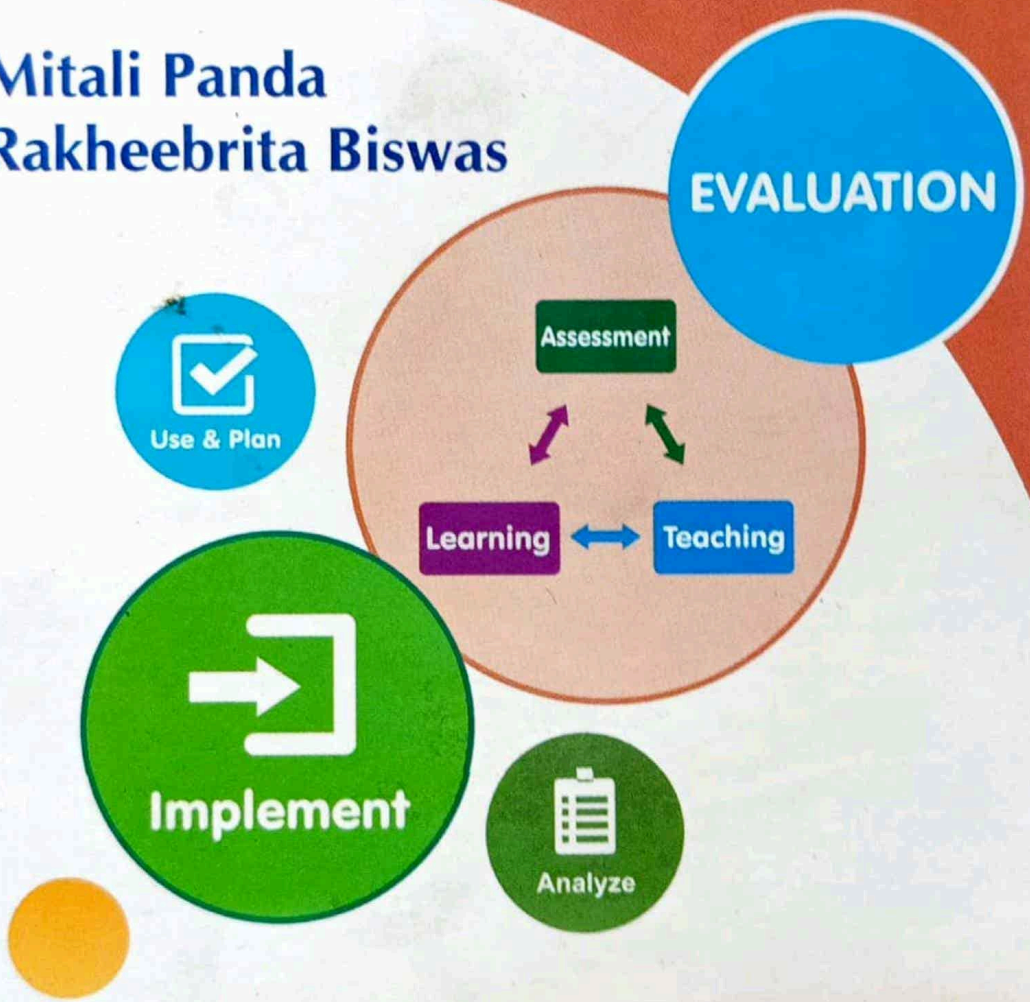
2 YEARS B.Ed New Syllabus

Uniform curriculum Structure for 2 Year B.Ed. Programme in West Bengal

SEMESTER-II
COURSE - IX

ASSESSMENT FOR LEARNING

Dr. Mitali Panda
Dr. Rakheebrita Biswas



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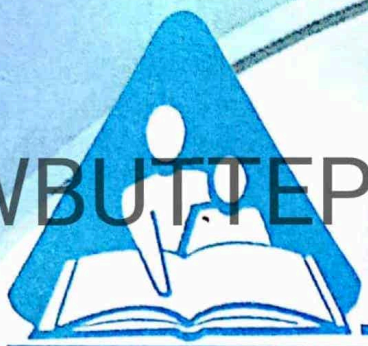

PREFACE

In accordance with the NCTE 2014 regulation and newly prepared Uniform B.Ed. curriculum (Two Years) of the West Bengal University of Teachers Training, Education Planning and Administration, **'Assessment for Learning'** [Course-IX, (1.2.9)] is being included as a general paper of 2nd Semester. This paper is basically based on Educational Assessment where the basic knowledge of Assessment for Learning, process of evaluation, different techniques of evaluation, tools of evaluation and their uses are discussed along with associated theories. Besides these, different types of teacher made test and compute simple statistics to assess the learning are also discussed.

Here, in this book, each chapter is initiated by a cotent/structure outline which is followed by detailed descriptions along with diagram and schematic representation. At the end of each and every chapter there is summary and probable questions which would hopefully help our B.Ed. trainees a lot.

We offer our deepest gratitude to Mr. Asim Kumar Mahanty and Mr. Debabrata Sarkar, the proprietor of Aaheli Publishers for publishing the book within a small span of time. We would also acknowledge the thankless job of composing and arrenging of this book by Mr. Tanmoy Bhattacharjee & Mr. Samir Naskar.

At the end we, the authors of this book would like to applozise for any kind of unintentional as well as uncautious mistakes that may take place despite of all our rigorous efforts. We would like to cordially welcome any constructive ideas and suggestions from the other teachers and faculty members of our society for our further improvement of the book. If this book would help to resolve any of the problems that are faced by our B.Ed. trainees, we would consider it as our achievement.

Regards and thanks.

15 June, 2016
Kolkata-9

Dr. Mitali Panda
Dr. Rakheebrita Biswas

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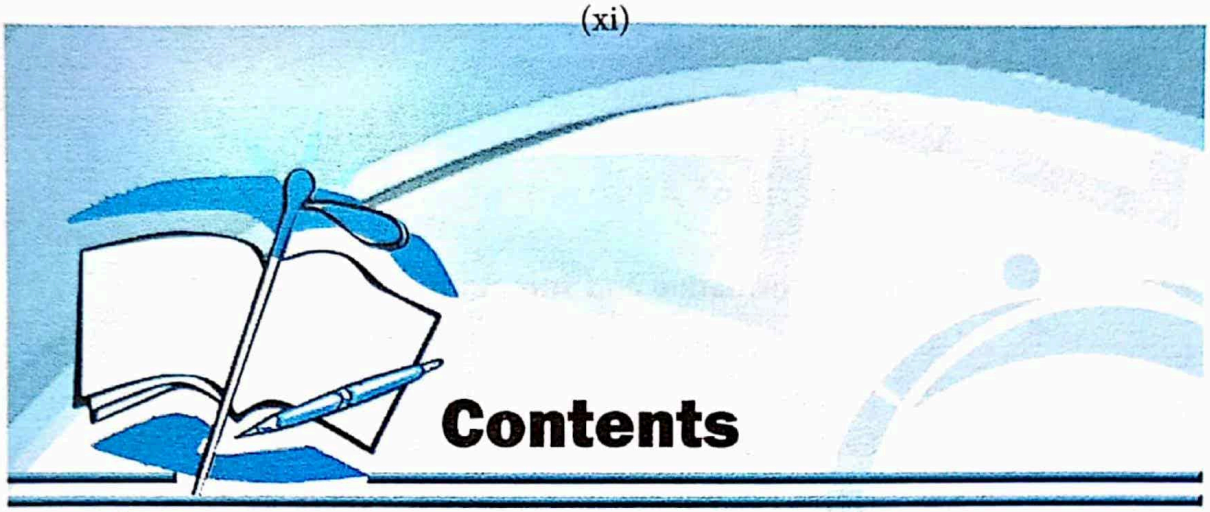

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Unit 1

Concept of Evaluation and Assessment

❑ Structure / Content Outline :

1.1 Introduction : Educational and Instructional Decisions

1.2 Concept and Meaning of Test, Measurement, Assessment and Evaluation

1.2.1 Test

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1.1 Introduction : Educational and Instructional Decisions :

In the field of education, a number of problems arise at every moment. Education, administrators and principals have to make a number of decisions at every step. Teachers are involved in teaching learning process and parents are connected with the process of education. Everyone face educational problems of a quite different nature. Some of the typical questions facing the various personnel connected with education :

1. Should the B.Ed. curriculum be modified this year? (An educator wants to know)
2. Should I arrange regular staff discussions for the enrichment of knowledge on various school subjects? (Principal wants to know)
3. What instructional aids should I use to introduce a lesson? (Teacher have the problem)
4. What should I do so that I may score better marks in English? (a student tries to solve)
5. Should I advise my son/daughter to take admission in B.Ed. course? (Parent thinks)

There are many types of educational decisions.

During the course of a school day, the principal, the teachers and other school personnel take a lot of decisions about academic and administrative matters and about students. Accurate judgements and inferences are absolutely necessary for educational decision – makers. It is their responsibility to gather relevant and accurate data. This involves the use of **tests, measurements, assessment and evaluation.**

Numerous decisions are made by the teachers that require them to supplement their informal observations of pupils with more systematic measures of aptitudes, achievement, and personal development. The following list of questions illustrates some of the major instructional decisions taken by the teachers are likely to encounter during the course of their teaching.

- How realistic are my teaching plans for this particular group of pupils? (Scholastic aptitude tests, past records of achivement.)
- To what extent are pupils attaining the minimum essentials of the course? (Mastery tests, class projects, observation)
- What type of learning difficulties are the pupils encountering? (Diagnostic tests, observation, pupil conferences.)

- Which pupils should be referred to counseling, special classes, or remedial programs? (Scholastic aptitude tests, achievement tests diagnostic tests, observation.)
- How effective was my teaching? (Achievement tests, pupils' ratings, supervisors' ratings.)

This list of questions highlights the need for various types of information in teachings. Thus, the teaching-learning process involves a continuous and interrelated series of instructional decisions concerning ways to enhance pupil learning and also the effectiveness of the instruction depends to a large extent on the nature and quality of the information on which the decisions are based.

1.2 Concept & Meaning of Test, Measurement, Assessment and Evaluation :

The concepts of test, measurement, assessment and evaluation are used in everyday school situations. They are easily confused because all may be involved in single process.

If we ask students to answer a series of questions concerning science, obtain their scores by couting the number of correct answers, and conclude that students are making good learning progress, we are concerned with all three concepts. **The test is the set of questions, measurement is the assigning of numbers to the test results according to a specific rule** (counting correct answers), **and evaluation adds the value judgement** (good learning process).

A test is an instrument / systematic procedure for measuring a sample of behaviour.

Answer the question "How well does the individual perform- either in comparison with others or in comparison with a domain of performance tasks?" we test at the end of a lesson or unit.

Measurement refers to *the process by which the attributes or dimensions of some physical object are determined.* One exception seems to be in the use of the word measure in determining the IQ of a person. The phrase, "*this test measures IQ*" is commonly used. Measuring such things as attitudes or preferences also applies. However, *when we measure*, we generally use some standard instrument to determine how big, tall, heavy, voluminous, hot, cold, fast, or straight something actually is. Standard instruments refer to instruments such as rulers, scales,

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thermometers, pressure gauges, etc. **We measure** to obtain information about what is. Such information may or may not be useful, depending on the accuracy of the instruments we use, and our skill at using them. There are few such instruments in the social sciences that approach the validity and reliability of, say a 12" ruler. **We measure** how big a classroom is in terms of square feet, **we measure the temperature** of the room by using a thermometer, and **we use Ohm meters** to determine the voltage, amperage, and resistance in a circuit. In all of these examples, we are not assessing anything; we are simply collecting information relative to some established rule or standard.

Assessment is a process by *which information is obtained relative to some known objective or goal. Assessment is a broad term that includes testing. **A test is a special form of assessment.** Tests are assessments made under contrived circumstances especially so that they may be administered.* In other words, all tests are assessments, but not all assessments are tests. We assess progress at the end of a school year through testing, and we assess verbal and quantitative skills through such instruments as the SAT and GRE. Whether implicit or explicit, assessment is most usefully connected to some goal or objective for which the assessment is designed. **A test and assessment** yields information relative to an objective or goal. In that sense, we test or assess to determine whether or not an objective or goal has been obtained. **Assessment of skill** attainment is rather straightforward. Either the skill exists at some acceptable level or it doesn't. Skills are readily demonstrable. **Assessment of understanding** is much more difficult and complex. Skills can be practiced; understandings cannot. We can assess a person's knowledge in a variety of ways, but there is always a leap, an inference that we make about what a person does in relation to what it signifies about what he knows. In the section on this site on behavioral verbs, to assess means To stipulate the conditions by which the behavior specified in an objective may be ascertained. Such stipulations are usually in the form of written descriptions.

Evaluation is perhaps the most complex and least understood of the terms. Inherent in the idea of evaluation is "value." When we evaluate, what we are doing is engaging in some process that is designed to provide information that will help us make a judgment about a given situation. Generally, any evaluation process requires information about the situation in question. A situation is an umbrella term that takes into account such ideas as objectives, goals, standards, procedures, and so on. **When we**

evaluate, we are saying that the *process will yield information regarding the worthiness, appropriateness, goodness, validity, legality, etc., of something for which a reliable measurement or assessment has been made.* **For example,** Teacher ask students if they wanted to determine the temperature of the classroom they would need to get a thermometer and take several readings at different spots, and perhaps average the readings. That is simple measuring. The average temperature tells us nothing about whether or not it is appropriate for learning. In order to do that, students would have to be polled in some reliable and valid way. That polling process is what evaluation is all about. A classroom average temperature of 45 degrees is simply information. It is the context of the temperature for a particular purpose that provides the criteria for evaluation. A temperature of 45 degrees may not be very good for some students, while for others, it is ideal for learning.

We evaluate every day. Teachers, in particular, are constantly evaluating students, and such evaluations are usually done in the context of comparisons between **what was intended (learning, progress, behavior)** and **what was obtained.** When used in a learning objective, for the **behavioral verb evaluate is : To classify objects, situations, people, conditions, etc., according to defined criteria of quality.** Indication of quality must be given in the defined criteria of each class category. Evaluation differs from general classification only in this respect.

To sum up, we measure distance, we assess learning, and we evaluate results in terms of some set of criteria. These three terms are certainly connected, but it is useful to think of them as separate but connected ideas and processes.

❑ 1.2.1 Test :

In Dictionary, **Test means—**

(1) A procedure for critical evaluation; a means of determining the presence, quality, or truth of something.
(2) A series of questions, problems, or physical responses designed to determine knowledge, intelligence, or ability.
(3) Psychology a set of standardized questions, problems, or tasks designed to elicit responses for use in measuring the traits, capacities, or achievements of an individual.

The term test is the narrowest of the four terms, and may be defined in a variety of ways.

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In the words of **Bean** (1953:11), a test is "an organised succession of stimuli designed to measure quantitatively or to evaluate qualitatively some mental process, trait or characteristic".

Anastasi and Urbina (1997) have defined a psychological test as "an essentially an objective and standardized measure of sample of behaviour".

Cullary (1998) has said, "A test is a standardised procedure for sampling behaviour and describing it with scores or categories".

Kaplan and Saccuzo (2001) have opined, "A psychological test or educational test is a set of items designed to measure the characetristics of human beings that pertain to behaviour".

The following are the important aspects of the definition—

(i) A test often implies the presentation of a standard set of questions to be answered or tasks to be performed.
(ii) It is the student who does this.
(iii) The student is to do this independently.
(iv) The test results is a measure (a numerical value) of a characteristic of the students.
(v) The test provides a quantitative comparison of the performance of different students.
(vi) It is a technique that yields only a verbal description; for example, an interview technique is not a test.
(vii) Such devices as rating scale or checklists are not included in the test classification even if they yield quantitative results, for they are typically filled out by the teacher and do not consist of questions to which the student is to respond.

It may be defined as follows :

It is a device or procedure for confronting a subject with a standard set of questions or tasks to which the student is to respond independently and the results of which can be treated in such a way as to provide a quantitative comparison of the performance of different students.

❑ 1.2.2 Measurement :

Measurement means quantitative description of data. In science, measurement is the process of obtaining the magnitude of a quantity, such as length or mass, relative to a unit of measurement, such as a meter or a kilogram. The term can also be used to refer to the result obtained after performing the process.

The word "measurement" is derived from the Greek word "metron" which means a limited proportion. As a result of a test, a measure is obtained. An observation, a rating scale or any other device that allows us to obtain information in a quantitative form is a measurement.

Measurement may be defined as follows :

Measurement is an act or process that involves the assignment of a numerical index to whatever is being assessed.

Thus, The **measurement**

1. The act of measuring or the process of being measured.
2. A system of measuring: measurement in miles.
3. The dimension, quantity, or capacity determined by measuring: the measurements of a room.

We measure how big a classroom in terms of square feet, we measure the temperature of the room by using a thermometer, and we use volt, ampere & ohm to determine the voltage, current and resistance in a circuit. In all of these examples, we are not assessing anything; we are simply collecting information relative to some established rules or standard.

Different educationists have defined the word as following.

N.E.Gronlund and **R.L.Linn.** Measurement is the process of obtaining a numerical description of the degree to which an individual possesses a particular characteristics.

James M. Bardfield. Measurement is the process of assigning symbols to dimensions of phenomena in order to characterize the status of a phenomenon as precisely as possible.

R.H. Lindman. Measurement is assignment of one or a set of numbers to each or a set of persons or objects according to certain established rules. This set of numbers depends upon the nature of the characteristics being measured and upon the type of measuring instrument used.

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C.V.Good. The comparison of a quantity, (exhibited by a particular case) with an appropriate scale for the purpose of determining (within the limits of accuracy imposed by the nature of the sale) the numerical value on the scale that corresponds to the quantity to be measured.

From the analysis of above definitions it may be said that *measurement is the process of quantification of some phenomena. It is to assign a number or a set of numbers to one or a set of phenomena.*

❑ 1.2.3 Assessment :

Assessment means a number of different things in different contexts. Sometimes, as teachers, we assess our classes as learning spaces and thus our teaching of them; other times, we evaluate tests or written work that our students produce based on our assignments.

Assessment is a process by which information is obtained relative to some known objective or goal.

By assessment, we mean the processes and instruments that are designed to measure the learner's achievement, when learners are engaged in an instructional programme of our sort or another. It is concerned with ascertaining the extent to which the objective of the programme have been met.

Assessment in education is best described as an action "to determine the importance, size, or value of."

Educational assessment is the process of documenting, usually in measurable terms, knowledge, skill, attitudes and beliefs. Assessment can focus on the individual learner, the learning community (class, workshop or other organised group of learners), the institution, or the educational system as a whole.

❑ 1.2.4 Evaluation :

The last, but not the least, important stage in the process of gathering, using and imparting all relevant and accurate information is that of evaluation. It gives the value judgement to the numerical value.

Inherent in the idea of evaluation is 'value'. When we evaluate, what we are doing is engaging in some process that is designed to provide information that will help us to make judgement about a given situation.

Generally, any evaluation process requires information about the situation in question. A situation is an umbrella term that takes into account such ideas as objectives, goals, standards, procedures & so on.

When we evaluate, we are saying that the process will yield information regarding the worthiness, appropriateness, goodness, validity etc. of something for which a reliable measurement or assessment has been made.

It includes both tangible and intangible qualities. Different educationists have defined evaluation as following.

James M. Bradfield. "Evaluation is the assignment of symbols to phenomenon, in order to characterise the worth or value of a phenomenon, usually with reference to some social, cultural or scientific standards."

Thorndike and Hegan. "The term evaluation is closely related to measurement. It is in some respect, more inclusive including informal and intuitive judgements of pupil's progress. Evaluation is describing something in terms of selected attributes and judging the degree of acceptability or suitability of that which has been described."

Norman E. Gronlund and **Robert L. Linn.** Evaluation is a systematic process of collecting, analysing and interpreting information to determine the extent to which pupils are achieving instructional objectives.

James M. Bradfield. Evaluation is the assignment of symbols to phenomenon, in order to characterise the worth or value of a phenomenon, usually with reference to some social, cultural or scientific standards.

C.V. Good. The process of ascertaining or judging the value or amount of something by use of a standard of appraisal, includes judgement in terms of internal evidence and external criteria.

Therefore, it is defined in a variety of ways.

- Evaluation is an act or process that allows one to make a judgement about the desirability or value of a measure.
- Evaluation refers to the act or process of determining the value of something.
- Evaluation is a process of delineating, obtaining and providing useful information for judging decision alternatives.

Evaluation (classroom) : The systematic process of collecting, analyzing, and interpreting information to determine the extent to which pupils are achieving instructional objectives. (Answers the question "How good?")

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From the above definitions it can be said that evaluation is a much more comprehensive and inclusive term than the measurement. Measurement is assigning numbers to the results of the test according to some specific rules on the other hand evaluation adds value judgement.

For example, ■ when we say Ananya secured 75 numbers in English. It just indicates **'how much'** Ananya has successfully answered. It does not include any qualitative description i.e. **'how good'** he is in English, **Evaluation** on the other hand includes **both quantitative description (measurement)** and **qualitative description (Non measurement) along with value judgements.**

■ Rittika secured 60 numbers in Mathematics. It just indicates **'how much'** Rittika has successfully answered. It does not include any qualitative description i.e. **'how good'** he is in Mathematics. Evaluation, on the other hand includes both **quantitative description (measurement)** and **qualitative description (Non measurement)** along with **value judgements.**

■ A teacher measures Nilanjana's achievement in Physics to be 85%. She evaluates her achievement in Physics when she says that Nilanjana's performance is Very good.

■ Rajat and Rahul study in the same class. Rajat gets 50 marks in science while Rahul gets 88. After getting these measurements, their parents evaluate their achievement in Science when they say that, comparatively, Rajat's progress is better.

Therefore, **Evaluation** is not only *quantitative but also qualitative & includes value judgement.* Mathematically, **Evaluation = Measurement (quantitative description of student's achievement) + Qualitative description of student's abilities + Value judgements about student's achievements and abilities.**

■ B. Ed. Student is evaluated by the teacher educator.
The record reads as follows :

Evaluation :
- The student gets 65 % marks in theory papers (quantitative description).
- She cannot control the class, she never uses instructional aids, never uses reinforcement, her Blackboard is shabby and not methodical (qualitative description).

In view of both the description above, she should be considered as a second class teacher.

❖ 1.2.4.1 Educational Evaluation :

Introduction : Education aims at an all-round development of a pupil and not merely at imparting knowledge to him. Therefore, the modern concept of educational evaluation, in recent decades, stemmed from a newer philosophy of education which calls for the development of more adequate techniques of assessing a pupil's growth and development.

The modern concept of educational evaluation—
- puts the child, and not the subject matter, in the centre;
- caters to the child's psychological needs and interests, aptitudes, appreciation, etc.;
- puts more stress on learning than teaching.

Modern evaluation attempts to measure a comprehensive range of objectives of the modern school curriculum rather than subject-matter achievement only. It employs a variety of techniques, methods and procedures for appraisal. **Modern evaluation includes** integration and interpretation of the various indices of behaviour into an inclusive portrait of an individual. We evaluate the characteristics of students, e.g. their scholastic potential, knowledge of Algebra, honesty, perseverance, ability to teach, and so forth. In the classroom situation, not only the content but also the achievement of the objectives and learning activities are to be evaluated. Content achievement and mastery over learning activities will be tested indirectly when objectives are evaluated. It is, therefore, necessary that teachers and educators should be equipped, not only with subject matter (content) and dynamic methods of teaching but also with objectives and appropriate testing devices which will assess a pupil's abilities.

From an **educational point of view,** the **definition of evaluation** may be *given in the following words* :

"Evaluation is any systematic, continuous process of determining–
(i) the extent to which specified educational objectives, previously identified and defined, are attained;
(ii) the effectiveness of the learning experiences provided in the classroom;
(iii) how well the goals of education have been accomplished."

The following are the important **aspects of this definition—**
- Evaluation implies a systematic process which omits the casual uncontrolled observation of pupils.

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- Evaluation is a continuous process. In an ideal situation, the teaching-learning process on the one hand and the evaluation procedure on the otherhand, go together.
- Evaluation includes not only subject-matter achievements but also attitudes, interests and ideals, ways of thinking, work habits and personal and social adaptability.
- Evaluation always assumes that educational objectives have previously been identified and defined.
- A comprehensive programme of evaluation involves the use of many procedures, for example, analytico-synthetic, heuristic, experimental, lecture, etc.; a great variety of tests, for example, essay type, objective type, etc.; and other necessary techniques, for example, sociometric, controlled-observation techniques, etc.
- Learning is more important than teaching.
- Objectives and accordingly learning experiences should be so relevant that ultimately they should direct the pupils towards the accomplishment of educational goals.
- To assess the students and their complete development brought about through education is evaluation.
- Evaluation includes all the means of collecting evidence on student's behaviour.
- Evaluation is more concerned with the growth which the student has made, than with his status in the group.
- Evaluation is continuous, an integral part of all training and testing.
- Evaluation is descriptive as well as quantitative.
- Evaluation is concerned with the total personality of the student and with gathering evidence on all aspects of personality development.
- Evaluation is a co-operative process involving students, teachers and parents.
- Evaluation is the determination of the congruence between the performance of objectives. Schematically, the concept of educational evaluation may be presented by showing the relationship among objectives, content, learning activities and evaluation procedures (testing) as follows :

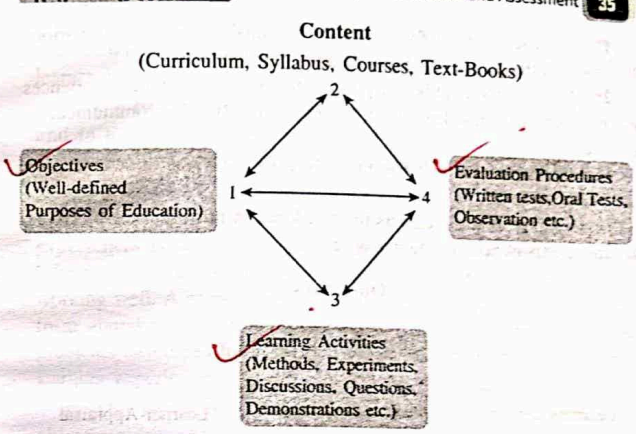

Fig.1.1. Four aspects of educational evaluation.

Evaluation is thus a very comprehensive term. It *involves objectives, content (subject matter), learning activities* and *evaluation procedures*. Each of these *four aspects is related to the remaining three*. The use of the thicker bond between *objectives and evaluation* procedures (fig.2) shows that the *attainment of objectives is the main thing. Objectives are to be evaluated directly and content, learning experiences indirectly.*

The **inter-relationship of objectives, content, learning experiences and evaluation procedures (testing)** clearly indicates that the *process of evaluation is a continuous one and involves continual appraisal of objectives, of the teaching-learning process and of the testing procedures* used by the classroom teacher. It is evident that one cannot pass judgement on the pupil by just testing him at the end of a course of instruction. It is also necessary for the class-room teacher to determine the pupil's status at the beginning of the course, at periodical intervals and then at the end of the academic year. Then and then only he would be in a position in achieving the objectives of instruction.

❖ 1.2.4.2 Teaching-Learning Process and Evaluation :

The main purpose of classroom teaching is to influence pupil behaviour in the desired direction. The desired direction is guided by the educational objectives formulated by the school and the teacher.

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1st, the teacher must formulate instructional objectives for various lessons & units as per the goals & aims of education.

2nd, the teacher should be in a position to construct learning experiences on the basis of student learning & the modes of effective communication channels.

Finally, the teacher will determine the extent to which these objectives are being achieved.

Hence, three major elements in the education process are Objectives, Learning-experiences & learner appraisal.

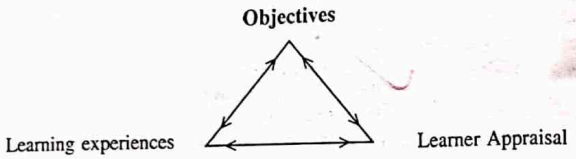

Fig. 1.2 Representation of Educational Process

The above **representation is a dynamic** one and *shows interaction among three major elements as shown* by directional arrows.

Objectives refer to one's intention of desired behaviour that learners should acquire.

Learning Experiences refers to those activities and experiences that the learners undergo in order to acquire the desired behaviours.

Learner Appraisal is concerned with ascertaining the extent to which the objectives have been met.

The representation of Educational process shows the linking of each element with each of the other. Beginning with objectives, the arrow pointing to learning experiences indicates that objectives serve as a guide for the selection or creation of learning experiences.

For example, if a geometry course is aimed at developing deductive thinking abilities in learners, then learning experiences require work other than geometry content. This may include home-assignment to work on newspaper editorials, advertisements & also individual projects.

⇨ **The arrow pointing from objectives to learner appraisal** indicates that the primary focus of appraisal is on gathering evidence on the extent to which the objectives of the programme have been attained.

⇨ **The arrow pointing from learning experiences to learner appraisal** indicates that learning experiences furnish ideas and suggestions learner appraisal.

⇨ **The two arrows pointing from learner appraisal to objectives and to learning experiences** are specially important. For the 1st case, the arrow signifies that appraisal procedures should furnish information about the extent to which the objectives are being attained.

⇨ **The arrow pointing from learner appraisal to learning experiences** is suggestive of two important notions. First, it provides information about the extent to which learning experiences appear to be working well. A second important idea suggested by the arrow pointing from appraisal to learning experiences is that tasks, experiences and problems developed by evaluation specialist may be suggestive of new learning experiences.

⇨ **The last arrow, which points from learning experiences to objectives,** denotes that learning activities can result in encounters involving teachers, learners and learning materials which in turn may suggest new objectives.

❖ 1.2.4.3 Steps in Evaluation :

To understand the *relation among the four aspects of evaluation-Objectives, Content (Subject matter), Learning activities and Evaluation procedures*, it is necessary to study the various steps involved in the process of evaluation.

- Identifying and Defining General Objectives:
- Identifying and Defining Specific Objectives:
- Selecting Teaching Points
- Planning Suitable Learning Activities
- Evaluating
- Using the Results as Feedback

❖ 1.2.4.4 Principles of Evaluation :

Evaluation is a systematic process of determining to what extent instructional objectives has been achieved. It should be seen as an integrated process for determining the nature and extent of pupil learning and development. This process will be more effective when the following principles are taken into consideration.

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Clearly specifying what is to be evaluated. The effectiveness of evaluation depends as much on a careful description of what to evaluate. A teacher must formulate the instructional objectives and define them clearly in terms of student's observable behaviour. Thus, specification of the characteristics to be measured should precede the selection or development of evaluation devices. This relationship between measurement, non measurement and evaluation can be illustrated with the help of following diagram (1.1).

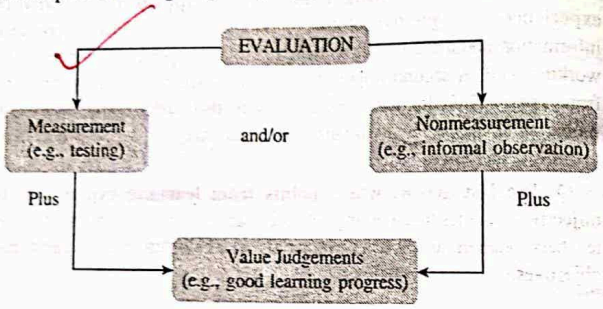

Fig.1.3 The role of evaluation techniques and value judgements in evaluation

1.3 Distinguish between Assessment, Measurement and Evaluation :

1.3.1 Assessment and Evaluation :

In derivation of assessment, the word assess means "to sit beside" or "to assist the judge". It, therefore, seems appropriate in evaluation studies to limit the term assessment to the process of gathering the data and fashioning them into an interpretable form; judgement can then be made on the basis of the assessment. Assesssment the, as we define it, proceedes the final decision making stage in evaluation e.g., the decision to continue, modify, or terminate an educational programme.

- The overall goal of assessment is to improve student learning
- Assessment provides students, parents/ guardians, and teachers with valid information concerning student progress and their attainment of the expected curriculum.

- Assessments are based on the levels of achievement and standards developed for those curricular goals appropriate for the grade.
- Assessment and evaluation measure whether or not learning and/or learning objectives are being met. One could look at assessment and evaluation as the journey (assessment) versus the snapshot (evaluation).
- Assessment requires the gathering of evidence of student performance over a period of time to measure learning and understanding. Evidence of learning could take the form of dialogue, journals, written work portfolios, tests along with many other learning tasks. Evaluation, on the other hand occurs when a mark is assigned after the completion of a task, test, quiz, lesson or learning activity. Eg: a mark on a spelling test will determine if the child can spell the given words and would be seen as an evaluation.
- Assessment would be a review of journal entries, written work, presentation, research papers, essays, story writing, tests, exams etc. and will demonstrate a sense of more permanent learning and clearer picture of a student's ability.

Although a child may receive high marks in spelling test, if he/she can't apply correct spelling in everyday work, the high spelling test marks (evaluation) matter little.

Effective teachers will use both assessment & evaluation techniques regularly and on a daily basis to improve student learning & to guide instruction.

1.3.2 Measurement & Evaluation :

- *Evaluation* is a broader term than measurement. It is more comprehensive than mere measurement. It is more inclusive than the term *measurement*.
- According to D. L. Stuffebeam (1968), *measurement* may be defined as the assignment of numerals to entities according to rules.
  In the words of Lester o. Cron & others, "*Evaluation* not only is concerned with the determination of learning results but it also involves value judgement of the desirability of these results.
- Evaluation is a continuous process in which various techniques of testing of *measurement* can be utilised. Evaluation is a cooperative activity in which the principal, the teacher, the pupils and the parent participate".

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- While *measurement* is concerned with only the amount, quantity or frequency of a variable, *evaluation* matches such an amount, quantity or frequency with relevant criteria for the purpose of making some value judgement about the measured or the observed amount. [Prof. adidiram Taiwo (1995)]
- *Measurement* is a term that emphasises the single aspects of subject matter achievement, scientific skill and abilities. *Evaluation* is a psychological term based on predetermined objectives and includes qualitative and quantitative criteria.
- Evaluation is a comprehensive and continuous process which covers every aspect of an individual's achievement in the educative programme. It is an integral part of education in which students and teachers are partners. *Measurement*, on the otherhand, implies only a precise quantitative assessment of instructional outcomes.
- *Evaluation* is integrated with the entire task of education and not only with exams, test and measurement.
- *Evaluation* encompasses tests and measurement but also goes beyond them.
- *Evaluation* depends upon measurement, but is not synonymous with it.
- *Measurement* is a quantitative determination of how much an individual's performance has been. *Evaluation* is a qualitative judgement of how good or how satisfactory an individual's performance has been.
- *Measurement* describes a situation; *evaluation* judges its worth or value.
- *Measurement* is only a tool to be used in *evaluation*. By itself, it is meaningless, but without it evaluation is likely to be of little significance.
- *Measurement* affords the *evaluator* a quantitative description of externalised knowledge and behaviour.
- Sound *evaluation* is based upon the results of accurate & relevant *measurement*.

❑ 1.3.3 Relation Between Measurement and Evaluation :

The words measurement and evaluation are used inter changeably.

- Evaluation depends upon measurement but is not synonymous with it.
- Evaluation encompasses but goes beyond the meaning of the terms 'test' and 'measurement'.
- Sound evaluation is based upon the results of accurate and relevant measurement. Measurement is only a tool to be used in evaluation. By itself, it is meaningless, but without it evaluation is likely to be very erratic.
- Evaluation is integrated with the whole task of education, and not only with measurement and examinations.
- Evaluation goes beyond the measurement in judging the desirability or value of the measure. Evaluation is not only quantitative but also qualitative and includes value judgements.

Mathematically, it may be said that :
Evaluation = Quantitative description of pupils' achievements + Qualitative description of pupils' abilities + Value judgement about achievements and abilities.

The major distinction between measurement and evaluation may be summarized as under.

Measurement	Evaluation
• Measurement refers to the observations that can be expressed quantitatively.	• Evaluation is qualitative expression of the data.
• Measurement is a quantitative determination of how much an individual's performance has been.	• Evaluation is a qualitative judgement of how good or how satisfactory an individual's performance had been.
• Measurement describes a situation.	• Evaluation judges its worth or value.
• Measurement is precise and objective.	• Evaluation is subjective.
• Measurement assign numerical value to quantify the data.	• Evaluation adds value judgement to state the quality of data.
• Measurement implies only a precise quantitative assessment of instructional outcomes.	• Evaluation signifies a wider process of judging students' progress.
• Measurement is concerned with, knowing the level of attainment.	• Evaluation is concerned with its improvement.
• Measurement is the science of collecting information about objects to be studied.	• Evaluation includes the use of information collected by the process of Measurement.

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1.4 Evaluation : Nature, Scope, Purpose and Functions :

1.4.1 Nature and Characteristics of Evaluation :

- Evaluation is a continuous process
- Evaluation includes academic and non academic subjects
- Evaluation is a procedure for improving the product
- Discovering the needs of an individual and designing learning experience
- Evaluation is purpose oriented

1.4.2 Scope of Evaluation :

- Value judgement
- Ascertaining the extend to which the educational objectives have been attained.
- Effectiveness of appraisal or methods of instruction
- Identifies pupil's strengths and weakness, difficulties and problems, needs and demands
- Provide baseline for guidance and counseling
- Placements and promotions in jobs
- Development of attitudes, interests, capabilities, creativity, originality, knowledge and skills etc.
- Development of tools and techniques
- Development of curriculum and for its revision interpretation of results.
- Helpful for curriculum planners and administrators to improve the curriculum pattern.

1.4.3 Purpose of Evaluation :

Bramley and Newby identify five main purposes of evaluation :

Feedback – Linking learning outcomes to objectives and providing a form of quality control.

Control – Making links from training to organizational activities and to consider cost effectiveness.

Research – Determining the relationships between learning, training, and the transfer of training to the job.

Intervention – The results of the evaluation influence the context in which it is occurring.

Power games – Manipulating evaluative data for organizational politics.

According to **Bloom (1971), the main purposes of evaluation** are :

- To discover the extent of competence which the student has developed in initiating, organizing and improving his day-to-day work and to diagnose his strengths and weaknesses with a view to further guidance.
- To predict the educational practices which a particular student-teacher can best participant in an organization
- At the end of a career to certify the students' degree of proficiency in a particular educational practice.

In order to achieve the ultimate objective of education, we may identify the following **main four purposes of evaluation.**

- Classifying students in classes or sections of a class according to their demonstrated knowledge or ability in some subject areas.
- Diagnosing the individual student's educational weaknesses in order to plan remedial work for him and to revise teaching strategies.
- Assessing pupil progress from time to time.
- Predicting students' future academic success or otherwise.

Evaluation plays an enormous role in the teaching-learning process. The main aim of teaching learning process is to enable the pupil to achieve intended learning outcomes. In this process the learning objectives are fixed then after the instruction learning progress is periodically evaluated by tests and other evaluation devices. However, we can form an idea of the purpose and function of evaluation process. **Overall purpose of evaluation** are as under—

- To discover the extend of competence
- To predict the educational practices
- To certify student's degree, proficiency in a particular educational practice
- To appraise the status of and changes in student's behavior
- To make provision for guiding the growth of the individual student.
- To diagnose the individual students educational weakness and strength
- To assess the student's progress from time to time and discloses student's needs and possibilities

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- To predict the student's future academic success or otherwise
- To provide basis for modification of curriculum and courses
- To locate areas where remedial measures are needed
- To provide basis for the introduction of experiences to meet the needs of individuals and group of students
- To motivate students towards better attainment and growth
- To test the efficiency of teachers
- To appraise the teachers and supervisors competence
- To improve instructions, measurements and measuring devices
- To bring out the inherent capabilities of a student, such as attitudes, habits, appreciation and understanding, manipulative skills in addition to conventional acquisition of knowledge
- Serves as method of self-improvement, improving school learning relations and as a guiding principles for the selection of supervisory techniques

❑ 1.4.4 Importance of Evaluation in Education :

Evaluation is inevitable in teaching-learning process. It is inevitable in classroom teaching. Effective decision making process involves evaluation. The importance of evaluation may be stated as follows–

- Evaluation is essential for **sound educational decision-making**
- Parents are eager to know what the results of education are
- **Educators, Administrators, Teachers, Students and Parents** all work hard for the attainment of educational goals, and it is only natural that they should want to ascertain the extent to which these goals have been realized.
- Education is truly a giant and an important enterprise. Therefore, it is crucial that we evaluate its process and products. For an adequate teaching learning situation, evaluation techniques are essential.
- A sound choice of objectives depends upon sound information about the pupils' abilities, interests, attitudes and character. This information is obtained through the techniques of evaluation.
- A good programme of evaluation clarifies the aims of education.
- It helps in the improvement of the curriculum.
- Evaluation attempts at relating **the subject matter (content), classroom instruction (teaching-learning process)** and **testing procedures to educational objectives, and** it helps in **developing a scientific approach** to educational problems.
- Evaluation helps administrators, teachers and students.
- Evaluation helps teachers to make better **evaluative judgements.** We carry out activities in various aspects of teaching-learning process like :

(a) fulfill classroom objectives
(b) diagnose learning difficulties of students
(c) determine readiness for new learning experiences
(d) from students' classroom groups for special activities
(e) assist students in their problems of adjustment
(f) prepare reports of pupils' progress.

The understanding of the principles and procedures of evaluation is very much needed in making more intelligent decisions in directing pupils progress towards worthwise educational goals.

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Short Questions & Answers

1. Define the term 'test'.

Ans : It is a device or procedure for confronting a subject with a standard set of questions or tasks to which the student is to respond independently and the results of which can be treated in such a way as to provide a quantitative comparison of the performance of different students.

2. What do you mean by the term 'measurement'?

Ans : Measurement may be defined as follows :

Measurement is an act or process that involves the assignment of a numerical index to whatever is being assessed.

Thus, The **measurement**

1. The act of measuring or the process of being measured.
2. A system of measuring: measurement in miles.
3. The dimension, quantity, or capacity determined by measuring: the measurements of a room.

From the analysis of above definitions it may be said that *measurement is the process of quantification of some phenomena. It is to assign a number or a set of numbers to one or a set of phenomena.*

3. How is evaluation defined?

Ans : Norman E. Gronlund and **Robert L. Linn.** Evaluation is a systematic process of collecting, analysing and interpreting information to determine the extent to which pupils are achieving instructional objectives.

Therefore, it is defined in a variety of ways.

- Evaluation is an act or process that allows one to make a judgement about the desirability or value of a measure.
- Evaluation refers to the act or process of determining the value of something.
- Evaluation is a process of delineating, obtaining and providing useful information for judging decision alternatives.

4. What is educational evaluation?.

Ans : The modern concept of educational evaluation—

- puts the child, and not the subject matter, in the centre;
- caters to the child's psychological needs and interests, aptitudes, appreciation, etc.;
- puts more stress on learning than teaching.

5. What are the various steps involved in evaluation?

Ans : To understand the relation among the four aspects of evaluation-Objectives, Content (Subject matter, Learning activities and Evaluation procedures, it is necessary to study the various steps involved in the process of evaluation.

- Identifying and Defining General Objectives:
- Identifying and Defining Specific Objectives:
- Selecting Teaching Points
- Planning Suitable Learning Activities
- Evaluating
- Using the Results as Feedback

6. How would you distinguish between assessment and evaluation.

Ans : Assessment and evaluation measure whether or not learning and/or learning objectives are being met. One could look at assessment and evaluation as the journey (assessment) versus the snapshot (evaluation).

Assessment requires the gathering of evidence of student performance over a period of time to measure learning and understanding. Evidence of learning could take the form of dialogue, journals, written work portfolios, tests along with many other learning tasks. **Evaluation**, on the other hand occurs when a mark is assigned after the completion of a task, test, quiz, lesson or learning activity. Eg: a mark on a spelling test will determine if the child can spell the given words and would be seen as an evaluation.

7. Bring out clearly the relationship between measurement and evaluation.

Ans : Evaluation goes beyond the measurement in judging the desirability or value of the measure. Evaluation is not only quantitative but also qualitative and includes value judgements.

Mathematically, it may be said that :

Evaluation = Quantitative description of pupils' achievements

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+ Qualitative description of pupils' abilities + Value judgement about achievements and abilities.

8. Distinguish between measurement and evaluation..

Ans :

Measurement	Evaluation
• Measurement refers to the observations that can be expressed quantitatively.	• Evaluation is qualitative expression of the data.
• Measurement is a quantitative determination of how much an individual's performance has been.	• Evaluation is a qualitative judgement of how good or how satisfactory an individual's performance had been.
• Measurement describes a situation.	• Evaluation judges its worth or value.
• Measurement is precise and objective.	• Evaluation is subjective.
• Measurement assign numerical value to quantify the data.	• Evaluation adds value judgement to state the quality of data.

9. What are the various nature of evaluation?

Ans : The various nature of evaluation are—

(i) Evaluation is a continuous process
(ii) Evaluation includes academic and non academic subjects
(iii) Evaluation is a procedure for improving the product
(iv) Discovering the needs of an individual and designing learning experience
(v) Evaluation is purpose oriented

10. Enumerate the various purposes of evaluation.

Ans : In order to achieve the ultimate objective of education, we may identify the following **main four purposes of evaluation**.

