to performed something or to manipulate some concrete materials without much use of language ability. There are several types of it. they are Pinter Patkerson scale. Form boards, rent shaknow from boards etc.

Performance scale donot require language, therefore, it is useful to childrens adults and even to mentally retarded. However such scale has the limitations that it is more susceptible to practice effect.

(4)   A Group test is one that can be given to number of subjects at the same time by a single examiner. It is of two kinds—non–verbal group test and verbal group test.

Similarly, Cattell has developed a culture free test to measure intelligence.

(5) Intelligence test have several uses. They are as under :

(i) It measures the general learning capacity of the subject.

(ii) It measures intelligence in terms of I.Q.

(iii) It is used for educational guidance.

(iv) It is useful in identifying gifted and mentally retarded children.

(v) It is used in studying the mental growth.

However one of the major difects of present day testing is that it is unable to get below the surface of the mind.

(6) An achievement test is one which measures Relative a com plishment in a specified are a of work. It is of four kinds—Oral test, Essay type test, Objective test and performance test.

(7) Aptitude is a combination of characteristic indicative of an individuals capacity to acquire some specific knowledge scales etc. It is of several kinds such a machanical aptitude, clericals aptitude etc. Aptitude tests are useful in guidance, vocational selection and admission.

8.21 Key Words Used

Measurement,	quantity,	evaluation,
abilities,	reliable,	instruments,
accuracy,	require,	aptitude,
achievement,	quotient,	vocabulary,
Information,	comprehension,	performance,
analysis,	quantitativ	externally,
flexible,	categories,	illiterates,
manipulation,	situation,	capabilities,
supplement,	significance,	conventional,
abstraction,	concept,	achievement,
evaluation.		

8.22 Questions for Exercise

8.22.1 Short answer type questions :

1. What do you mean by measurement ?

Ans. **See 8.1**

2. Explain the performance test of intelligence.

Ans. **See 8.2**

3. Discuss the kinds of performance tests.

Ans. **See 8.8**

4. Explain the limitation of intelligence test.

Ans. **See 8.15**

5. What do you mean by 'Wechsler Scales' ?

Ans. **See 8.5**

8.22.2 **Long answer type questions :**

1. What do you mean by performance test ? Explain its merits and demerits.

Ans. **See 8.2., 8.9 and 8.10**

2. What do you mean by individual test ? Make a comprison between individual and group test of intelligence.

Ans. **See 8.13**

3. Explain the uses of intelligence tests. Explain its limitations.

Ans. **See 8.14 and 8.15**

4. What do you mean by aptitude test ? Explain its meaning.

Ans. **See 8.17.1**

8.23 Suggested Readings

1. Skinner, C. E : Educational Psychology
2. Mathur, S.S : Advanced Educational Psychology
3. Chauhan, S.S : Educational Psychology
4. Sulaiman, Md & Sinha, R. K : Adhunik siksha Manovigyan

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LEARNING

9.0 Objective of the Lesson

The present lesson is highly important as it deals with the learning. In this lesson the

learner will be acquainted with formal and informal learning, meaning of motivation and its psychological basis. In addition, the function of motive in school learning, role of motivation and incentive in learning will be discussed in detail. It is hoped that learners get advantage of it. In the end of the lesson a summary, key words and, questions for exercise have also been given to assist the learner in better understanding of learning.

9.1 Formal and Non-Formal Learning

Learning has been defined as a relatively permanent change in behaviour as a function of practice (McGeoch, 1952) learning has been divided into two types namely formal learning and informal learning. The general definition of learning stated by Mc Geoch is applicable to both formal learning and informal learning. Naturally, the fundamentals of these two types of learning remain the same. However, there are differences in procedures and methodology for which formal learning takes place.