- Classifying students in classes or sections of a class according to their demonstrated knowledge or ability in some subject areas.
- Diagnosing the individual student's educational weaknesses in order to plan remedial work for him and to revise teaching strategies.
- Assessing pupil progress from time to time.
- Predicting students' future academic success or otherwise.

Probable Questions

☛ Short answer type questions : Marks : 2 or 3

1. Define the term 'test'.
2. What do you mean by the term 'measurement'?
3. How is evaluation defined?
4. How would you distinguish between assessment and evaluation.
5. Distinguish between measurement and evaluation.
6. Bring out clearly the relationship between measurement and evaluation.
7. What is educational evaluation?
8. What are the various steps involved in evaluation?
9. What are the various nature of evaluation?
10. Enumerate the various purposes of evaluation.

☛ Essay answer type questions : Marks : 5 or 7

1. Explain : Evaluation depends upon measurement but is not synonymus with measurement.
2. Explain the importance of evaluation in education.
3. Enlist the purpose and functions of evaluation in education.
4. Explain fully the teacher's role in evaluation.
5. Present schematically the concept of educational evaluation.
6. Make differences between measurement and evaluation.
7. Describe concept and meaning of the term : test, measurement and evaluation.
8. Discuss the importance of evaluation.

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Unit 2

Approaches and Techniques of Evaluation and Criteria of Assessment Procedure

❑ Structure / Content Outline :

2.1 Approaches-Formative and Summative, NRT and CRT

2.1.1 Formative and Summative Evaluation

2.1.2 Difference Between Formative and Summative Evaluation

2.1.3 Norm-Referenced and Criterion- Referenced

2.1.4 Comparison of Criterion-Referenced Tests (NRTs) and Norm-Referenced tests (CRTs)

2.2 Techniques-Observational, Self-reporting, Psychological and Educational tests.

2.2.1 Observation as a Technique

2.2.1.1 Anecdotal Records

2.2.1.2 Rating Scale

2.2.1.3 Checklists

2.2.2 Self-Report Techniques

2.2.2.1 Interviews

2.2.2.2 Inventories or Questionnaires

2.2.2.3 Attitude Scales

2.2.3 Psychological and Educational Tests

2.2.3.1 Characteristics : Psychological Tests and Educational Tests

2.2.3.2 Classification : Psychological tests and Educational Tests

2.2.3.3 Uses : Psychological test and Educational Tests

2.3 Validity-Meaning, Types and Measurement

2.3.1 Nature of Validity

2.3.2 Types of Validity

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2.3.3 Measurement of Validity
2.3.4 Factors Affecting the Validity
2.4 Reliability-Meaning, Types and Measurement
2.4.1 Nature of Reliability
2.4.2 Types of Reliability
2.4.3 Methods of estimating Reliability
2.4.4 Factors influencing the Reliability of Test Scores
2.5 Objectivity
2.6 Norm and Usability
2.5.1 Norm
2.5.2 Usability

✪ 2.1 Approaches-Formative and Summative, NRT and CRT :

There are various approaches in evaluation. We need to understand these approaches in order to choose the appropriate one for our purpose in a given situation. In this unit we will take a look at some of the most significant approaches to evaluation. These approaches are grouped in pairs, namely **Formative and summative** (according to their *functional role in the classroom instruction*); **Norm-referenced and Criterion-referenced** (according to the *interpretation of results*).

❑ 2.1.1 Formative and Summative Evaluation :

Measurement and evaluation can be classified according to their functional role in the classroom instruction.

A. Formative Evaluation :

Formative evaluation is used during the teaching learning process to monitor the learning progress. Its purpose is to provide continuous feedback to both pupil and teacher concerning learning success and failures.

It helps the students and the teachers both to identify the immediate learning difficulties. Formative evaluation used to provide the student and teacher with feedback on the student's progress toward mastery of relatively small units of learning to provide information that will direct subsequent teaching or study. Feedback to the teacher helps to modify the methods of instruction and to prescribe group and individual remedial work.

Formative evaluation answers to the questions–
- Are the pupils actually benefited by the instruction?
- Whether the desired change in behavior being produced in pupils?
- To what extent the pupils have achieved the objectives of instruction?
- Whether the progress of pupils in a unit is successful?

⇨ *Formative evaluation determines* learning success of the learners and identifies learning errors of the pupils which need to be corrected.

⇨ *Formative evaluation requires* specially prepared tests for each unit of course or each chapter of a text book. It depends on tests, quizzes, homework, classwork, oral questions prepared for each segment of instruction. Generally teacher made tests are used for formative evaluation. Observational techniques can also be used to monitor student progress and identify learning errors.. The results of the formative evaluation can only be used to improve learning and instruction.

⇨ *Formative Evaluation is used to* monitor learning progress during instruction.

⇨ *Formative Evaluation is used to* monitor student's learning progress during instruction with the purpose of providing ongoing feedback to students and teachers regarding success and failure of teaching/learning process.

B. Summative Evaluation :

This type of evaluation is given **at the end of the course or unit of instructions to find out which student, to what extent has mastered the intended learning outcomes.**

⇨ *Summative Evaluation is used* principally to certify, assign a grade, or to attest to the student's successful completion of a relatively large unit of instruction.

⇨ *Summative Evaluation indicates* the degree to which the students have mastered the course content.

⇨ *Summative Evaluation helps* to judge the appropriateness of the instructional objectives.

⇨ *Summative Evaluation also helps* the teacher to know the effectiveness of the instructional procedure.

⇨ *Summative Evaluation* The techniques used in summative evaluation are determined by the instructional objectives, but they typically include

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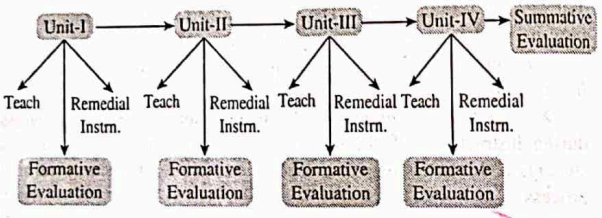
teacher-made achievement tests, ratings on various types of performance (e.g., laboratory, oral report), and evaluations of products(e.g., themes, drawings, research reports). Although the results of summative evaluation are primarily used for assigning the grades or for certifying learners' mastery of instructional objectives, they can also be used to give feedback on the appropriateness of objectives and the effectiveness of instruction.

Summative Evaluation : To evaluate achievement at the end of instruction. Summative Evaluation is designed to determine the extent to which the instructional objectives have been achieved and is used primarily for assigning course grades or for certifying pupil mastery of the intended learning outcomes.

A flow chart



❑ 2.1.2 Difference Between Formative and Summative Evaluation :

Michael Serinen for the first time used the terms formative evaluation and summative evaluation in 1967. The difference between both the terms can be summarized under following headings.

Formative Evaluation	Summative Evaluation
• It is used during the teaching Learning process to monitor the learning process	• It is used after the course completion to assign the grades
• It is developmental in nature. The aim of this evaluation is to improve student's learning and teacher's teaching.	• It is terminal in nature. Its purpose is to evaluate student's achievement

Formative Evaluation	Summative Evaluation
• Generally, teacher made tests are used for the purpose	• Generally, standardized tests are used for the purpose.
• The test items are prepared from Limited content area	• The test items are prepared from whole content area
• It helps to know to what extent. The instructional objectives has been achieved.	• It helps to judge the appropriateness of the instructional objectives
• It provides feedback to the teacher to modify the methods and to prescribe remedial works	• It helps the teacher to know the effectiveness of the instructional procedure.
• Only few skills can be tested in this evaluation	• Large number of skills can be tested in this evaluation.
• It is a continuous and regular process.	• It is not regular and continuous process
• It considers evaluation as process	• It considers evaluation as product
• It answers to the question, Whether the progress of the pupils In a unit is successful?	• It answers to the question, the degree to which the students have Mastered the course content.

❑ 2.1.3 Norm-Referenced and Criterion-Referenced :

Measurement and evaluation procedures can be classified as per the interpretation of the results. How the results of tests and other evaluation procedures are interpreted also provides a method of classifying these instruments. There are two basic ways of interpreting pupil performance.

- Norm-Referenced
- Criterion-Referenced

A. Norm-Referenced :

Norm-Referenced : When the interpretation is made in terms of the *"relative position held in some known group."A norm referenced measurement* is designed to *measure the performance of an individual, which is interpretable in terms of the individual's relative position in some known group.*

A norm-referenced interpretation of the test score permits the teacher to make meaningful comparisons among students in terms of their achievement. ***For example,*** in a class of 40 students, the average marks in Physical Science are 75. Nilanjana's marks in Physical Science are 88.

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The teacher concludes that Nilanjana's performance in Physical Science is above average.

Norm-referenced interpretations might be based on a local, state, or national group depending on the use to be made of the results. Using national norms, for example, we might describe a pupil's performance on a vocabulary test as equaling or exceeding that of 80 percent of a national sample of fifth-graders.

Norm-Referenced is to describe the performance in terms of the relative position held in some known group (e.g., typed better than 75% of the class members).

The **norm-referenced interpretation indicated** the pupil's relative standing in a norm group by noting that percent of the pupils in the group who obtained the same score or one lower **(called a percentile score)**.

★ **Characteristics of NRT :**

- Its basic purpose is to measure students' achievement in curriculum based skills.
- It is prepared for a particular grade level.
- It is administered after instruction.
- It classifies achievement as above average, average or below average for a given grade.

B. Criterion-Referenced :

Criterion-Referenced : When the interpretation is made in term of the 'specific performance' that an individual has demonstrated.

For example, Bisakha has typed 40 words per minute without error.

⇨ **Criterion-reference interpretation** can be made in various ways. **Firstly,** we can describe the specific learning tasks a pupil is able to perform (**e.g.,** counts from 1 to 100). **Secondly,** we can indicate the percentage of tasks a pupil performs correctly (**e.g.,** spells 80 percent of the words in the word list). **Thirdly,** we can compare the performance of an individual on a test with some standard set of performance and make a mastery-non-mastery decision (**e.g.,** answers correctly at least 70 percent of the items measuring "Identification of the main idea in paragraphs").

⇨ The test score in a **criterion referenced interpretation is used** to describe the status of the individual.

⇨ **Criterion-Referenced is to describe** the specific performance that was demonstrated (e.g., spelled 10 words correctly out of 10).

⇨ The **criterion-referenced interpretation focused** on the percentage of items answered correctly **(called a percentage-correct score).**

★ **Characteristics of CRT :**

- Its main objective is to measure students' achievement of curriculum based skills.
- It is prepared for a particular grade or course level.
- It has balanced representation of goals and objectives.
- It is used to evaluate the curriculum plans instruction progress and group students interactions.
- It can be administered before and after instruction.

★ **Basic Terminology :**

Formative Evaluation : To monitor learning progress during instruction

Summative Evaluation : To evaluate achievement at the end of instruction

Norm-Referenced Test : A test designed to provide a measure of performance that is interpretable in terms of an individual's relative standing in some known group.

Criterion-Referenced Test : A test designed to provide a measure of performance that is interpretable in terms of clearly defined and delimited domain of learning tasks.

★ **NRT and CRT :**

The norm-referenced interpretation indicated the pupil's relative standing in a norm group by noting that percent of the pupils in the group who obtained the same score or one lower **(called a percentile score)**. The criterion-referenced interpretation focused on the percentage of items answered correctly **(called a percentage- correct score)**.

Strictly speaking, norm reference and criterion reference refer only to the method of interpreting the results. These distinct types of interpretation are likely to be most meaningful and useful, however, when tests (and other evaluation instruments) are specifically designed for the type of interpretation to be made. Thus, it is legitimate to use the terms criterion referenced and norm-referenced as broad categories for classifying tests and other evaluation techniques.

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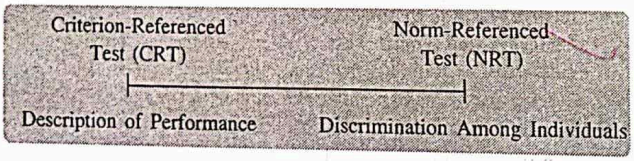
A key feature in constructing norm-referenced tests is the selection of items of average difficulty and the elimination of items that all pupils are likely to answer correctly. This procedure provides a wide spread of scores so that discrimination among pupils at various levels of achievement can be more dependably made. This is useful for decisions based on relative achievement, such as selection, grouping and relative grading. In contrast, a key feature in constructing criterion referenced tests is the selection of items that are directly relevant to the learning outcomes to be measured, without regard to the power of items to discriminate among pupils. If the learning tasks are easy, that test item will be easy. No attempt is made to eliminate easy items or alter their difficulty. Here the main purpose is to obtain a description of the specific knowledge and skills each pupil can demonstrate. This information is useful for both group and individual instruction.

As shown in the following continuum, **the criterion referenced test**, at one end, *emphasizes description of performance* and the **norm-referenced** test, at other end, *emphasizes the discrimination among individuals*.



❑ 2.1.3 Comparison of Criterion-Referenced Tests (NRTs) and Norm-Referenced tests (CRTs) :

Common Characteristics of NRTs and CRTs :

- Both require specification of the achievement domain to be measured.
- Both require a relevant and representative sample of test items.
- Both use the same types of test items
- Both use the same rules for item writing (except for item difficulty).
- Both are judged by the same qualities of goodness (validity and reliability)
- Both are used in educational measurement.

☛ **Difference Between NRTs and CRTs** (but it is only a matter of emphasis) :

- NRT - Typically covers a large domain of learning tasks, with just a few items measuring each specific task.
  CRT - Typically focuses on a delimited domain of learning tasks, with a relatively large number of items measuring each specific task.
- NRT - Emphasizes discrimination among individuals in terms of relative level of learning.
  CRT - Emphasizes description of what learning tasks individuals can and cannot perform.
- NRT - Favours items of average difficulty and typically omits easy items.
  CRT - Matches item difficulty to learning tasks, without altering item difficulty or omitting easy items.
- NRT - Used primarily (but not exclusively) for survey testing.
  CRT - Used primarily (but not exclusively) for mastery testing.
- NRT - Interpretation requires a clearly defined group.
  CRT - Interpretation requires a clearly defined and delimited achievement domain.

Both criterion-referenced and norm-referenced measurement are useful in classroom testing.

- Tests used during instruction (formative tests), typically favour criterion-referenced measurement because of its descriptive nature. Each test can be designed to measure such a limited domain of learning tasks that a large number of test items can be included for each task. This makes it possible to use the results to describe specifically what each people has learned and what types of learning errors need to be corrected.
- **Tests used** at the end of instruction (summative tests), however, typically emphasize norm-referenced interpretations. Such a broad range of learning outcomes is usually covered by the test that just a few items can be included for each outcome. These few items in each area can serve as indicators of achievement, and thus help determine each pupil's level of performance, but they provide inadequate descriptions of what has been learned specifically.

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2.2 Techniques–Observational, Self-reporting, Psychological and Educational tests :

Techniques of Evaluation : The **technique of evaluation is method or procedure** in carrying out a scientific or mechanical operation or a degree of experness shown in the method procedure or in carrying out an operation. The **technique of evaluation in the** field of education is the degree of skilfulness dexterity shown in the process of collecting information or evidences with regard to a characteristic quality of a person or performance process.

❑ 2.2.1 Observation as a Technique :

Meaning : Observation is one of the most ancient and widely used instruments of assessing personality. **Observation** have been defined as "Measurement without instruments". In education, Observation is the most commonly employed at all measurement technique.

★ Direct observation and Indirect observation :

Basically, there are two modes of observations : We can watch people do and say things, and we can ask people about their own actions and the behaviour of others. The principal ways of getting information are by either experiencing something directly or by having someone tell us what happend.

★ Natural observation and Participant observation :

Observation may be natural observation or participant observation.

Natural Observation : In natural observation, the observer observes the specific behavioural characteristics of children in natural settings like playground or any other social situation.

In Participant observation, the observer actually becomes an active participant in chidren's play or activities.

★ Controlled observation and Free observation :

Observation may be conducted in a **controlled situation** or in an **unstructured** or **free situation.**

Controlled observation : When the observer observes the behavioural characteristics of children in certain situations which have been controlled or structured by the observer for purpose for observing the specific behaviour patterns, is called **controlled observation.**

Free observation : In this techniques, children's behaviour, feelings, actions and reactions are obseved in free, natural and real life situations in the home, classroom, playground, etc.

Steps of observaion : The major steps of observation are as follows :

(i) planning for observation
(ii) Observing
(iii) Drawing inferences and interpreting observed facts.
(iv) Reporting

★ Observational Techniques :

Direct observation is the best means we have for evaluating some aspects of learning and development, and it offers supplementary information concerning others. The problem is how to get an objective record of the most meaningful behaviour. This can be greatly facilitated by using such techniques as (1) anecdotal records, (2) rating scales, and (3) checklists.

Learning outcomes in skill areas and behavioural changes in personal-social development are especially difficult to evaluate with the usual paper-and-pencil test. **Learning outcomes and aspects of development** like the following

- Skills (speaking, writing, listenng, oral reading, performing laboratory experiments, drawing, dancing, study skills, social skills etc.)
- Work habits (use of time, use of equipment, use of resources, creativity, persistence, dependability, etc.)
- Social attitudes (concern for the welfare of others, respect for laws, concern for social institutions, sensitivity to social issues etc.)
- Scientific attitudes (open-mindedness, willingness to suspend judgement, sensitivity to cause-effect relations, an inquiring mind)
- Interests (Expressed feelings toward various educational, mechanical, asthetic, scientific, social, recreational, vocational activities)
- Appreciations (Feeling of satisfaction and enjoyment expressed toward nature, music, art, literature, physical skill, outstanding social contributions)
- Adjustments (relationship to peers, reaction to praise and criticism, reaction to authority, emotional stability, social adaptability)

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Can generally be evaluated by (1) observing pupils as they perform and describing or judging that behaviour (evaluating a speech), (2) observing and judging the quality of the product resulting from their performance (evaluating handwriting), (3) asking their peers about them (evaluating social relationships), and (4) questioning them directly (evaluating expressed interests).

An **observation technique** generally implies the use of a particular observational tool such as—

- **Anecdotal Records**
- **Rating Scales**
- **Checklists**

However, the process of observing and recording an individual's behaviour is what is meant by the phrsase Observational Technique

❖ 2.2.1.1 Anecdotal Records :

Teacher's daily observation give them a wealth of information concerning the learning and development of their pupils. **For example,** a second grade teacher notices during oral reading that *Avik mispronounces* several simple words, *Ananya sits staring out the window*, and that *Arka keeps interrupting the reading with irrelevant questions.*

Similarly, a high school Physics teacher notices during a laboratory period that *Chandrima is slow and inefficient in setting up his equipment*, that *Ashish finishes his experiments early and helps others*. Such daily incidents and events have special evaluative significance. They enable us to determine how a pupil typically perform or behaves in a variety of situations.

An anecdote is an account of an event in a child's day. The record of this event can be detailed or brief. These short report describe, in a factual way, the incident, its context, and what was said or done by the participant(s). In most cases, ***anecdotes focus on very simple, everyday interactions among children, children and adults as well as children and materials in the environment.***

Anecdotal records are *factual descriptions of the meaningful incidents and events that the teacher has observed in the pupils' lives.*

Each incident should be written down shortly after it happens. The descriptions may be recorded on separate cards like the one shown in the following figure., or as running accounts, one for each pupil, on separate page in a notebook. Jotting one-word reminders or short phrases on the cards about the event can provide a set of reminders when the anecdote is written.

Class _VII Pupil___Ananya Gayen
Date_20-01-15 Place_school Observer M. G

Incident :

As class was about to start, Ananya asked if she could give a answer of a question in physics, she answered the question in a low voice, constantly looked down, moved her right foot back and forth, and pulled her shirt. When she finished, some students said," We couldn't hear it." Teacher told to answer loudly. Ananya didn't repeat the answer.

Interpretation :

Ananya study seriously, prepare the assignment regularly. However, she seems very shy and nervous in answering before a group. Her silent refusal to repeat the answer again seemed to be due to her nervousness.

Fig. Anecdotal Record Form

Characteristics of Anecdotal Records :

- Simple reports of behavior'
- Result of direct observation.
- Accurate and specific
- Gives context of child's behavior
- Records typical or unusual behaviors

Purpose :

Anecdotes capture the richness and complexity of the moment as children interact with one another and with materials. These records of child behavior and learning accumulated over time enhance the teacher's understanding of the individual child as patterns or profiles begin to emerge. Behavior change can be tracked and documented, and placed in the child's portfolio resulting in suggestions for future observations, curriculum planning and student or parent conferences.

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A sample of Cumulative Anecdotal Record is shown below :

Date : **Time :**

Name of the Pupil_____

Sl.No.	Description of Anecdote	Name of the observer	Comments if any
1.			
2.			
3.			
4.			
5.			

Cumulative Anecdotal Record

Uses : The uses of Anecdotal record is as follows—

- The anecdotal record is useful for the guidance worker and teacher as it present dynamic picture about the pupil in different situations.
- The **anecdotal record is used** by teachers to know and understand the pupil on the basis of the description of happening of student's life.
- The **anecdotal record enables** teacher and guidance worker to understand the personality pattern of students.
- The **anecdotal record enables** teacher and guidance worker to study and understand the adjustment patterns of the students.
- The **anecdotal record is helpful** for the teachers and guidance workers in assisting the students for solving their problems and difficulties.
- The **anecdotal record is better means** of data collection which is helpful to improve relationship with teachers and peers.
- The **anecdotal record is helpful** for the students to get rid of mental tansions, anxieties and so on.
- The **anecdotal record is useful** for parents to know about the child clearly and they can help their child in various ways.
- The **anecdotal record is useful** to improve teaching standard after knowing comment of the students through anecdotal technique.

❖ 2.2.1.2 Rating Scale :

A rating scale is a method that requires the rater to assign a value, sometimes numeric, to the rated object, as a measure of some rated attribute. Etymologically, a rating scale means a scale or scaling technique employed for rating a thing, event or person with respect to his qualitative characteristics, aspects or attributes.

According to **Encyclopedia Britannica**, **"The rating scale** is one of the oldest and most versatile of assessment techniques. Rating scales present users with an item and ask them to select from a number of choices. The rating scale is similar in some respects to a multiplechoice test, but its options represent degrees of a particular characteristic."

As with other evaluation instruments, it should be constructed in accordance with the learning outcomes to be evaluated, and its use should be confined to those areas in which there is a sufficient opportunity to make the necessary observations. If these two principles are properly applied, a rating scale will serve several important evaluative functions:

- It will direct observation toward specific aspects of behaviour;
- It will provide a common frame of reference for comparing all pupils on the same set of characteristics:
- It will provide a convenient method for recording the observers' judgements.

✦ Types of rating scales :

All rating scales can be classified into one of three classifications:

A. Numerical Rating Scale : One of the *simplest types of rating scales is that in which the rater checks or circles a no. to indicate the degree to which a characteristic is present.*

Typically, each of a series of numbers is given a verbal description that remains constant from one characteristic to another.

The numerical rating scale is useful when the characteristic or qualities to be rated can be classified into a limited number of categories and when there is general agreement concerning the category represented by each number.

Example : 1. Directions: Indicate the degree to which the pupil contributes to class discussions by circling the appropriate number. The numbers represent the following values: 5- outstanding, 4-above average, 3-average, 2- below average, 1-unsatisfactory.

- To what extent does the pupil participate in discussions?

  1 2 3 4 5

- To what extent are the comments related to the topic under discussion

  1 2 3 4 5

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B. Graphic Rating Scale : The distinguishing feature of the graphic rating scale is that each characteristic is followed by a horizontal line. The rating is made by placing a check on the line. A set of categories identifies specific positions along the line, but the rater is free to check between these points.

Examples : Directions: Indicate the degree to which this pupil contributes to class discussions by placing an x anywhere along the horizontal line under each item.

1. To what extent does the pupil participate in discussion?

Never | seldom | occasionally | frequently | always

2. To what extent are the comments related to the topic under discussion?

Never | seldom | occasionally | frequently | always

There is little agreement among raters concerning the meaning of such terms as seldom, occasionally and frequently. What is needed are behaviour descriptions that indicate more specifically how pupils behave who possess various degrees of the characteristic being rated.

C. Descriptive Graphic Rating Scale : The descriptive graphic rating scale uses descriptive phrases to identify the points on a graphic scale. The descriptions are thumbnail sketches that convey in behavioural terms how pupils behave at different steps along the scale.

In some scales, only the centre and end positions are defined. In others, a descriptive phrase is placed beneath each point. A space for comments is also frequently provided to enable the rater to clarify the rating.

Example : Directions: Make your ratings on each of the following characteristics by placing an x anywhere along the horizontal line under each item. In the space for comments, include anything that helps clarify your rating.

1. To what extent does the pupil participate in discussions?

Never participates; Quiet, passive	Participates as much as other group members	Participates more than any other group members

The descriptive graphic rating scale is generally the most satisfactory for school use. It explains to both the teacher and the pupil the types of behaviour that represent different degrees of progress toward desired learning outcomes.

Uses of Rating scales :

Rating scales can be used to evaluate a wide variety of learning outcomes and aspects of development. These uses may be classified into three evaluation areas.

- **Procedure Evaluation :** In many activities, like the ability to give a speech, manipulate laboratory equipment, sing, play a musical instrument, achievement is expressed specifically through the pupil's performance and the procedures used in the performance itself must be observed and judged by the rating scale.the dimensions and behaviour descriptions used in the scale show the pupil the type of performance desired.
- **Product Evaluation :** When pupil performance results in some type of product, it is frequently more desirable to judge the product rather than procedures. The ability to write a theme, for example, is best evaluated by judging the quality of the theme itself. Little is to be learned by observing the pupil's performance. In some areas, however, such as typing, cooking, and woodworking, it might be most desirable to rate procedures during the early phase of learning and products later, after the basic skills have been mastered. In any event, product rating can provide evaluative information in many areas.
- **Evaluating Personal-Social Development :** One of the most common uses of rating scales in the schools is in rating various aspects of personal-social development. Most report cards have a special place for rating pupils on such attributes as citizenship, interest, classroom conduct, and cooperation.

Rating personal-social characteristics is quite different from procedure and product evaluation. When judging procedures and products, the ratings are usually made during or immediately after a period of directed observation. In contrast, ratings of personal-social development are typically obtained at periodic intervals and represent a kind of summing up of the teacher's general impressions.

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❖ 2.2.1.3 Checklists :

A checklist is similar in appearance and use to the rating scale. The basic difference between them is in the type of judgement needed. On a rating scale, one can indicate the degree to which a characteristic is present or the frequency with which a behaviour occurs. The checklist, on the otherhand, calls for a simple yes-no judgement.

It is basically a method of recording whether a characteristic is present or absent or whether an action was or was not taken.

The checklist is especially useful at the primary level. A simple checklist for evaluating the mastery of mathematics skills at the beginning primary level is shown in the following fig.

Mathematics Skills Checklist
Primary level

Directions : Circle YES or NO to indicate whether skill has been demonstrated

YES	NO	1.	Identifies numerals 90 to 100
YES	NO	2.	Counts to 50
YES	NO	3.	Identifies basic geometric shapes (circle, square, rectangle, triangle)
YES	NO	4.	Compares objects and identifies bigger-smaller, longer-shorter
YES	NO	5.	Identifies one-half of an area

✦ Uses of Check Lists :

The uses of check lists are as follows :

- Checklists are useful in evaluating those performance skills that can be divided into a series of specific actions.
- In addition to its use in procedure evaluation, the checklist can also be used to evaluate products.
- In the area of personal-social development, the checklist can be a convenient method of recording evidence of growth toward specific learning outcomes.

For example, in the area of work habits, a primary teacher might list the following behaviours (to be marked yes or no).

_____ Follows directions
_____ Works cooperatively with others.
_____ Tries new activities.
_____ Cleans work space.

- The check lists are used by teachers, employers, researchers and guidance workers as they are easy to construct, record, score and interpret the responses marked in the checklists.
- They are used to ascertain the individual's character and evaluate the performance on the job, promotion to the next higher post and assigning responsibilities to a person etc.
- They are the less time consuming devices.

❑ 2.2.2 Self-Report Techniques :

Self-reporting techniques *require the respondent to react to items concerning his own behaviour or characteristics.*

The items generally require expression regarding likes, dislikes, fears, hopes, religious beliefs, ideas about sex and many other matters that reflect the way in which the person copes with his own needs and demand of his environment.

Self-reporting techniques are very commonly used for measuring the *traits pertaining to interest, adjustment, attitude and personality* etc. Sometimes, a self-report test measures only one trait such as introversion-extroversion, security-insecurity or high anxiety-low anxiety. *Self-reporting is obtained* through *a check-list, questionnaire or rating scale format.* Some of the well known self-reporting instruments are listed below :

- Woodworth Personal Datasheet
- The Minnesota Multiphasic Personality Inventory (MMPI)
- Edwards Personal Preference Schedule
- Minnesota Teacher Attitude Inventory (MTAI)

For evaluation purposes, the wealth of information about the student is usually obtained from him by interviews and questionnaires (inventories). These are used to gather data by obtaining responses to questions. The effective use of self-report inventories assumes that individuals are both willing and able to report accurately. Responses can usually be easily faked if individuals want to present a distorted picture of themselves. Even when they want to be truthful, their recollections of past events may be inaccurate and their self-perceptions biased.

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❖ 2.2.2.1 Interviews :

Interview is a face-to-face or one-to-one situation in which one person (who is experienced, trained and qualified) or the interviewer gathers information about the behaviour or problems of the other (s) (less experienced) or the interviewes (s) for purpose of helping the latter to solve his or their problems or modify his or their behaviour.

Interview is based on direct personal contact which is unique to the method of interview and not found in any other method of interview and not found in any other method of investigation.

Of various methods of obtaining information directly from an individual, the oldest and best known is the personal interview. The face-to-face contact gives it several advantages as a self-report procedure.

✦ **First,** it is flexible. Interviewers can clarify questions if they are not easily understood, they can pursue promising lines of inquiry, and they can give the interviewees an opportunity to qualify or expand on their answers, as needed.

✦ **Second,** interviewers can observe interviewees during the session, noting the amount of feeling attached to their answers, the topics on which they seem to be evasive, and the areas in which they are most expansive.

✦ **Third,** the interview makes possible not only collecting information from interviewees but also sharing information with them and, as in the case of the counseling interview, using the face-to-face contact as a basis for therapy.

Types of Interview :

There are different types of interview according to the purpose for which they are **used** and according to their **design or structure.**

Reserch interview : When interview is used as a tool for gathering data for reserch purpose, it is called **"research interview."**

Clinical Interview : When interview is used for clinical purpose, to secure information about an individual's problems, his past history, occupation and family adjustment for diagnosis and treatment purposes, it is called **"clinical interview."**

Individual Interview : When the interviewer interviews one individual at one time, it is called **"individual interview."**

Group Interview : When a group of individuals are interviewed, at one time, it is called **"group interview."** In group interview, the size of the group should not be too large nor too small. The optimum size of the group should be approximately 10. In group interview, some individuals may hesitate or feel shy to reveal some important facts concerning their problems in presence of others. For this purpose, individual interview is more effective than group interview.

Interviews are also classified as **"Structured"** and **"Unstructured" interviews.**

Structured Interview : In structured interview, the procedure, the type of questions, the order of questioning and the instructions are standardised and specified in advance. The interviewer has no freedom to alter the procedure or to reharse the questions, or to add new questions .

Unstructured Interview : In unstructured interview, the interviewer is free to rephrase the questions, change the order of questions, time of interview and to add new questions. Thus understructured interview allows greater flexibility and freedom to the interviewer.

Techniques of Interview : If interview is to be effective as a technique for gathering useful information about the individual's problems, it must be conducted in a systematic way.

There are at least three main aspects to the technique of interviewing.

(i) **Parts of an interview :** (a) A beginning (establishing rapport and clarifying the purposes of the interview); (b) A middle (data gathering or exploration of alternative solutions to a problem); (c) An end (summarising and terminating the face to face relationship).

(ii) **Securing responses :** (a) Structured or controlled interview: (Here, there is an attempt to cover a definite ground. Schedules of questions are generally drawn up beforehand). (b) Unstructured or uncontrolled interview: (Here, conditions are least controlled. The interviewer raises various questions orally with the interviewee and takes advantage of the flexibility and informality of the situation).

(iii) **Recording Results :** the teacher takes brief notes during the course of the interview and summarises the main points after the interviewee leaves. With the consent of the interviewee, a tape recorder may be used.

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The personal interview would be an almost ideal method of obtaining self-report information from pupils except for two serious problems. It is extremely time consuming, and the information gained is not standard from one person to another. Therefore, in the interests of both feasibility and greater comparability of results, the self-report inventory or questionnaire is commonly used in place of the personal interview. An inventory consists of a standard set of questions pertaining to some particular area of behaviour, administered and scored under standard conditions. It is a sort of standardized, written interview that enables the collection of a large amount of information quickly and that provides an objective summary of the data collected.

★ **Advantages and Limitations :**

Advantages :

(i) The interview method provides an opportunity to the interviewer to question throughly certain areas of inquiry.

(ii) It permits greater depth of response which is not possible through any other means.

(iii) It also enables the interviewer to get information concerning interviewee's feelings, attitudes or emotions in relation to certain questions.

Limitations :

In spite of these advantages, the interview method has certain limitations.

(i) It is a time-consuming technique.

(ii) Many interviewers are not experienced, skillful and factful as a result of which much useful information is not elcited and some also missed.

(iii) Moreover, there is greater possibility of subjectivity in recording and interpreting the data.

(iv) very oftern an interviewee fails to respond freely, frankly and accurately and this defeats the very purpose of the interview.

❖ 2.2.2.2 Inventories or Questionnaires :

Questionnaires :

The **Questionnaire** is a simple technique which includes a series of questions meant for students to collect information about the growth of

interests, attitudes, facts about current conditions and practices and opinions.

A questionnaire is a *list of planned written question related to a particular topic or series of topic.* Space is provided for the reply to each question. The questions included in the questionnaire should be simple, systematically arranged. They should be few in number also. It is easier technique employed for data collection in the guidance programme.

Goode and Halt (1952) : In general, the word 'questionnaire' refers to a device for securing answers to questions by using a form which the respondent files in himself.

Barr, Davis and Johnson (1953) : A questionnaire may be termed as a systematic compilation of questions that are submitted to a sampling of polulation.

Young (1965) : The questionnaire is defined as a form used in self-enumeration, usefully mailed to the respondent.....in which the content is aimed at finding out facts or opinions or both.

Characterisitics of a Good Questionnaire :

A good questionnaire must have the following characteristics :

- The questionnaire should be concerned with specific topics, which must be regarded as relevant by the respondents.
- The questionnaire should, as far as possible, be short because very lengthy questionnaires often find their way into the wastebasket.
- Directions and wordings of the questions should be simple and clear. Each question should deal with a single idea.
- The questions should be objective and should not provide any hints or suggestions regarding a possible answer.
- Embarassing questions, presuming questions and hypothetical questions should be avoided.
- The questions should be presented in a good order proceeding from general to specific responses or from those showing a favourable attitude to an unfavourable attitude.
- Lasstly, a questionnaire must be attractive in appearance, neatly printed or duplicated and clearly arranged.

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Functions of a Questionnaires :

A questionnaire performs generarally two functions as given below :

- **Description :** One of the basic functions of questionnaire is to describe the individual or group characteristics. In other words, the questionnaire provides description about age, sex, marital status, occupation, income, political affiliation, religious affiliation, membarship to some civic group or corporation.
- **Measurement :** Another important functions of a questionnaire is the measurement of individual and or group variables like attitude, opinion, personality traits, etc. The questionnaire may consist of several items which aim at assessing such attitude, opinion, traits and habits of the persons.

Types of Questionnaires :

Based upon the type of response required, the questionnaire may be of the following two types :

- Fixed-response Questionnaire
- Open-end Questionnaire

Fixed-response Questionnaire :

It is a questionnaire which consists of statements of questions with a fixed number of options or choices. The respondent is asked to check the option or response that best fits or suits him. It is also known as **closed-form questionnaire** or **pre-coded type of questionnaire.**

Open-end Questionnaire :

It is a questionnaire which consists of questions that require short or lengthy answers by the respondent.

• In the **structured (close-end)** type of questionnaire, the *answers are checked or underlined by the respondent.* • In the *unstructured (open-end) type*, the *respondent is allowed to make free responses to the questions.* The inventory comes under the first type.

In practice, when we want to collect the respondents family data, personal data, health data, special school activities, educational and vocational plans, etc., we call the questionnaire a Questionnaire,

When we want to evaluate the respondent's interests, attitudes, opinions, feelings and other personal social adjustments, we present him a series of questions or statements in the form of a Check list. Such self-report techniques are generally referred to as inventories.

★ **Use of Questionnaires :**

The uses of questionnaires are as follows :

(i) The questionnaires are used in ascertaining the general trend of opinion of a group.

(ii) They are very simple to construct and evaluate for the purpose of data collection.

(iii) They are less time taking and they do not need much money to be worked out.

❖ 2.2.2.3 Attitude Scales :

Attitude are a result of the socialisation process. Attitudes are not directly observable but are inferred from one's overt behaviour, both verbal and non-verbal. They influence an individual's responses to objects, situations, other persons and groups of persons. By knowing a person's attitude to an object, one can predict his reaction to that class of objects. Attitudes are not fixed but are quite malleable. There is a positive correlation between attitudes and learning.

■ Measurement of Attitudes :

The measurement of attitudes can be possible through different following techniques.

- Attitude Scales
- paired Comparisons
- Error-Choice Technique
- Free-Response Technique
- Opinion Polling or Surveying
- Some other simple devices as Anecdotal Records, Autobiographies, Diaries, Leisure time Pursuits, Impression Interview or Observation.

➨ **Attitude Scales :** Attitude scales stand for such scaling techniques and rating scales that are specifically designed and used for the assessment and measurement of ones attitude towards a social/psychological object or issue. *Gay (1996) observes, the attitudes scales may be considered as a purposeful attempt to determine what an individual believes, perceives or feels. With their help, we can properly measure ones attitude towards self others, and a variety of other activities, institutions and social situations.*

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Attitude Scale : A specific type of rating scale specially designed for measuring the attitudes of the subjects of the study towards the social or psychological object/issue under study.

✦ **Types of Attitude Scale :**

Attitude scales used in the field of behavioural sciences research may be broadly classified as under.

- **Summated Rating Scale, e.g. Likert Scale**
- **Equal Appearing Interval scale, e.g. Thurstone Scale**
- **Cumulative Scale, e.g. Guttman Scale**
- **Concept Measurement Scale, e.g. Semantic Differential Scale.**

➨ **Likert Type Scales :** Likert type scale has wide application in the field of attitude testing. In this scale, each item or statement is followed by five responses which are usually expressed in terms of categories such as **Strongly Agree (S.A), Agree (A), Undecided (U), Disagree (D) and Strongly Disagree (S. D.)**. Arbitrarily scores of 5, 4, 3, 2, 1 were assigned to respective statements. For positive items and 1, 2, 3, 4, 5 for negative items. This method is known as Likert Method of Spangler Summated Ratings. After scoring the scale, the attitude of student to particular person, object, situation task, idea and activity can be easily measured and interpreted. Test of values supports to measure generalized and dominant interest classified values into six categories like theoretical, economic, aesthetic, social, political and religious are taken as the basis.

➨ **Thurstone Type Scale :** Thurstone type scale is known as the method of equal appearing intervals which includes statement or questions either carrying favourable or carrying unfavourable responses from the students bearing on a particular topic or questions. It should be carefully designed by a group of experts or writers following eleven point scale. The respondents are directed to respond any one answer or co-ordinations out of the eleven choices which is applicable for them. Then after valuation of the responses the attitude of student is clearly observed.

Attitude scales are highly susceptible to taking and therefore should be used with care. Nevertheless, they can often be used by the classroom teacher to obtain a better understanding of his pupils.

❑ 2.2.3 Psychological and Educational Tests :

A Psychological (or an educational) test is a standarized procedure to measure quantitatively or qualitatively one or more than one aspect of a trait by means of a sample of verbal or nonverbal behaviour.

The **purpose of a psychological** test is twofold.

First, it attempts to compare the same individual on two or more than two aspects of a trait; and **Second,** two or more than two persons may be comapred on the same trait. Such measurement may be either quantitative or qualitative.

Definition :

In the words of Bean (1953 : 11), a test is "an organized succession of stimuli designed to measure quantitatively or to evaluate qualitatively some mental process, trait or characteristic."

○ **Psycho logical Tests :**

Definition :

✦ **Anastasi and urbina (1997) 'A psychological test** is essentially an objectives and standardized measure of a sample of behaviour."

✦ **Freedom "A Psychological test** is a standardised instrument designed to measure objectively one or more aspects of a total personality by means of samples of verbal or non-verbal responses, or by means of other behaviours."

Psychologist Marshall, "A **psychological test may be defined** as a pattern of stimuli, selected and organised to elicit responses which will reveal certain characteristics in the person who makes them."

A psychological test is an instrument designed to measure unobserved constructs, also known as latent variables. Psychological tests are instruments in the hands of the counsellor that are helpful in the assessment of an individual's skills-abilitiesm optitudes, personality traits, attitudes, interests and achievements.

Psychological tests are typically, but not necessarily, a series of tasks or problems that the respondent has to solve. Psychological tests can strongly resemble, questionnaires which are also designed to measure

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unobserved constructs, but differ in that psychological tests ask for a respondent's maximum performance whereas a questionnaire asks for the respondent's typical performance. A useful psychological test must be both valid; (i.e., there is evidence to support the specified interpretation of the test results) and reliable (i.e., internally consistent or give consistent results over time, across raters, etc.).

Psychological tests are defined as *standardized, repeatable procedures used to elicit and measure samples of human behavior*. Because testing involves measurement, tests have procedures for coding, scoring, or quantifying the behavior that is elicited so that it can be compared with normative data systematically collected on similar samples. Testing is used to evaluate (1) human abilities, including intelligence, aptitudes, skills, and achievement in various areas; (2) personality characteristics, which include traits, attitudes, interests, and values; and (3) adjustment and mental health, which involves detecting signs and symptoms of psychological and neurological disorders and appraising the effectiveness of psychological functioning. (Kazdin, Alan E. Encyclopedia of psychology. Washington, D.C., American Psychological Association, 2000, vol. 8, p. 47–48.)

○ Educational Test :

Educational test may be defined as "an organised pattern of stimuli which are selected and organised to reveal educational achievement of the person who takes them."

Kaplan and sacczzzo (2001) have opined, "**An educational test** is a set of item designed to measure characteristics of human beings that pertain to behaviour."

❖ 2.2.3.1 Characteristics Psychological and Educational Tests :

○ Psycho logical Tests :

- A psychological test is a sample of behavior.
- The behavior sample is obtained under standardized conditions.
- There are established scoring rules for obtaining quantitative information from the behavior sample.

○ Educational Test :

- It is an organized succession of stimuli, which means that the stimuli (known as item) in the test are organised in a certain sequence and are based upon some principles of test construction. Usually, the items of a test are proccessed through item analysis and its procedure of administration is standardized to ensure maximum objectivity.
- Both quantitative and qualitative measurements are possible through Psychological and educational tests. An educational test provides both quantitative and quanlitative measurement of a trait.

❖ 2.2.3.2 Classification : (Psychological tests and Educational Tests)

○ Psycho logical Tests :

Mental tests are of various kinds. They have been classified from various different stand points. Classifications are as follows :

1. Classification according to method of testing.
- Individual tests
- Group tests

2. Classification according to the medium of instruction
- Verbal tests
- Non-verbal tests

3. Classification according to the objectives of testing.

There are several broad categories of psychological tests—
- *Intelligence tests*
- *Testing of mental abilities*
- *Attitude tests*
- *Projective tests (Free response measures)*
- *Personality tests*
- *Interest tests*
- *Aptitude tests*

○ Classification of Educational Test :
- Achievement Test
- Diagnostic Test

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- Prognostic Test
- Survey

❖ **2.2.3.3 Uses : (Psychological test and Educational Tests)**

Traditionally, the function of Psychological tests is to measure the difference between individuals or between the reaction of the same individual under different circumstances.

(1) **Detection of specific Behavior :** Psychological test is used to measure and to detect the abilities of a person.

(2) **Individual Differences :** A psychological test is used to measure the individual differences, that is different between abilities of different persons and the performance of the same person at different time.

(3) **To diagnose by the Psychological Test :** The psychological tests are usually used in clinical psychology.In clinical psychology a test's function is to diagnose mental disorders.So tests are used in mental hospitals and coaching and guidance centers for the assessment and diagnose of mental disorders.Major tests are MMPI, (Minnesota Multiphasic Personality Inventory) RISB, (Roter Incomplete Sentences Blank) Bender Gestalt Test, and RPM, (Revon Progressive Matrices) etc.

(4) **Legal Classification :** A psychological test helps in classifying a number of people into different categories For example normal and abnormal, criminal and innocent, intellectual and mental retarded, able and disable etc.

(5) **Promoting Self Understanding :** A psychological test provide standardized information about the abilities, capabilities, aptitudes, potential competencies interest, trait and states of a person which helps in understanding one's personality and planing future prospective.

(6) **Program Evaluation :** An effectiveness of a particular program is assessed by the applications of some kind of test.This function is usually perform by an achievement test.

(7) **Scientific Inquiry or Research :** Some experts use tests for research purpose which provide information about the mental level and personality of the subject.

(8) **Military Selection :** A closely related application of psychological testing is to be found in the selection and classification of military

personal.From simple beginnings in the World War-I, the scope and variety of psychological tests employed in military situations underwent a phenomenal increase during World War-II. Subsequently research on test development has been containing on a large scale in all brands of the normed services.

(9) **Industry :** In industry and business tests are helpful in selection and classifying personal for placement in jobs that range from the simpler semiskilled to the highly skilled, from the selection of filling clerks and sales-person to top management for any of these position.

Industrial psychology is a relatively new branch of psychology that was created for corporations and organizations that needed more structure. Industrial psychology is able to provide this structure by evaluating employee behavior for the good of the company. It is often referred to as organizational psychology because of its emphasis on analyzing individuals who work for various organizations.

(10) **Education :** Psychological tests especially those of general intelligence and of specific aptitudes have very extensive use in educational classification, selection and planing from the 1st grade (and sometimes earlier) through the university. Prior to World War-II schools and colleges were the largest user of psychological tests.

"Now at present schools are among the largest test users".

Educational psychology is the study of how humans learn in educational settings, the effectiveness of educational interventions, the psychology of teaching, and the social psychology of schools as organizations. Educational psychology is concerned with how students learn and develop, often focusing on subgroups such as gifted children and those subject to specific disabilities.

(11) **Mental Hospitals :** In clinical or mental hospitals psychological tests are used primarily for individual diagnoses of factors associated with personal problems of learning, behavior attitudes or specific interpersonal relations.

Another areas are jails, correctional centers and training institutions etc.

(12) Guidance & Counselling : Tests provide a foundation for self-understanding, which helps an individual in taking decisions may also be identified through tests for individual counselling.

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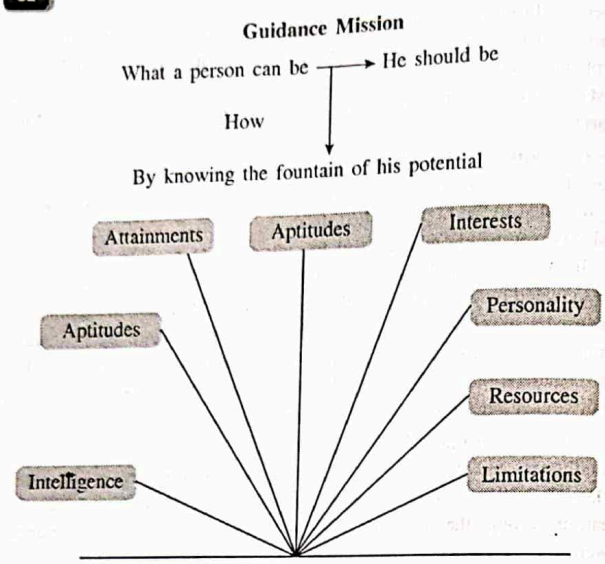

Individual Assessment Programme

✪ 2.3 Validity- Meaning, Types and Measurement :

When **constructing or selecting tests and other evaluation instruments,** the *most important question is,* To *what extent will the interpretation of the scores be appropriate, meaningful and useful for the intended application of the results?*

Tests and other evaluation instruments serve a variety of uses in the school. **For example, tests of achievement** might be *used for selection, placement, diagnosis;* **aptitude tests** might be *used for predicting success in future learning activities or occupations.* Regardless of the type of instrument used for how the results are to be used, however, all of the measurements should possess certain characteristics. The most essential of these are **validity, reliability objectivity and usability.**

Validity refers to the **appropriateness of the interpretations made from test scores and other evaluation results, with regard to a particular use.**

For example :

- If a test is to be used to describe pupil achievement, we should like to be able to interpret the scores as a relevant and representative sample of the achievement domain to be measured.
- If the results are to be used to predict pupils' success in some future activity, we should like our interpretations to be based on as accurate an estimate of future success as possible.
- If the results are to be used as a measure of pupils' reading comprehension, we should like our interpretations to be based on evidence that the scores actually reflect reading comprehension and are not distorted by irrelevant factors.

The validity of a test may be defined as :

- "the accuracy with which a test measures whatever it is supposed to measure".
- "the efficiency with which a test measures what it attempts to measure".
- "the accuracy with which a test reliably measures what is relevant".

"In selecting or constructing an evaluation instrument, the most important question is; *To what extent will the results serve the particular uses for which they are intended?* **This is the essence of validity."**

–GRONLUND

"An evaluation procedure is valid to the extent that it provides an assessment of the degree to which pupils have achieved specific objectives, content matter and learning experiences."

Example :

An achievement test in science may be–

- valid for std.VII and not for std. IX
- valid for std.VII in West-Bengal but not valid for the same standard in Odisha state.
- Valid for std.VII in an urban area but not valid for the same standard in any rural area.

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❑ 2.3.1 Nature of Validity :

When using the term validity in relation to testing and evaluation, there are a number of cautions to be borne in mind.

- **Validity refers to the appropriateness of the interpretation** of the results of a test or evaluation instrument for a given group of individuals, and not to the instrument itself.
- **Validity is a matter of degree;** it does not exist on an all-or-none basis. Validity is best considered in terms of categories that specify degree, such as high validity, moderate validity and low validity.
- **Validity is always specific to some particular use** or interpretation. No test is valid for all purposes. For example, the results of an arithmetic test may have a high degree of validity for indicating computational skill, a low degree of validity for indicating arithmetical reasoning, a moderate degree of validity for predicting success in future mathematics courses, and essentially no validity for predicting success in art or music.
- **Validity is a unitary concept** based on various kinds of evidence.

There are many ways of accumulating evidence to support or challenge the validity of an interpretation of test scores.

❑ 2.3.2 Types of Validity :

The usual method or judging validity of a test is to compare and co-relate its scores with those on similar tests. The American Psychological Association for technical recommendations have classified the various methods for testing validity into following groups :

- **Content validity** (how well our test sample represents the universe of criterion behaviour);
- **Criterion Related Validity** (how well test performance predicts future performance or estimate current performance on some valued measures other than the test itself (called a criterion)
- **Concurrent validity** (how closely test scores are correlated with present criterion behaviour);
- **Predictive validity** (how well test scores predict future criterion behaviour)

- **Construct validity** (how well our test seems to measure a hypothesised trait).
- **Face Validity** (To the extent the test appears to measure what is to be measured.
- **Factorial Validity** (To the extent of correlation of the different factors with the whole test

❖ 2.3.2.1 Content Validity :

Content validity may also be described as **curricular validity.**

Content validation is the process to determine how an individual performs on a domain of tasks that the test is supposed to represent.

For example, A reading test, must take note of the desirable skills in reading. Reading for information or 'work-level type' include the following essential skills: skill in recognising new words, ability to locate material quickly, ability to comprehend quickly what is read, ability to organise what is read, attitude to reading and proper care of books and so on. Validity of reading test (for information) will be judged by the extent to which the above skills are measured, and also by the opportunity of the pupils to master these skills. An educational test must fulfill this criterion.

Content validity :
- how] well our test sample represents the universe of criterion behaviour
- how well the sample of test tasks represents the domain o]f tasks to be measured.

❖ 2.3.2.2 Criterion-Related Validity :

Criterion-related validity refers to the extent to which test performance is related to some other valued measure of performance.

Criterion validity evidence involves the correlation between the test and a criterion variable (or variables) taken as representative of the construct. In other words, it compares the test with other measures or outcomes (the criteria) already held to be valid. Unlike the content validity, criterion-related validity can be objectively measured and declared in terms of numerical indices.

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- **For example,** employee selection tests are often validated against measures of job performance (the criterion), and IQ tests are often validated against measures of academic performance (the criterion).

(A) **Concurrent Validity :**

Concurrent validity refers] to the degree to which the operationalization correlates with other measures of the same construct that are measured at the same time.

Returning to the selection test example, this would mean that the tests are administered to current employees and then correlated with their scores on performance reviews.

In **concurrent validity,** we assess the operationalization's ability to distinguish between groups that it should theoretically be able to distinguish between. For example, if we come up with a way of assessing manic-depression, our measure should be able to distinguish between people who are diagnosed manic-depression and those diagnosed paranoid schizophrenic. If we want to assess the concurrent validity of a new measure of empowerment, we might give the measure to both migrant farm workers and to the farm owners, theorizing that our measure should show that the farm owners are higher in empowerment. As in any discriminating test, the results are more powerful if you are able to show that you can discriminate between two groups that are very similar.

Concurrent Validity :
- correlating the test scores with another set of criterion scores.
- how closely test scores are correlated with present criterion behaviour.
- how well test performance estimates current performance on some valued measures other than the test itself (called criterion).

(B) **Predictive validity :**

Predictive validity refers to the degree to which the operationalization can predict (or correlate with) other measures of the same construct that are measured at some time in the future.

In **predictive validity,** we assess the operationalization's ability to predict something it should theoretically be able to predict. For instance, we might theorize that a measure of math ability should be able to predict how well a person will do in an engineering-based profession. We could give our measure to experienced engineers and see if there is a high correlation between scores on the measure and their salaries as engineers. A high correlation would provide evidence for predictive validity -- it would show that our measure can correctly predict something that we theoretically think it should be able to predict. Again, with the selection test example, this would mean that the tests are administered to applicants, all applicants are hired, their performance is reviewed at a later time, and then their scores on the two measures are correlated.

Predictive validity :
- the extent to which test provides the future performance of students.
- how well test scores predict future criterion behaviour

There is a **distinction between concurrent validity and predictive validity.**

While **predictive validity** refers to future ability, **concurrent validity** refers to existing states.

Anastasi explains the difference very aptly by an example. The difference can be explained by asking :

- Is Smith neurotic? **(concurrent validity)**
- Is Smith likely to become neurotic? **(predictive validity)**

❖ 2.3.2.3 Construct Validity :

When tests are constructed to measure any particular attribute or trait, it is necessary to define the area of that trait very carefully. " Construct validity of a test is the extent of which the test may be said to measure a 'theoretical construct or trait'. Construct validity seeks agreement between a theoretical concept and a specific measuring device or procedure.

Construct validation is the process of determining the extent to which a particular test measures the psychological constructs that the test maker intends to measure. **Gronlund and Linn (1995)** states, *"construct validation may be defined as the process of determining the extent to which test performance can be interpreted in terms of one or more psychological constructs."*

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For example, a researcher inventing a new IQ test might spend a great deal of time attempting to "define" intelligence in order to reach an acceptable level of construct validity. To understand whether a piece of research has construct validity, three steps should be followed. First, the theoretical relationships must be specified. Second, the empirical relationships between the measures of the concepts must be examined. Third, the empirical evidence must be interpreted in terms of how it clarifies the construct validity of the particular measure being tested (Carmines & Zeller, p. 23).

Construct Validity :
- How well our test seems to measure a hypothesized trait.
- How well test performance can be interpreted as a meaningful measure of some characteristics or quality.

Construct validity can be broken down into two sub-categories—

* **Convergent validity** and * **Discriminate validity**

(A) **Convergent validity** is the actual general agreement among ratings, gathered independently of one another, where measures should be theoretically related. In **convergent validity,** we *examine the degree to which the operationalization is similar to (converges on) other operationalizations that it theoretically should be similar to.* For instance, to show the convergent validity of a test of arithmetic skills, we might correlate the scores on our test with scores on other tests that purport to measure basic math ability, where high correlations would be evidence of convergent validity.

(B) **Discriminate validity** is the lack of a relationship among measures which theoretically should not be related. In **discriminant validity,** *we examine the degree to which the operationalization is not similar to (diverges from) other operationalizations that it theoretically should be not be similar to.* For instance, to show the discriminant validity of a test of arithmetic skills, we might correlate the scores on our test with scores on tests that of verbal ability, where low correlations would be evidence of discriminant validity.

❖ 2.3.2.4 Face Validity :

Face validity is *concerned with how a measure or procedure appears. Does it seem like a reasonable way to gain the information the researchers are attempting to obtain? Does it seem well designed? Does it seem as though it will work reliably?* Unlike content validity does not depend on established theories for support (Fink, 1995). Face validity is an estimate of whether a test appears to measure a certain criterion; it does not guarantee that the test actually measures phenomena in that domain. Indeed, when a test is subject to faking (malingering), low face validity might make the test more valid.

Face validity is very closely related to content validity. While content validity depends on a theoretical basis for assuming if a test is assessing all domains of a certain criterion (e.g. does assessing addition skills yield in a good measure for mathematical skills? - To answer this you have to know, what different kinds of arithmetic skills mathematical skills include) face validity relates to whether a test appears to be a good measure or not. This judgment is made on the "face" of the test, thus it can also be judged by the amateur.

Face Validity : Face validity is *concerned with how a measure or procedure appears. Face validity is an estimate of whether a test appears to measure a certain criterion.*

❖ 2.3.2.5 Factorial Validity :

Factorial validity is determined by a statistical technique known as factor analysis. This is inclusive of the validity of the factors in the test. And in order to judge whether a test has factorial validity, it is examined by the method of factor analysis. It uses methods of explanation of inter-correlations to identify factors (which may be verbalised as abilities) constituting the test. The correlation of the test with each factor is calculated to determine the weight contributed by each such factor to the total performance of the test. This relationship of the different factors with the total test is called the factorial validity.

Factorial Validity : The extent of correlation of the different factors with the whole test

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❑ 2.3.3 Measurement of Validity :

	Procedure	Meaning
• Content-Related Evidence	• Compare the test tasks to the test specifications describing the task domain under consideration.	• How well the sample of test tasks represents the domain of tasks to be measured.
• Criterion-Related Evidence	• Compare test scores with another measure of performance obtained. At a later date (for prediction) or With another measure of Performance obtained concurrently (for estimating present status).	• How well test performance predicts future performance or estimate current performance on some valued measures other than the testitself (called a criterion).
• Construct-Related Evidence	• Establish the meaning of the scores on the test by controllin(or examining) the development Of the test, evaluating the relationships of the scores with other relevant measures, and experimentally determining.	• How well rest performance can be interpreted as a meaningful measure of some characteristics or quality
• Face-Related Evidence	• an estimate of whether a test appears to measure a certain criterion	• To the extent the test appears to measure what is to be measured
• Factorial-Related Evidance	• The correlation of the test with each factor is calculated to determine the weight Contributed by each such factor To the total performance of the test	• The extent of correlation of the different factors with the whole test

❑ 2.3.4 Factors Affecting the Validity :

A large number of factors influence the validity of an evaluation tool. Gronlund (1981) has suggested the following factors—

- Factors in the test itself
- Functioning content and teaching procedures
- Factors in test administration and scoring
- Factors in pupils' responses
- Nature of the group and the criterion

(A) Factors in the Test Itself: Any of the following factors can prevent the test items from functioning as intended and thereby lower the validity of the interpretations from the test scores.

- Unclear directions.
- Reading vocabulary and sentence structure too difficult
- Inappropriate level of difficulty of the test items
- Ambiguity
- Test items inappropriate for the outcomes being measured
- Inadequate time limits
- Test too short
- Improper arrangement of items
- Identifiable pattern of answers

(B) Functioning content and teaching procedures :

In achievement testing, the functioning content of test items cannot be determined only by examining the form and content of the test. The administration and scoring of a test may also introduce factors that have a detrimental effect on the validity of the interpretations from the results.

- In the case of teacher-made tests, such factors as insufficient time to complete the test, unfair aid to individual pupils who ask for help, cheating during the examination, and the unreliable scoring of essay answers tend to lower validity.
- In case of published tests, failure to follow the standard directions and time limits, giving pupils unauthorized assistance, and errors in scoring similarly contribute to lower validity.
- For all types of tests, adverse physical and psychological conditions at the time of testing may also have a negative effect.

(C) Factors in Test Administration and Scoring :

- Unfair aid to individual students who ask for help.
- Cheating by the pupils during testing
- Unreliable scoring of essay type answers
- Insufficient time to complete the test
- Adverse physical and psychological condition at the time of testing.

(D) Factors in Pupils' Responses :

- Test anxiety of the students
- Physical and psychological state of the pupil
- Response set-a consistent tendency to follow a certain pattern in responding the items.

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(E) Nature of the Group and the Criterion :

Validity is always specific to a particular group. What a test measures is influenced by such factors as age, sex, ability level, educational background, and cultural background. Thus, in appraising reports of test validity included in test manuals or other sources, it is important to determine the nature of the validation group. How closely it compares in significant characteristics with the group of pupils we wish to test determines how applicable the information is to our particular group.

○ 2.4 Reliability: Meaning, Types and Measurement :

Next to validity, reliability is the most important characteristic of evaluation results. Reliability (1) provides the consistency that makes validity possible and (2) indicates how much confidence we can place in our results.

> *"Reliability* refers to the consistency of measurement- that is, how consistent test scores or other evaluation results are from one measurement to another". [Gronlund and Linn, 1995]

A test score is called reliable when we have reason for believing the score to be stable and trust-worthy.

- If we obtain quite similar scores when the same test is administered to the same pupil on two different occasions, we can conclude that our results have a high degree of reliability from one occasion to another.
- Similarly, if different teachers independently rate the same pupils on the same instrument and obtain similar ratings, we can conclude that the results have a high degree of reliability from one rater to another.
- For some uses, we may be interested in asking how reliable our evaluation results are over a given period of time and, for others, how reliable they are over different samples of the same behaviour.

In all instances in which reliability is being determined, however, we are concerned with the consistency of the results.

> Reliability answers to the following questions. Gronlund and Linn, 1995
> How similar the test scores are if the test is administered twice?
> How similar the test scores are if two equivalent forms of tests are administered?
> To what extent the scores of any essay test differ when it is scored by different teachers?

❑ 2.4.1 Nature of Reliability :

The meaning of reliability, as applied to testing and evaluation, can be further clarified by noting the following general points.

- Reliability refers to the results obtained with an evaluation instrument and not to the instrument itself.
- A closely related point is that an estimate of reliability always refers to a particular type of consistency. Test scores are not reliable in general. They are reliable (or generalizable) over different periods of time, over different samples of questions, over different raters, and the like.
- Reliability is a necessary but not a sufficient condition for validity. Low reliability can be expected to restrict the degree of validity that is obtained, but high reliability does not ensure that a satisfactory degree of validity will be present. In short, reliability merely provides the consistency that makes validity possible.
- Reliability is primarily statistical. The logical analysis of a test will provide little evidence concerning the reliability of the scores. The test must be administered, one or more times, to an appropriate group of persons, and the consistency of the results determined. Consistency in the first case is reported by means of a correlation coefficient called a reliability coefficient and in the second case is reported by means of the standard error of measurement .

> Therefore, the reliability of a test may be defined as-
> - "the degree of consistency among test scores".
> - "the degree of consistency with which the test measures what it does measure".
> - If a watch regularly goes 5 minutes slow of the Indian Standard Time, it may be said that it is not valid, for it does not measure, what it is supposed to measure; but it is reliable in the sense that it consistently goes 5 minutes slow.

❑ 2.4.2 Types of Reliability :

There are four general classes of reliability estimates, each of which estimates reliability in a different way. They are—

- **Inter-Rater or Inter-Observer Reliability :**
  Used to assess the degree to which different raters/observers give consistent estimates of the same phenomenon.

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- **Test-Retest Reliability :**
  Used to assess the consistency of a measure from one time to another.
- **Parallel-Forms Reliability :**
  Used to assess the consistency of the results of two tests constructed in the same way from the same content domain.
- **Internal Consistency Reliability :**
  Used to assess the consistency of results across items within a test.

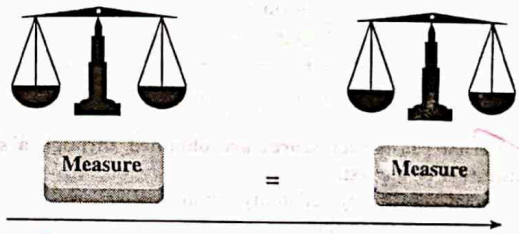
❑ 2.4.3 Methods of Estimating Reliability :

Reliability is usually expressed by a coefficient of correlation which is called the *reliability coefficient*. There are many ways to estimate the reliability of a test and the most common approaches to estimate the reliability are shown in the following table

Method	Type of reliability Measure	Procedure
Test-retest	Measure of stability	Give the same test twice to the same group with any time interval between tests, fromSeveral minutes to several years.
Equivalent-Forms Method	Measure of equivalence	Give two forms of the test to the same group in close succession.
Split-half method	Measure of equivalent	Give test once. Score two halves Internal consistency of test (e,g,, odd items and even items); Correct correlation between halves to fit whole test by Spearman-Brown formula.
Kuder-Richardson Method	Measure of Internal consistency	Give test once. Score total test and apply Kudor-Richardson formula.

A. Test-Retest Reliability : Checking the test reliability by giving the test again.

We estimate **test-retest reliability** *when we administer the same test to the same sample on two different occasions*. This approach assumes that there is no substantial change in the construct being measured between the two occasions. The amount of time allowed between measures is critical. We know that if we measure the same thing twice that the correlation between the two observations will depend in part by how much time elapses between the two measurement occasions. The shorter the time gap, the higher the correlation; the longer the time gap, the lower the correlation. This is because the two observations are related over time–the closer in time we get the more similar the factors that contribute to error. Since this correlation is the test-retest estimate of reliability, you can obtain considerably different estimates depending on the interval.



B. Parallel-Forms / Equivalent Forms :Checking test reliability through two equivalent forms of the same test.

In parallel forms reliability you first have to create two parallel forms. One way to accomplish this is to create a large set of questions that address the same construct and then randomly divide the questions into two sets. You administer both instruments to the same sample of people. The correlation between the two parallel forms is the estimate of reliability. One major problem with this approach is that you have to be able to generate lots of items that reflect the same construct. This is often no easy feat. Furthermore, this approach makes the assumption that the randomly divided halves are parallel or equivalent. Even by chance this will sometimes not be the case. The parallel forms approach is very

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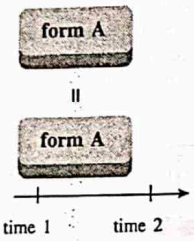
similar to the split-half reliability described below. The major difference is that parallel forms are constructed so that the two forms can be used independent of each other and considered equivalent measures. For instance, we might be concerned about a testing threat to internal validity. If we use Form A for the pretest and Form B for the posttest, we minimize that problem. it would even be better if we randomly assign individuals to receive Form A or B on the pretest and then switch them on the posttest. With split-half reliability we have an instrument that we wish to use as a single measurement instrument and only develop randomly split halves for purposes of estimating reliability.

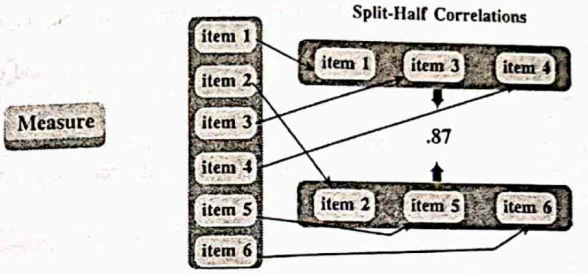


⇨ Internal consistency scores are obtained through a single administration of the test.

In internal consistency reliability estimation we use our single measurement instrument administered to a group of people on one occasion to estimate reliability. In effect we judge the reliability of the instrument by estimating how well the items that reflect the same construct yield similar results. We are looking at how consistent the results are for different items for the same construct within the measure. There are a wide variety of internal consistency measures that can be used.

★ Split-Half Reliability :

In split-half reliability we randomly divide all items that propose to measure the same construct into two sets. We administer the entire instrument to a sample of people and calculate the total score for each randomly divided half. the split-half reliability estimate, as shown in the figure, is simply the correlation between these two total scores. In the example it is .87.



The common procedure of splitting the test is to take all odd numbered items i.e. 1, 3, 5 etc. in one half and all even numbered items i.e. 2, 4, 6, 8 etc. in the other half. Then scores of both the halves are correlated by using the Spearman- Brown formula.

$$r_2 = 2r_1 / 1 + r_1$$

Where r_2 = Reliability coefficient on full test.
r_1 = Correlation of coefficient between half tests.

For example, by correlating both the halves we found a coefficient of 60. By using formula (i) we can get the reliability coefficient on full test as

$$r_2 = 2 \times \cdot 60/1 + \cdot 60 = \cdot 75$$

The reliability coefficient .75 when the coefficient of correlation between half test is .60. It indicates to *what extent the sample of test items are dependable sample of the content being measured-internal consistency.* This method overcome overcome the problem of equivalent forms method introduced due to differences from form to form, in attention, speed of work, effort, fatigue and test content etc.

D. Inter-item Consistency :

This method is to test the reliability by finding out the inter-item consistency, i.e., the consistency of responses on each item. In this method both the equivalence and homogeneity of items may be tested. If the items are not homogeneous in content, the co-efficient of inter-item consistency may become low, in spite of a high split-half or equivalent form reliability. In fact, the difference between split-half co-efficient and

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inter-item consistency co-efficient may be taken as an index of the heterogeneity of the items.

Kuder and Richardson have evolved various formulae to find out inter-item consistency. In this method it is not required to divide the test into two forms or equal halves. But the test is to be applied only once, and the consistency can be calculated on the basis of the performance of the examinee. Among the various K-R formulae, the following is the most commonly used :

$$r_{11} = \left(\frac{n}{n-1}\right)\left(\frac{\sigma_t^2 - \Sigma pq}{\sigma_t^2}\right)$$

where r_{11} = Reliability coefficient of the whole test
n = Number of items in the test.
σt = The S. D. of the total scores of the text.
p = the proportion of the group answering a test item correctly.
$q = (1 - p)$ = the proportion of the group answering a test item incorrectly

This method provides information about the degree to which the items in the test measure similar characteristics. Though the simplicity of applying this method has made it wide spread still it has some limitations.

- Kuder-richardson method and split-half method are not appropriate for speed tests.
- Both Kuder-Richardson and split-half method do not measure the consistency of pupil response from day to day.
- Kuder-Richardson method is cumbersome to calculate unless information is already available concerning the proportion of passing.

❑ 2.4.4 Factors influencing the Reliability of Test Scores :

There are a number of factors which affect the measures of reliability. So that when we interpret and use the scores we must be cautious and manipulate those factors through test preparation and administration. The major factors which affect the reliability of test scores can be categorised in to two headings.

A. Intrinsic Factors
- Factors related to test
- Factors related to testee
- Factors related to testing procedure

B. Extrinsic Factors

A. Intrinsic Factors :

◆ **Factors related to test :**

(i) **Length of the test :** The more the number of the test contains, the greater will be its reliability and vice-versa.

(ii) **Content of the test :** According to Guilford, homogeneity of test content also increases the reliability of test scores.

(iii) **Characteristics of items :** If test items are too easy or difficult for the group members it will tend to produce scores of low reliability.

(iv) **Ambiguous wording of items :** When questions are interpreted in different ways at different times by the same students, the test becomes less reliable.

(v) **Spread of scores :** When the spread of scores are large there is greater chance of an individual to stay in the same relative position in a group from one testing to another. We can say that errors of measurement affects less to the relative position of the individual when the spread of scores are large.

◆ **Factors related to testee :**

(i) **Test wiseness of the students :** Experience of test taking also affect the reliability of test scores. Practice of the students in taking sophisticated tests increases the test reliability. But when in a group all the students do not have same level of test wiseness, it leads to greater measurement errors.

(ii) **Motivation of the students :** When the students are not motivated to take the test, they will not represent their best achievement. This depress the test scores.

◆ **Factors related to testing procedure :**

(i) **Time limit of test :** When the students get more time to take the test they can make more guessing which may increase the test scores. Therefore, by speeding up a test we can increase the test reliability.

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(ii) **Method :** The method used in obtaining data on reliability affects the reliability coefficient. The method that takes into account both stability and equivalence will tend to give a lower coefficient than the other methods.

(iii) **Inconsistency in test administration :** Inconsistency in test administration such as deviations in timing, procedure, instruction, etc., fluctuations in interest and attention of the pupils, shifts in emotional attitude, etc., make a test less reliable.

(iv) **Interval :** With any method involving two testing occasions, the longer the interval of time between two test administrations, the lower the coefficient will tend to be.

(v) **Cheating opportunity given to the students :** Some students may provide correct answer by copying it from cheat sheets or listening from other students without knowing the correct answer. This will cause a higher score of those students than they actually deserve. This will make the observed score of cheaters higher than their true score.

B. Extrinsic Factors :

The factors which remain outside the test itself are—

(i) **Group Variability :** when the group of pupils being tested is homogeneous in ability, the reliability of the test scores is likely to be lowered and vice-versa.

(ii) **Guessing and chance errors :** Guessing in test gives rise to increased error variances and as such reduces reliability.

(iii) **Environmental conditions :** As far as practicable, testing environment should be uniform. Arrangement should be such that light, sound and other comforts should be equal to all testee, otherwise it will affect the reliability of test score.

◆ Relation between Reliability and Validity :

The relation between reliability and validity is sometimes confusing persons who encounter these terms for the first time.

- Reliability (consistency) of measurement is needed to obtain valid results, but we can have reliability without validity. That is, we can have consistent measures that provide the wrong information or are interpreted inappropriately.

- Reliability is a necessary but not a sufficient condition for validity.
- Validity is sometimes defined as truthfulness while reliability is sometimes defined as trustworthiness. Truthfulness and trustworthiness are the two aspects of what is essentially the same thing, namely, test efficiency.
- Neither validity nor reliability is an either. They are degrees of each.
- Validity includes reliability. A classroom test should be both consistent and relevant; this combination of characteristics is called validity. Thus validity has two major aspects-reliability and relevance.

◆ Basic Terminology :

Correlation coefficient	:	A statistic that indicates the degree of relationship between any two sets of scores obtained from the same group of individuals (e.g., correlation between height and weight)
Validity coefficient	:	A correlation coefficient that indicates the degree to which a measure predicts or estimates performance on some criterion measures (e.g., correlation between scholastic aptitude scores and grades in school).
Reliability Coefficient	:	A correlation coefficient that indicates the degree of relationship between two sets of measures obtained from the same instrument or procedure (e.g., correlation between scores obtained from administration of two forms of a test).

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2.5 Objectivity :

The **objectivity** of a test refers to the degree to which equally competent scores obtain the same results. Most standardized tests of aptitude and achievement are high in objectivity.

A test is **objective** when the scorer's personal judgement does not affect the scoring. A measuring instrument is said to be highly objective if the score assigned by different but equally component scores is not affected by the judgement, personal opinion or bias of the scores.

In an **objective test, test items*** can readily be scored as right or wrong. The true-false type, the alternate response type, the matching type, the multiple-choice type test items are highly objective, while essay type items are highly subjective.

Objectivity is a pre-requisite of reliability and therefore of validity. Objective judgements are accurate and hence tend to be reliable.

Objectivity of a test *denotes unkindness in administration, test.* The test should be such that the Guidance workers' attitudes or ideals do not get reffered in the admininstration, interpretation and scoring of the test. The scores on the tests should be the same even when examined by more than one examiner. Higher this objectivity, higher is the probability of the test being good.

Objectivity of a test is also measured in terms of **item difficulty.** Item difficulty in a test should be based on empirical findings. For example, if a large number of individuals are able to solve a particular item in a test, it implies that the item is easy, and the items which are solved by only a few people are termed as difficult. This shows that construction of a test should be based on experimental measurement of difficulty level.

2.6 Norm and Usability :

2.6.1 Norms :

Norms are the *scores earned by pupils in clearly-defined reference groups.* These groups are known as norm groups and are generally representative of the pupil population.

* Objective test item discussed in Unit-III

Norms are not standards; they go on changing from population to population. Test norms enables us to answer questions such as the following :

- How does a pupil's test performance compare with that of other pupils?
- How does a pupil's performance on one test (or subtest) compare with performance on another test (or subtest)?
- How does a pupil's performance on one form of a test compare with performance on another form of the test, administered at an earlier date?

These comparisons of test scores make it possible to predict a pupil's probable success in various areas, to diagnose strengths and weaknesses, to measure educational growth, and to use the test results for other instructional and guidance purposes. Such functions of test scores would be severely curtailed without the use of the derived scores provided by test norms.

For maintaining the uniformity of scoring, aspect of standardisation, proper 'norms' should be established.

A 'norm' is the average performance with which the individual's performance could be compared.

For example, if on an average, children of 15 years are able to complete 40 items out of 50 on an abstract reasoning test, then the norm for a 15 year's old child would be 40 and the scores obtained by an individual are compared with this norm. The actual scores obtained by individuals are known as **raw scores**. For establishing such norms of test scores, a test is administrated to a large number of persons of a specified age group, educational level, according to the fixed time limit and controlling other variables. The scores are averaged to prepare norms.

A summary of the most common types of test norms is presented in the following table. To interpret and use test results effectively, we need a good grasp of the characteristics, advantages, and limitations of each of these types of norms.

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Type of Test Norm	Name of Derived Score	Meaning in Terms of Test Performance
• Grade norms	• Grade equivalents	• Grade group in which pupil's raw score is average.
• Percentile Norms	• Percentile ranks(or) percentile scores	• Percentage of pupils in the reference group who fail below pupil's raw score.
• StandardScore norms	• Standard scores	• Distance of pupil's raw score above or below the of the reference group in terms of standard deviation units.

The adequacy of test norms is a basic consideration during the interpretation of the test scores. The following criteria indicate the qualities most desired in norms:

- Test norms should be relevant
- Test norms should be representative
- Test norms should be up to date
- Test norms should be comparable
- Test norms should be adequately described.

❑ 2.6.2 Usability :

Usability-the degree to which the tool of evaluation can be successfully used by the educational practitioner.

In addition to providing results that possess a satisfactory degree of validity and reliability, an evaluation procedure must meet certain practical requirements. It should be economical from the viewpoint of both time and money; it should be interpreted and applied by the school personnel available. These practical aspects of an evaluation procedure all can be included under the heading of usability. The term usability, then, refers only to the practicality of the procedure and says nothing about the other qualities present.

While constructing or selecting a test the following practical aspects must be taken account.

■ Ease of Administrability :

- Definite provision should be made for the preparation,distribution and collection of test materials.
- Instruction to the pupils should be simple, clear and concise.
- Sample items should be illustrated by practice exercises.
- The test format should be such that pupils will have no difficulty in reading the items, in recording their answers, in moving from one page to the next, etc.
- Illustrations should be clearcut and easily tied up with the appropriate test items
- Mechanical features of a test, such as page size, length of line and kind of type, should be such as to facilitate the administration of a test.
- Ease of Scoring
- The test should be subjected to accurate scoring even by persons not conversant with their content.
- The results of a test possessing scorability should be obtainable in as simple, rapid and routine a manner as in proportion to their importance
- Ease of Interpretation
- The raw scores of a test should be easily converted into meaningful derived scores.
- It should be feasible to interpret the results with the competence of classroom teachers.

■ Economy :

- The economy of a testing programme should be computed in terms of the validity of the tests per unit of cost.
- Economy refers to the cost as well as the time required for administering and scoring a test.

■ Comparability :

- There are two means whereby comparability of results is established for standardized tests: (a) Availability of equivalent (Parallel) forms of a test; (b) Availability of adequate norms.

■ Utility :

- The utility of teacher-made-tests depends largely upon the foresight of the teacher in so planning the test and its use that the results will serve the needs of the local classroom.

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Short Questions & Answers

1. What is Formative Evaluation?

Ans : Formative Evaluation : To monitor learning progress during instruction. **Formative evaluation is used** during the teaching learning process to monitor the learning progress. Its purpose is to provide continuous feedback to both pupil and teacher concerning learning success and failures. It helps the students and the teachers both to identify the immediate learning difficulties.

Formative evaluation determines learning success of the learners and identifies learning errors of the pupils which need to be corrected.

2. Define Summative evaluation.

Ans : Summative Evaluation : To evaluate achievement at the end of instruction. Summative Evaluation is designed to determine the extent to which the instructional objectives have been achieved and is used primarily for assigning course grades or for certifying pupil mastery of the intended learning outcomes.

3. Give important differences between Summative and Formative evaluation.

Ans :

Formative Evaluation	Summative Evaluation
• It is used during the teaching Learning process to monitor the learning process	• It is used after the course completion to assign the grades
• It is developmental in nature. The aim of this evaluation is to improve student's learning and teacher's teaching.	• It is terminal in nature. Its purpose is to evaluate student's achievement
• It answers to the question, Whether the progress of the pupils In a unit is successful?	• It answers to the question, the degree to which the students have Mastered the course content.

4. Define the term (a) Norm-referenced and (b) Criterion-referenced evaluation

Ans : (a) Norm-Referenced : When the interpretation is made in terms of the *"relative position held in some known group."A norm referenced measurement* is designed to *measure the performance of an individual, which is interpretable in terms of the individual's relative position in some known group.*

(b) Criterion-Referenced : When the interpretation is made in term of the 'specific performance' that an individual has demonstrated.

✦ **Criterion-Referenced is to describe** the specific performance that was demonstrated (e.g., spelled 10 words correctly out of 10).

✦ The **criterion-referenced interpretation focused** on the percentage of items answered correctly (called a percentage-correct score).

5. Distinguish between NRT and CRT.

Ans :

★ NRT - Typically covers a large domain of learning tasks, with just a few items measuring each specific task.
CRT - Typically focuses on a delimited domain of learning tasks, with a relatively large number of items measuring each specific task.

★ NRT - Emphasizes discrimination among individuals in terms of relative level of learning.
CRT - Emphasizes description of what learning tasks individuals can and cannot perform.

6. Enumerate various types of Observational techniques.

Ans : An observation technique generally implies the use of a particular observational tool such as :
Anecdotal Records, Rating Scales, Checklists.

7. Define : (a) Psychological test (b) Educational test.

Ans : (a) A psychological test is an instrument designed to measure unobserved constructs, also known as latent variables. Psychological tests are instruments in the hands of the counsellor that are helpful in the assessment of an individual's skills-abilitiesm optitudes, personality traits, attitudes, interests and achievements.

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(b) An Educational test may be defined as "an organised pattern of stimuli which are selected and organised to reveal educational achievement of the person who takes them."

Kaplan and saccuzzo (2001) have opined, "**An educational test** is a set of item designed to measure characteristics of human beings that pertain to behaviour."

8. Define the term (a) validity (b) reliability (c) objectivity (d) Norm

Ans : (a) **The validity** of a test may be defined as :

- "the accuracy with which a test measures whatever it is supposed to measure".
- "the efficiency with which a test measures what it attempts to measure".
- "the accuracy with which a test reliably measures what is relevant".

(b) "*Reliability* refers to the consistency of measurement- that is, how consistent test scores or other evaluation results are from one measurement to another". [Gronlund and Linn, 1995]

Therefore, the reliability of a test may be defined as :

- "the degree of consistency among test scores".
- "the degree of consistency with which the test measures what it does measure".
- If a watch regularly goes 5 minutes slow of the Indian Standard Time, it may be said that it is not valid, for it does not measure, what it is supposed to measure; but it is reliable in the sense that it consistently goes 5 minutes slow.

(c) **The objectivity** of a test refers to the degree to which equally competent scores obtain the same results. Most standardized tests of aptitude and achievement are high in objectivity.

(d) **Norms** are the *scores earned by pupils in clearly-defined reference groups*. These groups are known as norm groups and are generally representative of the pupil population.

A 'norm' is the average performance with which the individual's performance could be compared.

Probable Questions

Short answer type questions : Marks : 2 or 3

1. What is Formative Evaluation?
2. Define Summative evaluation.
3. Give important differences between Summative and Formative evaluation.
4. Name the general techniques of evaluation.
5. Define : (a) Psychological test (b) Educational test.
6. Enumerate various types of Observational techniques.
7. Define the term (a) validity (b) reliability (c) objectivity.
8. Name the three factors which affect the validity of a test.

Essay type questions : Marks : 5 or 7

1. Define the term (a) Norm-referenced and (b) Criterion-referenced evaluation
2. Distinguish between NRT and CRT.
3. Explain the significance of Observational techniques and Self-reporting techniques.
4. List the various types of Self-reporting techniques.
5. Describe the procedure to find out validity of a given tool.
6. Define reliability, and describe its importance in teaching.
7. Reliability is nothing but consistency. How?
8. Enlist the five factors which can decrease the reliability of a test.
9. Briefly describe the methods of estimating reliability.Can one method substitute for another? Why or why not?
10. Describe the procedure to find out reliability.
11. State the relationship between validity and reliability.
12. List the similarities and differences between cirterion-referrenced and norm-referrenced measurement.

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Unit 3

Psychological Test

❑ Structure/Content Outline

3.1 Meaning and Concept of Psychological Test

3.2 Preliminary Idea about Intelligence Test, Aptitude Test, Interest Inventory, Attitude Test, Creativity and Personality

- 3.2.1 Intelligence Test
  - 3.2.1.1 Definition
  - 3.2.1.2 Classification of intelligence test
  - 3.2.1.3 Measurement of Intelligence:
  - 3.2.1.4 Tests of Intelligence
    - Stanford-Binet Intelligence Scale
    - Wechsler's Intelligence Scales
- 3.2.2 Aptitude Test
  - 3.2.2.1 Definition of Aptitude
  - 3.2.2.2 Aptitude Tests
    - Achievement and Aptitude Test
  - 3.2.2.3 Uses of Aptitude Tests
- 3.2.3 Interest Inventory
  - 3.2.3.1 Definition of Interest and Interest Inventory
  - 3.2.3.2 Measurement of Interest
    - The strong Interest Inventory (SIN)
    - The Kuder Occupational Interest Survey and Its Predecessors
  - 3.2.3.3 Uses of Interest Inventories :
- 3.2.4 Attitude test
  - 3.2.4.1 Definition of Attitude and Attitude Scale
  - 3.2.4.2 Measurement of Attitudes

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- Likert Type Scale
- Thurstone Type Scale

3.2.4.3 Uses of Attitude Scale

3.2.5 Creativity Test

3.2.5.1 Meaning and Aspects of Creativity

3.2.5.2 Tests of Creativity

3.2.6 Personality test

3.2.6.1 Definition of Personality

3.2.6.2 Personality Measures

- Self report inventories
- Observational Methods
- Projective Technique

3.3 Achievement Test-Meaning, Characteristics, Steps for Construction and Uses

3.3.1 Definition of Achievement Test

3.3.2 Classification

3.3.2.1 Teacher made Test

3.3.2.2 Standardised Achievement Test

3.3.2.3 Teacher made Test vs. Standardised Achievement Test

3.3.3 Characteristics of Ach ievement Test

3.3.4 Construction of Achievement Test

3.3.5 Uses of Achievement Test

3.4 Diagnostic Test

3.5 Prognostic Test

○ 3.1 Meaning and Concept of Psychological Test :

A psychological or an educational test is a standardized procedure to measure quantitatively or qualitatively one or more than one aspect of a trait by means of a sample of verbal or non-verbal behaviour.

The ***purpose* of a psychological test** is twofold.

First, it attempts to compare the same individual on two or more than two aspects of a trait. **Second,** two or more than two persons may be compared on the same trait.

○ Psycho logical Tests :

Definition :

- **Anastasi and urbina (1997) 'A psychological test** is essentially an objectives and standardized measure of a sample of behaviour.''
- **Freedom ''A Psychological test** is a standardised instrument designed to measure objectively one or more aspects of a total personality by means of samples of verbal or non-verbal responses, or by means of other behaviours."

Psychologist Marshall, ''A **psychological test may be defined** as a pattern of stimuli, selected and organised to elicit responses which will reveal certain characteristics in the person who makes them.''

A psychological test is an instrument designed to measure unobserved constructs, also known as latent variables. Psychological tests are instruments in the hands of the counsellor that are helpful in the assessment of an individual's skills-abilitiesm optitudes, personality traits, attitudes, interests and achievements.

Psychological tests fall into several categories. Achievement and aptitude tests are usually seen in educational or employment settings, and they attempt to measure either how much you know about a certain topic (i.e., your achieved knowledge), such as mathematics or spelling, or how much of a capacity you have (i.e., your aptitude) to master material in a particular area, such as mechanical relationships.

◆ Characteristics : Psychological Tests :

1. A psychological test is a sample of behavior

- All Psychological Tests require the respondent to do something.
- Psychological Tests are not exhaustive measures.
- A good Psychological test is a *representative sample* of the measured behavior.
- There should be a clear connection between the test and the measured behavior in a real world setting.

2. The behavior sample is obtained under standardized conditions.

- Each individual taking a psychological test should be tested under essentially identical conditions. For example, SAT administration instructions pertain to : Seating Arrangements, Lighting Conditions, Noise Levels, Interruptions,

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Answering common questions–

- Standardization is vital because many test results are referential in nature : Your performance is measured relative to everybody else performance.
- Standardization reduces between subject variability due to extraneous variables.
- Standardization is easier to obtain with tests designed to be administered en masse.
- Tests such as the Wechsler Adult Intelligence Scale, which are administered individually, are less standardized.
- The individual giving the test is an important variable. Often, they take special training to standardize the way they give the test.