By informal learning we mean such learning which follows no fixed or dictated procedure or methodology. Such learning does not require a particular place of learning, particulars to teach particular syllabus to follow and specific methods to be adopted. Such learning usually begins from home which is considered to be the first educational institution for children. Here, parents directly or indirectly teach their own children. The child learns the values, the customs, the modes of behaviour simply by observing the behaviours, the vocal expressions and the activities of their parents and also other members of the family. Sometimes they are directed by their parents and also other members of the family. Sometimes they are directed by their parents to learn a particular thing. In the same way informal learning takes place in neighbourhood. Children learn several things just by observing the behaviours of the other members of the society. Bandura (1965) asserted that social learning is to a great extent informal learning based on observation and modelling behaviours by the children. Moreover, children learn several things in their play grounds. Learning relates to cognitive development, emotional development, social development, moral development etc. occurs through plays and hence it is informal learning.

On the other hand, formal learning generally takes place after five or six years of life. Learning from 0 to 6 years is said to be informal learning based on family, neighbourhood, plays etc. On the other hand, after six years children are sent to school from where formal learning starts. By formal learning we mean such learning which follows a particular procedures methodologies, institution, syllabus and teachers also. All these requisites are fulfilled by the school which is meant for impartial education to children. It is obvious that informal learning has a limited scope while formal learning has unlimited scope. In the strict sense informal learning ends before six years of life. While formal learning continuous till death through primary school, colleges and universities. The informal learning is not limited to a particular placement only for learning itself. The informal learning is fundamentally related to a place meant for it alone. Another difference is that in informal learning there is no dictated syllabus, while in a formal

learning a definite syllabus is must. Still another distinction is that for informal learning there is no fixed procedure or method of teaching, while for formal learning it is a must. Moreover, for informal learning there are no appointed teachers while for formal learning some appointed teachers are an essential requisite. In spite of these differences informal learning contributes significantly to the growth of formal learning. This is why it is said that informal education is simply a preparation for formal education.

9.2 Meaning of Motive

Motive is a condition – "Physiological" and "Psychological"—within the organism that disposes it to act in certain ways. Motives take a variety of forms and are designated by many different terms, such as needs, desires, tensions, sets, determining, tendencies, attitudes, interest, persisting, stimuli, and so on. McGoch defines a motive as "any condition of an individual which points or orients him towards the practice of a given task and which defines the adequacy of his activities and completion of the task."

9.3 Difference Between Needs, Drives, Incentives and Motives

The psychologists use different words while discribing the determinants of behaviour. Some of the words used by them are motives, instincts, needs, values, incentives, goals, stimulations, reinforcement, etc. This creates a great confusion since very often words are used differently and sometimes in contradictory ways. It is, therefore, necessary to understand the broader perspectives in which these words are used by a majority of psychologists.

Need : Klausmeier describes "a need is the lack of something which, if present, would tend to further the welfare of the organism or of the species, or to facilitate its usual behaviour." The lack of something is experienced by the organism. It then tries to perform that activity which culminates in the satisfaction of the need. Thus, the needs are associated with goals. Among the human beings, the needs are relatively permanent tendencies which seek their satisfaction in achieving certain specific goals. When these goals are achieved, need no more exists at least for the time being. But the needs recur sooner or later and energize further activity. The needs in the human beings can be of physiological type as need for oxygen, or of social type as the need for affection, need to achieve, etc. In many books on educational psychology the need is given the most prominent place in describing and energinzing of learning activities.

Drive : Usually, the word drive is used when there is the feeling of mental tension on account of our bodily needs. For example, when there is dearth of food we feel hungry or when there is dearth of water we feel thirsty. Thus, among the drives we can put hunger, thirst, etc., which means that drives are active when there is some felt need.

According to Klausmeier, "A drive is a tendencey initiated by shifts in physiological balance, tissue tension, sensitivity to stimuli of a certain class, and response in any of a variety of ways that are related to the attainment of a certain goal."

The drives may be differentiated as primary drives and secondary drives. The primary drives are due to physiological imbalances. They occur when certain essential substances such as food and water are needed. Sex, avoidance of pain, etc. are primary drives. The primary drives are unlearned while the secondary drives are learned. The anxiety, learned sexual states are the examples of secondary drives. Many psychologists prefer to describe all types of motivational states as primary or secondary drives.

Incentive : That element in an environment which satisfies the drive is known as incentive. For example, for hunger drive the incentive is food. The food satisfies our hunger and therefore, we call it as incentive. In learning situations in schools the incentives might be marks, grades, merits badges, stars or praise.