3. **There are established scoring rules for obtaining quantitative information from the behavior sample.**
   - **Objective Scoring Rules :** Most mass produced tests fall into this category. Different qualified examiners will all come to the same score for an identical set of responses.
   - **Subjective Scoring Rules :** When the judgement of the examiner is an important part of the test, different examiners can legitimately come to different conclusions concerning the same sample of behavior. There conclusions should be similar, however.
   - Good standardized psychological tests all have a set of rules or procedures for scoring responses to a test.

⚙ 3.2 Preliminary Idea about Intelligence Test, Aptitude Test, Interest Inventory, Attitude Test, Creativity and Personality:

❑ 3.2.1 Intelligence Test :

❖ 3.2.1.1 Definition :

Dictionary definition : A standardized test used to establish an intelligence level rating by measuring a subjects ability to form concepts, solve problems, acquire information, reason perform other intellectual operations.

Intelligence tests are psychological tests that are designed to measure a variety of mental functions, such as reasoning, comprehension and judgement.

Several attempts have been made since long days back to define intelligence as it is an ambiguous and controversial concept.

Dictionary **:** Intelligence is the capacity to acquire and apply knowledge.

Binet and Simon **:** Intelligence is, Judgement, good sense, initiative, the ability to comprehend and to reason well and to adapt ones self to circumstances.

Burt **:** Intelligence is as The power of readjustment to relatively novel situations by organizing new psychophysical combinations.

Stern **:** Intelligence is as A general capacity of an individual consciously to adjust his thinking to new requirements.

Thorndike **:** Intelligence is the power of good response from the point of view of truth or fact.

Wells **:** Intelligence is the property of recombining our behavior pattern as to act better in novel situations.

Munn **:** Intelligence is the flexibility on versatility in the use of symbolic processes.

Terman **:** Intelligence is the ability to carry out abstract thinking.

Garret **:** Intelligence is the ability demanded in the solution of problems which require the comprehension and use of symbols i.e. words, numbers, diagrams, equations and formulae.

Charles Spearman **:** Intelligence is the analytic and synthetic ability of mind.

D. P. ***Ausubel and F. F. Robinson*** **:** Intelligence refers to a general level of cognitive functioning as reflected in the ability to understand ideas and utilize abstract symbols (verbal, mathematical or spiritual) in the solution of intellectual problems.

David Wechsler **:** Intelligence is the aggregate or global capacity of the individual to act purposefully, to think rationally and to deal effectively with his environment.

To sum up these definitions, intelligence is-

- The ability to learn.
- The ability to think abstractly
- The ability to solve problems
- The ability to perceive relationship.
- The ability to adjust and relate to ones environment.
- The ability to behave properly and effectively.
- The ability to profit from experience.

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Definition of Intelligence :

"It seems to us that in intelligence there is a fundamental faculty, the alteration or the lack of which, is of the utmost importance for practical life. This faculty is judgment, otherwise called good sense, practical sense, initiative, the faculty of adapting one's self to circumstances. A person may be a moron or an imbecile if he is lacking in judgment; but with good judgment he can never be either. Indeed the rest of the intellectual faculties seem of little importance in comparison with judgment" **(Binet Simon, 1916, 1973, pp.42-43).**

❖ 3.2.1.2 Classification of Intelligence Test :

A. **On the basis of size** the intelligence tests can be classified under two heads such as (i) Individual tests (ii) Group tests

B. **On the basis of language used** the intelligence tests can be divided into two types namely (i) Verbal or Language tests (ii) Non-verbal or Non-language tests

C. **On the basis of medium used** the intelligence tests can be classified under two heads such as (i) Paper and Pencil tests (ii) Performance tests.

Individual and Group Tests of Intelligence :

The first of these classification, individual and group tests, is based on their administration.

An Individual tests are administered to one examinee at a time in a face-to-face situation. (Simon-Binet). The problems are presented orally by the examiner and the examinee responds by pointing, giving an oral answer, or performing some manipulative task.

During World War 1 rapid and mass classification of army personnel was required and such tests could not fulfil these needs. Therefore, group intelligence tests were developed which could be administered on a group of individuals, (Army Alpha and Army Beta).

Individual tests have some special advantages over a group test. Because the individual tests is administered to one pupil at a time, it is possible to control more carefully such factors as motivation and to assess more accurately the extent to which disabling behaviours are influencing the score.

Verbal/Non Verbal Tests :

Another classification of intelligence tests based on the form and content of the test items is verbal / paper-pencil tests and non-verbal / performance tests. Verbal tests use written language for its items and therefore, require the examinees to be literate. Items of performance tests do not use language at all and are manipulative in form and nature. Examinees are required to manipulate the items in a particular and desired manner. Hence, such tests can be effectively administered on illiterates, children and deaf persons also. Some of the performance tests claim to be suitably used at persons from different cultures and prefer to be called as culture-free, culture-fair, culture-reduced and cross-cultural tests.

❖ 3.2.1.3 Measurement of Intelligence :

Concept of Mental Age in Intelligence Tests :

Alfred Binnet originated and developed the **concept of mental age** in the field of intelligence testing. He devised it by arranging the items of test in terms of age level, an age scale. The level of intelligence is ascertained in terms of items with credit of age in the context of real (chronological) age by allowing the subjects to complete successfully the items, set in the test in order of difficulty. The items provided in the tests are previously standardized and it is true to maximum extent for a larger group of representative sample. The mental age of subject is determined from his actual performance in the test. A subject of actual 12 years age may or may not have mental age of twelve as it depends on whether student have completed and passed the test items prescribed for him according to that age level.

Concept of Intelligence Quotient :

The most important development in the area of intelligence testing was adaptation of Stern's (1912) concept of an intelligence quotient in the Stanford-Binet intelligence scale. Stern put forth the notion that to derive an intelligence quotient (IQ) and Terman incorporated this concept into the 1916 version of Stanford-Binet Scale.

An intelligence quotient (IQ) is a total score derived from one of several standardized tests designed to assess human intelligence. The abbreviation IQ was coined by the psychologist William Stern for the German term *Intelligenzquotient*, his term for a scoring method for intelligence tests he advocated in a 1912 book.

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The intelligence quotient (I.Q.) is the actual ratio of mental age to chronological age of the subject for whom the test is meant. For example.

a student or child with 1 year age who has passed in the test items successfully prescribed for 12 years of age has an I. Q. of M. A./C. A.= 12/10. But to get rid of problem of fraction it is normally multiplied with 100.
IQ = M.A./C.A.*100 = 6/5*10 = 120.
Then from I.Q., the mental standard of child is determined easily whether the student is superior, average, dull etc.

❖ 3.2.1.4 Tests of Intelligence The four most commonly used intelligence tests are :

- Stanford-Binet Intelligence Scales
- Wechsler Primary Preschool Scale of Intelligence
- Wechsler Intelligence Scale for Children
- Wechsler Adult Intelligence Scale

■ Stanford-Binet Intelligence Scales :

Terman had revised the Stanford Binet with the help of Maud Merrill in 1937 as the **Revised *Stanford-Binet Intelligence Scale*.** The revision included two alternate forms, **the L form,** and **the M form,** *each with 129 items.* The **third revision of the Stanford-binet** came after Terman's death in 1960 and was constructed primarily by **Merrill.** The *Stanford-Binet Intelligence Scale, Form* L-M, was different from its predecessor in that it included a deviation intelligence quotient with a *normative mean of 100* and a *standard deviation of 16.* This version also included the 142 most pertinent items from the two previous forms of the test (Roid, 2003).

Stanford-binet Scale fourth Edition : The fourth revision of the Stanford-Binet, the Stanford-Binet intelligence scales came in 1986 and retained much of the content of the form L-M edition. The same age range was covered; many of the same items and tasks were retained, and the basal and ceiling procedures were quite similar.

The greatest advance of the fourth edition was that, like the fifth edition, the fourth edition was based on a hierarchical model of intelligence.

In the fourth edition, the grouping of items by age level has been replaced by the grouping of items into 15 separate tests. Each test consists of the same type items arranged in order of increasing difficulty, with two items at each level having approximately the same difficulty. The fifteen tests include many of the item types of earlier editions but provide broader coverage of memory, quantitative, and spatial tasks. *Six of the tests cover the full range of the scale, from age 2 to adult, but seven of the tests start above age 2 and two tests end below the adult level.* The *15 tests are arranged into four cognitive areas,* as follows:

◆ Verbal Reasoning :

- Vocabulary-Defining items.
- Comprehension-Identifying and giving reasons for events.
- Absurdities- Explaining what is wrong or silly about pictures.
- Verbal Relations- Telling how three things are alike and differ from a fourth.

◆ Quantitative Reasoning :

- Quantitative- Counting, computation, and problem solving.
- Number Series- Completing the next two items in a number sequence.
- Equation Building- Arranging numbers and symbols to form an equation.

◆ Abstract/Visual Reasoning :

- Pattern Analysis-Reproducing patterns using a form board and cubes.
- Copying- Copying designs using blocks and drawings.
- Matrices- Completing matrices that have portions missing.
- Paper Folding and Cutting- Identifying pictures of unfolded paper after viewing it folded and cut.

◆ Short-Term Memory :

- Bead Memory-Identifying beads and bead patterns.
- Memory for Sentences-Repeating sentences verbatim.
- Memory for Digits-Repeating digits forward and backward.
- Memory for Objects-Identifying proper sequences of pictures.

The tests are grouped under these four areas for scoring and profiling but are not administered in that order. **The examiner** *begins with the vocabulary test, using chronological age for determining the entry level*

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(i.e., where to begin the test). The *vocabulary test, along with chronological age, is then used as a routing test to determine the entry level on all other tests*. On each test, the basal level is established(when all four items on two consecutive levels are passed) and then the test is continued until a ceiling level is reached (when three or more items are failed at two consecutive levels). This adaptive testing procedure, a carry over from earlier editions, eliminates the items that are two easy and too difficult for the examinee and administers only those of appropriate difficulty.

The raw score for each test is obtained by subtracting the number of items failed from the number of the highest item administered. This procedure, of course, gives credit for those items below the basal level that were not administered. An individuals raw score on each test is converted, by means of tables, to standard scores with a mean of 5and a standard deviation of 8. These scores are then combined to obtain Standard Age Scores (SAS) for each of the four cognitive areas and for the total scale. These SAS are normalized standard scores with a mean of l0 and a standard deviation of 16.

An individual does not take all 15 tests. There are only 8 tests suitable for the youngest and only 13 tests that are suitable for the highest level.

In summary, *the fourth edition of the Standard-Binet Scale includes a variety of ability tests grouped into four cognitive areas. It provides four area scores and a full scale score, called Standard Age Scores, that have a mean of l0 and a standard deviation of 16.*

The latest version of the test, the Stanford-Binet Intelligence Scales-Fifth edition (SB5) differs significantly from the SB4 with regard to theoretical structure, as the Sb5 adheres rather strictly to the Cattell-Horn- Carroll (CHC) cognitive theory and the SB$ adheres to a less strict psychometric design.

Stanford-Binet Intelligence Scales Fifth Edition (SB-5; Roid, 2003a): The Stanford-Binet Intelligence ScalesFifth Edition (SB-5; Roid, 2003a) is a test of intelligence/cognitive abilities for individuals 2 to over 85 years of age (child, adolescent, and adult). It is a major revision of the Stanford-Binet Intelligence Scales Fourth Edition (SB-4; Thorndike, Hagen, Sattler, 1986) and took seven years to complete. The complete SB-5 takes between 45 and 75 minutes to administer. The SB5 provides comprehensive coverage of five factors of cognitive ability:

- Fluid Reasoning
- Knowledge
- Quantitative Reasoning
- Visual-Spatial Processing
- Working Memory

Use of the SB-5 may be for assessing mental retardation, learning disabilities, developmental disabilities, and intellectual giftedness, although diagnosis of mental retardation also requires assessment of and significant deficits in adaptive behaviors. The SB-5 examiner's manual articulates test user qualifications, including college and/or graduate training in statistics and measurement for understanding test scores; thorough understanding of standardized administration, scoring, and calculation of standardized scores; and supervised training in administration via training workshops and/or graduate school testing courses.

The SB5 helps to diagnose a wide variety of developmental disabilities and exceptionalities and may also be useful in

- Clinical and neuropsychological assessment
- Early childhood assessment
- Psychoeducational evaluations for special education placements
- Adult social security and workers compensation evaluations
- Providing information for interventions such as IFSPs, IEPs, career assessment, industrial selection, and adult neuropsychological treatment
- Forensic contexts
- Research on abilities and aptitudes

■ Wechsler's Intelligence Scales :

It is developed by David Wechsler, is an individually administered intelligence test for children between the ages of 6 and 16 inclusive that can be completed without reading or writing.

◆ WAIS(Wechsler-Adult Intelligence Scale) :

The WAIS was initially created as a revision of the Wechsler- Bellevue Intelligence Scale (WBIS), which was a battery of tests published by Wechsler in 1939. The WBIS was composed of subtests that could be found in various other intelligence tests of the time, such as Robert Yerkes' army testing program and the Binet-Simon scale. The WAIS was first released in February 1955 by David Wechsler.

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◆ WAIS-R :

The WAIS-R, a revised form of the WAIS, was released in 1981 and consisted of six verbal and five performance subtests. The verbal tests were Information, Comprehension, Arithmetic, Digit Span, Similarities, and Vocabulary. The Performance subtests were Picture Arrangement, Picture Completion, Block Design, Object Assembly, and Digit Symbol. A verbal IQ, performance IQ and full scale IQ were obtained.

◆ Verbal scale :

- Information: Answers questions based on general information (e.g., How many legs does a cat have?).
- Similarities: Explain in what way a series of paired things are alike (e.g., apple and orange)
- Arithmetic: Solves problems similar to those used in school (e.g.,If two pencils cost a nickel, how many could you buy for a quarter?).
- Vocabulary: Tells the meaning of words from a master listof 32, arranged in order of increasing difficulty.
- Comprehension: Answers questions requiring common-sense comprehension (e.g., why should people tell the truth?)
- Digit Span (alternate test) : Repeat series of digits forward and backward after hearing them once (e.g.372). This test may substitute for any of the others in the Verbal scale.

◆ Performance Scale :

- **Picture completion :** Tells what part is missing in incomplete pictures.
- **Picture Arrangement :** Arranges sets of cartoon panels in proper sequence so that they tell a story.
- **Block Design :** Arranges sets of blocks (coloured red and white) so that they match pictures of designs on examiners cards.
- **Object Assembly :** Puts together jigsaw puzzles based on parts of objects (e.g., car).
- **Coding :** Matches numbers and symbols by referring to a simple code that is kept in front of the examinee.

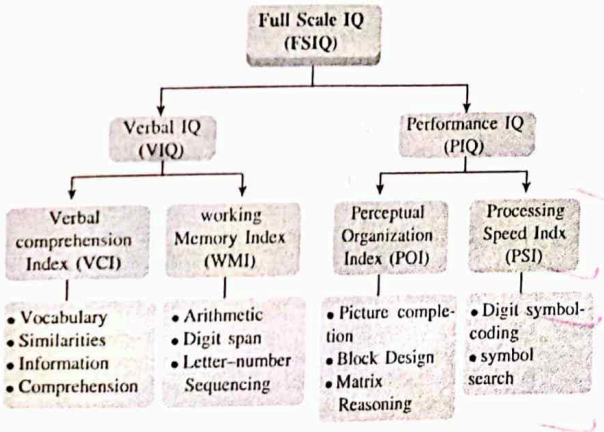
Mazes (alternate for the coding test)Traces on a paper maze, within a set time limit.

Each subtest in the WISC-R is administered and scored separately. The tests are administered by alternating between the Verbal and

Performance Scales (test order is 1,6, 2, 7, and so on) to maintain greater interest and attention. The raw scores on the individual tests are converted to scaled scores with a mean of 10 nd a standard deviation of 3. They are then combined to produce a verbal IQ, a performance IQ, and a total IQ.

◆ WAIS-III :

The WAIS-III, a subsequent revision of the WAIS and the WAIS-R, was released in 1997. It provided scores for Verbal IQ, Performance IQ, and Full Scale IQ, along with four secondary indices (Verbal Comprehension, Working Memory, Perceptual Organization, and Processing Speed).



WAIS-III Table-1

◆ WAIS-IV :

The current version of the test, the WAIS-IV, which was released in 2008, is composed of Icore subtests and five supplemental subtests, with the Icore subtests comprising the Full Scale IQ. With the new WAIS-IV, the verbal/performance subscales from previous versions were removed and replaced by the index scores. The General Ability Index (GAI) was included, which consists of the Similarities, Vocabulary and Information subtests from the Verbal Comprehension Index and the Block Design,

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Matrix Reasoning and Visual Puzzles subtests from the Perceptual Reasoning Index.

◆ **Indices and scales :**

There are four index scores representing major components of intelligence:

- Verbal Comprehension Index (VCI)
- Perceptual Reasoning Index (PRI)
- Working Memory Index (WMI)
- Processing Speed Index (PSI)

Two broad scores are also generated, which can be used to summarize general intellectual abilities :

- Full Scale IQ (FSIQ), based on the total combined performance of the VCI, PRI, WMI, and PSI
- General Ability Index (GAI), based only on the six subtests that the VCI and PRI comprise.

◆ **Subtests :**

◆ **Verbal Comprehension Index includes four tests :**

- **Similarities :** Participants are given two words or concepts and have to describe how they are similar. Abstract verbal reasoning
- **Vocabulary :** Depending on the tasks, participants must name objects in pictures or define words presented to them. The degree to which one has learned, been able to comprehend and verbally express vocabulary
- **Information :** Participants are questioned about their general knowledge Degree of general information acquired from culture.
- **Comprehension [Supplemental] :** Ability to deal with abstract social conventions, rules and expressions

◆ **The Perceptual Reasoning Index comprises five tests :**

- Block Design: Spatial perception, visual abstract processing, and problem solving. Children put together red and white blocks in a pattern according to a displayed model.
- Matrix Reasoning: Nonverbal abstract problem solving, inductive reasoning, spatial reasoning. Children are shown an array of pictures with one missing square and select the picture that fits the array from five options.
- Visual Puzzles : Non-verbal reasoning
- Picture Completion [Supplemental]: Ability to quickly perceive visual details. Children are shown art work of common objects with a missing part and asked to identify the missing part by pointing and/or naming.
- Figure Weights [Supplemental]: Quantitative and analogical reasoning

◆ **The Working Memory is obtained from three tests :**

- Digit span
  - **forwards :** Participants must recall a series of numbers in order learning, memory, attention, encoding, auditory processing
  - **backwards :** Participants must recall a series of numbers backwards working memory, transformation of information, mental manipulation and visuo spatial imagery
  - **sequencing :** Participants must retain a series of numbers and recall them in ascending order
- **Arithmetic :** Concentration while manipulating mental mathematical problems
- (Letter-Number Sequencing [Supplementary]: Participants must recall a series of numbers in increasing order and letters in alphabetical order Attention, concentration, mental control

◆ **The Processing Speed Index includes three tests :**

- **Symbol Search :** Visual perception/analysis, scanning speed. Children are given rows of symbols and target symbols, and asked to mark whether or not the target symbols appear in each row.
- **Coding :** Visual-motor coordination, motor and mental speed, visual working memory. Children under 8 marks rows of shapes with different lines according to a code. Children over 8 transcribe a digit-symbol code. The task is time limited with bonuses for speed.
- **Cancellation [Supplemental] :** Visual-perceptual speed. Children sees random and structured arrangements of pictures and marks specific target pictures within a limited amount of time.

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◆ Uses of Intelligence Tests :

In the guidance services, intelligent tests are widely appreciated and used due to following reasons.

- Measurement of the learning readiness of students at different age levels.
- Selection of subjects, courses and careers.
- Diagnosis of reading inability and educational backwardness.
- Classification of pupils in the different homogeneous groups.
- Prediction of future progress of a student.
- Identifying the exceptional children such as educable mentally retarded, the slow learner, and learning disabled.
- Selection of candidates for officers training in defence services.
- Ascertaining the magnitude of individual difference.
- Prediction for vocational success of student in occupational life.
- Providing educational, vocational and personal guidance to pupils.

◆ Advantages :

In general, intelligence tests measure a wide variety of human behaviors better than any other measure that has been developed. They allow professionals to have a uniform way of comparing a person's performance with that of other people who are similar in age. These tests also provide information on cultural and biological differences among people. Intelligence tests are excellent predictors of academic achievement and provide an outline of a person's mental strengths and weaknesses. Many times the scores have revealed talents in many people, which have led to an improvement in their educational opportunities. Teachers, parents, and psychologists are able to devise individual curricula that matches a person's level of development and expectations.

❑ 3.2.2 Aptitude Test :

❖ 3.2.2.1 Definition of Aptitude :

The word **aptitude** is derived from the word 'aptos' which means for 'fitted for'. Aptitude is a set of abilities, which are essential for accuracy, knowledge and skills specific to an area of performance. In other words, aptitude is a set of abilities required for a specialized activity.

Having an aptitude for something means you have a talent or flair for it, i.e. you have the ability to perform a particular kind of task at a certain level. This may be a mental (e.g. arithmetic) or a physical task (e.g. trowing darts). In general, aptitudes are in no way related, and are therefore fully independent from one another. This means that being highly skilled in one task does not automatically lead to being highly skilled in another kind of task.

When we say *clerical aptitude*, *surgical aptitude* or *aptitude for medical*, each one of the above *require a different set of abilities to be successful in that field- medicine, teaching and science. Music abilities and art* also *require basic abilities. Intelligence* refers to a set of mental abilities to the set of those abilities which directs into individual performance. The components of aptitude may make the concept clear.

To know the meaning of aptitude, the following definitions to be considered.

Dictionary of Education : Aptitude is defined as a pronouncrd innate capacity for or ability in a given line of endeavour such as a particular art, school subject or vocation.

Bingham : Aptitude is a condition or a set of characteristics regarded as symptomatic of an individuals ability to acquire with training some usually specified knowledge, skill or set of responses.Such as the ability to speak language to produce music

Van Dusen : Aptitude is a measure of the probable rate of learning which results in interest and satisfaction and is relatively specific and narrow.

Freeman : Aptitude is defined as a combination of characteristic indicative of an individuals capacity to acquire (with training) some specific knowledge, skill or set of organized responses such as the ability to speak a language, to become a musician, to do mechanical work.

To sum of these, the following are the characteristics of an aptitude.

- Aptitude is indicative of ones ability for a particular work or job.
- It is the present condition which speaks about the potentialities of the individuals future.

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- It is the combination of both inborn and developed capacities, abilities and skills etc.
- It is a capacity of the individual to learn.
- Aptitude can be developed by practice and training.
- Aptitude is considered to be unique or unusual potential of an individual.
- Aptitude is related to potentialities of different area such as music, clerical skill, academic attainment etc.

Aptitude consists of a combination of the abilities related to cognitive sensory and psychomotor components. The individuals do differ in the aptitudes. Different types of aptitudes like

- Mannual Aptitude
- Mechanical Aptitude
- Clerical Aptitude
- Musical Aptitude
- Aesthetic Aptitude
- Scientific Aptitude
- Teaching Aptitude

❖ 3.2.2.2 Aptitude tests :

Measurement of aptitude can help the teachers to :

- Identify the strength and weakness of the students
- To place a student in a particular career and provide guidance
- For educational and vocational guidance
- To create adoptive instructional system
- To provide compensations aptitude training to those who are unable to profit from normal methods of teachers.

The measurement of aptitudes becomes important and several tests are constructed to measure the aptitudes.

What is an Aptitude Test?

An aptitude test is any type of assessment that evaluates the talent/ability/potential to perform a certain task, with no prior knowledge and/or training.

To simplify this definition, think about the following examples :

- A True/False/Cannot say
- Verbal Reasoning test could help a legal firm to evaluate the ability of a lawyer, to draw conclusions from legal documents.
- A concentration test could help a rail operator evaluate a driver's ability to keep focused while being involved in the monotonous work of driving a train.

An aptitude test is designed to assess what a person is capable of doing; to predict what a person is able to learn or do given the right education and instruction. It represents a person's level of competency to perform a certain type of task. Such aptitude tests are often used to assess academic potential or career suitability.

Aptitude tests were developed to assess the capability or aptitude of a particular person in a structured, systematic and objective way. They consist of standardized methods, and the scores are compared with those of a control or reference group. Aptitude tests are designed to predict future performance in some activity. Those used in schools range from the traditional scholastic aptitude tests to the more comprehensive differential aptitude tests.

There are **many tests measuring single aptitudes** and a **test battery measuring several abilities together.**

- **Minnesota Clerical Test :** It measures the perceptual speed and accuracy required to perform various clerical duties.
- **Differential Aptitude Tests (DAT) :** It assess verbal reasoning, numerical ability, abstract Reasoning, clerical speed and accuracy, mechanical reasoning, space relations, spelling and language usage.
- **The Wonderlic Test :** These aptitudes are believed to be related to specific occupations and are used for career guidance as well as selection and recruitment.

Some examples of aptitude tests include :

- **A test assessing** an individual's aptitude to become a fighter pilot
- **A career test evaluating** a person's capability to work as an air traffic controller
- **A test given** to high school students to determine which type of careers they might be good at.

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High school students often take a variety of aptitude tests designed to help them determine what they should study in college or pursue as a career. These tests can sometimes give a general idea of what might interest students as a future career. For example, a student might take an aptitude test suggesting that they are good with numbers and data, suggesting that a career as an accountant, banker or stockbroker.

A list of some **Aptitude Tests in India and Abroad and Indian Adaption of some Foreign Aptitude Tests :**

Certain aptitude tests have been constructed to predict the subsequent performance of students in the context of new situations. These are–

- **The General Aptitude Test Battery (GATB)** by the U.S. Employment Service meant for the prediction of success in different occupations.
- **The Differential Aptitude Test Battery (DATB)** by Benett, Seashone and Wesman.
- Various **Special Aptitude Tests such** as-
  - Mechanical Aptitude Tests (MAT)
  - Clerical Aptitude Tests (CAT)
  - Musical Aptitude Tests
  - Art Aptitude Tests (AAT)
  - Military Aptitude Tests
  - Teaching Aptitude Tests (TAT)
- A Battery of **Mechanical Aptitude Tests** by A. Sharma
- **Clerical aptitude Test Battery** by Bureau of Educational and Vocational Guidance, Patna (Hindi and English).
- **Minnesota Mechanical Aptitude Test**

■ Achievement and Aptitude Test :

A common distinction is that **achievement tests** measure what a pupil has learned, and **aptitude tests measure** the ability to learn new tasks. Actually both types measure what a pupil has learned and both are useful for predicting success in learning new tasks. The main difference lie in (1) the types of learning measured by each test and (2) the types of prediction for which each is most useful.

❖ 3.2.2.3 Uses of Aptitude Tests :

The uses of aptitude tests are as follows :

- Aptitude tests are used to help the students in the proper choice of courses, subjects and careers.
- They are used for the purpose of prediction for future success both in educational and vocational careers.
- Aptitude tests are used to help the students in the improvement of certain special traits.
- Aptitude tests are used for purpose of admission and selection of students in the college and technical institutions.
- They are used as they supplement other psychological test.

❑ 3.2.3 Interest Inventory :

❖ 3.2.3.1 Definition and Types of Interest :

The concept of interest and its measurement has become a subject of intellectual discussion for teachers, guidance workers and psychologists. Interest refers to the motivating force of an individual which impels him to attend to a person, a thing, an object or an activity. It is closely related to drives, motives and emotional responses of the individual towards a person, an object or an activity.

To clear meaning of interest, some definitions cited here.

Strong : Interest is defined as activities for which we have liking or disliking and which we go toward or away from; on concerning which we at least continue or discontinue the status quo; further more, they may or may not be preferred to other interests and they may continue over varying intervals of time.

Guilford : Interest is generalized behaviour tendency of an individual to be attracted to a certain class of incentives or activities that are vocational in nature and to those whose broad meanings transcend vocations.

Murphy : Interests are conditioned stimuli related to goal objects and expressed as likes or dislikes of activities, objects, characteristics or people in the environment.

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Bingham : Interest is defined as a tendency to become absorbed in an experience and to continue it.

Crow and Crow : Interest may refer to the motivating force that impels us to attend to a person, a thing or an activity.

Ross : A thing that interests us is just something that concerns us or matters to us.

To sum up these, the **characteristics areas** follows :

- Interests are conditioned stimuli related to goal objects.
- Interests are expressed as likes or dislikes of activities, objects ar characteristics or people in the environment.
- They are influenced by heredity as well as environment.
- They are quite stable and fixed traits of personality of the individual.
- They are not permanently fixed trait of the individual.
- They are unique to an individual.
- They vary with age of the individual.

Types of Interest : Based upon methods employed to evoke responses, Super Crites (1962) have classified interests into three types–

- **Expressed Interest :** It refers to interest in an object activity, subject of study, or occupation as verbally expressed by an individual.
- **Manifest Interest :** It refers to interest as manifested in actual activity, study or occupation.
- **Inventoried Interest :** It refers to an individuals interest as measured by interest inventories.

Different Interest Factors : *Guilford* has pointed out following seven interest factors-

- **Mechanical :** This includes activities that are mechanical or manual in nature with less emphasis on thinking variable.
- **Business :** This includes business administration, business selling, business contact, verbal expression (development), social sciences, and sensory satisfaction.
- **Scientific :** This includes such activities as scientific investigation, scientific theory, mathematical concepts, laboratory work, logical processes, precision in detail.

- **Aesthetic :** This includes both aesthetic expression and appreciation. It is interest in enjoyment in the graphic, literary, dramatic and musical arts.
- **Social :** This includes welfare of others, verbal expression, control of others, office activity, responsibility, persuation.
- **Clerical :** This includes such activities as office work, number manipulation, precision, exactness and physical activity.
- **Outdoor :** This includes outdoor activity, like agriculture, manual activity, construction as well as manipulation, farming forestry, construction.

Information about pupils interests can be gathered from simple self-report devices prepared by the teacher. An Interest Inventory for reading, for example, might be no more than a list of types of books with the pupils asked to mark whether they like or dislike each type.

❖ 3.2.3.2 Measurement of Interest :

Various methods of responding can be used with informal interest inventories. The simple like-dislike response, methods can be expanded to more points, such as a like, indifferent, dislike, or strongly like, like, indifferent, dislike, strongly dislike. When there are relatively few items to be responded to, the pupils can rank them in order from like most to like least, as in the following example.

Rank	Type of Reading
_____	Fiction
_____	Non-fiction
_____	Poetry
_____	Drama

A simple paired comparison procedure also might be used to find out the pupils reading preferences when there are relatively few items to respond to. Using these same four items, for example, we would have six pairs as follows :

_____	Fiction	_____	Fiction
_____	Nonfiction	_____	drama
_____	fiction	_____	Nonfiction
_____	Poetry	_____	Drama
_____	Nonfiction	_____	Poetry
_____	Poetry	_____	Drama

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The pupils are instructed to mark the type of reading that they most prefer in each pair. A simple tally of the number of marks for each type of reading will indicate the pupils relative preference.

Using any of the preceding response methods, we can obtain an interest score for each individual pupil, or we can combine the results for the entire class. There are no right or wrong answers, and the results are usually used to plan classroom activities or to develop individual learning programs.

■ The strong Interest Inventory (SII) :

The Strong Interest Inventory was first constructed by **E K Strong, Jr., around 1920-21**. Then it was named as the **Strong Vocational Interest Blank (SVIB)** which was published in 1927. Subsequently, it was revised several times. In its revised 1966 version of the SVIB, the 399items were related to 54 occupations which were meant for men. A separate form presented 32 different occupations for women. Beginning in the 1970s, extensive innovations have been introduced and implemented in successive **revisions of the SII (D. P. Campbell, 1974; D.P. Campbell Hansen**, 1981: Hansen D. P. Campbell, 1985; Harmon et al., 1994).

The SIII-Form T317– The current Strong Interest Inventory consists of 317 items grouped into eight parts. In the first five parts, the respondent records her or his preferences by marking **L, I, or D to indicate Like, Indifferent, or Dislike**. Items in these five parts fall into the following categories occupations, school subjects, activities (e.g., making a speech, repairing a clock, raising money for charity), leisure activities, and day-to-day contact with various types of people (e.g., very old people, military officers, people who leave dangerously). Two additional parts require the respondent to express preferences between paired activities (e.g., dealing with things vs. dealing with people) and between all the possible pairings of four items from the world of work (i.e., ideas, data, things, and people). Finally, a portion of the inventory asks the resndent to make a set of self-descriptive statements Yes, No, or ?.

■ The Kuder Occupational Interest Survey and Its Predecessors :

The interest inventories developed by **Frederic Kuder** have been in use almost as long as the Strong series. The earliest was the Kuder Preference Record Vocational whose approach to the measurement of interests differed from the Strongs in two major ways. First, Kuder used forced-

choice triad items, in which the respondents indicatedwhich of the three activities they would like most and which least. Second, scores were obtained not for specific occupations, but for 1 broad interest areas-namely, **Outdoor, Mechanical, Computational, Scientific, Persuasive, Artistic, Literary, Musical, Social service, and Clerical**. Items for each scale were formulated and tentatively grouped on the basis of content validity; final item selection was based on internal consistency and low correlations with other scales. The Kuder General Interest Inventory (KGIS) was developed later as a revision and downward extension of the Kuder Preference Record-Vocational. Designed for Grades 6 to 12, this form uses simpler language and easier vocabulary, requiring only a sixth-grade reading level.

❖ 3.2.3.3 Uses of Interest Inventories :

The uses of Interest Inventory are as follows–

- Interest inventories are very much essential as they enable students to have a better choice in case of adopting subjects, courses, occupations and recreational activities etc.
- They are highly useful for the teachers and guidance workers to ascertain students performances in his field of interest.
- They are also useful for the parents as they insist them to help their children for their liking field.
- They are very much useful for employers to select a student for a favourable occupation in the concerned occupational set-up.
- They are useful for students as a powerful means for broadening and enriching the knowledge of the students in relation to courses, activities and occupations.

❑ 3.2.4 Attitude test :

❖ 3.2.4.1 Definition of Attitude and Attitude Scale :

An attitude is a tendency of the individual to react favourably or unfavourably towards a designated class of stimuli such as person, object, task, idea or an activity. In other words, it can be said that it is a point of view of an individual towards a person, object, task, idea or activity which may be positive, negative, hostile or indifferent one.

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In all its forms and shapes, the term attitude is used to express ones intense feelings or strong liking and disliking for a particular thing, concept, phenomenon, organization, systems, culture and traditions specifically associated with the groups, systems and social situations prevalent in ones society. Several attempts have been made to clarify the concept of Interest.

Thorndike and Thorndike (2010): In attitude measurement, we are interested in obtaining a reliable score that can represent the intensity of an individuals sentiments towards or against something.

Freeman (1968) : An attitude is a dispositional readiness to respond a certain situations, persons or objects, in a consistent manner which he has learned and has become ones typical mode of response.

Anastasi (1968) : An attitude is defined as a tendency to react favourably or unfavourably toward a designated class of stimuli, such as a national group, a custom or an institution. Thus defined, attitudes can not be defined directly observed but must be inferred from overt behaviour, both verbal and nonverbal.

Thurstone (1959) : An attitude reflects the degree of positive or negative effect associated with some psychological object.

Allport (1935) : An attitude is a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individuals response to all objects and situations to which it is related.

To sum up these, **certain characteristics of attitude** have been found which are given below:

- An attitude is essentially a set or disposition which can be mentioned as a predisposition or tendency.
- It is a feeling one towards an object, person, task, idea, activity or situation to act favourably or unfavourably, positively or negatively.
- Attitudes are frequently linked with ones emotional states and sentiments toward or against something.
- Attitudes are responsible for providing a specific direction to ones behaviour in accordance with their nature and intensity.
- Attitudes are found to vary in terms of their intensity and direction. People may have positive and negative attitudes towards adoption of a child and two people having the same type of attitude (positive or negative) may differ in how strongly they feel about the issue.
- Attitudes are not inherited and they are learned.

- Attitudes are affective and they vary in intensity so far attitude of an individual towards to a specific objects, persons, task etc. concerned.
- Attitudes are the evaluation of individuals liking and disliking towards persons, objects, tasks and situations.
- Attitudes are inferred from behaviour of an individual which may or may not be a perfect determinant or indicator of attitude.

Attitude : *A hypothetical construct or psychological disposition used for explaining the nature of ones fixed responses and behaviour towards the specific stimuli present in specific social situation.*

❖ 3.2.4.2 Measurement of Attitudes :

The **measurement of attitudes** can be possible through different following techniques.

- Attitude Scales
- paired Comparisons
- Error-Choice Technique
- Free-Response Technique
- Opinion Polling or Surveying
- Some other simple devices as Anecdotal Records, Autobiographies, Diaries, Leisure time Pursuits, Impression Interview or Observation.

Attitude Scales : Attitude scales stand for such scaling techniques and rating scales that are specifically designed and used for the assessment and measurement of ones attitude towards a social/psychological object or issue. *Gay (1996) observes, the attitudes scales may be considered as a purposeful attempt to determine what an individual believes, perceives or feels. With their help, we can properly measure ones attitude towards self, others, and a variety of other activities, institutions and social situations.*

Attitude Scale : *A specific type of rating scale specially designed for measuring the attitudes of the subjects of the study towards the social or psychological object/issue under study.*

◆ Types of Attitude Scale :

Attitude scales used in the field of behavioural sciences research may be broadly classified as under.

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- **Summated Rating Scale, e.g. Likert Scale**
- **Equal Appearing Interval scale, e.g. Thurstone Scale**
- **Cumulative Scale, e.g. Guttman Scale**
- **Concept Measurement Scale, e.g. Semantic Differential Scale.**

● **Likert Type Scale :** Likert type scale has wide application in the field of attitude testing. In this scale, each item or statement is followed by five responses which are usually expressed in terms of categories such as **Strongly Agree (S.A), Agree (A), Undecided (U), Disagree (D)** and **Strongly Disagree (S. D.).** Arbitrarily scores of 5, 4, 3, 2, 1 were assigned to respective statements for positive items and 1, 2, 3, 4, 5 for negative items. This method is known as Likert Method of Spangler Summated Ratings. After scoring the scale, the attitude of student to particular person, object, situation task, idea and activity can be easily measured and interpreted. Test of values supports to measure generalized and dominant interest classified values into six categories like theoretical, economic, aesthetic, social, political and religious are taken as the basis.

● **Thurstone Type Scale :** Thurstone type scale is known as the method of equal appearing intervals which includes statement or questions either carrying favourable or carrying unfavourable responses from the students bearing on a particular topic or questions. It should be carefully designed by a group of experts or writers following eleven point scale. The respondents are directed to respond any one answer or co-ordinations out of the eleven choices which is applicable for them. Then after valuation of the responses the attitude of student is clearly observed.

❖ 3.2.4.3 Uses of Attitude Scales :

The uses of Attitude scales are as follows :

- Attitude scales are widely used as a good means to know the extent to which desirable attitudes have been developed in the student.
- Attitude scales are needed to enable the students to develop desirable attitudes for better survival in the world.
- Attitude scales are used to assist teachers to understand their students and as a result of which teachers try their best to change their attitude in a required manner.
- Attitude scales are useful for the teachers to know their students attitude towards an occupation by which the teachers become able to suggest their students accordingly.
- Attitude scale are useful for parents to change the attitude of their children in required direction.

❑ 3.2.5 Creativity Test :

❖ 3.2.5.1 Meaning and Aspects of Creativity :

Creativity is the process of solving problems by combining ideas/ behavior in new ways. Creativity refers to the ability of creating something or discovering something that is novel and has some value for life and society.

Creativity is a goal directed thinking which is unusual, novel and useful. Many of such creative thinking become so important that they influence the whole human civilization and are called as historical creativity. The Mona Lisa, the laws of thermodynamics, the laws of motion, the theory of relativity are some of the ideas that were never thought before and changed the human civilization altogether in a great way in their respective spheres o life.

The **definitions of creativity** are as broad as the over used concept of creativity. Characteristically, a creative action is novel, exploratory and venturesome spirit on the part of the individual. Imagination is the primary component required for any new creation or solving of the problem in a novel way. That is why imagination, novelty, uniqueness can be considered as primary components of creativity. Psychologists do look at creativity from two angles, one as the product, and other as the process. Whether the emphasis is on the output (product) or the process (thinking process) the components like imagination, novelty and uniqueness remain the same.

Torrance defined **creativity as a process** of becoming sensitive to problems, deficiencies, gaps of knowledge, missing elements, disharmonies and so on, identifying the difficulties, searching for solutions, making guesses or formulating hypotheses about the deficiencies, testing and retesting hypotheses and possibly modifying and retesting them and finally communicating results.

Sternberg and Lubart (1999) define **creativity as the ability** to produce work that is both novel (i.e. original, Unexpected) and appropriate (i.e. useful concerning tasks constrains).

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◆ **Aspects of Creativity :**

Guilford (1986) considered creative thinking as involving divergent thinking, which emphasizes **fluency, flexibility, originality, and elaboration**. Convergent thinking is measured by means of intelligence tests which include items like remembering, recognition, and manipulation of some concrete material. In order to develop Torrance Tests of Creative Thinking (TTCT) and in its further revisions, Torrance (1966, 1974) has explained six components of creativity. **These aspects of creativity are:**

Fluency : The no. of relevant ideas; shows an ability to produce a no. of figural images.

Flexibility : Flexibility is the individuals abiity to produc e not only a large no.of responses, ideas or solutions to a problem, but also a variety of responses, ideas or solutions to a problem.

Originality : The no.of statistically infrequent ideas; shows an ability to produce uncommon or unique responses.

Elaboration : The no. of added ideas; demonstrates the subjects ability to develop and elaborate on ideas.

Abstractness of Titles : The degree beyond labeling; based on the idea that creativity requires an abstraction of thought. It measures the degree a title moves beyond concrete labeling of the pictures drawn.

Resistance to Premature Closure : The degree of psychological openness; based on the belief that creative behavior requires a person to consider a variety of information when processing information and to keep an open mind.

❖ 3.2.5.2 Tests of Creativity :

Tests of creativity measure divergent thinking (Guilford, 1967). Divergent thinking refers to that aspect of the mental process where individual expands to many correct solutions of problems on the basis of a small amount of information. Convergent thinking is mostly measured by the general mental ability test or the intelligence test.

Tests standardised abroad :

- **Torrance test of creative thinking (TTCT) by torrance (1966)**
- **The Wallach and Kogan Tests**
- **The Guilford Battery.**
- **Minnesota tests of creative thinking**

Tests standardised in India

- **Baquer Mehdi's tests of creative thinking**
- **Passi's test of creativity**

The following are the **brief discussions of The Torrance Test of Creative Thinking.**

TTCT : The Torrance Test of Creativity was developed by Torrance (1959, 1962) and it has been re-formed four timesl974, 1984, 199and 1998. There are two forms, TTCT Verbal and Figural with two parallel tests (Form A and B), each test is expected to measure

- **Fluency :** The no. of ideas. Total no. of relevant responses.
- **Originality :** The rarity of ideas. No. of statistically infrequent ideas. The score is zero if the idea is common, and one if it is unique.
- **Elaboration :** The no. of added ideas.
- **Flexibility :** No. of categories of the relevant responses.

These batteries are called the **Torrance Tests of Creative Thinking, Verbal Form A, Verbal Form B** (an equivalent, alternate form to Verbal A), **Figural form A** and **Figural Form B** (an equivalent, alternative form to Figural A).

The interpretation of the above factors for both figural and verbal tests is similar. But the difference is in the content. In Figural test, the content is figural and in Verbal it is verbal.

◆ **TTCT Verbal Form A :**

The verbal test consists of seven parallel tasks, each battery requiring a total of 45 minutes in addition to the time necessary for giving an orientation, passing out booklets and giving instructions.

Activities :

- **Asking Questions about the Drawing :** This measure the child's ability to develop hypothesis and think in terms of possibility.
- **Making Guesses about the Drawing :** This measures the subject's ability to become sensitive to the problem, gaps in knowledge, missing elements and so on.
- **Product Improvement Activity :** A picture of a toy is given to the examinee who is encouraged to suggest changes in the toy so as to make it more fun for playing. It permits them to regress in the service of the age and enables them to play with ideas they would not express in a more serious task.

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- Unusual Uses Activity: The examinee is asked to give as many unusual uses as he or she can of a common object. It measures the ability to free one's mind of a well established set.
- Unusual Question Activity: This measures the divergent ability of the subjects.
- Just Suppose Activity: This measures the ability to consider, evaluate and play with usual ideas and to think through their possible consequences.

The Figural section requires the examinee to draw a picture representing an object and to tell an interesting and exciting story with a picture. Each subset of the figural section gives something to the examinee to start with. For example, he may be given a circle with the instruction to construct as many figures as possible, with the circle as the key part in each figure.

The Torrance Test can be used with both small children and adolescents. On the basis of this test, three scores are given to examinee; fluency (which indicates total number of acceptable responses), flexibility (which indicates the number of categories in the manual used by the examinee)and originality (which indicates the number of responses not found in the list of frequent responses). No norms are available and therefore, each examinees total score is evaluated against a set of common criteria for creative achievement.

◆ Minnesota Tests of Creative Thinking :

It provide a good example for tests of creativity. These tests fall into three categories namely non-verbal tasks, verbal tasks using non-verbal stimuli, and verbal tasks using verbal stimuli. Some illustrative tasks in each category will clarify the idea. Incomplete figure task, picture construction task, circle and square task, creative design task, can be quoted under the first category, Verbal tasks using nonverbal cues are exemplified by ask and guess test, causes and consequences test, product improvement tasks. The last categories exemplified by unusual uses, impossibilities task, just suppose, common problems.

❑ 3.2.6 Personality Test :

❖ 3.2.6.1 Definition of Personality :

The word **'personality' is derived from the Latin word 'persona'** which means a **mask or false face** which Greek actors used to wear

while acting on stage. The word 'personality' refers to a person's characteristics, both acquired and inherited, which make him unique in terms of the impression he makes upon others.

The following definitions and views would explain the concept and meaning of personality.

- **Woodworth (1929) :** "It is the quality of the individual's total behaviour, it is how he acts, when his activity is taken as a whole."
- **Watson (1930) :** "Personality is the sure of activities that can be discovered by actual observations overa long enough period of time to give reliable information." This definition reflects that personality is synonymous with the consistent behaviour patterns of an individual.
- **May (1932) :** "Personality is what makes one effective, or gives one influence over others. It is one's social stimulus value."
- **Morrison (1934) :** "It is the sum total of what an individual has come to be by learning the cultural products of social evolution."
- **Judd (1939) :** "It is the complete and unified outcome of all the developmental processes through which an individual has passed."
- **Allport (1948) :** "Personality is a dynamic organization within the individual of those psychophysical systems that determine his unique adjustment to his environment." Allport has emphasized the role of personality of an individual in enabling the individual for adjusting to the environment.
- **Eysenck (1971) ;** "Personality is the more or less stable and enduring organization of a person's characters, temperament, intellect and physique, which determine his unique adjustment to the environment."

An analysis of all the aforesaid definitions refracts the following :

- Each individual is first an individual by inheritances and through these one acquires a personality by growing in a social world.
- Personality is one's total integrated behaviour and not just one or more aspects of behaviour.
- Personality is not something static like colour or height, but the totality or unity or an individual's actions.
- It is a social concept. It is because of an individual's personality he and others interact mutually.
- It is a dynamic concept and it is all that, a person is. It is the outcome of the combined effect of heredity and environment which is different in different individuals, i.e. it is unique.

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- It is the outcome of the combined effect of heredity and environment which is different individuals, i.e., it is unique and distinct.
- It is not merely the sum of the traits of an organism, it is a part of the dynamic organism. It is always in action responding to situations in various ways.

The term **personality refers** to the total functions of an individuals who interacts with his environment. The purpose of the measurement of personality is to describe a person in terms of traits. Trait is nothing but the observed consistency of behaviour of a person. Traits are not directly observed but inferred from the consistent behaviour of an individual.

The most general cues to traits are what the person does, how he does it and how well he does it. Nunnally (1979:354) has opined that personality measurement aims at studying the following four broad types of traits

Social Traits : Social traits are those traits which determine how persons interact with other persons in society. Examples of social traits are friendliness, honesty, responsibility, dominance etc.

Motives : The non-biological drives such as need to earn money and prestige, need for academic achievement, need for affiliation aggression etc.

Personal conceptions : The methods which determine peoples attitude toward the self and others, a persons values, interests, etc.

Adjustment : Traits like the freedom from emotional worries or instability and other disruptive behaviour.

Personality measurement : aims at measuring the above four broad categories of general traits. For the measurement of social traits, motives and adjustment, more or less a similar set of principles is found but to measure personal conception, which includes attitude, interest and values, a different set of principles is necessary.

❖ 3.2.6.2 Personality Measures :

There are **three most common tools** (or methods) of personality assessment.

- **Self-Report Personality Inventories or Structured Personality Tests**

- **Observational Methods including Situational Test**
- **Projective Techniques**

■ Self report inventories :

Self report inventories, also known as personality inventories, are the self-rating questionnaires, where the individual describes his own feelings, environment and reactions of others towards himself. In a nutshell, on the self-report inventories a person reports about himself in the light of the questions (or items) put therein.The typical personality inventory presents pupils with a series of questions like those used in a psychiatric screening interview. For example, an inventory might include items like the following:

- Are you frequently depressed?
- Do you usually feel tired?
- Do you have difficulty making friends?

Responses to such questions are commonly indicated by circling yes, no, or ? (for uncertain). In some instances, a forced-choice procedure is used, where the items are paired and the respondent must indicate which of the two statements is more characteristic of him.

Personality inventories vary considerably in the types of score provided. Some provide a single adjustment score, others have separate scores for particular adjustment areas (e.g., health, social, emotional) or for specific personality traits, (e.g., self-confidence, sociability, ascendancy).

Self-report inventories are further classified into the following five steps.

- **Inventories that attempt to measure social and certain other specified traits** such as self-confidence, dominance, ego-strength, extroversion, responsibility, etc. *The Eysenck personality Questionnaire, The Differential Personality Inventory* are some of the examples of this category.
- **Inventories that attempt to evaluate the adjustment** of the persons to different aspects of the environment, such as school, home, health, etc. Example, the Bell adjustment Inventory.

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- **Inventories that attempt to evaluate pathological traits**, such as hysteria, paranoia, hypomania, depression, schizophrenia, etc. Example, **The Minnesota Multiphasic Personality Inventory (MMPI).**
- **Inventories that attempt to measure attitudes, interests, and values of persons.** The **Kuder inventories** (vocational, occupational, and personal), the *Strong Vocational Interest Blank*, the Allport-Vernon Study of Values are some of the best examples.

■ Observational methods :

Observational methods provide either a **structured or unstructured situation**. A structured situation is **controlled situation**, whereas an **unstructured situation** is an **uncontrolled situation.** Persons whose personality traits are to be observed are put in either of theses two situations and careful, impartial, accurate observations are made by the observers. The observation becomes the basis for assessing the personality traits.

■ Projective Techniques :

Projective techniques are another method of **evaluating personal-social adjustment** with which the classroom teacher should be familiar.

Psychologically, **projection** is an unconscious process whereby an individual attributes certain thoughts, attitudes, emotions or characteristics to other persons or objects in the environment. He expresses his needs to others in environment and draws incorrect inferences from an experience. Projective technique provides the subject with a semi-structured or unstructured stimulus situation giving him an opportunity to impose upon it his own private needs and his own perceptions and interpretations.

Projective tests are so named because they induce the subject to project himself into the test situation and thus reveal his feelings, motives, attitudes, apprehensions and aspirations.

In contrast with the highly structured personality inventory, projective techniques provide almost complete freedom of response. The several forms of projective technique are pictures, ink blots, incomplete sentences, word associations, ones own writings, and drawings etc., which are intended to elicit responses that will reveal the respondents personality

structure (feelings, values, motives, characteristics, modes of adjustment and complexes). Typically, individuals are presented with a series of ambiguous forms or pictures and asked to describe what they see. Their responses are then analyzed to determine what content and structure they have projected onto the ambiguous stimuli.

Two of the best known projective techniques are the ***Rorschach Inkblot* Test and the *Thematic Appreciation* Test *(TAT).***

1. The Rorschach Inkblot Test :

This technique was developed by **Herman Rorschach (1884-1922),** a Swiss Psychiatrist. It provides an insight into the nature of mental disorder on the one hand and hidden feelings, emotions and desires on the other which the testee would not have normally desired to be known to others. **The Rorschach consists of ten inkblot figures on cards** five made in shades of black and grey only, two contain bright patches of red in addition to shades of grey and the remaining three employ various colours. These ink-blots are completely unstructured- the shapes of the blots do not have any specific meaning. The test is administered in the following sequence.

- The cards are presented one at a time in a specified order. When the subject gets seated, the examiner gives him the first card with necessary instructions and asks him to say what he sees in it, what it looks like to him, etc.
- The subject is allowed as much time as he wants for a given card and is permitted to give as many responses as he wishes. He /she is also allowed to turn the card around and look at it from any angle he wants.
- Besides keeping a record of the responses of the subject concerning these inkblots and separate pieces of paper, the examiner notes the time taken for each response. The position in which the cards are being held, emotional expression and other factors of incidental behaviour of the subject during the test etc.
- After all the cards have been presented, the second phase of inquiry which intended to look for clarification or addition to the original responses follows. The responses are served and analyzed in accordance with the standardized procedure and interpreted in the light of occurence of certain kinds of responses.

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2. Thematic Appreciation Test (TAT) :

It is another important test in the category of projective techniques, it was developed by **Henry Murray in 1935**. First conceived by Morgan in 1935. The **TAT includes a series of pictures of people in various settings**. It has a set of thirty cards and one blank card which are used in various combinations as per the age and sex of the subject. One is exclusively meant for men, the after exclusively for women, and the third is used with both of them. The picture depict common life situationss of conflicts between adolescent and parents, love affairs, sibling relations, frustrations in achieving or securing things of interest, jealousy, rivalry, aggression and hostility.

These pictures are presented one by one to the subject who is asked to narrate a story centered round the incident portrayed in the picture. He has also got to say how the incident may have taken place and what might follow as a result thereof. In brief, he has to reveal a picture of his personal / private thought. The fun is that the subject happens to identify himself with one or other character depicted in the picture and his narration becomes a part of autobiography, thus an individual exposes voluntarily.

3. Children Apperception Test (CAT) :

The TAT has another version which is suitable **for children of the age group of 1 to 10 years**. This version is known as **Children Apperception Test (CAT). There are ten cards depicting different life situations** which occur in children's life. In depicting these life-situations animal figures are used instead of human figures. The figures are semi structured to encourage children to project their personality characteristics. The reasons for using animal figures are-

- Children naturally like animals
- They easily identify with animals.

The system of scoring and interpretation takes the following into account.

- **Hero of the Story :** What type of personality he has?
- **Theme of the Story :** What is the nature of them or plot used in making up the story?
- **Style of the Story :** the lengths of the story, language used, whether the expression is direct or indirect, forced or poor, organisation of the contents, originality, creativity etc.

- **The Content of the Story :** What interests, sentiments, attitudes they depict, whether behaviour-has been expressed in real terms or as fantasyand what inner state of the mind the story reveals.
- **Test situation as whole :** The subject's reaction is to be listed as a whole.
- **Particular emphasis or Omissions :** The omission, addition, distortion and attention to particular detail. Subject's attitude towards authority and sex.
- **Outcome :** Whether the ending of the story is happy, unhappy, funny etc.

As a whole, the recurring themes and features contribute more towards the interpretation than a single response.

These tests are usually administered to one individual at a time, and the individuals responses are recorded during the testing. Analysis of the results requires both systematic scoring and impressionistic interpretation, with emphasis of the total personality pattern revealed. Projective techniques are used primarily as part of a complete clinical study of those individuals who are experiencing adjustment difficulties.

Other Projective Techniques include

- **Draw a Man Test**
- **Word Association Test,** etc.

✪ 3.3 Achievement test: Meaning, Characteristics, Steps for Construction and Uses

❑ 3.3.1 Achievement Tests :

The objective of evaluation is to provide a clear reliable and valid description about the pupil's achievement. For the above purpose, classroom tests provide relevant information about pupil's learning. Tests represent the total domain of achievement tasks.

From common man point of view, **achievement is pupil's success on a particular classroom test. For example,** paromita has secured 60 in English and 75 in Mathematics. Generally, we say that **Paromita has a better achievement in Mathematics than English.** But in real sense, the term achievement is more broader than this. **It means total learning attainments, accomplishments and proficiencies that a student has acquired. Definitions are as follows :**

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H. W. Bernard : The concept of achievement involves the interaction of three factors such as (i) aptitude for learning (ii) readiness for learning and (iii) opportunity for learning.

C. V. Good : Achievement is the accomplishment or profiiency of performance in a given skill or body of knowledge.

Super : "An achievement of proficiency test is used to ascertain what and how much has been learnt or how well a task has been performed."

Therefore, it can be said that achievement implies the overall mastery of a pupil on a particular context. Any measuring instrument that measures the attainments or accomplishments of a pupils achievement is called the achievement test.

Generally achievement test is designed to assess pupil status in the different school subjects. Most published achievement tests are called standardized achievement tests. These typically have been **Norm-referenced** *tests that measure the pupils' level of achievement in various content and skill areas by comparing their test performance with the performance of other pupils in some general reference group (e.g., a nationwide sample of pupils at the same grade level).* **Criterion-referenced achievement tests** *(e.g., basic skill area, especially reading and mathematics) are typically interpreted by means of the extent to which a limited set of instructional objectives has been mastered.* Thus, they describe in terms of specific educational tasks what each pupil has learned and has yet to learn in some clearly specified achievement domain.

It is clearly found that there is a close **relationship between achievement tests and aptitude test.** Bingham gives opinion that achievement tests may be regarded as indicators of aptitudes. As a matter of fact, many achievement tests are at the same time very good tests of aptitude. It can be concluded that aptitude tests is designed to measure an individual's abilities before training and achievement test is constructed to measure his abilities after training. Thus, achievement tests can be used as indicators of aptitude of the students.

Robert L. Ebel :- "An achievement test is designed to measure a student's grasp of some body of knowledge or his proficiency in certain skills.

Frank S. Freeman :- A test of educational achievement as a test "designed to measure knowledge, understanding, skills in a specified subject or group of subjects."

❑ 3.3.2 Classification :

A classification of achievement tests can be done on the basis of a number of factors as follows:

(a) On the basis of form used for same namely
- (i) Oral Test
- (ii) Written Test

(b) On the basis of **various purposes** such as
- (i) Prognostic Test
- (ii) Diagnostic Test
- (iii) Power Test
- (iv) Speed Test
- (v) Accuracy Test
- (vi) Quality Test
- (vii) Range Test

(c) On the basis **of organization of tests**, the achievement tests can be categorized as:
- (i) Essay Type
- (ii) Objective Type Test

(d) On the basis **of *period or time limit***
- (i) Daily Test
- (ii) Weekly Test
- (iii) Monthly Test
- (iv) Term Test
- (v) Annual Test

(e) On the basis of ***subject or content area*** **namely**
- (i) Arithmetic test
- (ii) language Test
- (iii) Reading Test
- (iv) Spelling Test etc.

(f) According to the **process of construction and use the class-room** tests can be classified into different categories. But Broadly, it can be classified into two types.
- Teacher-made Tests
- Standardized Tests

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❖ 3.3.2.1 Teacher-made tests :

We normally use **teacher-made tests in** schools. Their results indicate student achievement in relation to the instructions provided in a school. These results are of great help in improving the teaching-learning process. They help the teachers in understanding their students, in taking proper decisions about teaching and testing the effectiveness of their own teaching. The students are motivated towards further learning and teachers towards self-evaluation. Since instruction provided differs from school to school, the result of teacher-made tests cannot be compared. The scoring may not be objective. There is no standard procedure for its administration. They have limited utility.

❖ 3.3.2.2 Standardised achievement test :

Standardized achievement tests measure the common objectives of a wide variety of schools, have standard procedures for administration and scoring, and provide norms for interpreting the scores. A standardized achievement test has certain distinctive features, including a fixed set of test items designed to measure a clearly defined achievement domain, specific directions for administering and scoring the test, and norms based on representative groups of individuals like those for whom the test was designed.

Standard content and procedure make it possible to give an identical test to individuals in different places at different times. The norms enable us to compare an individual's test score with those of known groups who also have taken the test. Thus test norms provide a standard frame of reference for determining an individual's relative level of test performance on a particular test and for comparing test performance on several different tests (providing all were standardized on the same group).

❖ 3.3.2.3 Standardized Achievement Tests versus Teacher-made Tests :

Standardized achievement tests and carefully constructed classroom tests, i.e. teacher-made tests are similar in many ways. Both are based on a table of specifications, both have the same type of test items, and both provide clear directions to the pupils. The main differences between the two types are :

- The nature of the learning outcomes and content measured.
- The quality of the test items
- The reliability of the tests
- The procedures for administering and scoring
- The interpretation of scores

Difference between Standardized Tests and Teacher-Made Tests of achievement are shown in table 2.

Difference Between standardized Tests and Teacher - Made Tests of achievement.

Standarized Achievement Test	Informal Achievement Test/Teacher Made Test
* Standardized Tests are prepared by the educationists & test specialists.	* Teacher made tests are prepared by the class-room teachers.
* S. tests are based on uniform curriculum in many institutions.	* It is for local use in some particular institutions.
* It is concerned with the whole field of knowledge or ability.	* It is concerned with limited or specific field of knowledge or ability.
* Norms are given for comparing performance according to age, grade, place, sex etc.	* No norms are given.
* Procedures standaradzed, specific instructions provided.	* Uniform procedures followed but may be flexible.
* General quality of items high. It is pretested and selected on basis of effectiveness.	* Quality of items is unknown unless test item file is used. Quality typically lower than standardized because of teacher's limited time & skill.
* Reliability high, commonly between .80 and .95 frequently is above .90.	* Reliability usually unknown, can be high if carefully constructed.
* Scores can be compared with those of norm groups. Test manual and other guides aid, interpretation and use.	* Score comparisons and interpretations limited to local school situation.
* It is more time consuming and expensive	* It is not so.
* These test have proper difficulty index.	* It may not have proper difficulty index.

Table-2 : Standardized Tests Informal Achievement Tests/ Teacher-made Tests

Comparative Advantages of Standardized and Informal Classroom Tests of Achievement

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The standardized achievement tests is especially useful for the following instructional purposes.

- Evaluating pupils' general educational development in the basic skills and in those learning outcomes common to many courses of study.
- Evaluating pupil progress during the school year or over a period of years.
- Grouping pupils for instructional pyrposes.
- Determining pupils' relative strengths and weaknesses in broad subject or skill areas.
- Comparing pupils' general level of achievement with their scholastic aptitude.

The standardized test's inflexibility makes it less valuable for those purposes for which the informal classroom test is so admirably suited.

- Evaluating the learning outcomes and content unique to a particular class or school.
- Evaluating pupils' day-to-day progress and their achievement on work units of varying sizes.
- Evaluating knowledge of current developments in such rapidly changing content areas as science and social studies.

❑ 3.3.3 Characteristics of Standardized Achievement Tests :

A standardized achievement test has certain distinctive features, including a fixed set of test items designed to measure a clearly defined achievement domain, specific directions for administering and scoring the test, and norms based on representative groups of individuals like those for whom the test was designed. The norms enable us to compare an individual's test score with those of known groups who also have taken the test. Test norms provide a standard frame of reference for determining an individual's relative level of test performance on a particular test and for comparing test performance on several different tests. Standard content and procedure make it possible to give an identical test to individuals in different places at different times.

In summary, the **characteristics of a carefully constructed standardized achievement test include the following :**

- *The test items are of a high technical quality. They have been developed by educational and test specialists; tried out experimentally (pretested); and selected on the basis of difficulty, discriminating power, and relationship to a clearly defined and rigid set of specifications.*

- Directions for administering and scoring are so precisely stated that the procedures are standard for different users of the test.
- Norms based on representative groups of individuals are provided as aids in interpreting the test scores. These norms are based on various age and grade groups on a national, regional or state level.
- Information needed for judging the value of the test is provided. The reliability and validity of the test are established.
- A manual is supplied that explains the purposes and uses of the test, describes briefly how it was constructed, provides specific directions for administering, scoring and interpreting results, contains tables of norms, and summarizes available research data on the test.

❑ 3.3.4 Construction of Achievement Test :

General Principles of Test Construction

Evaluation process is an appraise of the learning outcomes resulted by the instruction. In order to make proper appraisal we need a valid, reliable and objective tool for measurement. Therefore, the selection of a tool or operation of a standard tool for the process of evaluation is most important. We may prepare a standardized test or a teacher-made test for the above purpose follows different principles of test construction. The following steps and procedures helps us to produce a valid, reliable and objective standardized test.

- **A. Planning (Design) of the test**
- **B. Writing items of the test**
- **C. Preliminary administration (or the experimental try-out) of the test**
- **D. Evaluating the test**

A. Planning (Design) of The Test :

Planning of the test is the first important step in the test construction. To fulfill the main goal of evaluation process, to collect valid, reliable, and useful data about the student, we must keep in mind, that (i) what is to be measured (ii) what content areas should be included and (iii) what type of test items are to be included. All educational objectives must be clearly stated. They must be defined in terms of pupil behaviour. Situations are suggested by which pupils can show the particular kind of behaviour. There must be adequate provision for evaluating all outcomes of

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instruction. Approximate emphasis on the course content should be given. The nature of the test must serve the purpose for which it is meant. Therefore, the first step includes three major considerations.

1. Determining the objectives of testing
2. Preparing test specifications
3. Selecting appropriate item types. We can summarize the steps:-

1. Determining the Objectives of Testing

➢ Selection of Objectives and Sub-units (content)

2. Preparing Test Specifications :

(a) Weightage to Objectives
(b) Weightage to different Areas of Content
(c) Weightage to different different Forms of Questions

3. Selecting Appropriate Item types

(a) Weightage to difficulty level
(b) Scheme of options
(c) Sections in the question paper

1. Determining the Objectives of Testing *(Selection of Objectives and Sub-units) :*

A test can be used for different purposes in a teaching learning process. It can be used to measure the entry performance, the progress during teaching learning process and to decide the mastery level achieved by the students.

The first and the most important step in planning a test is to identify the instructional objectives. Each subject has a different set of instructional objectives. Following Bloom's Taxonomy, Knowledge objective is considered to be the lowest level of learning whereas understanding, application of knowledge in science, Science, behavioural sciences are considered higher levels of learning.

2. Preparing Test Specifications :

The second important step in planning is to prepare the test specifications. In order to be sure that the test will measure a representative sample of the instructional objectives and content areas we must prepare test specifications. Therefore, an elaborate design is necessary for test construction. The design specifies :-

(a) weightages to different instructional objectives/learning outcomes

(b) weightages to areas of content or units and sub-units of the course content,

(c) weightage to item types or forms of questions,

For this purpose, one of the most commonly used device is *"Table of Specification' or 'Blue Print"*.

Preparation of Table of Specification/Blue Print :

Preparation of table of Specification is the most important task in the planning stage. It acts as a guide for the test construction. Table of specification or Blue Print is three dimensional chart showing weightage given to instructional objectives, content areas, and types of items in its dimensions. It is at the stage that the paper setter decides as to how many question are to be set for different objectives. Further she/he decides under which unit/topic a particular question is to be set. Further more, she/he picks up various forms of questions. Thereafter, the paper setter decides how all the questions are to be distributed over different objectives and content areas so as to obtain the weightages decided in the design.

The three dimensions of the blueprint consist of content areas in horizontal rows and objectives and forms of questions in vertical columns. Once the blueprint is prepared, the paper setter can write/select the items and prepare the question paper.

It includes four major steps.
(i) Determining the weightage to different instructional objectives
(ii) Determining the weightage to different content areas.
(iii) Dtermining the item types to be included.
(iv) Preparation of the table of specification.

(i) *Determining the weightage to different inst/ructional objectives :*

Here, the relative importance of each objective is to be considered. Generally, for informative subjects like History, Geography, Mathematics and Science, the objectives are knowledge, understanding and skill. For languages, the objectives are knowledge, comprehension and understanding (grammar), expression and appreciation. Therefore, it must

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be planned how much weightage to be given to different instructional objectives keeping in mind the importance of the particular objective for that subject or chapter.

DESIGN

Subject :

Class :

Unit:

The Weight Age of the Distribution of Marks Over the Different Dimensions of the Question Paper :

Table 3.1 Weightage to instructional objectives/learning outcomes

S. No.	Objectives	Marks	%Age of Marks
1.	Knowledge	—	—
2.	Understanding	—	—
3.	Application	—	—
4.	Skill	—	—
	Total		100%

(ii) *Determining the weightage to different content areas :*

The second step in preparing the table of specification is to outline the content area. It indicates the area in which the students are expected to show their performance. It helps to obtain a representative sample of the whole content area. It also prevents repetition or omission of any unit. The emphasis on how much weightage should be given to which unit. There are different methods to weigh the sub-units.

- Weightage to each sub-unit according to the number of pages allotted to it in the text book.
- Weightage to each sub-unit according to the number of periods devoted to it.
- Weightage to each sub-unit according to the number of specifications that can be achieved through it.

Table 3.2 Weightage to Content/Subject Units and sub-unints

S. No.	Units & their sub-units	No. of items/ marks	% of item/marks
1.		—	—
2.		—	—
3.		—	—
4.		—	—
Total			100%

(iii) Determining the item types :

The third important step in preparing table of specification is to decide appropriate item types. For testing different abilities and sub-units, different forms of questions may be suitably used, instead of using the traditional form-the essay type question. In testing various learning outcomes, the essay type, short answer type and the objective type questions may be judiciously used. For example, when the outcome is writing, naming supply type items are useful. If the outcome is identifying a correct answer selection type or recognition type items are useful. If the learning outcome to be measured is stated as "the pupil organises the ideas in logical and coherent fashion," the multiple choice item format would be inappropriate.

Table 3.3 Weightage to item types/forms of questions

S. No.	Forms of Questions	Marks for Each	Number of Questisons	Total Marks	% of Marks
1.	Essay type				
2.	Short answer type				
3.	Objective type				
Total					100%

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(iv) Preparing the Three Way chart :

Preparation of the three way chart is last step in preparing table of specification. This chart relates the instructional objectives to the content area and types of items. In a table of specification the instructional objectives are listed across the top of the table, content areas are listed down the left side of the table and under each objective the types of items are listed content-wise. Table 3.4 is a model table of specification.

Table 3.4 Blue Print :

Exam : Paper :

Subject : Class :

Unit : Time :

Maximum Marks

A.

Objectives	Knowledge	Understaning	Application	Skill	Total	% of Marks
Forms of Question	ESO	ESO	ESO	ESO		
Content or Unit						
1.						
2.						
3.						
4.						
Sub Total						
Total						
% Of Marks						100%

B. Following Bloom's Taxonomy (Revised)

Sub-Unit	Cognitive Process Dimensions	Remember	Understand	Apply	Analysis	Evaluate	Create	Total	% of Marks
	Froms of questions	ESO	ESO	ESO	ESO	ESO	ESO		
	Knowledge Dimensions								
1.	Factual								
	Conceptual								
	Procedural								
	Metacognitive								
2.	Factual								
	Conceptual								
	Procedural								
	Metacognitive								
	Total Marks								
	% of Marks								100%

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NOTE : Please put the NO. OF QUESTIONS-WITHIN BRACKETS and THE MARKS-OUTSIDE THE BRACKETS

SUMMARY

ESSAY TYPE (E) MARKS:

SHORT ANSWER TYPE (S) MARKS:

OBJECTIVE TYPE (O) MARKS:

3. *Selecting appropriate Item types*

The desigin specifies

(a) weightages to levels of difficulty,

(b) scheme of options,

(c) sections in the question paper.

It includes three major steps

(i) Determining the Difficulty Level

The fourth important step in preparing table of specification is to determine the difficulty level of all items. In a classroom, there are three types of pupils-above average, average, and below average. Accordingly, the test should not be too difficult or too easy. A test should provide a suitable opportunity to the bright, the mediocre, and the weak students in the class. No statistical method is to be employed here to decide about the difficulty value of the test item. Teacher gains competence through experience. Hence, all the test items in a test should not be very difficult or very easy. The teacher is expected to classify the test items into three levels- difficult, average and easy. This is quite enough for the teacher-made tests.

Table 3.5 Weightage to the difficulty Level :

A.

S. No.	Difficulty Level	Percentage	Marks
1.	Easy	30	15
2.	Average	50	25
3.	Difficult	20	10

B.

S. No.	Types/Forms of Questions	Marks	Expected Length (No. of words/ sentences	Expected time for each question (Minutes)
1.	Essay	—	—	—
2.	Short answer	—	—	—
3.	Objective	—	—	—

*** Note : the expected length of the answers of different types of questions** would be as follows.

This is only an approximation. **The actual length**, however, may vary as the total time is calculated on the basis of the number of questions required to be answered and the length of their anticipated answers.

The weightage to the difficulty level is not to be mentioned in the blueprint., but it should be kept in mind while setting the question paper.

(ii) Scheme of Options

There are **two types of options : External options and Internal options.**

In the case of external options, there are various methods.

Method 1 : The students are asked to attempt any six questions out of the given eight. This is an example of overall options.

Method 2 : the students are asked to attempt all four questions from the first section and any two from the second section and any two from third section.

Method 3 : the students are asked to attempt any all the questions but every question has an alternate option.

(iii) Sections in the Question Pattern

The inclusion of Objective type items, short answer type items and essay type items necessitates the division of the question paper into two sections, one comprising of objective type items and the other comprising of short-answer type items and essay type items. A separate time limit for answering each section should be considered while planning for a unit test, for it is not advisable to keep the section containing objective type items with the students for longer than the time required for answering them. The second section may be administered after a little break.

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B. PREPARING THE TEST :

After planning preparation is the **next important step is the test construction**. In this step, the *test items are constructed in accordance with the table of specification*. The preparation stage includes the following four functions.

(1) Preparing the test items
(2) Preparing instruction for the test
(3) Sections in the question paper
(4) Preparing marking scheme and scoring key.

(1) Preparing the test items :

Preparation is the most important task in the preparation step.

(a) ***Selection of test items*** **:**

Selecting test items, the following principles help

1. Test items must be appropriate for the learning outcome to be measured. Test items must be in accordance with the performance described in the specific learning outcome.
2. Test items should measure all types of instructional objectives and the whole content area.
3. The test items should be free from ambiguity.
4. The test items should be of appropriate difficulty level.
5. The test item must be free from technical errors and irrelevant clues.
6. Test items should be free from racial, ethnic and sexual biasness.

(b) ***Grouping of the test items*** **:**

While grouping test items, the following points should be borne in mind:

1 All the objective type items should be grouped in one section., while the short-answer and essay type items should be grouped in another section.
2. In the section of objective type items heaving the same format, e.g., yes-no type, matching type, multiple-choice type, etc. Should be grouped together.
3. items in each section should be arranged in order of their difficulty, as far as possible.

(2) Preparing instruction for the test :

Generally everybody gives attention to the construction of test items. So the test makers do not attach the instruction with the test items. But the validity and reliability to the test items to a great extent depends upon the instructions for the test. N. E, gronlund suggested that the test makers should provide clear-cut direction about

- The purpose of testing
- The time allowed for answering
- The basis for answering
- The procedure for recording answers
- The methods to deal with guessing

The following points should be considered :

(i) **General instructions** may be given at the beginning of a question paper; e.g.
   (a) This paper has two sections, A and B.
   (b) All questions in sections A and B are compulsory, etc.

(ii) **Specific instructions** related to each section may be given at the beginning of each section; e.g.,
   (a) Answers to section A should be given on the question paper itself.
   (b) Maximum time for this section is 15 minutes, etc.

(3) Sections in the question paper :

Generally, objective type items are grouped under section A and short-answer and essay type questions are grouped under section B.

(4) Preparing marking scheme and scoring key.

A marking scheme is essential in the case of short-answer and essay type items. It indicates:

(a) The number of points or steps expected in the answer.
(b) The outline of each point or step expected in the answer,
(c) The weightage to each of these points or steps.

Advantages- (a) **A marking scheme** helps the examiner to bring about a uniformity of standards in assessing and thereby increases the objectivity of the test.

(b) Many examiners may be judiciously involved in assessing answer books.

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(c) A scoring key increases the reliability of test. The test maker should provide the procedure for scoring the answer scripts. Directions must be given whether the scoring will ba made by a scoring key (when the answer is recorded on the test paper) or by a scoring stencil (when answer is recorded on separate answer sheet) and how marks will be awarded to the test items.

(d) A scoring key is essential in the case of objective test items. In the scoring key, the itemwise correct response in terms of its number is to be mentioned. **For example,**

Item no. 12 (d)
13 (b)
14 (a)
15 (i)-(a), (ii)-d, (iii)-c....etc.
16 (i) F, (ii) T, (iii) T, (iv) F, ...etc.

C. TRY OUT OF THE TEST :

Once the test is prepared, it is time to be confirm the validity, reliability, and usability of the test. Try out helps us to identify defective and ambiguous items, to determine the difficulty level of the test and to determine the discriminating power of the items. Try out involves two important functions.

(1) Administration of the test

(2) Scoring the test

(1) Administration of the test :

Administration means administrering the prepared test on a sample of pupils. So the effectiveness of the final form test depends upon a fair administration.

Gronlund & Linn have stated that "the guiding principle in administering any classroom test is that all pupils must be given a fair chance to demonstrate their achievement of learning outcomes being masured.' It implies that the pupils must be provided congenial physical and psychological environment during the time of testing. Any other factor that may affect the testing procedure should be controlled.

- **Physical environment** mean proper sitting arragement, proper light and ventilation and adequate space for investigation.
- **Psycholological environment** refers to those aspect which influence the mental condition of the pupil. Therefore steps should be taken to

reduce the anxiety of the students. The test should not be administered just before or after a great occasion like annual sports or annual drama etc. Following principles should follow :

- The teacher should talk as less possible.
- The teacher should not nterpret the students at the time of testing.
- The teacher should not give any hints to any student who has asked about any time.
- The teacher should provide proper insigilation in order to prevent the students from cheating.

(2) Scoring the test :

Once the test is administered the answer scripts are obtained the next step is to score the answer scripts.

A scoring key may be provided for scoring when she answer is on the test paper itself. Scoring key is a sample answer script on which the carrect answers are recorded. When answer is on a separate answer sheet at that time a scoring stencil may be used for answering.

'Preparation of scoring key' has been discussed in detail in she previous section.

Correction for guessing : When the pupils do not have sufficient time to answer the test or the students are not ready to take the test, at that time they guess the correct answer, in recognition type items. To eliminate the effect of guessing the following formulla is used.

$$\text{Score} = R - \frac{W}{n-1}$$

Where R = No. of right responses
W = No. of wrong "
n = No. of alternatives

Guilford is of the opinion that "when the middle is excluded in item analysis the question of whether to correct or not correct the total scores become rather academic."

Keeping in view the above opinions, the test-maker should decide not to use the correction for guessing. To avoid this situation he suould give enough time for answering the test item.

D. EVALUATING THE TEST :

Evaluating the test is most important step in the test construction process. Evaluation is necessary to determine the quality of the test and

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the quality of the responses. Quality of the test implies that how good and dependable the test is (validity & reliability)

Quality of the responses means which items are misfit in the test.

It also enables is to evaluate the usability of the test in general class-room situation. Evaluating the test involves following functions.

1. Item analysis
2. Determining validity of the test
3. Determining reliability of the test.
4. Determining usability of the test.

1. Item analysis :

When an item–writer prepares test items, he must come to some judgements regarding the difficulty level, discrimination on power and content validity of his items.

Item Analysis – determines the effectiveness of the different items included in the test.

Item analysis is a procedure which helps us to find out the answers to the following questions.

→ Whether the items functions as intended?
→ Whether the test items have appropriate difficulty level?
→ Whether the item is free from irrelevant clues and other defects?
→ Whether the distractors in multiple choice type items are effective?

The item anlysis data also helps us :

- to provide a basis for effcient class discussion of the test result.
- to provide a basis for the remedial works.
- to increase skill in test construction.
- to improve class-room discussion.

Two indices of item analysis :

1. Item difficulty
2. Discriminating power.

• Item analysis Procedure :

Item analysis procedure gives special emphasis on **item difficulty** level and **item discriminating power**. The item analysis procedure follows the following :

Step : (i) The test papers should be ranked from highest to lowest.

Step : (ii) Select 27% test papers from highest and 27% from lowest end.

For example, it the test is administered on 45 students then select 12 test papers from highest end and 12 test papers from lowest end.

Step : (iii) Keep aside the other test papers as they are not required in the item analysis.

Step : (iv) Tabulate the number of pupils in the upper and lower group who selected each alternative for each test item. Separate test item card (table–4) may be used.

Two indices of item analysis :

Step : v (a) Item Difficulty Estimating the **item difficulty** or **difficulty level** of the item The difficulty level of a test item is indicated by the percentage of pupils who respond to the item correctly. Hence, difficulty level of an item can be computed by applying the following formula.

$$\text{Item difficulty} = \frac{R}{T} \times 100$$

When R = Total number of students got the item correct
T = Total number of students tried the item.

In our example (table – 4) out of 24 students from both the groups 12 students have answered the item correctly and 24 students have tried the item.

Record the count – item

Item – 1

• Alternatives	A	B*	C	D
• upper group (12)	2	10	0	0
• Lower group (12)	5	2	3	2

* Right anawer

Here R = (10+2) = 12
T = (12+12) = 24

The item difficulty is as follows :

$$\text{Item difficulty} = \frac{R}{T} \times 100$$
$$= \frac{12}{24} \times 100$$
$$= 50\%$$

It implies that the item has a proper difficulty level.

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Because it is customary to follow 25% to 75% rule to consider the item difficulty. It means if *an item has a item difficulty more than 75% then is a too easy item if it is less then 25% then item is a difficult item.*

Sometimes respondents may guess and respond and for this perpose the following formula may be employed.

- R – W in case of true and false type
- $R - \frac{W}{K-1}$ in case of multiple choice where the number of choices are.

The items in a test should neither be too easy nor too difficult, hence a balance between these two must be maintained. Any test to be caused a good measuring instrument must have *some items of higher indices of difficulty which should be placed at the begining of the test, some items of moderate indices of difficulty ranging from 40% through 60% which should appear at the end. Item having item difficulty between 20% to 80% are included in the test.* The items can be passed by 100% should be placed at the beginning of the test, while those items which can be passed by no one or zero parcent should be placed at the end.

In certain exceptional cases like highly gifted children or high achievers, the test may even include items of 20% to 0% difficulty level. Thus the test items must have a normal distribution in regard to their indices of difficulty.

Step : vi (b) **Estimating :**

(i) Discriminating Power : The discriminating power (i.e. the validity index) of an item refers to the degree to which a given item discriminates among students who differ sharply in the function(s) measured by the text as a whole.

Discriminating Power : the extent to which a test item diserimination between pupils with high and low achievement.

The discriminating power of a test items refers to its ability to discriminate between the high and the low achievers.

If an item is to be more effective, more pupils from the upper group will get an item correct than the number of pupils in the lower group. The formula used for computing the discriminating power is given below :

Discriminating Power $\frac{Ru - R_L}{T/2}$

Where Ru = Students from upper group who got the item right

R_L = Students from lower group who got the item right

T/2 = Half of the total number of pupils included in the item analysis

Thus for item 1 in the above example, the index of discrimination would be as follows :

$$\text{Index of discrimination} = \frac{10-2}{\frac{24}{2}} = .66$$

A high positive ratio indicates the **high discriminating power.** Here. 66 indicates an average discriminating power. If all the 12 students from lower group end 12 students from upper group answers the item correctly then the discrinating power will be **0.00.** It indicates that the item has no **discriminating power.**

It all the 12 students from upper group answer the item correctly and all the students from lower group answer the item correctly then the item **discriminating power will be 1.00 it indicates an item with maximum positive discriminating power.**

Step : (vii) Find out the effectiveness power of the distractors.

A distractor is considered to be a good distractor when it attracts more pupil from the lower group than the upper group. The distractors which are not selected at all or very rarely selected should be revised. In our example, (table – 4) distractor 'A' attracts more pupils from lower group.

Table : 4 The Item Analysis Card than upper group

Subject ..... Unit .....

Class .....

Item no.....

Group	No. of Pupils	Alternatives A	B	C	D	Total No. of pupils responded	Item difficulty	Item Discriminating power
Upper	12	2	10*	0	0	12	50	.66
Lower	12	5	2	3	2	12		

* Correct answer

It indicates that 'A' is an effective distractor.

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Preparing a test item file :

Once the item analysis process is over we can get a list of effective items. Now the task is to make a file of the effective items. It can be done with item analysis cards. The items should be arranged according to the order of difficulty. While filing the items the objectives and the content area that it measures must be kept in mind.

2. Determining validity of the test :

At the time of evaluation it is estimated that to what extent the test measures what the test maker intends to measure. Discussed in detail different methods of determining validity of a test in unit 2.

3. Determining Reliability of the test :

Evaluation process also estimates to what extent a test is consistent from one measurement to other. Otherwise the results of the test can not be dependable. The methods of determining the reliability of a test is discussed in unit 2.

4. Determining the usability of the test :

Try out and evaluation process indicates to what extent a test is usable in general classroom condition. It implies that how far a test is usable from administration, scoring, time and economy point of view. Detail description about usability discussed in unit 2.

❑ 3.3.5 Uses of Achievement Tests :

The uses of achievement tests are as follows :

- Achievement tests are prepared to evaluate the extent to which the aims and objectives of education have been achieved.
- Achievement Tests are used for evaluating and improving the curriculum meant for the students of different grades
- Achievement Tests are designed to identify the students of different categories such as slow learners, gifted and average students etc.
- Achievement Tests are helpful for the purpose of identifying and classifying the students in the various groups on the basis of their achievement merits.
- Achievement Tests are intended to give promotion to the students to the next higher classes or new courses.
- Achievement Tests are used to provide scholarships, awards or special award of merit to the students those who perform better in the achievement tests.

- Achievement Tests are useful in helping students to choose suitable subjects or courses according to their achievement levels
- Achievement Tests are used to enable the parents to know strength and weakness in the context of their academic achievements.
- Achievement Tests are helpful for the teachers to enable them to know strength and weaknesses of students in different subjects and skills.

3.4 Diagnostic Tests :

Generally, we find that students have difficulties in understanding and learning certain concepts. The difficulties vary from individual to individual, subject to subject and class to class. In order to make the teaching-learning process effective, it is essential to find the learning difficulties of students during instruction. Persistent learning difficulties may require the use of diagnostic tests.

For this type of testing, a number of test items are needed in each specific area, with some slight variation from item to item. In diagnosing pupils difficulties in adding whole numbers, for example, it would be necessary to include addition problems containing various number combinations, some not requiring carrying and some requiring carrying, to pinpoint the specific types of errors being made.

The diagnostic tests consist of items based on a detailed analysis of the specific skills involved in successful performance and a study of the most common errors made by students. The test difficulty is low. Thus, a good diagnostic test will permit a student to demonstrate all aspects of the skill being measured and will pinpoint the types of errors that he/ she has made.

Diagnostic tests are available for different subjects. In order to select and use diagnostic tests, some different points to be kept in mind are:

While selecting a test, the diagnostic procedures should be evaluated in the light of the specific type of information desired.

Diagnostic tests are designed for students of below average performance in the particular subjects. So they are useful in identifying weaknesses in learning but not for indicating the level of proficiency. If a student scores high on a sub-test, it simply means that this student does not have difficulties related to the area measured by the sub-test.

Diagnostic tests indicate the typical errors a student makes, but they do not indicate the causes of the errors. Some causes can be easily

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inferred from the type of error made, or from a students explanation of how he /she arrived at the answer.

Diagnostic tests provide only partial information for diagnosing a students difficulty. Other methods like observation have to be made use of to supplement and complement this information.

Results from diagnostic tests, concerning specific learning difficulties, tend to have a low reliability because there are relatively few items measuring each type of error.

Purpose and Use :

Diagnostic tests are designed to point out inadequacies in specific skills. The immediate aim is to locate areas in which additional instruction is required or in which teaching methods have to be improved.

The purpose of diagnostic testing is to furnish continuous specific information in order that learning activities may be most productive of desirable outcomes. Diagnostic tests would be helpful in identifying the use of faulty, round-about or incorrect procedures; the use of elementary processes where these could have been replaced by advanced process; and evidences of lack of understanding and lack of precision. A carefully constructed test could be used as an inventory test towards the beginning of a years work or topic and as analytical test of competencies or skills involved in the different branches.

Diagnostic test is a useful tool for analysing learning difficulties.

Diagnostic testing is seen as one component of the ongoing teaching/ learning process.

It provides feedback to teachers and students regarding their strengths and weaknesses.

These tests will help to find out the specific kind of instruction and practice that will be required to bring achievement upto the desired level.

To tackle large classes, individual observation needs to be supplemented through diagnostic tests.

The tests are useful as guides to both the attainments as well as difficulties of pupils whose achievements are not up to the mark; in isolating individual difficulties; and for dividing pupils into groups for special coaching or remedial teaching as the case may be.

3.5 Prognostic Test :

Definition **Prognostic test** is a measure which predicts how well a person is likely to do in a certain school subject or task. In education, a prognostic test is an aptitude test. The purpose of a prognostic test is to predict achievement in a specific subject area.

Certain types of tests designed for use in educational contexts are essentially prognostic instruments. As such, they function as aptitude rather than as achievement tests. At the same time, they frequently resemble achievement tests in content, because what they undertake to predict is usally performance in a specific course of study. Typical of this approach is the Orleans–Hanna Algebra Prognosis Test (**Hanna, sonnenschien & Lenke,** 1983). In this test, students are provided with a set of short, simple "lessons" in algebra and are immediately tested on what they have learned. The test thus consists of work samples in which the students' later course learning is predicted from their performance in the sample learning tasks. A more unusual, and experimental, example of prognostic testing is provided by the artificial language tests devised by the U.S. office of Personnel Management and by the department of Defence in order to predict ability to learn a new language (**Diane, Brogan, & Mc Canley,** 1991).