Motive : According to Klausmeier, a motive is "a state within the individual that under appropriate circumstances initiates or regulates behaviour in relation to a goal." This means that needs, drives etc., can be put in the category of motives. The motives also include the feeling of the goal. May also says that when in an individual the needs and the drives are active and he develops a tendency to act in a particular direction to achieve a goal, then this state is known as motive.

Thus, we can say that the necessary elements which are to be found in a motive are as follows :

1. Need or drive which creates activity.
2. The control on the direction of the behaviour for the achievement of the goal.
3. The cessation of activity after the achievement of the goal.

9.4 Incentives and Motivation

In schools the children are provided many kinds or successful performance, such as grades, prizes, teacher approval and the approval of classmates. The children are supposed to work to get these rewards. These rewards are called incentives. We believe that will motivates students to work harder and to perform better.

9.5 External Motivation

Learning must proceed in absence of internal motivation. If there is intellectual immaturity and lack of sensitivity to ultimate consequences and ideas in the individiual, then internal motivations will fail, In such circumstances recourse is to be taken to external motivation. External motivation, however, is so called only because it is external to the learning activity itself. By external motivation it should not be considered that it is in any sense artificial. It has to be built upon the foundation of some existing natural response or tendency. It can be successful only when it is intrinsic to the nature of the individual. Thus, drives which are the

chief sources of spontaneous attention and painless effort and are enormous resources of potential energy at the disposal of the learner and teacher should be judiciously employed and wisely directed towards motivating the pupil.

9.6 Role of Motivation in learning

Here such motives or incentives are described which are effective in learning.

9.6.1 Intention to Learn :

The simplest motivation which we can give is to a child to ask him to learn. When a child will know that he is expected to learn he will make efforts to learn.

Here is also necessary to say that many a times an individual learns when he has no intention to learn. You learn the telephone number or car number without any intention. Much learning takes place at the time when an individual concentrates his attention on any thing but is not asked to learn.

In modern times many researches are being carried on learning during sleep. The student can learn without intention but the intention to learn helps the learning to a great extent. It is a very simple motive and there is hardly any teacher who does use it.

9.6.2 Ego-involvement :

Man is different from other animals. He can perform higher mental functions. He can do many such complex tasks which the other animals cannot. The psychologists say that the basis for these complex activities is provided by a mental element of self.

The nature of self can be understood by observing the experiences and behaviour. First of all we can say that the self of an individual is all that which can be observed. Every individual has knowledge of his own personality. Secondly, the self is the organization of values and attitudes. Thirdly, self includes much that we call egoistic. For the discussion over here these three characteristics of self are important : (i) self can be observed and can be known by the individuals, (ii) It can be clearly demarcated from the other individuals and the external world, and (iii) It involves values and attitudes acceptable to the person.

A person can react to his environment in two ways. When we tie the laces of our shoe or board a bus or produce humming sound we react in an uninvolved manner. The second type of reaction takes place at that time when we do some work very carefully and attentively and involve ourselves completely in it. In the first type of behaviour the ego is involved. Sheriff and Cartril call the second type of behaviour as ego-involvement behaviour. Ego involvement is a condition of total participation of the self as knower, organiser, observer, status seeker and as socialized being. Ego is involved in all those actions in which our ability is challenged.

Many a times in such ordinary actions like dressing, shaving, catching a train, there is an automatic functioning and so there is no ego involvement. Ego is involved when there is an obstacle in the successful functioning. If we catch a bus daily and reach our office in time there

is no ego involvement. In case the bus is late, the ego-involvement takes place as we are now afraid that we will be late for our office. The extreme form of ego-involvement is self-sacrifice. Whenever we are learning some new skill or getting some new knowledge our ego is then involved.

The human behaviour is not usually ego-involved. It is in one way good because if it does not happen then even the simple thing may become very complex. I do many activities in my normal routine. They are not ego involved. Thus I save my self from much fatigue. In fact we learn that some of our acts should be routine and automatic and some which are near our life and desire be ego involved. It is an important duty of the teacher to make some activities as routine and automatic and some which are concerned with the development and growth of the child be made ego involved.