♦ Prognosis and Sellection of the right profession.

Intelligence tests are very frequently used for measurement of general capacity. It has been observed that general intelligence is one of the significant pre-determiners for success in accademic achievements and in various professions.

Capacity in all fields of human activities such as arts, music, clerical work, mechanics, teaching, medical, engineering etc. is defined as 'aptitude'. Aptitude tests are used for the prediction of the capacity and potential success in particular fields. The chief purpose of aptitude tests is to predict or to identify individuals who have the greatest potential for dvelopment along special lines or who are likely to profit most by special training.

Some of the aptitude tests in the area of Science and Teacher training developed in our country are described bellow :

(i) **Scientific Aptitude Test Battery (Hindi) :** Having test items on Reasoning, Numerical Ability, Science Information and Science Vocabulary. This has been developed to predict the success in Science at high school.

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This test serves the purpose of classification, selection and guidance for scientific courses at secondary level (K. K. Agarwal).

(ii) **Scientific Aptitude Test for college Students :** This test consists of 45 items and assess the potentialities of students for success in the science subjects in college through seven areas (A.K. P Sinha & I.N.K. Sinha)

(iii) **Teaching Aptitude Test Battery :** This test aims to measure the apptitude in the teaching profession through 80 items related to 8 areas (Shamin Karim & Ashok kumar Dixit)

(iv) **Teaching Aptitude Test :** This test measures aptitude for the teaching profession (Jaiprakash & R.P. Srivastava)

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Short Questions & Answers

1. What is psychological test?

Ans : A psychological test is an instrument designed to measure unobserved constructs, also known as latent variables. Psychological tests are instruments in the hands of the counsellor that are helpful in the assessment of an individual's skills-abilitiesm optitudes, personality traits, attitudes, interests and achievements.

2. Define Intelligence & Intelligence test.

Ans : *Intelligence tests are psychological tests that are designed to measure a variety of mental functions, such as reasoning, comprehension and judgement.*

Binet and Simon– Intelligence is, Judgement, good sense, initiative, the ability to comprehend and to reason well and to adapt ones self to circumstances.

To sum up these definitions, intelligence is-

- The ability to learn.
- The ability to think abstractly
- The ability to solve problems
- The ability to perceive relationship.
- The ability to adjust and relate to ones environment.
- The ability to behave properly and effectively.
- The ability to profit from experience.

3. Write down two examples of intelligence test.

Ans :
- Stanford-Binet Intelligence Scales
- Wechsler Primary Preschool Scale of Intelligence
- Wechsler Intelligence Scale for Children
- Wechsler-Adult Intelligence Scale

4. Define Aptitude.

Ans : The word **aptitude** is derived from the word 'aptos' which means for 'fitted for'. Aptitude is a set of abilities, which are essential for accuracy,

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knowledge and skills specific to an area of performance. In other words, aptitude is a set of abilities required for a specialized activity.

5. What is Aptitude test ?

Ans : An aptitude test is any type of assessment that evaluates the talent/ ability/potential to perform a certain task, with no prior knowledge and/ or training.

An aptitude test is designed to assess what a person is capable of doing; to predict what a person is able to learn or do given the right education and instruction. It represents a person's level of competency to perform a certain type of task. Such aptitude tests are often used to assess academic potential or career suitability.

6. Classify different aptitude test.

Ans : Minnesota Clerical Test : Which measures the perceptual speed and accuracy required to perform various clerical duties.

Differential Aptitude Tests (DAT) : which assess verbal reasoning, numerical ability, abstract Reasoning, clerical speed and accuracy, mechanical reasoning, space relations, spelling and language usage.

7. What is interest?

Ans : The concept of interest and its measurement has become a subject of intellectual discussion for teachers, guidance workers and psychologists. Interest refers to the motivating force of an individual which impels him to attend to a person, a thing, an object or an activity. It is closely related to drives, motives and emotional responses of the individual towards a person, an object or an activity.

8. Define attitude test.

Ans : Attitude : A hypothetical construct or psychological disposition used for explaining the nature of ones fixed responses and behaviour towards the specific stimuli present in specific social situation.

Attitude Scale : A specific type of rating scale specially designed for measuring the attitudes of the subjects of the study towards the social or psychological object/issue under study.

9. What do you mean by personality inventory?

Ans : Creativity is the process of solving problems by combining ideas/ behavior in new ways. Creativity refers to the ability of creating something

or discovering something that is novel and has some value for life and society.

10. Define creativity.

Ans : *Torrance* defined **creativity as a process** of becoming sensitive to problems, deficiencies, gaps of knowledge, missing elements, disharmonies and so on, identifying the difficulties, searching for solutions, making guesses or formulating hypotheses about the deficiencies, testing and retesting hypotheses and possibly modifying and retesting them and finally communicating results.

11. Give examples of creativity test.

Ans : Tests standardised abroad :

- Torrance test of creative thinking (TTCT) by torrance (1966)
- The Wallach and Kogan Tests
- The Guilford Battery.
- Minnesota tests of creative thinking

Tests standardised in India

- Baquer Mehdi's tests of creative thinking
- Passi's test of creativity

12. Define achievement test.

Ans : H. W. Bernard:- The concept of achievement involves the interaction of three factors such as (i) aptitude for learning (ii) readiness for learning and (iii) opportunity for learning.

Therefore, it can be said that achievement implies the overall mastery of a pupil on a particular context. Any measuring instrument that measures the attainments or accomplishments of a pupils achievement is called the achievement test.

Generally achievement test is designed to assess pupil status in the different school subjects.

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Probable Questions

Short answer type questions : Marks : 2 or 3

1. Define the term 'test'.
1. What is psychological test
2. Define Intelligence & Intelligence test
3. Write down two examples of intelligence test
4. Define Aptitude
5. What is Aptitude test
6. Classify different aptitude test.
7. What is interest?
8. Define attitude test.
9. What do you mean by personality inventory?
10. Define creativity.
11. Give examples of creativity test.
12. Define achievement test.
13. What is projective test of personality?
14. What is diagnostic test?
15. Enumerate the concept of prognostic test.

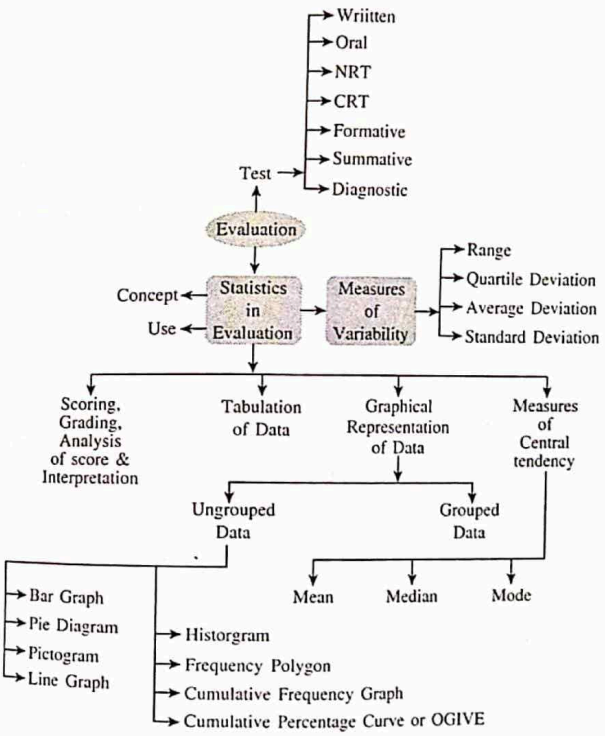
Essay answer type questions : Marks : 5 or 7

1. Explain briefly the stanford Reniseon of Binet Simon Intelligence Scale.
2. How do you measure aptitude of a learner?
3. Describe briefly any personality test.
4. How do you measure interest?
5. How the creativity of the students in measured?
6. Brilly discuss the steps tourned in constrtuction of an achievement test.
7. What are the characteristics of an achievement test.

Unit 4

Evaluation

Structure / Content Outline



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4.4.2 Importance of Graphical Data
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4.5 Measures of Central Tendency-Mean, Median, Mode
4.5.1 Measures of Central Tendency
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4.5.3.1 Median of ungrouped data distribution
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4.5.5 Merits, Limitation & Applications of the Measures of Central Tendency
4.6 Measures of Variability
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4.6.3.4 Standard Deviation
4.6.4 Merits, limitations and uses of Measures of variability

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✪ 4.1 Introduction :

A test is a means to elicit and gather responses which would provide legitimate evidence about the extent of acquisition of a particular attribute such as knowledge, skill, intelligence, aptitude or the like, by an individual or a group. Then a test presents a set of stimuli eliciting responses helpful in measuring a particular variable.

A test is a standardized situation that provides an individual with a score.

Beam (1953) "A test is an organised succession of stimuli designed to measure quantitively or to evaluate qualitatively some mental process, trait or characteristic.

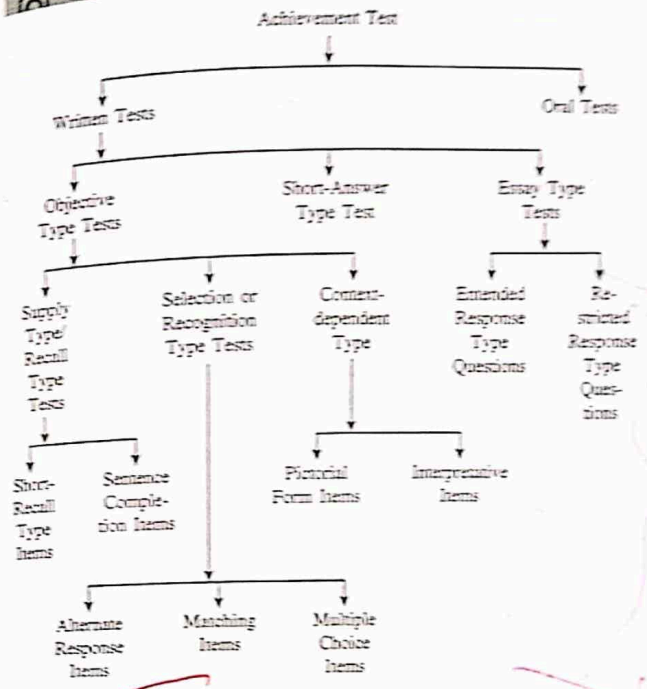
The construction of good test items is an art. The skills it requires, however, are the same as those found in effective teaching needed are a thorough grasp of subject matter, a clear conception of the desired learning outcomes, a psychological understanding of pupils, sound judgement, persistence, and a touch of creativity. The only additional requisite for constructing good test items is the skillful application of an array of simple but important rules and suggestions. The construction of test items is crucial because the validity of a classroom test is ultimately determind by the extent to which the performance to be measured is actually called forth by the test items.

✪ 4.2 Types of Test :

On the basis of educational purpose, tests can be classified into (i) Psychological Test (ii) Educational Test.

Educational Tests can be classified into different types, mentioned as in the following–

- Written Test } Achievement Test
- Oral Test
- Norm-Referenced Test (NRT)
- Criterian-Referenced Test (CRT)
- Formative Test
- Summative Test
- Diagnostic Test
- Prognostic Test



❑ 4.2.1 Written Test :

The test in which the students respond to the teacher in writing is called written test. In this type the pupils give their responses in writing.

This is the most popular means of evaluation at all levels of education. It is based on rote memory and recall questions it will lead to cramming. It has both advantages and disadvantages.

Advantages :

(i) A written test can provide us a reliable, stable and valid type of evaluation.

(ii) It can be planned carefully, keeping in view objectives, content and learning experiences.

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(iii) Answers can be assessed with perfect objectivity and more validly and reliably, with the help of a marking scheme and a scoring key.
(iv) Easy to construct and use. Several students can be evaluated at a time and at various places.
(v) Answer books can be preserved for a long time, making measurement possible.
(vi) It helps teachers to plan and guide an instructional programme.
(vii) Question papers and answer books can be moderated.

Disdvantages :

(i) Certain objectives, such as skill in handling apparatus, etc. can not be evaluated.
(ii) Difficult to give equal importance to all units.
(iii) Difficult to assess the quality of the answer.
(iv) Understanding/cramming may not be judged.
(v) The examiner may be carried away by the flowery language or hand writing of the pupils.
(vi) There is less reliability and more subjectivity.
(vii) Its preperation takes a longer time, so it cannot be taken as a continuous part of evaluation.
(viii) Written tests require a considerable amount of expenditure.

Written test can be standardized or Teacher made test.
Written test can be callssified into there types.

- Essay type
- Short answer type
- Objective type.

❖ 4.2.1.1 Essay Type Test :

The essay type test refers to any written test that requires an examinee to write a sentence, a paragraph or longer passages and that demands a subjective judgement about its quality and completeness when it is scored.

In classroom testing essay type tests are very popularly used. History show that in china essay type test were in use earlier to 2300 B.C and the begining of 20th century this was the only form of written test.

Learning outcomes concerning ability to recall, organise, and integrate ideas; the ability to express oneself in writing; and the ability to supply ideas cannot be measured with objective type tests. Measurement of these outcomes require essay type items.

Essay type tests are those tests in which the examinee is asked to discuss, enumerate, compare, state, evaluate, analysis, summarise or criticise, includes writing at a specified length on a given topic involving the process listed above.

An essay type question may give freedom to the students to write any number of pages. The required response may vary in length. Limit may be imposed by restricting the content and the length of student's response in the statement of a question.

Characteristics :

(i) Most familiar and widely used.
(ii) The length of the required response may vary from one sentence to a lengthy composition requiring a day or more to complete in a comprehensive examination for some type of professional certification (M. Ed. dissertation, Ph.D Thesis).
(iii) Demands a subjective judgement.

Essay type tests can be divided into two catagories according to the freedom provided to the pupils.

(a) Restricted Response Type Tests
(b) Extended Response Type Tests

• 4.2.1.1.1 (a) Restricted Response Type Tests :

These clasification are made on the basis of degree of freedom provided to the pupil in answering the test. The content and the response are limited in the restricted response type questions. Content is restricted by directing the student to discuss specific aspects of the topic. Responses are restricted by the form of question.

■ ***Restricted Response*** :

Here the student is more limited in the form and scope of his answer, because the student is told specifically the content in which the answer is to be made.

★ Restricted response type items are quite useful for testing learning outcomes which require interpretation, application of outcomes

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which are specific and clearly defined in nature. Such type of questions help to reduce subjectivity in marking, which is considered to be the major drawback of essay tests. This type of questions is of the greatest value for measuring learning outcomes at the comprehension, application and analysis levels.

Examples :

- Explain, the chemical changes that take place in our day-to-day life, not more than 100 words.
- Differentiate between objective type and essay type tests within 100 words.

Uses : Restricted response type questions as used to measure ability to explain cause and effect relationships, to describe application of principles, to present relevent arguments, to formulate hypothesis, to formulate noted conclusions, to state necessary asumptions, to describe the limitations of data, to explain methods and producers etc.

• 4.2.1.1.2 (b) Extended Response Type :

"Extended response type test items are those which allows pupils to select any factual information that they think is pertinent to organise the answer in accordance with their best judgement, and to integrate and evaluate ideas as they deem appropriate"–**Gronlund** and **Linn.**

✦ *Extended Response :*

No restriction in placed on the student as to the points the student will discuss and the type of organisation he/she will use. Full freedom is given to the student to exercise his/her competence and demonstrate the best she/he possesses, of course, pertaining to the area of the subject. There is freedom to select, organise integrate, evaluate and express in anyway one likes or seems appropriate. Such questions although useful for measuring global type of abilities, are no suitable for measuring specific learning outcomes, besides beings difficult to grade.

Examples :

- "Compare the status of women education of vedic period with that of the buddhistic period."

Entended response type of essay question permits a student to demoustrate her ability to–

(a) Recall factual knowledge;
(b) Evaluate his factual knowledge
(c) Organise his ideas
(d) Present his ideas in a logical, coherent fashion.

It is at the levels of synthesis and evaluation of writing skills (style, quality) that this type of question makes the greatest contribution.

Uses : Extended response type tests are used to measure the ability to produce, organise and express ideas, to integrate learnings in different areas, to create some original forms and designs, to evaluate the worth of something.

• 4.2.1.1.3 Types of Essay Questions :

There can be many types of essay questions. Some of these are given below :

1. Selective recall
2. Evaluative recall
3. Comparison of two things–on a single designated basis.
4. Comparison of two things–in general
5. Decision–for or against
6. Causes or effects
7. Explanation of the use or exact meaning of some phrase in a passage or sentence.
8. Summary of some unit of the text or of some article.
9. Analysis (the word itself need not involved in the question)
10. Statement of relationship
11. Illustration or examples (your own) of principles in science, language, etc.
12. Classification.
13. Application of rules or principles in given situations.
14. Discussion.
15. Statement of author's aim-purpose in his/her selection or organisation of material.
16. Criticism.
17. Outline.
18. Recognization of facts.
19. Formulation of questions–problems and questions raised.
20. New methods of procedure.

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• 4.2.1.1.4 Comparison of Learning Outcomes Measured :

Type of Test Item	Examples of Complain Learning Outcomes measured
Restricted Response Essay Questions	Ability to : ✦ explain cause-effect relationships. ✦ discribe application of principles. ✦ present relevant arguments. ✦ formulate tenable hypotheses. ✦ formulate valid conclusions. ✦ state necessary assumptions. ✦ describe the limitation of data. ✦ explain methods and procedures (and similar outcomes based on the pupil's ability to supply the answer)
Extended Response Essay Questions	Ability to : ✦ produce, organise and express ideas. ✦ integrate learnings in different areas. ✦ create original forms (e.g..disigning an experiment) ✦ evaluate the worth of ideas.
table 4.1	Types of complex learning Outcomes Measured by Essay Questions.. Restricted Response and extended Response.

• 4.2.1.1.5 Advantages, Disadvantages and Limitations of Essay Type Questions :

✦ **Advantatages :**

- Essay type tests measure some complex learning outcomes that can not be measured by objective type test.
- It is relatively easier to prepare and administer a six question entended-response essay test than to prepare and administer a comparabale 60 items multiple choice test item.
- It is the only means that can assess an examinee's ability to organise and present his/her ideas in a logical and coherent fashion.
- Some of the objectives–such as ability to organise idea effectively, ability to criticize or justify a statement, ability to interpret etc-can be best measured by this type of test.

- Logical thinking and critical resoning, systematic presentation, etc. can be best measured by this type of test.
- It helps induce good study habits such as making outlines and summatives, organising the arguments for and against etc,
- The students can show their initiative, the originality of their thought and the fertility of their imagination as they are permitted freedom of response.
- The responses of the students need not be completely right or completely wrong. All degrees of comprehensiveness and accuracy are possible.
- It largely eliminates guessings.

✦ **Disadvantages :**

(a) Poor (limited) content sempling, specially the extended-response type, is one of the most serious limitations of essay test.

(b) The essay test possesses relatively low validity and reliability because of the following factors.

(i) Limited content sampling
(ii) Subjectivity of scoring
(iii) Contaminated by entrancous factors like spelling, good handwriting, coloured ink, neatness, grammar, length of the answer.
(iv) Hall effect–biased judgement by previous impressions.
(v) Good verbal ability even in the absence of relevant points.
(vi) Mood of the examiner.
(vii) First impression
(viii) Improper comparison of answers of different students-bright and dull.

(c) It requires an excessive time on the part of students to write.

✦ 4.2.1.2 Short-Answer Type Test :

Short answer type questions generally require exact answers and although taking many forms, they share the following distintive features :

(i) They usually take less than five minutes to read and answer, many take less than a minute.

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(ii) They include some guidance on the extent of the answer required e.g. the six of answer, space or specific instruction such as "In not more than 20 words....."

(iii) The answer is supplied by the public, not pre-selected as in objective questions. They can be grouped into two broad catagories.

(a) extended answer.

(b) insert and completion.

(a) Extended Answer Type :

The extended answer version includes questions which require pupils to write a brief description, draw a map, make a list, perform a calculation, translate a sentence, write down a definition or formula and so on. These are the commonest form of questions used in schools and frequently used by examining Boards. They are deceptively easy to set and usually difficult to mark with any degree of speed and consistency.

Example :

1. Does all vibrating body can produce sound? Justify your statement.
2. Mention a major difference between α-ray & x-ray
3. $_{92}U^{235} \xrightarrow{-2\alpha} x \xrightarrow{-\beta} y$ Identify x and y.
4. Make diagram to show the structure of an atom.

(b) Completion Type :

The pupil is required to add one or two words to complete an incomplete statement correctly. The use of insert or completion question can be used to prepare good question based on incomplete maps, drawing, diagrams, formulae, calculations & the like.

Example :

1. Complete the followings formula :

   Hydrogen Sulphide : ..... S

   Methane : C .....

   Nitric Acid : H .....

2. If two triangles have a ..... of corresponding ..... equal and the sides including them ....., such the ..... are similar.

Advantages of short answer type items :

- Large portion of the content can be covered in a text.
- No opportunity for guessing.
- Easy to constructuct because it measures relaively simple outcomes.
- It can be made quite objective by carefully fixing the value points.
- Useful in evaluating the ability to interpret diagrams, charts, graps etc.
- It carefully prepaired, deep level objective understanding, application and problem solving skill can be evaluated.

❖ 4.2.1.3 Objective Type Test :

Definition : It refers to any written test that requires the examinee to select the correct answer from among one or more of several alternatives or supply a word or two and that demands an objective judgement when it is scored.

★ **Objective-centred Test :** When questions are framed with reference to the objectives of instruction, the test becomes objective-centred or objective-based. This type of Test may contain essay type and objective type test items.

- An essay test may be objective - centred or objective-based, though it may be difficult to score it objectively.
- An objective type tests on the other hand, can always be scored objectively though it may not be objective-centred it is not planned with reference to the objectives of instruction.

★ **Objective Type Test Item :** The most important criterion of an objective type test item is that it can be most objectively scored. The scoring will not vary from examiner to examiner.

- What is an objective question? Simply an objective question is one which is free from any subjective bias-either from the tester or the maker. The **adjective 'Objective'** *usually means 'not subjective'*, while the noun **'Objective'** *usually means an aim, a goal, target or intention.* Therefore, it is not about course objective–aim, intended learning outcomes, etc.–but about testing which is free from subjective elements. There can only be one right or objective

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answer to an objective questions. It requires the pupils to supply a word or two or to select the correct answer from a number of alternatives.

Objective type items are most efficient to measure difficult instructional objectives. Objective type tests are also called as **'new type tests.'** These are designed to overcome some of the great limitations of traditional essay type tests.

Advantages of objective type items :

- A large amount of study meterial can be tested in a very short period time.
- Economy of time.
- Objectivity of scoring.
- No bluffing
- It reduces the subjective element of the examiner to the minimum.
- It carefully plant, it can measure the higher menal process of understanding application, analysis, prediction and interpretation.

Limitation of objective type items :

- Difficulty in preparing good items.
- Problem of guessing.
- Problem of cheating.
- Ineffeciency in testing complicated skills.
- High printing cost.
- Emphasis on testing superficial knowledge.

• 4.2.1.3.1 Classification of Objective Type Test :

All objective type test items may be subdivided into three classes.

(A) Supply Type or Recall Type Test

→ Short-answer items

→ Sentence completion items

(B) Selection Type or Recognition Type Test

→ Alternat response items

→ Matching items

→ Multiple-choice items

(C) Context-Dependent Type Test

→ Pictorial form

→ Interpretative

✪ 4.2.1.3.1.1 Supply or Recall type :

Supply type items are those in which answers are not given in the question. The student supply their answer in the form of a word, phrase, number or symbol.

These items are also called as **'free response' types items,** According to the method of presentation of the problem, these items can be divided into two types–

(1) Short-Recall type

(2) Completion type items.

(1) Short-Recall type items : The pupil has to recall a response from his past experience to a direct questions.

Example : What device is used to detect whether an electric charge is positive or negetive (electroscope)

- In the number 402, what value does the 4 represent? (400)
- If an aeroplane flying northwest made a 180 degree turn, what direction would it be heading?

(2) Completion type : The pupil may be asked to supply a word or words missing from a sentence. So in completion type a services of statements are given in which certain important words or phrases have been omitted and blanks are supplied for the pupils to fill in.

Example :

- Chlorine belong to a group of elements that combine with metals to form salt. It is therefore called a _____ (halogen).
- The normal body temperature of human being is _____ Farenheit.
- Total number of chromosomes in human cell is _____ (46)

In each form, the pupil answers with a word, phrase, mathematical symbol, chemical formula, etc. This type ot item is something of a compromise between an essay items and other types of objective items. Like essay items, they-require recall rather than recognition.

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✪ 4.2.1.3.1.2 Selection or Recognition Type :

In the recognition type items the answer is supplied to the examine along with some distractors. The examinee has to choose the correct answers from among them. So that these tests are known as **'Selection type.'** As the answer is fixed and given so some call it 'Fixed **response type'** items. The recognition type test itms are further classified into following types.

(1) True-False/Alternate Response Type.
(2) Matching Type
(3) Multiple choice Type

(1) True-False/Alternative Response Type : The alternative response test item consists of declarative statement that the pupil is asked to mark **true** or **false, right** or **wrong, correct** or **incorrect, yes** or **no, fact** or **opinion, agree** or **disagree**, and the like. In each case there are only two possible answers. Because the true-false option is the most common, this item type in most frequently-referred to as the **true-false** test item. Some of the variations, however, deviate considerably from the simple true-false pattern and have their own characteristics. For this reason, some prefer the more general category, **alternative-response** item.

Example :

◗ **Tru-False Variety :**

Directions : Read each of the following statements. If the stetement is true, circle the T. If the statement is false, circle the F. If the statement is an opinion, circle O.

(T) F O 1. The earth is planet.

T F (O) 2. There are no planets or animals on mars.

◗ **Yes-No Variety :**

This varify consists of a direct question or declarative statement that is to be answered with a 'yes' or a 'No'.

Directions : Read each of the following question. If the answer is yes, circle the Y, If the answer is no, circle the N.

(Y) N 1. Is 50% of 24 less than 15

y (N) 2. Is 50% of 4/10 equal to 2/5 ?

◗ **Right-Wrong Variety :**

Direction : The following are some pairs of words. If two words have opposite meanings, write R in the blank and, if not, write W.

( ) like-dislike,

( ) cover-discover

◗ **Cluster Variety :**

In the cluster variety, there is one incomplete stein (statement) with several suggested answers to be judged as true or false.

Suggestions for constructing True-False or Alternate-Response Item

→ Determiners that are likely to be associated with a true-false statement must be avoided.

→ Those statements having little learning significance should be avoided.

→ The statements should be simple in structure.

→ Negative statements, especially double negative statements should not be used.

→ The item should be based on a single ideas.

→ False statements should be more in number than true statements.

→ The length of the true statements and false statements should be equal in size.

(2) Matching Items : In its traditional form, the matching exercise consists of two parallel column, with each word, number or symbol in one column being matched to a word, sentence, or phrase in the other column. The items in the column for which a match is sought are called **Premises,** and the items in the column from which the selection is made are called **responses**. On the basis of whcih the matching will be made are described in the **'Directions.'** The students may be asked to match the states with their achievements etc.

Example :

Directions : Match the formulat of acid in the column 'B' with the respective acids in Column 'A' by writing the number of the item in 'B' in the space procided.

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	Column A	Column B
( )	(i) Sulphuric acid	HNO_3
	(ii) Hydrochloric acid	H_2SO_4
	(iii) Nitric Acid	HCl

★ **Use of Matching Items :**

(i) The typical matching exercise is limited to measuring factual information based on simple associations.

(ii) Whenever learning outcomes emphasize the **ability to identify the relationship between two things**, and a sufficient number of homogeneous premises and responses can be obtained, a matching exercise seems most appropriate.

(iii) It is a compact and efficient method of measuring such simple knowledge outcomes. Examples of relationships :

Persons ..... Achievement
Dates ..... Historical events
Terms ..... Definitions
Rules ..... Examples
Symbols ..... Concepts
Authors ..... Titles of Books
Machines ..... Uses
Plants/Animals ..... Classification
Principles ..... Illustrations
Objects ..... Names of objects
Parts ..... Functions.

(iv) The matching exercise has also been used with pictorical materials in relating pictures and words and to identify positions on maps, charts and diagrams.

★ **Guidelines for constructing Matching Items :**

(i) Use only homogeneous material in a single matching exercise.

(ii) Include an unequal number of responses and premises, and instruct the pupil that responses may be used once, more than once, or not at all.

(iii) Keep the list of items to be matched brief, and place the shorter responses on the right.

(iv) Arrange the list of reponses in logical order.

(v) Indicate in the directions the basis for matching the responses and premises.

(vi) Place all of the items for one matching exercise on the same page.

(3) Multiple-Choice Type Items : Multiple choice type items are the most widely used objective type test items. These item can measure almost all the important learning outcomes coming under knowledge, understanding and application. It can also measure the abilities that can be tested by means of any other item short answer, true false, matching type or essay type.

A multiple choice item consists of a problem and a list of suggested solutions. The problem may be stated as a direct question or an incomplete statement and is called the *stem* of the item. The test of suggested solutions may include words, numbers symbols, or phrases and are called ***alternatives*** (also called choice or options). The pupil is requested to read the stem an the list of **alternatives** and to select the one correct, or best, alternative. The correct alternative in each item is called merely the *answer*, and the remaining alternatives are called *distracters* (also called decoys or foils)

Examples :

Direct-question form :

What is the value of π (to 3 decimals)

(a) 3.1 (b) 3.14 (c) 3.142 (d) 3.143

Incomplete-statement form :

Mass per unit volume is called _____ (density).

(a) specific gravity (b) density (c) weight

★ **Use of Multiple Choice Items :**

(i) It is the most versatile type of test item available.

(ii) It can measure a variety of learning outcomes from simple to complex, and it is adaptable to most types of subject-matter content.

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(iii) It has such wide applicability and so many uses that many standardized tests use multiple-choice items exclusively.

(iv) It can be used in measuring some of the common learning outcomes in the knowledge, understanding and application areas.

(v) The following are some of the more typical uses of the multiple-choice form in measuring knowledge outcomes common to most school subjects.

(a) Knowledge of terminology

(b) Knowledge of specific facts

(c) Knowledge of principles

(d) Knowledge of methods & procedures

(vi) It can be usued in measuring various aspects of understanding and application

(a) ability to identify application of facts and principles

(b) ability to interpret cause and effect relationships

(c) ability to justify methods and procedure.

★ **Suggestion for constructing :**

The following suggestions provide more specific maxims for this purpose.

(i) The stem of the item should be meaningful by itself and should present a definite problem.

(ii) The item stem should include as much of the item as possible and should be free of irrelevant materials.

(iii) Use a negatively stated item stem only when significant learning outcomes require it.

(iv) All of the alternatives should be grammatically consistent with the stem of the item.

(v) An item should contain only one correct or clearly best answer.

(vi) Items used to measure understanding should contain some novelty, but beware of too much.

(vii) All distracters should be plausible.

(viii) Verbal associations between the stem and the correct answer should be avoided.

(ix) The relative length of the alternatives should not provide a clue to the answer.

(x) The correct answer should appear in each of the alternative positions an approximately equal number of times but in random order.

(xi) Use sparingly special alternatives such as 'none of the above' or 'all of the above.'

(xii) Do not use multiple-choice item when other item types are more appropriate.

(xiii) Break any of these rules you have a good reason for doing so.

○ 4.2.1.3.1.3 The Context-Dependent Types :

Items that are based on an external source-be it pictorial or verbal-are called *context-dependent.* A teacher interested in learning whether his pupils can read and interpret a graph or a table, interpret a poem or a short story, identify a pointing, recognise a musical composition read the dials on an electrical equipment and the like–would provide this material to the student, who would them use it as his frame of reference to answer items based on this material.

(A) Objective Test Item Based on Pictorial Materials :

The pictorial form is a medium used to present the material to the examinee. It is not an item format. Different item formats may be used with pictorial materials.

★ **Use of Pictorial Materials :**

(i) It is very useful for younger pupils and when ideas can be more clearly conveyed in pictorial form.

(ii) It can measure the ability to interpret graphs, Cartoons, maps, and other picorial materials.

(iii) For measuring a young child's ability to count, to measure and to discriminate, pictorial material is an excellent medium.

(iv) Where a picture is equal to the use of many hundreds of words, the pictorial form should be employed.

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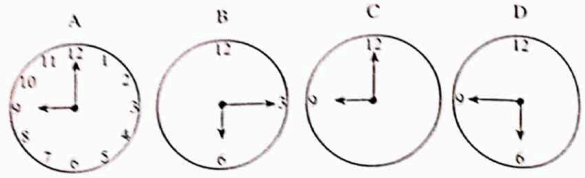
★ **Examples-1**



What clock shows the time that school starts?

A B C D

What clock shows the time closest to lunch time?

A B C D

What clock shows half past the hour?

A B C D

(Use oral question)

(B) The Interpretative Test :

It consists of either or introductory statement, pictorial material or a combination of the two, followed by series of questions that measure in part the student's ability to interpret the material. The reasons for its growing popularity are :

(i) The structuring of the problem assists both examiner and examinee.
(ii) It lends itself to the measurement of understanding, interpretation and evaluation.
(iii) Complex material can be measured with a series of different items based upon a single introductory passage, graph, chart/diagram.
(iv) It minimises the influence of irrelevent factual material
(v) Pupils can demonstrate thinking and problem-solving skills.

❑ 4.2.2 Oral Test :

The oral approach, rather than oral examination, is frequently used by the classroom teacher. Everyday, pupils are asked questions by their teachers. Although the results of the answers to these questions may not be (although they may be and sometimes are) used by the teacher, both teachers and

pupils can, if they wish, profitably use the results so obtained to improve the teaching-learning situation.

It is still used at the university level for thesis examinations, at the early childhood, level for context examinations, and at the post-school level for occupational placement examination. However, for many measurement purposes, the oral examination is seldom used.

The oral question is a variation of the essay question. Oral questioning provides immediate feedback to both pupil and teacher.

In the classical form of the oral examination, the question is presented orally to the examinee and is responded to in like manner. However two alternative forms of response to orally presented problems (written and performance) should also be considered because they have elements in common with the more traditional oral response form.

(1) Oral Response Test : In the oral-response form of the oral examination, the examiner presents the questions using the spoken word and the examinee responds in the same manner. This type of test is considered by memory to be the only legitimate from of oral examination.

(2) Written Response Test : In the written-response form of the oral examination, the questions are presented by the examiner by the use of the spoken word and are answered in writing by the examinee. The written response test can be thought of as falling somewhere between the classical oral examination (Oral response) and the written examination. Whether it is closer to the oral-response test or the written test depends primarily on the purpose for using this particular test form.

(3) Oral Performance Test : In the preformance test, the student is orally presented with a task to carry out, and his/her skill in executing it is assessed. Many instructional objectives which can't be measured by written tests are amenable to measurement by oral examinations of the performance variety.

Oral performance tests are particularly well suited to the languages and related areas. **For example,** students may be required to translate a passage read out to them into a foreign language carry on a brief and controlled conversation in a foreign language with an examiner.

✦ In the pre-school, kindergarten and lower primary grades the oral examination is probably the only way to evaluate achievement because the pupils have not get learned to read.

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✦ In higher grades oral examinations are often desirable when the teacher wishes to evaluate a pupil's ability to discuss broad types of problems in which intergration of knowledge in several areas is important.

★ **Merits of an Oral Test :**

(i) It helps a teacher to know whether a student *knows;*
(ii) It helps a teacher to make evaluation continuous.
(iii) Some objectives like oral expression, pronounciation, recitation, etc. are evaluated by this type of test only.
(iv) It permits the examiner to determine how well a pupil can synthesise, intergrate and organise his ideas and express himself.
(v) It permits free response by students.
(vi) It is best for young children who have not mastered the skills of reading and writing.
(vii) It is valuable in these situations where the objective is to see how a pupil will conduct himself before a group of people (e.g., a course in public speaking);

★ **Limitations :**

(i) It provides for a very limited sampling of the content of a course.
(ii) It has low reliability because of inadequate sampling.
(iii) It is very subjective :
  (a) it is affected by minor changes in the psychological and physical states of the teacher or the student;
  (b) it is influenced by what the examiner knows about the examinee and so may not be equally fair to all pupils.
  (c) it permits favouritism by the teacher.
(iv) It can't have a permanent objective record of a student's responses for future preference; and item analysis is difficult to obtain.
(v) The results can't be accumulated for reference to any other person then the examiner himself.
(vi) It is very costly and time consuming, for only one student can be tested at a time.
(vii) It often encourages lack of planning.
(viii) The questions put to different students may have a different difficult value, comparability of questions is difficult to obtain.
(ix) It does not provide a complete picture of the abilities of a student.

★ **Suggestion for improving an oral Test :**

(i) Decide the objectives and the content area first.
(ii) Only those objectives, which cannot be evaluated by a written test should be evaluated by an oral test.
(iii) Plan for the questions to be used and also for acceptable answers.
(iv) Decide on the method of grading before hand.
(v) Questions of almost equal difficulty value should be asked.

4.2.3 NRT & CRT (Referred to Unit-II)
4.2.4 Formative Test (Referred to Unit-II)
4.2.5 Summative Test (Referred to Unit-II)
4.2.6 Diagnostic Test (Referred to Unit-III)

4.3 Statistics in Evaluation :

4.3.1 Statistics :

The word **'statistics'** is derived from the latin word **'statis'** which means a **"Political State."** The earliest statistics, such as the census of Babylonians, Egyptians and chinese, were used to count population for tax purposes.

1. **Statistics describes** a collection of numerical data such as emloyment statistics, accident statistics, population statistics, birth and death etc.
2. **It provides** method dealing with a collection of data and extracting information from them in a compact form by tabulating, summarizing and analysing the numerical data or set of observations.
3. **It is also used** when researchers need to seem up the characteristics or actions of a group, they apply statistics.
   Methods used to analyse the data includes studying the pattern of the data-whether the data is tightly clustered or it spreads out widely. To analyse data, an understanding of central tendencies like mean, median and mode is important.

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❑ 4.3.2 Scoring and Grading, Analysis of Score and its Interpretation :

❖ 4.3.2.1 Introduction :

We collect data on various things in order to draw certain generalizations. In Education we make use of data for various purposes for example to improve the examination system, we will depend on the Test data. The data is the quality for quantative assessment. Any research in education is meaningless without the data of various kinds and its analysis.

❖ 4.3.2.2 Meaning of the term 'Data' :

The word **'data'** is plural, the singular being **datum.** Dictionary meaning of the word datum is 'fact' and, therfore, in plural, the word data signifies more than one fact. In a wider sense, the term **data** *denotes evidence or facts describing a group or a situation.* In other words, it may refer to *any details regarding numerical records or reports.* However, in a pratical sense, the statistical term is generally used for numerical facts such as *measures of height, weight and scores on achievement and intelligence tests.*

After collecting data, the researcher becomes concerned with six things : (i) *Checking the questionnaires/schedules,* (ii) *Sorting out and reducing* information collected to managable propartions, (iii) *Summarising* the data in tabular form, (iv) *analysing facts* so as to bring out their salient features i.e. search for trends, patterns and relationship. (v) *interpreting* the results, or *converting data* into statements, propositions or conclusions which ultimately will answer the research questions and (vi) *writing or presenting* the report. Thus, the method of converting raw data into meaningful statements includes data processing, data analysis, and data interpretation and presentation. This chapter is mainly concerned with tabulation of data, diagramatic presentation of the quantitative data, and analysis and interpretation of data.

❑ 4.3.3 Tabulation of Data :

When a mass of data has been assembled, it becomes necessary for the researcher to arrange the same in some kind of concise and logical order. This procedure is referred to as tabulation. Thus, **tabulation** is the *process of summarising raw data and displaying the same in compact form* (i.e., **in the form of statistical tables)** for further analysis. In a broader sense, tabulation is an orderly arrangement of data in columns and rows.

Tabulation is essential because of the following reasons.

1. It conserves space and reduces explanatory and descriptive statement to a minimum.
2. It facilitates the process of comparison.
3. It facilitates the summations of items and the detection of errors and omissions.
4. It provides a basis for various statistical computations. Tabulation can be done by hand or by mechanical or electronic devices.

Tables are useful to the researcher and the readers in three ways : (i) they present an overall view of the findings in a simplier way, (ii) they identify trends; and (iii) they display relationships in a comparable way between parts of the findings. Easch table presents a specific description in its title, has columns and rows, and gives information either in numbers or in percentages.

There are various types of tables. There could be a single variable (univariate) table, a two-variables (bivariate) table, or a table with three or more variables (multivariate). For meaningful tables, the frequencies are but in several catagories. Formation of the categories depends on the size of the sample, the range of distribution, the upper and lower limits of the distribution, the type of analysis, and the objective of the study.

❖ 4.3.3.1 Univeriate, Bivariate and Multivariate Table :

Table-1

Age of Respondents years	Frequency	Percentage
Below 10	10	10%
11–20	15	15%
21–30	22	22%
31–40	23	23%
41–50	22	22%
Above 50	08	08%
Total	100	100%

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In bivariate table, two variables are put together in a single table in such a manner their thin interrelationship can be analysed. A table with two dichotomous variables forms a table with four cells :

Table-2

Age of Respondents

Sex	20	20–50	50+	Total
Males	27	38	7	72
Females	25	29	5	59
Total	52	67	12	131

Table-2A

Gender

	Male	Female	
20–	27	25	
20+	45	34	4-cell
		131	

It can also be a six-cell or eight-cell table and so on.

Table-2B

	Male	Female	
20–	27	25	
20–50	38	29	6-cell
50+	7	5	
		131	

Bivariate tables are referred to as countingency tables. In trivariate table, each sub-column of the second column can be divided into two sub-sub columns as below :

Table-3

Sex wise and Residence wise Age Groups of Respondents

Age (years)	Sex				Total
	Male		Female		
	Rural	Urban	Rural	Urban	
Below 10					
11–20					
21–30					
31–40					
41–50					
Above 50					

◊ 4.3.3.2 Rank order and Frequency Distribution :

Frequency distribution is a tabular arrangement of data by classes together with the corresponding class frequencies.

Raw data and Score :

The data given alongside is called *"ungrouped data"* or *raw data*. Each number in the given qualitative information is called a *score*. **Example** 145, 146, 148, 149,..... are called scores. Ungrouped data shows no particular or exact idea about the height of girls in std. IX. To make the data meaningful, the following procedure is followed :

1. The data is arranged either in ascending or descending order. The pattern obtained is called *arrayed data.*
2. Count the number of times a particular score occurs. This is called **frequency.**
3. Tabulate the score and frequency as shown.

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★ **Ungrouped or Raw Data :**

The height (in cm) of 42 girls in std. IX.

151, 153, 152, 145, 148, 147, 153, 149,
146, 152, 149, 154, 148, 147, 149, 148,
150, 153, 147, 151, 152, 150, 149, 153,
154, 150, 147, 151, 145, 150, 148, 151,
149, 146, 151, 148, 149, 146, 150, 148,
152, 150.

Form of arrayed data in ascending order.

145, 145, 146, 146, 146, 147, 147, 147, 147,
148, 148, 148, 148, 148, 148, 149, 149, 149,
149, 149, 149, 150, 150, 150, 150, 150, 150,
151, 151, 151, 151, 151, 152, 152, 152, 152,
153, 153, 153, 154, 154, 155.

Note : The lowest score is 145 and highest score is 155. Threfore, write the scores from 145 to 155 in the form of a column.

Table 4 : Frequency distribution table for ungrouped data :

Score Highes in cm	Tally Marks	Total Frequency
145	||	2
146	|||	3
147	||||	4
148	𝍸 |	6
149	𝍸 |	6
150	𝍸 |	6
151	𝍸	5
152	||||	4
153	|||	3
154	||	2
155	|	1

★ **Terms to Note :**

1. **Frequency :** The number of times a particular score occurs is called frequency.
2. **Tally Marks :** When the number of score is large, tally marks (short vertical lines) are used to calculate the frequency of the various scores.

   Every **fifth tally mark** cuts the four tally marks obliquely.
3. **Freqency Distribution :** To know the frequency of each score a frequency table, called **frequency Distribution** is made.

Grouped Frequency

Distribution involves grouping the scores in classes called **class intervals.**

Inclusive form	Exclusive form
The score can be put in groups called class intervals like 0-10, 11-20, 21-30 and so on. (i) 0-10 means between 0 and 10, including both 0 and 10. This is know as **inclsive form.** (ii) 0 is called the **lower limit.** (iii) 10 is called the **upper limit** of the class 0-10.	Class intervals can be taken as 0-10, 10-20, 20-30, 30-40, 40-50, Here the lower limit is included and the upper limit is excluded. (i) 0-10 means between 0 and above 0 but less than 10. (ii) 10-20 mean 10 and above but less than 20.

❖ 4.3.3.3 Cummulative Frequency and Cummulative Percentage Frequency Distributions :

A frequency table tells us the way in which frequencies are distributed over the various class intervals but it does not tell us the total number of cases or the percentage of cases lying below or above class interval. This task is performed with the help of cumulative frequency and cumulative percentage frequency distribution may be obtained directly from a frequency distribution, as may be evident from table.

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Table 5

Class interval	Frequency	Cumulative Frequency	Cumulative % Frequency
0 – 10	15	15	15.00
10 – 20	21	36	36.00
20 – 30	25	61	61.00
30 – 40	24	85	85.00
40 – 50	15	100	100.00

Cumulative frequencies are thus obtained by adding successively, standing from the lower class interval, the individual frequencies. In the given table, when are start from the top against the lowest class-intervals 0 – 10 the first cumulative frequency is to be written as 15. Then we get 36 as another culumative frequency by adding 15 & 21, then 61 by adding 15, 21 & 25. Similarly by adding 15, 21, 25, 24, we get 85.

For converting **cumulative frequencies into cumulative percentage frequencies**, the particular cumulative frequency is multiplied by 100/N, where N is the total number of frequencies. Thus frequencies tell us percentage of cases lying below a given store or class limit. For example, the cumulative frequency of 61 can be coverted into cumulative percentage frequency by multiplying by 100/N, ie. 100/61×1. Thus we obtain 61 as the cumulative percentage frequency against the class interval 20-30. This cum%f may help to conclude that there are 61% of students in the class of 100 whose achievement scores lie below the score 30.5. Similarly, the cumulative percentage frequency of 85 may tell as that there are 85% of students whose scores lie below the upper limit of the class interval 30-40, i.e-40.

The cumulative frequencies and cumulative percentage frequencies also helps us to tell the relative position, rank or merit of an individual with respect to the numbers of a group. **For example**, in the present distribution, if a student secures 40 marks, then it can be immediately concluded from the cumulative frequency distribution that he is better than 85 students in his class of 100 students or in the form of percentage he is better than 85% students of his class.

4.4 Graphical Representation of Data :

We have discussed the organisation of data in the form of statistical and frequency distribution tables. Such organization and arrangement of the obtained raw scores on some tests, experiments and surveys helps in the proper understanding and interpretation of the collected data.

Graphical representation of data also serves the same purpose in more effective ways. Here, the data collected through a practical experiement, test, study or survey is represented or illustrated with the help of some graphic aids, e.g. pictures and graphs.

4.4.1 Meaning of Graphical data :

A graphic representation is the geometrical image of a set of data. It is a mathematical picture. It enables us to think about a statistical problem in visual terms. The graphic representation of data proves quite an effective and an economic device for the presentation, understanding and interpretation of the collected statistical data.

4.4.2 Importance of Graphical data :

1. Graphs are the pictorial representation of data. Pictures can be made more vivid and eye catching by appealing columns.
2. Graph easily draw the attention of the reader (observer).
3. Graphs are helpful to summarise the data.
4. Comparative analysis and interpretation may be effectively and easily made.
5. Various valuable statistics like median, mode, quartiles may be easily computed.
6. Such representation is helpful to know the nature of group (whether normal or skewed group).
7. Graphical representation helps in forecasting, as it indicates the trend of the data in the past.
8. Such representation may help in the proper estimation, evaluation and interpretation of the characteristics of items and individuals.

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❑ 4.4.3 Modes of Graphical data :

The data in the form of raw scores is kind as **ungrouped data** and *when it is organised into a frequency distribution, then it is refered to a grouped data.* Separate methods are used to represent these two types of data- ungrouped and grouped.

❖ 4.4.3.1 Graphical Representation of Ungrouped data :

For the **ungrouped data (data not grouped into a frequency distribution)** we usually make use of the following graphical representation

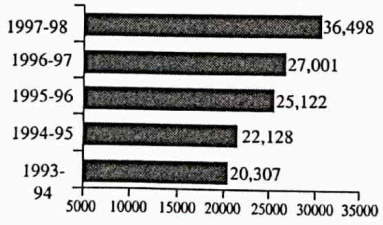
1. Bar graph or Bar diagrams
2. Circle graph or Pie diagrams
3. Pictograms
4. Line graphs

● 4.4.3.1.1 Bar graph or Bar diagram :

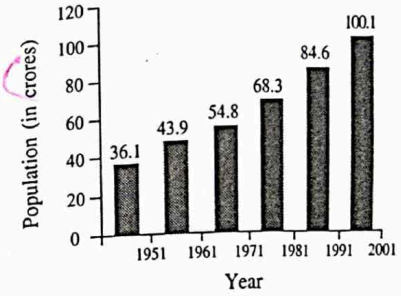
In bar graphs or diagrams, the data is represented by bars. These diagrams or bars are usually available in two forms, vertical and horizontal. In a **vertical bar graph**, the *length of a bar is used to indicate quantities.* **The longer the bar, the greater the quantity.** The width of bars is not governed by any set rules. Regarding the space between two bars, it is conventional to have a space about one half of the width of a bar.

Bar Graph

Simple Bar (Horizontal) Diagram
Central Govt. salary Bill (in crores in last 5 years)

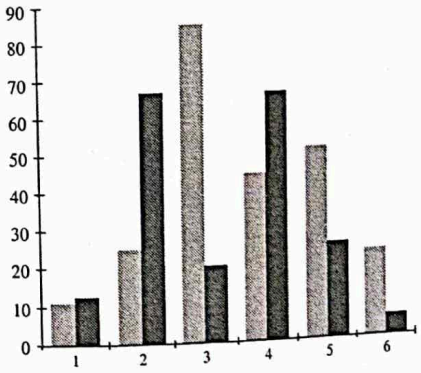


Simple Bar (Vertical) Diagram
India's Total Population during 1951 and 2000 (in crores)



(Source : Crime In India, 1998 : 11 and The Hindustan Times, January 26, 2001)

Bar Graph



The tallest bar of a bar graph, represents the value that occurs most often (mode).
Data that is normally distributed (evently spread) will produce a bar chart that has a bell shape.

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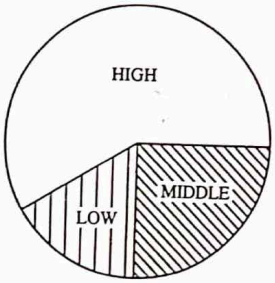
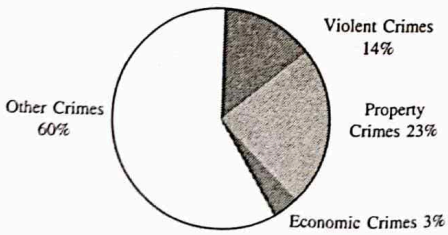
• 4.4.3.1.2 Circle graph or Pie diagram :

In this **form of graphical representation** *the data is represented through the sections or portion of a circle.* The name **pie diagram** is given to a *circle diagram because in determining the circumference of a circle we have to take into consideration a quantity known as 'pie'* (**written as** π). **For example**, the distribution of secondary students by their academic achievement in a school of the total 60% are high achievers, 25% middle achievers and 15% low achievers. The surface area of a circle is 2π or 360°. Hence 60% of 360° or 216° are counted off an shown in the diagram; this sector represent the proportion of high achievers students. 90° counted off, for the middle achiever students (25%) and 54°, for low achiever students (15%). The pie **diagram is useful** when are wishes to picture proportions of the total in a striking way.



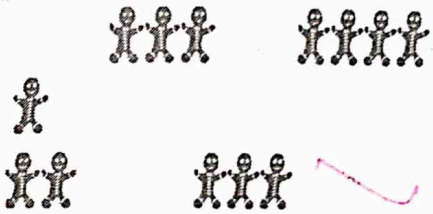
Distribution by academic achievement of pupils in Class VI of a school

Percentage Distribution of Crimes (IPC) in India in 1998



• 4.4.3.1.3 Pictogram :

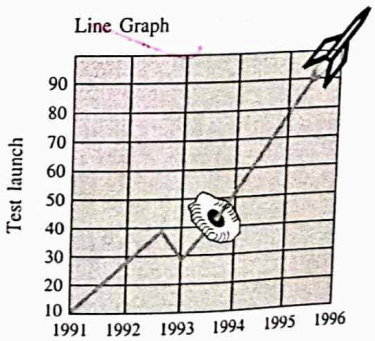
Numerical data of statistics may be represented by means of a pictogram. Such representation may be illustrated with the help of fig.



• 4.4.3.1.4 Line graph :

Line graphs are simple mathematical graphs that are drawn on the graph paper by plotting the data concerning one variable on the horizontal *x*-axis and other variable of data on the vertical *y*-axis. With the help of such graphs the effect of one variable upon another variable during an experimental or normative study, may be clearly demonstrated.

A line graph can be made from a vertical bar graph by connecting the tops of the columns. The line rises when quantities increase, and falls when they decrease, so that we can see the change at a glance.



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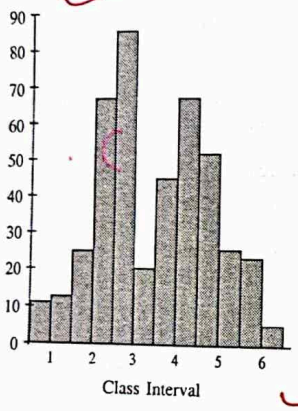
❖ 4.4.3.2 Graphical Representation of Grouped Data (Frequency Distribution) :

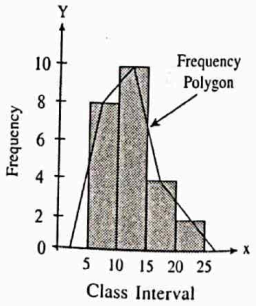
There are four methods of representating a frequency distribution graphicaly

1. The histogram
2. The frequency polygon
3. The cumulative frequency graph
4. The cumulative frqueny percentage curve or ogive let us discuss these methods.

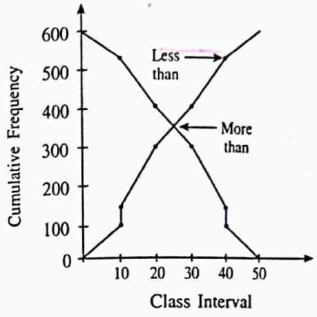
1. Histogram



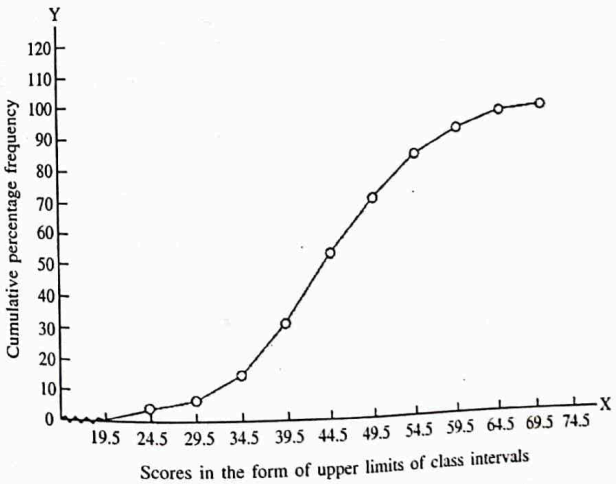
2. Frequency Polygon



3. Cumulative Frequency Graph



4. Ogive



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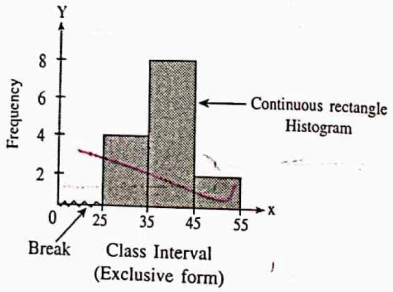
• 4.4.3.2.1 Histogram :

Histogram is a two dimensional graphical representation of grouped frequency distribution by means of adjoining rectangle.

Histogram is very similar to bar graph (bar chart) except that there are no spaces between the bars and the areas of the rectangles are proportional to the class frequencies.

To make (draw) a histogram of any statistical data carry out the steps given under :

1. The **class intervals** must be in the **exclusive form**. It given in the inclusive form then change into the exclusive form.



2. Taking suitable scales, the class interval are marked on x-axis and corresponding frequency on y-axis.
3. Construct rectangles with class intervals as bases and corresponding frequencies as heights.
4. If the scale dose not start from zero, then a break or curve is drawn.

Note : (i) Bases are proportional to the class intervals.
(ii) Heights are proportional to the frequencies of respective classes.
(iii) Base of continuous rectangles have the same length.

Examples :

Draw a histogram for the following frequency distribution. The table is given with class interval in inclusive form as :

Table–6

Class interval (inclusive form)	1–10	11–20	21–30	31–40	41–50
Frequency	8	12	10	3	5

Solution :

Change the class interval given on inclusive form to exclusive form.

1. Divide the difference between upper limit of a class and lower limit of the next class by 2.
2. The number obtained is called **adjustment factor.**
3. Substract the adjustment factor to all lower limits.
4. Add the adjustment factor from all upper limits.

Example : Lower limit of next class is 11
Upper limit of class 10

$$\text{Adjustment factor} = \frac{11-10}{2} = \frac{1}{2} = .5$$

Frequency distribution table in the exclusive form is obtained as :

Table–7

Class interval (inclusive form)	Substract 0.5 from lower limit	Class interval (Exclusive form)	Add 0.5 Upper limit	Frequency
1 – 10	(1 – 0.5)	0.5 – 10.5	10 + 0.5	8
11 – 20	(11 – 0.5)	10.5 – 20.5	20 + 0.5	12
21 – 30	(21 – 0.5)	20.5 – 30.5	30 + 0.5	10
31 – 40	(31 – 0.5)	30.5 – 40.5	40 + 0.5	3
41 – 50	(41 – 0.5)	40.5 – 50.5	50 + 0.5	5

Note : In this example,

(i) The class interval is given in inclusive form. Hence changed into exclusive form.

(ii) The first interval in the frequency distribution table starts with a number other than zero. Hence, a kink (or zigzag) is drawn near the graph to indicate that the graph is plotted to scale starting from 0.5.

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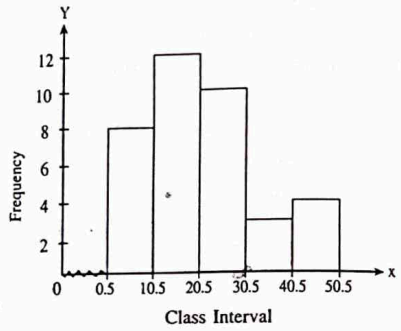


• 4.4.3.2.2 Frequency Polygon :

A frequency polygon is essentially a line graph for the graphical representation of the frequency distribution. We can get a frequency polygon from a histogram if the midpoints of the upper bases of the rectangles are connected by straight lines. But it is not essential to plot a histogram first to draw a frequency polygon. We can construct it directly from a given frequency distribution. The following points are helpful in constructing a frequency polygon.

(i) As in the histogram, two extra intervals/classes, one above and the other below the given intervals are taken.

(ii) The mid-points of all the classes/intervals (including two extra intervals) are calculated.

(iii) The mid-points are marked along x-axis and the corresponding frequencies are plotted along y-axis by choosing suitable scales on both axes.

(iv) The various points obtained by plotting the mid-points and frequencies are joined by straight lines to give the frequency polygon.

(v) Care should be taken to select the appropriate units of representation along the x-axis and the y-axis. Both the x-axis and the y-axis should not be too short or long. A good general rule for this purpose as suggested by Garett (1971) is : *To select x and y units which will make the height of the figure approximately* **75% of its width.**

✦ **Difference between a frequency polygon and a frequency curve :**

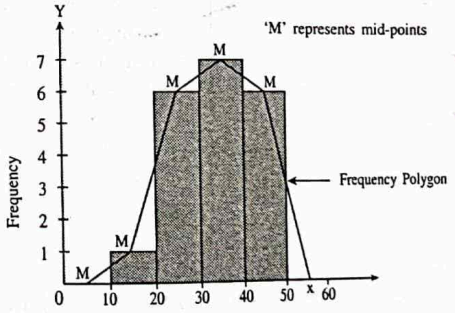
A polygon is a many sided figure. It is essentially a closed curve while a frequency curve is not a closed curve. In a frequency curve we do not take two extra intervals or classes. But in a frequency polygon we take these two extra classes in order to close the figure.

Draw a combined histogram and frequency polygon for the following frequency distribution :

40	45	30	25	22	28	40	30	25	20
32	36	32	18	45	40	30	35	28	40

Steps are given to draw a frequency polygon :

1. Draw a histogram (rectangles) from the given frequency table.
2. Mark the mid points (M) of upper bases of rectangles of the histogram.



3. Join the first end-point which is the mid-point of the first class interval with zero frequency and the mid-point of the second class interval, by a line segment.
4. Join all other constuctive mid-points by line segment considering the last end-point which is the mid-point of the last interval with zero frequency.

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• 4.4.3.2.3 The Cumulative Frequency graph :

There are two types (i) Less than type, (ii) More than type

Steps to draw Ogive :

More than type	Less than type
1. Construct a continuous frequency table.	1. Construct a continuous frequency table.
2. Mark the upper class limits on the x-axis.	2. Mark the lower class limits on the x-axis.
3. Mark the corresponding cumulative frequencies (with respect to classes on y-axis)	3. Mark the corresponding cumulative frequencies (with respect to classes)
4. Plot the points representing upper class limit and the respective cummulative frequency.	4. Plot the points representing lower class limit and the respective cumulative frequency.
5. Join these points (given in step-4) by a free hand curve.	5. Join these points (given in step-4) by a free hand curve.
6. More than type curve ends on a point on y-axis and starts from x-axis, ascending from right to left.	6. Less than type curve starts from the origin and ascends from left to right.

Examples :

Marks obtained by 400 students in an examination for standard X are as follows :

Marks	0–10	10–20	20–30	30–40	40–50	50–60	60–70	70–80	80–90	90–100
Number of students	10	20	22	40	55	75	80	58	28	12

Solution : Following table is the required cumulative frequency table :

Table–8

Marks obtained (exclusive class interval)	Number of students (frequency)	Cumulative Frequency	
		Less than	More that
0 – 10	10	(10 + 0) 10	400
10 – 20	20	(20 + 10) 30	390
20 – 30	22	(30 + 22) 52	370
30 – 40	40	(52 + 40) 92	338
40 – 50	55	(92 + 55) 147	298
50 – 60	75	(147 + 75) 222	243
60 – 70	80	(222 + 80) 302	178
70 – 80	58	(302 + 88) 360	98
80 – 90	28	(360 + 28) 388	40
90 – 100	12	(388 + 12) 400	12

(i) **Less than type :** Plot point (10, 10) (20, 30), (30, 52), (40, 92), (50, 147), (60, 222), (70, 302), (80, 360), (90, 388) and (100, 400).

Join these points with a free hand curve. Join the point (10, 10) with origin, so that the curve ascends from left to right curve shown is a continuous curve.

(ii) More than type : Plot pionts (0, 400), (10, 390), (20, 370), (30, 338), (40, 298), (50, 243), (60, 178), (70, 98), (80, 40), (90, 12) & (100, 0).

Join these points with a free hand Curve.
This curve ascends from right to left.

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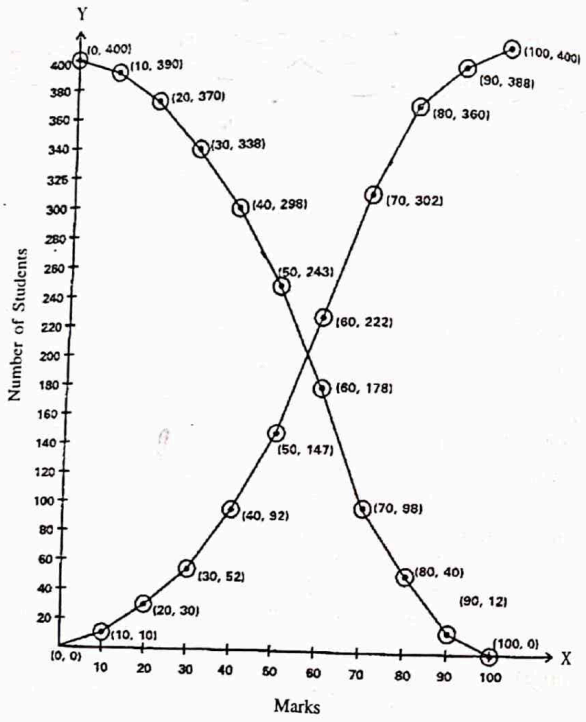


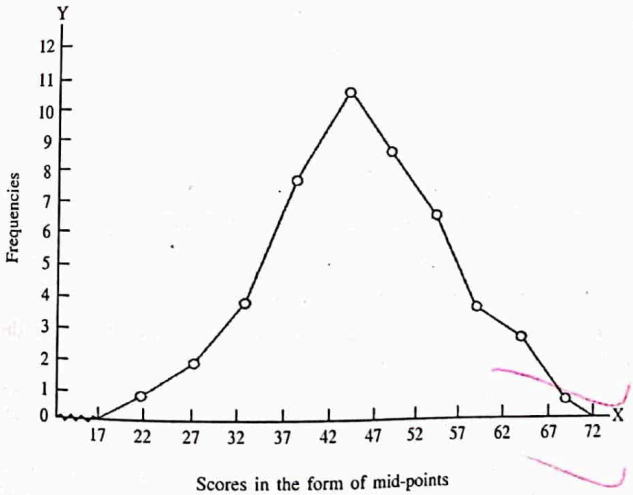
Frequency Polygon Vs. qumulative frequency curve :

In plotting the *frequency polygon* the frequency on each interval taken at the **midpoint** of the class interval. But in constructing a *cumulative frequency* curve each cumulative frequency is plotted at the exact **upper limit** of the interval upon which it falls. This is because in adding progressively from the boottom up each cumulative frequency carries through to the exact upper limit of the interval.

Examples :

Table–9

Class of Scores	Class Interval	Frequencies	Cumulative frequency	Cumulative percentage frequency
65 – 69	64.5 – 69.5	1	50	100.00
60 – 64	59.5 – 64.5	3	49	98.00
55 – 59	54.5 – 59.5	4	46	92.00
50 – 54	49.5 – 54.5	7	42	84.00
45 – 49	44.5 – 49.5	9	35	70.00
40 – 44	39.5 – 44.5	11	26	52.00
35 – 39	34.5 – 39.5	8	15	30.00
30 – 34	29.5 – 34.5	4	7	14.00
25 – 29	24.5 – 29.5	2	3	6.00
20 – 24	19.5 – 24.5	1	1	2.00



Frequency polygon of the frequency distribution (following Table-9)

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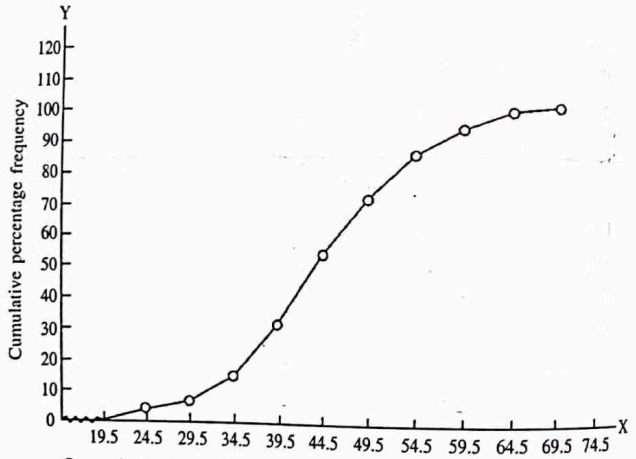
• 4.4.3.2.4 Cumulative Percentage Curve or OGIVE :

Construction of the ogive : The cumulative percentage curve or ogive differs from the cumulative frequency graph in that frequencies are expressed as cumulative percents of frequencies on the y-axis instead of as cumultive frequencies.

The cumulative percentage frequency curve or ogive is the graphical representation of a cumulative percentage frequency distribution such as given in table 9. It is essentially a line graph drawn on a piece of graph paper by plotting actual upper limits of the class intervals on the x-axis and then respective cumulative percentage frequencies on the y-axis.



Scores in the form of upper limits of class intervals (following table 9)

Use of the cumulative percentage frequency curve or ogive.

Cumulative percentage frequency curve (ogive) helps in the following tasks :

(i) The statistics like median, quartiles, quartile deviations, deciles, percentiles and percentile ranks may be determined quickly and fairly.

(ii) Percentile norms (a type of norm representing the typical performance of some designated group or groups) may be easily and accurately determined.

(iii) We can have an overall comparison of two or more groups or frequency distributions by plotting the ogives concerning these distributions on the same coordinate axes.

✪ 4.5 Measures of Central Tendency–Mean, Medium, Mode :

❑ 4.5.1 Measures of Central Tendency :

Central Tendency : Often, we obsurve that every statistical data has a tendency to cluster around a certain value, possibly at the centre of observations. This tendency of the staistical data is known as its **central tendency.**

A numerical value which tends to the centrally within the set of data, representing the entire data is known as the **measure of central tendency** of that data.

The numerical value which represents the entire statistical data is neither the lowest nor the highest value in the data, rather it lies in between the two extreme values of the data.

The different ways of measuring central tendency of a statisical data are : (i) Mean (ii) Median (iii) Mode.

❑ 4.5.2 Mean (Arithmetic Mean) :

❖ 4.5.2.1 Mean of ungrouped data :

The mean (arithmetic mean) of n variates (observation) $x_1, x_2, x_3, \ldots\ldots$, x_n is given by the formula :

$$\text{Mean} = \frac{x_1 + x_2 + x_3 + \ldots\ldots\ldots + x_n}{n} = \frac{\sum x_i}{n}$$

When $\sum x_i = x_1 + x_2 + x_3 + \ldots\ldots\ldots + x_n$

Note : The Greek Latter Σ (read) as sigma represents the sum.

Example 1 : The marks obtained by 12 students in a monthly test are 11, 19, 07,, 13, 18, 21, 09, 05, 20, 17, 16, 21.

Find : (i) The mean of their marks.

Solution :

(i) The sum of the marks of all students = 11 + 19 + 07 + 13 + 18 + 21 + 09 + 05 + 20 + 17 + 16 + 21 = 177.

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$\therefore$ The mean of marks $= \frac{\sum x_i}{n} = \frac{\text{Sum of marks of all students}}{\text{No. of students}}$

$= \frac{177}{12} = \frac{59}{4} = 14.75$

❖ 4.5.2.2 Mean of (discrete) grouped data :

If the variates $x_1, x_2, x_3, \ldots\ldots\ldots x_n$ have frequencies $f_1, f_2, f_3, \ldots\ldots f_n$ respectively, then the mean is given by the formula :

$$\text{Mean} = \frac{f_1x_1 + f_2x_2 + f_3x_3 + \ldots\ldots\ldots + f_nx_n}{f_1 + f_2 + f_3 + \ldots\ldots\ldots f_n}$$

$$= \frac{\sum f_i x_i}{\sum f_i} \quad \text{[Drirect Method]}$$

This method of finding the mean is called the *direct method.*

★ In some problems where the number of variates (observations) is large or the values of x_i or f_i are larger, then the calculations become tedious.

In order to overcome this difficulty we use another method usually called *short cut* (or *deviation*) method.

In this method, an approximate mean (called assumed mean or provisional mean) is taken (preferably near the middle), say A, and we calculate the deviation $d_i = x_i - A$ for each variate x_i. Then the mean is given by the formula : Mean $= A + \frac{\sum f_i d_i}{\sum f_i}$ [Short-Cut method]

★ (Also when the class intervals of a distribution are of equal size, it is most convenient to use the *step-deviation method.*

The calculation of the mean using this method is as under :

Mean $= A + \frac{\sum f_i x_i}{\sum f_i} \times h$, where A is the assumed mean,

$u_i = \frac{x_i - A}{h}$ and h is the class size)

Note : Any number can serve the purpose of the assumed mean A, but usually A is chosen somewhere in the middle part of the distribution.

Points of Remember :

- Mean $= \frac{\sum f_i x_i}{\sum f_i}$ **[Direct Method]**
- Mean $= A + \frac{\sum f_i d_i}{\sum f_i}$, A → assumed mean, $d_i = x_i - A$ [Short-Cut method]
- Mean $= A + \frac{\sum f_i u_i}{\sum f_i} \times h$, A is the assumed mean, $u_i = \frac{x_i - A}{h}$ [Step-diviation method] h is the class size)

Example : The following table shows the gain in weight by 25 children in a year :

Gain in weight (in Kg)	1.5	2	2.4	3	3.2	3.4
No. of children	4	5	8	5	2	1

Find the mean of gain in weight.

Solution : To calculate the mean of gain in weight, we construct the following table :

x_i	f_i	f_ix_i
1.5	4	6
2	5	10
2.4	8	19.2
3	5	15
3.2	2	6.4
3.4	1	3.4
Total	25	60

Mean $= \frac{\sum f_i x_i}{\sum f_i} = \frac{60}{25} = \frac{12}{5} = 2.4$

$\therefore$ The mean of gain in weight = 2.4 Kg.

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Short-cut method :

Example 2 : The distribution of height of 50 children (measured to the nearest cm) was as under :

Height	110	115	118	120	121	125
No. of students	6	8	14	15	4	3

Calculate the mean height for this distribution correct to one place of decimal.

Solution : We shall use short-cut method. Construct the table as under by taking assumed mean A = 118.

	x_i	$d_i = x_i - A$	f_i	$f_i d_i$
	110	–8	6	–48
	115	–3	8	–24
Assumed mean →	118	0	14	0
	120	2	15	30
	121	3	4	12
	125	7	3	21
	Total		50	–9

$\therefore$ Mean $= A + \frac{\Sigma f_i d_i}{\Sigma f_i} = 118 + \frac{-9}{50} = 118 - .18 = 117.82$

Mean height = 117.8 cm.

(B) *Mean of grouped data* : when the *frequency distribution* is *given* in the *form of classes* (continuous/discontinuous)

O In this case, we assume that the frequency in each class is centred at its class mark. If there are n classes and f_i, y_i denote the frequency and the class mark respectively of the i-th class, then the mean is given by formula :

$$\text{Mean} = \frac{f_1y_1 + f_2y_2 + f_3y_3 + \ldots\ldots\ldots + f_ny_n}{f_1 + f_2 + f_3 + \ldots\ldots\ldots + f_n} = \frac{\Sigma f_i y_i}{\Sigma f_i}$$

This method of finding the mean is called the direct method.

O In some problems, where the number of classes is large or the values of f_i or y_i are large, then the calculations become tedious.

In order to overcome this difficulty we shall use ***short cut*** (or ***deviation***) ***method***. In this method, an approximate mean (called **assumed mean**) is taken (preferably near the middle), say A, and we calculate the deviation $d_i = y_i - A$ for each class mark y_i. Then the mean is given by the formula :

$$\text{Mean} = A + \frac{\Sigma f_i d_i}{\Sigma f_i}$$

In most of the problems, width of all classes is the same, so we can further simplify the calculations of the mean by computing the coded mean i.e the mean of $u_1, u_2, u_3, \ldots\ldots\ldots, u_n$ where $u_i = \frac{y_i - A}{C}$ and C is the width of each class.

Then the mean is given by the formula :

$$\text{Mean} = A + C \times \frac{\Sigma f_i u_i}{\Sigma f_i}$$

This method of finding the mean is called *step-deviation method*

Example-1 : Find the mean for the following frequency distribution by (i) direct method (ii) Short-cut-method (iii) Step-deviation method.

Class Interval	84 – 90	90 – 96	96 – 102	102 – 108	108 – 114
Frequency	8	12	15	10	5

Solution : (i) Direct method

Construct the table as under :

Classes	Class mark (y_i)	Frequency f_i	$f_i y_i$
84 – 90	87	8	696
90 – 96	93	12	1116
96 – 102	99	15	1485
102 – 108	105	10	1050
108 – 114	111	5	555
Total		50	4902

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$\therefore$ **Mean** $= \frac{\Sigma f_i y_i}{\Sigma f_i} = \frac{4902}{50} = 98.04$

(ii) Short-cut method :

Construct the table as under, taking assumed mean A = 99

Classes	Class mark (y_i)	Deviation ($d_i = y_i - A$)	Frequency f_i	$f_i d_i$
84 – 90	87	–12	8	–96
90 – 96	93	–6	12	–72
96 – 102	99 ← Assumed mean	0	15	0
102 – 108	105	6	10	60
108 – 114	111	12	5	60
Total			50	–48

$\therefore$ **Mean** $= A + \frac{\Sigma f_i d_i}{\Sigma f_i} = 99 + \frac{-48}{50} = 99 - .96 = 98.04$

(iii) Step-deviation method :

Construct the table as under, taking assumed mean A = 99

Here C (width of each class) = 6

Classes	Class mark (y_i)	$u_i = \frac{y_i - A}{C}$	Frequency (f_i)	$f_i x_i$
84 – 90	87	–2	8	–16
90 – 96	93	–1	12	–12
96 – 102	99 ← Assumed mean	0	15	0
102 – 108	105	1	10	10
108 – 114	111	2	5	10
Total			50	–8

$\therefore$ Mean $= A + C \times \frac{\Sigma f_i d_i}{\Sigma f_i} = 99 + 6 \times \frac{-8}{50} = 99 - .96 = 98.04$

❑ 4.5.3 Median :

Median is the **central value (or middle observation)** of a statistical data if it is **arranged in ascending or descending order.**

❖ 4.5.3.1 Median of ungrouped data :

Median of a distribution is that value which divides the observations into two equal halves when the data is arranged in an arrya.

For an ungrouped data containing n observations (variates) $x_1, x_2, x_3, \ldots\ldots, x_n$ arranged in ascending or descending order, then–

Median $= \left(\frac{n+1}{2}\right)^{th}$ observation, if n is odd.

Median $= \left\{\left(\frac{n}{2}\right)^{th} \text{observation} + \left(\frac{n}{2}+1\right)^{th} \text{observation}\right\} / 2$

If n is even

Example 1 : Find the median of the following numbers :

(i) 3, 5, 0, 4, 9, 7, 6, 2, 8 (ii) 3, 5, 1, 2, 4, 6, 0, 2, 2, 3

Solution : (i) O_n arranging the given numbers in ascending order, we get

0, 2, 3, 4, 5, 6, 7, 8, 9

Here n (no. of observations) = 9, which is odd.

Median $= \frac{n+1}{2}$ th observation = 5th observation = 5

(ii) On arranging the given numbers in ascending order, we get 0, 1, 2, 2, 2, 3, 3, 4, 5, 6

Are n (no. of observations) = 10, which is even.

$\therefore$ Median $= \frac{\frac{n}{2}\text{ th observation} + \left(\frac{n}{2}+1\right)^{th} \text{obseravation}}{2}$

$= \frac{5^{th} \text{ observation} + 6^{th} \text{ observation}}{2} = \frac{2+3}{2} = \frac{5}{2} = 2.5$

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Example 2 : Calculate the median of the following distribution :

Weight (in Kg)	46	48	50	52	53	54	55
No. of Students	7	5	8	12	10	2	1

Solution : The given variates (weights of students) are already in ascending order we construct the cumulative frequency table as under :

Variate (weight)	Frequency (No. of Students)	Cumulative Frequency
46	7	7
48	5	12
50	8	20
52 ←	12	32
53	10	42
54	2	44
55	1	45

Here n (total no. of students) = 45, which is odd.

$\therefore$ Median = $\frac{n+1}{2}^{\text{th}}$ observation = 23^{rd} observation

Ans : Median is 52 kg.... (Since 23 lies under C.F. 32)

❖ 4.5.3.2 Median of discrete frequency distribution :

In case of a discrete frequency distribution ($x_i f_i$). We calculate median by using the following algorithm :

1. Prepare the Cumulative frequency table.
2. Find $\frac{N}{2}$ when $N = \Sigma f_i$
3. Look for the Cumulative frequency (c.f) just greater than $\frac{N}{2}$ and find the corresponding value of the variable x.
4. The value of the variable found in step 3 above, is the required median.

❖ 4.5.3.3 The Median of continuous frequency Distribution :

For a grouped data in the form of classes, we try to locate the median class as follows :

1. Obtain the frequency distribution
2. Prepare the cumulative frequency column and obtain $N = \Sigma f$.
3. Find N/2.
4. Locate the cumulative frequency just greater than $\frac{N}{2}$ and determine the corresponding class. The class is known as the median class.
5. Use the following formula to calculate the median.

$$\text{Median} = l + \frac{\frac{N}{2} - c.f}{f} \times h$$

Where l is the lower limit of the median class. N is the total frequency, $c.f$. is the cumulative frequency of the class preceding the median class and h is the size of the class interval.

Example 3 :

Obtain the median for the following frequency distribution :

x	1	2	3	4	5	6	7	8	9
f	8	10	11	16	20	25	15	9	6

Solution : The cumulative frequency table is :

x	1	2	3	4	5	6	7	8	9
f	8	10	11	16	20	25	15	9	6
c.f	8	18	29	45	65	90	105	114	120

Here N = 120

$\Rightarrow \frac{N}{2} = 60.$

The cumulative frequency just greater than $\frac{N}{2}$ (= 6.0) is 65, and the value of x corresponding to 65 is 5. Thus, the median of the given distribution is 5

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Sample problem 4. Obtain the median for the following frequency distribution :

Class Interval	5–9	10–14	15–19	20–24	25–29	30–34	35–39
Frequency	5	6	15	10	7	9	8

Solution : Here the class intervals are not continuous. So, we first convert it into a continuous table and then prepare the cumulative frequency column.

Classes adjustment	Classes after adjustment	Frequency	Cumulative frequency
5 – 9	4.5 – 9.5	5	5
10 – 14	9.5 – 14.5	6	11
15 – 19	14.5 – 19.5	15	26
20 – 24	19.5 – 24.5	10	36
25 – 29	24.5 – 29.5	7	43
30 – 34	29.5 – 34.5	9	52
35 – 39	34.5 – 39.5	8	60

Here N = 60

$\Rightarrow \frac{N}{2} = 30.$

The median class is 19.5 – 24.5

$$\text{Median} = l + \frac{\frac{N}{2} - c.f}{f} \times h$$

$$= 19.5 + \frac{30 - 26}{10} \times 5$$

$$= 19.5 + \frac{4}{10} \times 5$$

$$= 21.5$$

❑ 4.5.4 Mode (Modal Value) :

Mode (or mode value) is another measure of central tendency. The mode of a distribution is the value represented by the point about which the variates tend to be most heavily concentrated. In general, the mode is the variate which occurs most frequency, i.e., the variate having the highest frequency. Mode is usually denoted by Mo.

Example 1 : Find the mode of the following data :

8, 9, 3, 4, 8, 6, 6, 7, 4, 8, 8, 3, 2

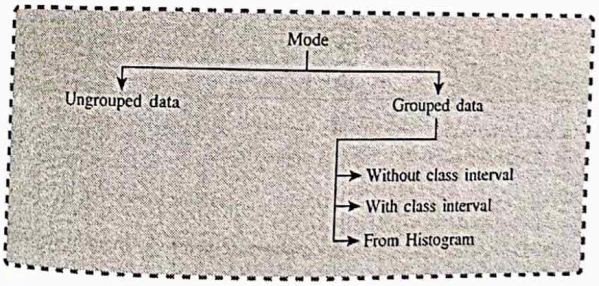
Solution : Number 8 occurs the maximum number of times. Hence, mode is 8.

Example 2 : Find the mode from the following frequency distribution.

Numbers	10	11	12	13	14	15	16
Frequency	6	8	15	25	20	10	6

Solution : The frequency of unmber 13 is maximum, hence **the mode is 13.**

Thus, ***mode* is *the term* of *highest frequency***



1. If two or more items are repeated the same maximum number of times they all are the mode.

Example 3 : Find the mode of the following data.

10, 20, 10, 30, 20, 50, 70, 20, 30, 40, 50, 50, 50, 40, 50, 20

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Solution : Tabulating the given data are :

Variable (n)	Frequency (f)
10	2
20	4
30	2
40	2
50	4
70	1

20 and 50 occur maximum number of times, i.e., 4 times

∴ Both **20 and 50 are mode of the given data.**

2. The approximate relation known as ***Emperial Relation*** between the three measures mean, median and mode is given as :

$$\text{Mode} = 3\ \text{Median} - 2\ \text{Mean}$$

3. The class with meximum frequency is called ***Modal class.***

4. Appropriately the **mid value of the model class may be taken as mode.**

Example 4 : Find the model class and approximate value of mode for the following frequency distribution with class interval.

Class Interval	30–40	40–50	50–60	60–70	70–80	80–90
Frequency	3	10	11	7	5	4

Class interval 50 – 60 has the highest frequency i.e., 11.

∴ Modal class is 50 – 60 and approximate

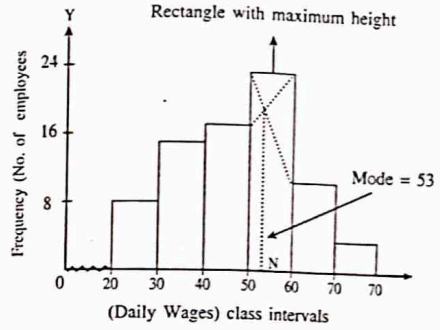
Value of made $= \frac{50+60}{2} = 55$..... (mid value of modal class)

Note : Correct value of mode can be obtained by using a histogram.

Example 5 : The daily wages (into Rs.) of 78 employees in a company are distributed as given under :

Daily wages	20–30	30–40	40–50	50–60	60–70	70–80
Number of Employees	8	14	18	22	12	4

Estimate the modal daily wages for above distribution by a graphical method.



Solution :

1. Draw a histogram for the given distribution.
2. Two diagnosis PQ and RS are drawn which interested at point M.
3. Draw perpendicular MN on x-axis.
4. Value of N on x-axis = 53

   ∴ Mode = 53

   Modal daily wages in 53.

❑ 4.5.5 Merits, Limitations & Applications of the Measures of Central Tendency :

(A) Merits of Arithmetic Mean :

(i) It is rigidly defined and easily understandable. Its value is always definite.

(ii) It can be accurately determined with the help of various methods.

(iii) Its computations is based on all the observations.

(iv) A mean is an algebric measure which is capable of further algebric treatment. It is useful in computing standard deviation, correlation etc.

(v) If the number of items in a series is large, the mean provides a good basis of computation.

(vi) A mean has an important property and that is the sum of the deviations of all the scores from the mean is always zero.

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✦ **Limitation of the mean :**

(i) As the skewness of the distribution increases, the reliability of the mean decreases.

(ii) It is highly affected by the extreme values of a variable.

(iii) If a single item of a series is missing the mean cannot be calculated. If out of 400 items, the values of 399 items are known, the mean cannot be calculated.

(iv) A mean gives greater importance to the bigger items of a series and less importance to the smaller items.

(v) Unless the data are very simple, the mean cannot be located merely by inspection, while the median and mode can be.

(vi) A mean can be used only with distribute that gives absolute scores. It cannot be used with scores expressing grades or ranks or order of students, such as A, B, C, D.....

(vii) A mean can be a figure which does not exist in the series at all.

(viii) A mean sometimes gives such results as appear almost absurd, e.g. 4.4 children.

✦ **When to use a mean :**

Use the mean :

(i) When the scores are distributed symmetrically around the central point, i.e., when the distribution is not badly skewed.

(ii) When the measures of a central tendency having the greatest stability and reliability are wanted.

(iii) When other statistics (e.g. S.D, Coefficient of Correlation) are to be computed later.

(B) The Median (Mdn) :

✦ **Merits :**

(i) It is an ideal average. It indicates the value of the middle item in the distribution.

(ii) It is rigidly defined and easily understood without any difficulty.

(iii) It is not affected by the values of the extreme items (i.e. skewness) and as such it sometimes more representative than the mean.

(iv) It is the most appropriate average in dealing with qualitative data.

(v) In the case of an open-end table, where the values of the extremes are not known, the median can be calculated if the number of items is known.

(vi) Its computation is not based on all the observations. Hence, it is not capable of further algebric treatment.

(vii) The median can be used not only with distributions that give absolute scores such as 25, 30, 32, etc. but also with scores expressing grades or ranks or order of students, such as A, B, C, D.....

(viii) When the units of measurement are unequal, the median is preferable. It does not assume equality of units, whereas the mean does assume it.

(ix) The median never gives absurd or fallacious results.

✦ **Limitations of Median :**

(i) A median is a non-algebric measure and hence not suitable for further algebric treatment.

(ii) It cannot be used for computing other statistical measures such as SD, or coefficient of correlation.

(iii) The arrangement of items in the ascending or descending order is some times very tedious.

(iv) When there are wide variations between the values of different items, a median may not be representative of the series; e.g. Marks : 5, 6, 8, 8, 8, 10, 44, 50, 60, 60, 72.

The median is 10, which is not representative of the series.

(v) A median is more likely to be affected by the fluctuations of sampling than the mean.

✦ **When to use a median :**

Use the median :

(i) When the exact midpoint–the 50% point of the distribution – is wanted;

(ii) When there are extreme scores which would markedly affect the mean. They do not disturb the median ;

(iii) When it is desired that certain scores should influence the central tendency.

(iv) When the distribution has an upper or lower class interval of unspecified length;

(v) When a distribution is described and interpreted in terms of percentiles, it is used as a member of the percentile system.