9.6.3   Praise and Blame :

These incentives are most effective when they come from persons held in esteem by the learners. In this field, there is experimental evidence which tends to show that praise stimulates average and inferior children but has less effect on those of superior intelligence. It has also been noted that reproof is felt most by superior children, but girls seem more susceptible to praise than boys. Some studies indicate, however, that regardless of age, sex, or initial ability, praise is the most effective of the incentives tested. Reproof seems to decline in effectiveness for all students. Among the experiments worth mentioning here are those of case who in 1932 reported 'praise' to be less effective than 'blame' with young children, and of Hurlock in the 1920's which have led to the general conclusion, still accepted by contemporary investigators that praise is more effective stimulus in motivating both immediate and long continued tasks. But it will depend on the teacher as to where he will use praise and where blame. A good teacher will be one who can use these incentives at the proper moment and in a proper manner. An investigation conducted at women's training college, Dayalbagh, Agra with very young children in the age group 4–5 years under author's supervisions has also come to the conclusion that praise is much more effctive than reproof with very young children of superior intelligence.

9.6.4 Rivalry :

The rivalry between the individuals which leads to resentment, jealousy, etc. or the rivalry between groups which create hatred are the least desirable types of incentives to be encouraged in the schools. Self rivalry in the form of competition with one's past record, is the most valuable type. This should be developed in the individual. Education will fail to develop proper social attitudes if it will put greater emphasis on competition and rivalry. Even thought many experimental researches have shown rivalry to be a powerful motivating influence yet before it is to be used in schools its emotional and social consequences must be considered by the teachers. (Luba's experiments in the1930's indicated an increases of 47 per cent in the achievement of school children with the introduction of the rivalry element).

9.6.5 Punishment and Rewards :

Punishment and rewards are more concrete expression of praise and blame" and are perhaps the least desirable forms of motivation.

"Punishment is the art of inflicting pain delibertely, with the avowed purpose of affecting the future conduct of one being punished. As a displinary and educative process, it is the most ancient and obvious method of restraining, coercing, and guiding the young." It is based on fear; the fear of physical pain, embarrassment and loss of status. Fear is a strong motive, and may elicit a type of a reaction which makes the child behave in the right manner. But punishment that is too severe, or inflicted when the reason for punishment is not clear and acknowledge, antagonism and desire to avoid the form of learning to which is attached. A great many experimental studies have been conducted in this field. While the investigators are not agreed on all pioints, considerable evidence support the contention that punisment interferes with difficult and complicated acts which require co-ordination and accuracy. Also a person who obeys because of fear is quite likely to disobey when he is no longer afraid or when he is willing to fare the consequences.

Reward, in the form of money, exemptions and models or badges, have been shown experiementally to be powerful incentives. But it must be remembered here that they are hardly ideal form of motivation. Hartshorne and May, in their study of honesty among school children, have made an interesting discovery that a certain group which had been artificially stimulated to honesty through rewards, was actually more dishonest than the average. The children wear evidently so strongly motivated by the desire to win prizes for honesty.

"The common practice of awarding pins, stars, cups and various marks and badges easily degenerates into motivation for those trinkets instead of creating a desire for the true objective." In Indian schools, the saddest example of this type of motivation is the systems of divisions and degree. It will not be wrong to say that an Indian student studies only for passing the examination or getting the degree. His main goal of learning degenerates into securing a good division by hook or crook. He will copy, threaten the invigilators, approach the examiners or indulge in similar other undersirable activities just to obtain a degree or a certificate and as soon as his task is accomplished and he gets a degree, he will try to forget whatever he has learnt as fast as possible. There will be left no further incentive for him to gain knowledge or to work. The universities are largely to blame for this extraneous importance of superficiality by awarding divisions on a none too scientific system of examinations. If a complete analysis of education system of our country is made, our examination system may emerge out to be the greatest contributing factor for the major evils inherent in it.

9.6.6 Knowledge of Progress result :

The student who is kept informed about the progress that he is making gets incentive for greater effort. Self display (elation) and construction are instincts operative here. Experimental evidence has also supported the view that the relation of progress stimulates further efforts. It