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(C) Mode :

Characteristics of Mode :

(i) It is not well defined

(ii) It is not unduly affected by the extreme values.

(iii) The value of the mode can also be determind graphically.

Merits of the mode :

(i) It posesses the merit of simplicity. In a discrete series, the mode can be located even by implication.

(ii) It is commonly understood. A mode is an average which people use in their day-to-day expressions; e.g. sale of a commodity, size of families, etc. are expressed in their mode values.

(iii) Its computation is not based on all the variates.

(iv) It is also not capable of being handled algebrically because its value is not based on all the observations.

(v) It may be unrepresentative in many cases.

✦ **Limitation of the Mode :**

(i) A mode is ill-defined, indeterminate and indefinite, and so untrustworthy.

(ii) It is not based on all the observations of a series.

(iii) It is not capable of further mathematical treatment.

(iv) It may be unrepresentative in may cases. A slight change in the series may extensively disturb the mode.

(v) The mode is affected by changes in the grouping distributions.

(vi) In ungrouped data, if no score is repeated, it may lead to the wrong conclusion that the series has no mode.

(vii) As there may be 2, 3, or more modal values, it becomes impossible to set a definite value of a mode.

✦ **When to Use a mode :**

Use a Mode :

(i) When a quick and approximate measure of a central tendency is all that is wanted;

(ii) When the measure of a central tendency should be the most typical value.

✦ **Key Words :**

1. **Frequency :** The number of times a particular score occurs in the given data.
2. **Frequency Distribution :** A method of presenting the collection of group of scores to show the frequency in each group of score or class.
3. **Central Tendency :** The central or average value of a variable.
4. **Arithmatic Mean :** The sum of all the values of items in a series devided by the number of items.
5. **Median :** The point which divides the distribution into two halves, with respect to frequencies.
6. **Mode :** A value of the variable which occurs most frequently.

4.6 Measures of variability :

⇒ Meaning of variability
⇒ Uses of variability
⇒ The Range
⇒ The Quartile deviation
⇒ The Average deviation
⇒ The Standard deviation
⇒ Their Computations
⇒ Their Uses, Merits & Demerits.

The measures of central tendency (Mean, Median and Mode) provides an average or single figure to get a central idea about the whole distribution or series. After measuring the central tendency, the next step is to find some measure of variability of data. Thus, **variability (variability, means 'scatter' A 'spread')** is the **spread or scatter of the separate scores around their central tendency.**

4.6.1 Measures of Dispersion :

An average can represent a data-set only as best as a single value can but it certainly cannot reveal the entire story of the data-set.

For example :

(i) 7, 7, 7, 7, 7 (mean = 7, median = 7)

(ii) 13, 5, 7, 6, 4 (mean = 7, median = 7)

(iii) 4, 6, 7, 8, 10 (mean = 7, median = 7)

In all three data-sets above, the average values (mean and median) are

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the same. Thus, an average fairs to give any idea about the spread or scatteredness of the observations in the data-set. The name given to this scatteredness is **spread** or **disperson** or **variability.**

❑ 4.6.2 Definitions of variability :

- ★ **Dictionary of Education : C.V Good.** The scatter or variability of the observations of a distribution about some measure of central tendency."
- ★ **Collins Dictionary of statistics :** "Dispersion is the spread of a distribution."
- ★ **Brooks and Dicks :** "Dispersion or spread is the degree of the scatter or variation of the variables about a central value."

Then the property which denotes **the extent to which the values are dispersed about the central values is called dispersion.**

❑ 4.6.3 Need of variability :

- ⇨ Helps to ascertain the degree of deviation
- ⇨ It helps to compare different groups
- ⇨ It is useful to supplement the information provided by the measures of central tendency.
- ⇨ It is useful to calculate further advance statistics based on the measures of dispertion.

There are four measures of variability.

- ✦ The Range
- ✦ The Quartile Deviation
- ✦ The Average Deviation
- ✦ The Standard Deviation.

❖ 4.6.3.1 Range :

Range is the simplest possible measure of dispersion and is defined as the difference between the values of the extreme items of a series. Thus–

$$\text{Range} = \begin{pmatrix}\text{Highest value of}\\ \text{an item in a series}\end{pmatrix} - \begin{pmatrix}\text{Lowest value of an}\\ \text{item in a series}\end{pmatrix}$$

$$H \quad - \quad L$$

Exapmle 1 :

In access 26 students have secured the marks as following —
25, 32, 49, 67, 75, 55, 35, 48, 57, 88, 92, 44, 22, 18, 47, 59, 65, 22, 23, 25, 37, 52, 43, 16, 75, 67

Here, the Highes score is 92,
Lowest score is 16

$\therefore$ Range = H – L = 92 – 16 = 76.

If the range is higher then the group indicates more heterogeneity and it the range is lower then the group indicates more homogeneity. Thus range provides an instant and rough indication of variability in a distribution.

❖ 4.6.3.2 The Quartile Deviation :

Next to range quartile deviation is another measure of variability.

"The quartile deviation or Q is the one-half the scale distance between the 75the and 25th percentiles in a frequency distribution."

From the following fig-1, we find that the 1st quartile or Q_1^* is position in a distribution below which 25% cases, and above which 75% cases lie.

The 2nd quartile or Q_2^* is a position below and above which 50% cases lie. It is the median of the distribution. The 3rd quartile or Q_3^* is the 75th percentile, below which 75% cases and above which 25% cases lie.

So, the quartile diviation (Q) is one-half the scale distance between the 3rd quartile (Q_3) and the 1st quartile (Q_1).

It is also known as the Semi-Interquertile Range.

Symbolically.

$$Q = \frac{Q_3 - Q_1}{2}$$

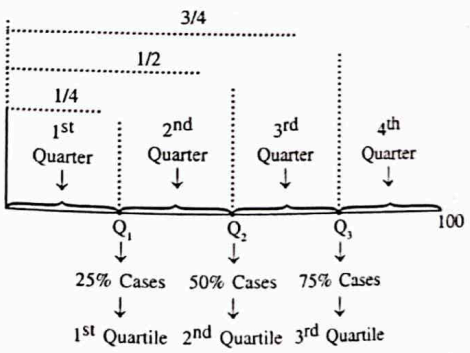

Fig-1

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$$Q = \frac{Q_3 - Q_1}{2}$$

Where, $Q_1 = L + \frac{\frac{N}{4} - C_F}{f} \times i$

$$Q_3 = L + \frac{\frac{3N}{4} - C_F}{f} \times i$$

Where L is the lower limit of the class in which the quantile lies.

C_F is the 'less than' cumulative frequency of the class preceding the quartile class,

f is the frequency of the quartile class and i is the size of the class interval.

- To find Q_1, and Q_3, We must first find quartile class.

(A) Quartiles [Q_1, Q_2, Q_3]

Quartiles are the values of a statistical data which divide the whole set of observations into four equal parts. Q_1-if the variates are arranged in ascending order, then the observation lying midway between the lower extreme and the median is called the **lower quartile** or **first quartile.** It is denoted by Q_1.

For an ungrouped data containing n observations.

- Lower Quartile $Q_1 = \left(\frac{n+1}{4}\right)^{th}$ observation, if n is odd.
- $Q_1 = \left(\frac{n}{4}\right)^{th}$ observation, if n is even.

Q_3 [Upper Quartile] : If the variates are arranged in ascending order, then the observation lying midway between the median and the upper extreme is called the **upper quartile** or **third quartile.** It is denoted by Q_3.

For an ungrouped data containing n observations.

Upper Quartile, $Q_3 = \left\{\frac{3(n+1)}{4}\right\}^{th}$ observation, if n is odd.

$Q_3 = \left(\frac{3n}{4}\right)^{th}$ observation, if n is even.

Note : The middle quartile is the median, to be denoted by Q_2.

(B) Inter Quartile range :

The difference between the upper quantile (Q_3) and the lower quantile (Q_1) is called the *inter quartile range.*

Thus, *inter quartile range* = $Q_3 - Q_1$

Semi interquartile range = $\frac{Q_3 - Q_1}{2}$

Example 5 :

The highest (in nearest cm) of 60 students of a certain school are given in the following frequency distribution table :

Height (in cm)	151	152	153	154	155	156	157
No. of students	6	4	11	9	16	12	2

find (i) median (ii) lower quartile (iii) upper quartile (iv) inter quartile range.

Solution : The given variates (heights of students) are already in asceding order. We construct the cumulative frequency table as under :

Variate (height)	Frequency (No. of Students)	Cumulative Frequency
151	6	6
152	4	10
153	11	21
154	9	30
155	16	46
156	12	58
157	2	60

Here, n (Total no. students) = 60, which is even.

(i) Median $= \frac{\frac{n}{2}^{th} \text{ observation} + \left(\frac{n}{2}+1\right)^{th} \text{ observation}}{2}$

$= \frac{30^{th} \text{ observation} + 31^{st} \text{ observation}}{2}$

$= \frac{154 + 155}{2} = \frac{309}{2} = 154.5$

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(ii) Lower quartile $(Q_1) = \frac{n}{4}$ th observation
$= 15^{th}$ observation
$= 153$

(iii) Upper quartile $(Q_3) = \frac{3n}{4}$ th observation
$= 45^{th}$ observation
$= 155$

(iv) Inter quartile range $= Q_3 - Q_1 = 155 - 153 = 2$

❖ 4.6.3.3 The Average Deviation (A.D) :

We can overcome some of the serious short-comings of range and quartile deviation by using another dispersion caused **Average deviation** or **Mean deviation.**

"Average deviation is the arithmatic mean of all the deviations of different scores from the mean value of the scores without the regard for sign of the deviation."

★ **Definitions :**

Dictionary of Education : C.V. hood "A measure expressing the average amount by which the individual items in a distribution deviate from a measure of central frequency such as mean of median."

Collins Dictionary of statistics. "Average deviation is the mean of the absolute values of the differences between the values of a variable and the mean of its distribution."

H.E. Garrett. "The avarage deviation or AD is the mean of the deviations of all the separate scores in a series taken from their mean (occasionally from the Median or Mode)."

Thus it can be said that average deviation or Mean deviation as it is called is the mean of the deviations of all the scores.

Symbolically

$$AD = \frac{\Sigma |x|}{N}$$

Where AD = Average deviation

Σ = Capital sigma, Means Sum Total of.

$| \ |$ = Modulus short Mod, means no respect to negative sign.

x = deviation, $(X - M)$

★ **Computation of Average Deviation :**

There are two situations for computions average deviation (a) when data are ungrouped (b) when data are grouped.

⇨ **(1) Computation of AD from ungrouped data.**

Example :

Find AD of the following 10 scores given below :
10, 13, 11, 9, 11, 5, 7, 14

Solution :

Step-1. Find out the mean of all scores with formula $\frac{\Sigma X}{N}$

$$M = \frac{\Sigma X}{N} = \frac{80}{8} = 10$$

Step-2. Find out deviation of all scores deducting the mean from the scores.

Step-3. Find out the absolute deviation as shown in table 3 and the $\Sigma |x|$.

Table-3

S.I. NO	Scores X	Deviations $x = (X - M)$	Absolute deviation $\|x\|$
1	10	0	0
2	13	3	3
3	11	1	1
4	9	−1	1
5	11	1	1
6	5	−5	5
7	7	−3	3
8	14	4	4
			$\Sigma \|x\| = 18$

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Step-4. Put the values in formula.

$$AD = \frac{\Sigma|x|}{N} = \frac{18}{10} = 1.8$$

$\therefore$ The A. D = 1.8

➪ **(2) Computation of AD from grouped data.**

Example :

Find out the AD of the following data.

Class intervals	Frequency (f)
25 – 35	5
35 – 45	8
45 – 55	8
55 – 65	6
65 – 75	7
75 – 85	9
85 – 95	4
Total	N = 47

Solution : Step-1. Find out the mean of distribution.

Mean = 59.6

Table-4

C.I	f	X Mid point	fx	x (X – M)	$\|x\|$	$\|fx\|$
25 – 35	5	$\frac{25+35}{2}$ = 30	150	–29.6	29.6	148
35 – 45	8	= 40	320	–19.6	19.6	156.8
45 – 55	8	= 50	400	–9.6	9.6	76.8
55 – 65	6	= 60	360	0.4	0.4	2.4
65 – 75	7	= 70	490	10.4	10.4	72.8
75 – 85	9	= 80	720	20.4	20.4	183.6
85 – 95	4	= 90	360	30.4	30.4	121.6
Total	N = 47		Σfx = 2800			$\Sigma\|fx\|$ = 762

Step-2. Find out the mid-point for each class intervals. As in column-3 of table-4.

Step-3. Find out x by deducting the mean from the midpoint (X). As shown in column 5 of table 2

Step-4. Find out absolute deviations of $|x|$. As column 6 above.

Step-5. Find out $|fx|$ by multiplying f with $|x|$. As shown in column 7 & find out $\Sigma|fx|$

Step-6. put the above values in formula.

$$AD = \frac{\Sigma|fx|}{N} = \frac{762}{47} = 16.21$$

$\therefore$ AD = 16.21

❖ 4.6.3.4 The Standard Deviation (S.D) :

Standard deviation is most widely used measure of dispersion of a series and is commonly denoted by the symbol 'σ' (pronounced as sigma).

Standard deviation is defind as the square-root of the average of squares of deviations, when such deviations for the values of individual items in a series are obtained from the arithmetic average.

★ Definitions :

Dictionary of Education–C.V Good. "A widely used measure of variability, cousisting of the square root of the mean of the squared deviations of scores from the mean of the distribution."

Collin's Dictionary of statistics "Standard deviation is a measure of spread or dispersion. It is root mean squared deviation."

Standard deviation is the square root of the average value of the sqaured deviations of the scores from their arithmatical mean.

It is also called, the **'root mean square deviation.'**

The square of standard deviation is called as **variance** (σ).

It is also called as the **Second moment dispersion.**

(1) Computation of σ from ungrouped data.

Find out the SD of the following data–

2, 4, 8, 10, 12, 9, 8, 5, 10, 12

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Solution :

Step-1. Find out the mean of the scores.

Step-2. Find out the deviation (x) of each score.

X	x	x^2
2	–6	36
4	–4	16
8	0	0
10	2	4
12	4	16
9	1	1
8	0	0
5	–3	9
10	2	4
12	4	16
$\Sigma X = 80$		$\Sigma x^2 = 102$

$$\text{Mean} = \frac{\Sigma X}{N} = \frac{80}{10} = 8$$

Step-3. Find out the x^2

Step-4. Find out the Σx^2

Step-5. Put the value in formula

$$\sigma = \sqrt{\frac{\Sigma x^2}{N}}$$

$$= \sqrt{\frac{102}{8}} = \sqrt{12.75}$$

$$= 3.5$$

Where Σ = Sum of total of

x = deviation of the scores from mean

N = total no. of scores

(2) Computation of SD from grouped data

In grouped data SD can be calculated in two methods.

(A) Direct method or Long method

(B) Short method or Assumed Mean method.

(A) Direct Method or Long method :

Example : Find the standard deviation for the following distribution.

CI	0 - 2	3 - 5	6 - 8	9 - 11	12 - 14	15 - 17	18 - 20
f	1	3	5	7	3	5	1

Step-1. Find the mid-value X of each classes.

Step-2. Multiply each X by the corresponding frequency

Step-3. Find out the deviation (x) by deductions the mean from the mid points.

Step-4. Find out the fx by multiplying f (col-2) with x (col-5).

Step-5. Find out fx^2 by multiplying fx (col-6) with x (col-5)

Step-6. Complete Σfx^2 by adding the values in col-7

Step-7. Put the values in formula

The formula for S.D = $\sigma = \sqrt{\frac{\Sigma fx^2}{N}}$

Where Σ = Sum total of

f = frequency of class interval

x = deviation of scores from their mean

N = Total no. of scores (Σf)

Table-5

C.I.s	f	X	fX	x (X – M)	fx	fx^2
0 – 2	1	1	1	1–10.24 = –9.24	–9.24	85.37
3 – 5	3	4	12	–6.24	–18.72	116.81
6 – 8	5	7	35	–3.24	–16.2	52.48
9 – 11	7	10	70	–0.24	–1.68	0.40
12 – 14	3	13	39	2.76	8.28	22.85
15 – 17	5	16	80	5.76	28.8	165.88
18 – 20	1	19	19	8.76	8.76	76.73
	N = 25		256			520.52

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$$\text{Mean} = \frac{\Sigma fx}{N} = \frac{256}{25} = 10.24$$

Now putting the values in formula, we get

$$\sigma = \sqrt{\frac{\Sigma fx^2}{N}} = \sqrt{\frac{520.52}{25}} = \sqrt{20.82} = 4.5$$

$\therefore$ Thus the σ is 4.5

(B) Short Method or Assumed Mean Method :

In short method calculation of SD is easy and less time consuming. If the mid-point of the class intervals are decimal numbers then it becomes more complicated to compute SD in long method. This method consists essentially in 'guessing' or assuming A mean & later applying a corrcetion to give actual mean. So that it is called as assumed mean method.

Example :

Complete the SD of the following distribution.

CI	0 – 2	3 – 5	6 – 8	9 – 11	12 – 14	15 – 17	18 – 20
f	1	3	5	7	3	5	1

Solution :

Step-1. Assuming the midpoint of any class interval as 'Assumed Mean' It is better to assume the midpoint of the class interval in the middle having high frequency as assumed mean.

Here let us assume **10** as Assumed mean.

Step-2. Find out x' (deviation of the scores from the assumed mean) as shown in col-3

$$x' = \frac{X - M}{i} \quad \text{[Ref to table-5]}$$

Step-3. Complete fx', by multiplying x' with f (col-4)

Step-4. Compute fx'^2, by multiplying x' (col-5) with fx' (col-5)

Step-5. Find out $\Sigma fx'$ and $\Sigma fx'$ by adding the values in Col-4 & Col-5 respectively.

Table-6

1	2	3	4	5
C.I	f	x' (X – M)/i	fx'	fx'^2
0 – 2	1	–3	–3	9
3 – 5	3	–2	–6	12
6 – 8	5	–1	–5	5
9 – 11	7	0	0	0
12 – 14	3	1	3	3
15 – 17	5	2	10	20
18 – 20	1	3	3	9
	N = 25		2	58

Here, AM = 10

Note : Calcultion of (X – M) from table-5

Step-6. Put the values in formula, SD in short method is

$$\sigma = i\sqrt{\frac{\Sigma fx'^2}{N} - C^2}$$

If we substitute $\frac{\Sigma fx'}{N}$ in place of C

Where i = Size of the C.I

Σ = Sum total of

f = frequency

x' = deviation of the scores from their assumed mean.

$$C = \text{Correction} = \frac{\Sigma fx'}{N}$$

$$\sigma = i\sqrt{\frac{\Sigma x'^2}{N} - \left(\frac{\Sigma fx'}{N}\right)^2}$$

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$$= 3\times\sqrt{\frac{58}{25}-\left(\frac{2}{25}\right)^2}$$

$$= 3 \times \sqrt{2.32 - .0064}$$

$$= 3 \times \sqrt{2.31}$$

$$= 3 \times 1.5 = 4.5$$

❑ 4.6.4 Merits, limitations and uses :

(A) Merits of Range :

(i) Range is easily calculated & readily understood.
(ii) It is the simplest measure of variability.
(iii) It provides a quick estimate of the measure of variability.

★ Limitation of the Range :

(i) It helps us to make only a rough comparison of two or moe groups for variability.
(ii) It takes account of only the two extreme scores of a series and is unreliable when N is small or when there are large gaps (i.e. zero *f's*) in the frequency distribution.
(iii) It is affected very greatly by fluctuations in sampling. Its value is never stable.
(iv) The range does not take into account the composition of a series or the distribution of the items within the extremes.

★ Uses the Range :

(i) When the data are too scant or too scattered to justify the computation of a more precise measure of variability.
(ii) Range is used when the knowledge of extreme score and total spread are required.
(iii) When a quick estimate of variability is wanted range is used.

(B) Merits of Q

(i) It is simple to calculate and easy to understand.
(ii) It is more representative and trust worthy measure of variability than the overall range.
(iii) In case of open class intervals it is used in studying measures of dispersion.
(iv) It is good index of score density at the middle of the distribution.

(v) When we take Median as the measure of central tendency at that time Q is preferred as the measure of dispersion.
(vi) Quartiles are useful in indicating the skewness of a distribution;
$Q_3 - Mdn > Mdn - Q_1$ indicates + ve skewness
$Q_3 - Mdn < Mdn - Q_1$ indicates – ve skewness
$Q_3 - Mdn = Mdn - Q_1$ indicates zero skewness

★ Limitation of Q :

(i) It is not capable for further algebric treatment.
(ii) It is possible for two distributions to have equal Qs but quite dissimilar variabilty of the lower and upper 25% of scores.
(iii) It is affected to a considerable extent by fluctuations in sampling. A change in the value of a single item may, in certain cases affect its value considerably.

★ Use Quartile Deviation :

(i) When the median is a measure of central tendency.
(ii) When the distribution is incomplete at either end.
(iii) When extreme scores affect S.D or the scores are scattered at that time Q is used as measures of variability.
(iv) When the class intervals are open ended, Q is used as measure of dispersion.
(v) When the concentration around the median–the middle 50% of cases–is of primary interest.

(C) Merits of A.D.

(i) A.D is rigidly defined and its value is praise and definite.
(ii) It is easy to calctlate and easy to understand.
(iii) It is based on all the observations and unlike, Q or Range, it cannot be calculated in the absence of a single score;
(iv) It is less affected by the value of extreme scores.

★ Limitations of A.D.

(i) A.D ignores the algebraic signs of the deviations and as such it is not capable of further mathematical treatment.
(ii) It is very rarely used. Because of Standard deviation is generally used as a measure of dispersion.
(iii) When calculated from mode AD does not give accurate measure of dispersion.

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★ **Use of AD :**

(i) When it is desired to weigh all deviations from the mean according to their size.
(ii) When extreme deviations would influence SD unduly.
(iii) AD is used when we want to know the extent to which the measures are spread out either side of the mean.

(D) Merits of SD :

(i) SD is rigidly defined and its value is always definite.
(ii) It is based on all the observations of the data.
(iii) It is capable of further algebric treatment and possess many mathematical properties.
(iv) Unlike Q and AD it is less affected by fluctuations of scores.
(v) When the interpretations related to the normal probability curve are desired.

★ **Limitations of SD :**

(i) S.D is difficult to understand and not easy to calculate.
(ii) It gives more weight to extreme items and less to those which are near the mean, because the squares of the deviations, which are big in size, would be propartionately greater than the squares of those which are comparatively small.

★ **Uses the S.D :**

(i) SD is used when our thrust is to measure the varriability having greatest stability.
(ii) When extreme deviations might affect the variability at that time SD is used.
(iii) When a measure, having the greatest stability and reliability, is sought.
(iv) When the coefficient of correlation and other statistics are subsequently to be computed.
(v) When the interpretations related to the normal probablity curve are desired.

Short Questions & Answers

1. What is written test?

Ans : The test in which the students respond to the teacher in writing is called written test. In this type the pupils give their responses in writing. This is the most popular means of evaluation at all levels of education. It is based on rote memory and recall questions it will lead to cramming.

2. Mention the importance of written test.

Ans : (a) A written test can provide us a reliable, stable and valid type of evaluation.

(b) It can be planned carefully, keeping in view objectives, content and learning experiences.

(c) Answers can be assessed with perfect objectivity and more validly and reliably, with the help of a marking scheme and a scoring key.

(d) Essay to construct and use. Several students can be evaluated at a time and at various places.

3. What do you mean by essay type test?

Ans : The essay type test refers to any written test that requires an examinee to write a sentence, a paragraph or longer passages and that demands a subjective judgement about its quality and completeness when it is scored.

4. Write the advantages of essay type test?

Ans : Advantages :

(i) Essay type tests measure some complex learning outcomes that can not be measured by objective type test.
(ii) It is relatively easier to prepare and administer a six question entended-response essay test than to prepare and administer a comparabale 60 items multiple choice test item.
(iii) It is the only means that can assess an examinee's ability to organise and present his/her ideas in a logical and coherent fashion.

5. Write two disadvantages of essay type test.

Ans : Disadvantages :

(i) Poor (limited) content sempling, specially the extended-response

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type, is one of the most serious limitations of essay test.

(ii) The essay test possesses relatively low validity and reliability

6. Define objective type test.

Ans : Definition : It refers to any written test that requires the examinee to select the correct answer from among one or more of several alternatives or supply a word or two and that demands an objective judgement when it is scored.

7. What is frequency polygon.

Ans : A frequency polygon is essentially a line graph for the graphical represtation of the frequency distribution. We can get a frequency polygon from a histogram if the midpoints of the upper bases of the rectangles are connected by straight lines.

8. State uses of ogive.

Ans : Cumulative percentage frequency curve (ogive) helps in the following tasks :

(i) The statistics like median, quartiles, quartile deviations, deciles, percentiles and percentile ranks may be determined quickly and fairly.

(ii) Percentile norms (a type of norm representing the typical performance of some designated group or groups) may be easily and accurately determined.

(iii) We can have an overall comparison of two or more groups or frequency distributions by plotting the ogives concerning these distributions on the same coordinate axes.

9. What is meant by dispersion of score?

Ans : Dictionary of Education : C.V Good, The scatter or variability of the observations of a distribution about some measure of central tendency.''

Then the property which denotes **the extent to which the values are dispersed about the central values is called dispersion.**

10. Mention different mesures of variability.

Ans : There are four measures of variability.

- ✦ The Range
- ✦ The Quartile Deviation
- ✦ The Average Deviation
- ✦ The Standard Deviation.

Probable Questions

Short answer type questions : Marks : 2 or 3

1. (a) What is written test?
   (b) Mention the importance of written test.
   (c) How many types of written test?
   (d) What do you mean by essay type test?
   (e) Write the advantages of essay type test?
   (f) Write two disadvantages of essay type test.
   (g) Define objective type test.
   (h) Write two advantages & two disadvantages of objective type test.
   (i) Construct one completion type and one multiple choice type objective question from any topic in your subject.
   (j) Write two differences between essay type test and objective type test.
   (k) What is oral test?
   (l) Mention the importance of oral test.
   (m) What do you mean by NRT?
   (n) What is CRT?
   (o) Difference between NRT & CRT.
   (p) Difference between summative and formative test.
   (q) Write two advantages and two disadvantages of Oral test.
   (r) What is grading?
   (s) Mention the different measures of central tendency.
   (t) Which of the measures of central tendency is better and why?
   (u) Why is the mean the most preferred form of central tendency?
   (v) Mention any situation when mean is better measure than median.
   (w) Mention any situation when median will be better measure than mean.
   (x) What is raw score?
   (y) What is frequency distribution?
   (z) Write two differences between Mean & Median.

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2. (a) Mention two important uses of Median.
   (b) State uses of ogive.
   (c) Difference between cumulation frequency and cumulative percentage frequency.
   (d) What is ogive?
   (e) What is frequency polygon.
   (f) Difference between Histogram and Frequency polygon.
   (g) Write the properties of means.
   (h) Write the properties of median.
   (i) Write the properties of Mode.
   (j) What are the measures of variability?
   (k) When and how are these measures used in education?
   (l) What is meant by dispersion of score? Mention different mesures of variability.

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EXCERCISE
Statistics

1. Find the mean, median and mode of the following data.
   (a) 6, 11, 23, 10, 14, 26, 18, 12, 11, 12, 11
   (b) 60, 61, 62, 60, 62, 63, 63, 59, 64, 62, 63, 64, 63, 65, 63, 62, 62
   (c) 13, 16, 26, 20, 18, 15, 20, 20
2. Find the mean-median and mode of the following frequency distributions.
   (a)

x	3	6	10	12	7	15
f	3	4	2	8	13	10

   (b)

x	20	21	22	23	24	25
f	0	6	8	10	11	12

3. Calculate the mean, median of the following distributions

x	0 – 9	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69
f	2	5	7	8	11	12	9

4. Find the (i) lower quartile (ii) Median (iii) Upper quartile (iv) interquartile range for the following distribution with the help of an ogive.

Class Interval	5 – 10	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35
Frequency	9	15	18	24	18	6

5. Draw the histogram for the following frequency distribution. Estimate the mode from the graph.

Class interval	1 – 10	11 – 20	21 – 30	31 – 40	41 – 50	51 – 60	61 – 70
Frequency	1	2.5	3.5	6	4	3.5	2

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6. The marks of 200 students in a test were recorded as :

Marks %	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79	80 – 89
Number of students	7	11	20	46	57	37	15	7

(i) Draw the cumulative frequency table
(ii) Draw the ogive and use it to find :
(a) the median (b) the numbers of students who scored more than 35% marks.

7. Who scored more than 35% marks?

8. Marks scored by 400 students in an examination are as follows :

Marks	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90	90 – 100
Number of students	7	11	20	46	57	37	15	7	15	7

Draw the ogive and from it determine :
(i) the median mark.
(ii) the pass marks if so 1 of the students pass the examination.
(iii) the number of students who obtained more than 75% marks.

8. In a class of 60 boys, the marks obtained in a monthly test were as follows :

Marks	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Numbers of students	10	25	12	8	5

9. Draw a ogive for the following frequency distribution. Use the ogive to estimate
(i) Median
(ii) the no. of students who obtained more than 80% marks
(iii) the no. of students who obtained less than 40% marks.

Marks	0 – 9	10 – 19	20 – 29	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79	80 – 89	90 – 99
Number of students	5	9	10	22	26	18	11	6	4	3

MODEL QUESTIONS

1. What are different measures of variability state their uses.
2. What is Quartile deviation? Complete the quartile deviation for the following data :

Class interval	30 – 39	40 – 49	50 – 59	60 – 69	70 – 79	80 – 89	90 – 99
Frequency	7	15	9	7	6	12	4

3. What is AD? State its merits and limitations. Find out the A.D of the following scores
Scores : 42, 35, 37, 25, 27, 37
4. Complete the AD of the following scores.

Class interval	10 – 14	15 – 19	20 – 24	25 – 29	30 – 34	35 – 39	40 – 44	45 – 49
frequency	3	5	4	7	8	6	4	3

5. What is SD? State its uses. Find out the SD for the following scores.
Scores : 57, 52, 50, 54, 66, 63, 68
6. Compute the SD of the following scores.

Class Interval	50 – 54	45 – 49	40 – 44	35 – 39	30 – 34	25 – 29
Frequency	6	8	11	9	5	1

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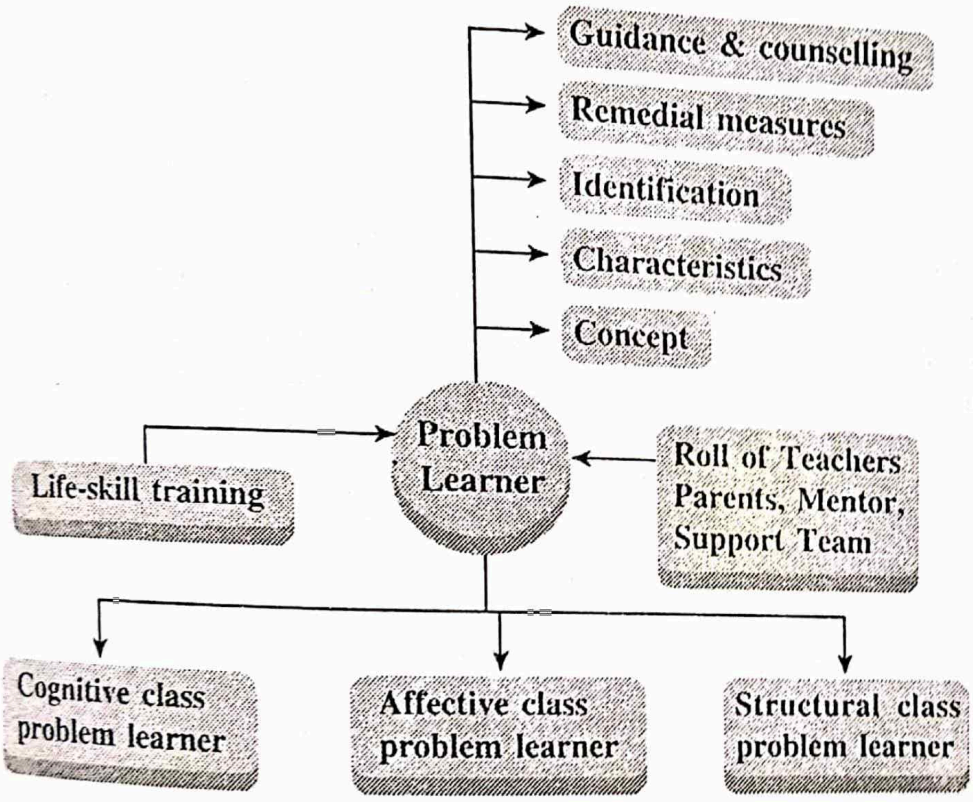
Unit 5

Problem-Learner

Structure/Content Outline



5.1 **Problem-Learner Concept and Types :**

- 5.1.1 Concept and Definition
- 5.1.2 Types
- 5.1.3 Characteristics

5.2 **Identification of porblem–learner; Observation, Case Study, Sociometric & Testing (Educational and Psychological) Techniques.**

- 5.2.1 Identification Techniques
  - 5.2.1.1 Testing Techniques
  - 5.2.1.2 Non-Testing Techniques

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5.2.2 Identification of Cognitive, Affective and Structural Class problem learner

5.3 Remidial Measures–Guidance & Counselling

5.3.1 Guidance of Cognitive class problem learner

5.3.2 Guidance of Affective class problem learner

5.3.3 Guidance of Structural class problem learner

5.4 Life skill Training

5.4.1 Definition of life skills

5.4.2 Core Life Skills

5.4.3 Need and Importance of Life skill education and Training

⚙ 5.1 Introduction :

Problem learners can be found in any teaching-learning setting (e.g. classrooms, beside teaching), and they may be particularly evident in specific situations (e.g. interesting patterns, formulating a differential diagnosis). The semanties used in the description of the problem learner are confusing. **Quirk** referred to *"Students with learning problem"*. Other faculty have informally used terms such as the *annoying student*, *difficult student*, or *stressed student*. Often, the student with a problem in a learning situation is referred to as a *student with a learning disability.*

❑ 5.1.1 Concept and Definition :

▲ Concept and Definition of Problem Learner :

Problem learners are *learners who perform significantly below their potential due to specific difficulties.* **(Vaugh et al)**, Acc to Vaugh et al, the term 'Problem Learner' has a negative connotation.

Quirk M.E (1994) defined problem learner as : "Learner with academic performance that is significantly bellow performance potential because of a specific affective, cognitive, structural or interpersonal difficulty."

❑ 5.1.2 Types of Problem Learners :

▲ Problem Learners : Possible Diagnoses for Difficult Learning situation. **Quirk** (1994) identified three classes problem learners : (1) Affective (2) Cognitive (3) Structural.

◆ Cognitive : ***Knowledge base or skills bellow expected :***

- One major reason for learning difficulties might be the cognitive area. Does the learner's knowledge base or skill base seem less than we expect for a learner at this level?
- Another explanation is that the learner may have a learning disability, i.e.'Dyslexia', 'Spatial perception problems', 'Communication,' 'skill deficits' and 'attention deficit disorder'
- Another possible cause may be the lack of interest or motivation at home or in institution. Lack of motivation may not be a diagnosis in itself but could be a symptom of an underlying process.

Therefore, five potential cognitive problems are :

- ➡ **knowledge base/skills less than expected**
- ➡ **Dyslexia**
- ➡ **Spatial perception difficulties**
- ➡ **Communication difficulties**
- ➡ **Lack of effort / interest.**

◆ Affective : Emotion related Concerns

A second category of possible "diagnoses" is affective or emotion related concerns. New learning situations frequently result in significant initial **nervousness** and **anxiety.** Severe anxiety can be a crippling emotion and extreme nervousness can markedly affect performance. Normal anxiety should manifest itself only in specific situations and improve quickly, as the learner becomes familiar with the setting. Persistent or severe anxiety can have negative effect on the learner's performance and should not be ignored.

Depression can also severely affect performance. The depression may by a normal response to a recent life situation resulting in difficulty with concentration and performance. Signs or symptoms of depression could also be the result of a major depressive illness.

Anger is an emotion that comprises relationships. Recognizing anger and assess underlying causes early is important to avoid a significant influence on the experience.

Fear is a specific form of anxiety. Prior negative learning experiences may severely impair the ability or willingness of the learner to communicate openly with you.

Therefore several affective diagnoses are

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- Anxiety,
- Depression,
- Anger,
- Fear

◆ **Structural : Structuring difficulty of the experiences in environment.**

- Any marked change in the learning environment can affect the learner's performance.
- Poor time management and disorganized are the factors of it.

❑ 5.1.3 Characteristics of Problem Learners :

> A problem learner is a learner whose academic performance is significantly below performance potential because of a specific affective, cognitive, structural or interpersonal difficulty. [Quirk, 1994]

Summarizing the characteristics :

1. **Learners with cognitive disorders** usually have difficulty in written or oral communication, spatial perception ability, or integration of material.
   They may fall behind in workload, demonstrate a poor fund of knowledge, or perform poorly in discussions or an examinations. Learners with continued cognitive difficulties may have an underlying learning disability.
2. **Learners with affective disorders** have problem handling important events, such as new phases of their education, illness or deaths in the family, and difficulties in the other relationships.
   The difficultly in adjusting may lead to affective reactions that estimately manifest as difficulties with memory or motivation.
3. **Learners with structural disorders** have difficulty structuring their experiences in the environment. They may demonstrate poor time management and disorganization by arriving late at the school or college.

1. The Cognitive Class Problem Learner :

The cognitive class problem learners typically has problems in one or more of five area as :

(a) **Written Communication :** These problems involve slow reading, poor reading ability, inability to complete assignments and simply falling behind with assignments.

(b) **Spatial Perceptual Problems :** These learners usually have difficulty seeing in three dimensions and will often have problems in anatomy or surgery.

(c) **Oral Communication Problems :** These problems control arround how to ask questions and often occur in learners with English as a second language. The learner with oral communication problems may have particular difficulty interviewing students.

(d) **Poor Integration of Material :** Learners with this problem have difficulty with conceptual or abstract thinking.

(e) **Poor Fund of Knowledge :** Learners with a poor fund of knowledge typically have gaps in ther knowledge base. Some of the gaps may be very basic material that the learner has forgotten or did not learn.

If cognitive problems are recurred persistent, and/or chronic they may reflect the adult learning dissabilities that warrant special attention and evaluation by specialists in the field of learning disabilities and special education.

2. The Affective Class Problem Learner :

The affective class of problem learners are those who are dealing with personal adjustment events such as transition into clinical rotations, marital or relational difficulties, illness, death in the family, or poor grades. The difficulty in handling such pivotal events often triggers affective reactions resulting in learning problems related to motivation and memory. Psychologically, the affective state typically involves low self-esteem, feelings of being overwhelmed, fear of failure, depression, anxiety, guilt, and feelings of inadequacy. These psychological states affect the learning process, causing avoidance of learning, failure to perform, memory loss, withdrawal and lower aspiration. If a learner feels anxious or incompetent, active learning may be blocked. The psychological states and learning problems all move in a vicious cycle of feeling bad, poor performance, and so on.

3. The Structural Class Problem Learner :

The structural class of problem learners refers to learners who are unable to structure their experiences in the environment. These individuals typically have poor time management, lack of organizational skills and poor study habits. These learners are generally disorganized and have difficulty keeping 'on top' of things.

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✪ 5.2 Identification of Porblem–Learner; Observation, Case Study, Sociometric & Testing (Educational and Psychological) Techniques :

Problem learners are those who standout as a distinct set from other student in a class and therefore require special attention. Educationally they deviate from the average students in their academic achievement. These learners require special attention by teachers.

In order to provide guidance to the above category of learners, it is important to identify them. For these learners, individual guidance will have to be arranged.

Identification of the problem learners will have to be carried out systematically. It may be based on **teacher observation, academic records** and **performance in mental ability traits.**

Learning problems exist whenever performance does not neet expectations. They can take a variety of forms and may be brought to your attention by a specific incident, a series of incidents or sometimes just a feeling that something is not quite right.

A simple and practical approach to learring problems can help to diagnose their cause and suggest some possible solutions.

➢ Even if a teacher is only seeing the learner with a problem on a particular occasion, you may still make important **observations.** Your observation could be part of a pattern of behaviour.

➢ **Put the problem in context :**

Is it real? Is it important?

Perhaps this was just a misunderstanding, a rumour. Nevertheless, some behaviours are potentially serious, such as learners who assume too much responsibility or fail to recognize their limitations. While you may wish to overlook smaller problems, remembar that what a teacher see could be part of a pattern and could indicate a significant problem.

If the problem is both real and important then teacher need to pursue the issue further.

- Is it a problem of knowledge or skill? Learners may not have the requisite knowledge or skills for a particular situation. The situation may be new or the knowledge or skills may have been together. These problems are the easiest to address– the answer is educational. Ultimately the student

are responsible for engaging in self-directed learning activities (textbook, reference book, journal readings) that will improve their knowledge base but teacher may be able to provide some suggestions.

If a learner has the knowledge and skills to perform, but still fails to meet expectations, the teacher should consider other reasons for the problems.

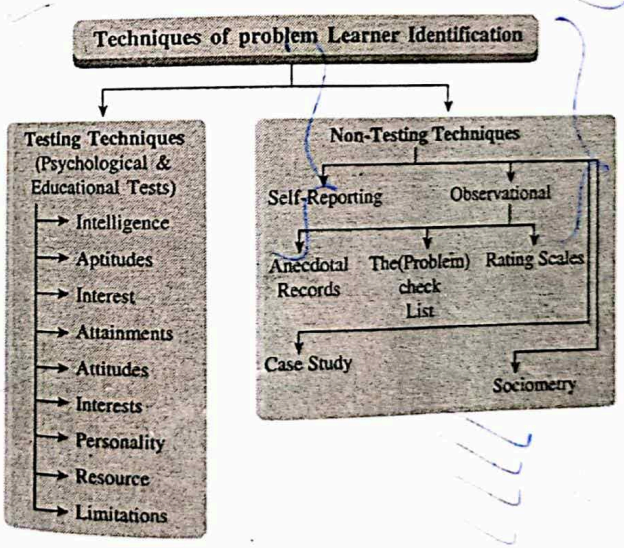
- Is there something that is influencing their behaviour?

Learners can perform poorly due to illness, stress or misunderstanding what was expected of them. Teacher should review the expectations with the learner and clarify any difference.

- Is the problem primarily one of attitude? Does this learner exhibit behaviour that is interfering with his/her education?

❑ 5.2.1 Identification Techniques :

To specify the problem the teacher should try to identify if the problem learner has an affective, cognitive or structural difficulty, using the following techniques.



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❖ 5.2.1.1 Testing Techniques :

Educational & Psychological Tests :

Educational & Psychological tests are instruments in the hands of the teacher & counsellor that are helpful in the assessment of an individual's skills, abilities, aptitudes, personality traits, attitudes, interests and achievements. These tests make possible to arrive at quantitative indicators of problem learner's strengths, weakness, behaviour patterns etc. Moreover, the result of these tests enable comparisons between a problem learner and other learners. The objectives of using educational and psychological tests as tools for guidance are :

- to get factual data about the problem learner to understand them better.
- to find out the tentative reaction of the problem learner in a given situation.
- to identify personality characteristics and difficulties of a problem learner.
- to use the tests results as a tool to provide educational, vocational and personal guidance.
- to use them as a tool for improving educational performance.

Educational and Psychological tests may be of the following type :

Educational Test	Psycholigical Test
● Achievement Test	● Intelligence Test
● Diagnostic Test	● Attitude Test
● Prognostic Test	● Interest Test
	● Projective Test
	● Personality Test
	● Aptitude Test

❖ 5.2.1.2 Non-Testing Techniques :

The teacher as a guidance workers have to adopt a no. of other techniques as well to gather information about the problem learner. Such non-testing techniques are of qualitative nature. Non-Testing techniques may be of the following types :

(a) Self-reporting
(b) Observational
(c) Case study
(d) Sociometric

★ (a) **Self-reporting Methods :** Discussed in Unit II
(i) Autobiography
(ii) Self-Assessment
(iii) Essays.

★ (b) **Observation Method :**

Assessmet of people through observing their behaviours comes very naturals to all. All of us observe others and draw conclusions about them. This is a popular technique in guidance also. Teachers and the counsellor observe behaviour of students in natural atmosphere and reach certain conclusions. These observations may be structured, where the students may be asked to do certain activity, or unstructured where observations are made about the students in their normal daily routines.

It is important to note that drawing conclusion through observing a person during one incident is not appropriate. It is necessary to make observations over a long time in varying situations and circumstances with varying groups. Observations thus made should be verified with information from other sources. The totality of the situation should also be kept in mind. **For example**, if a learner is showing aggressive behaviour, the situations where he is aggressive should be analysed properly before aiming at any definite conclusion. To reach any conclusion his behaviour should be observed in more than one situation. For structured observations, a number of techniques have been developed.

(i) **Ancedotal Record :** **Anecdotal record** is a useful instrument where the behaviour of a student is observed during some specific incident in which the student was present. It is also called a **word picture** because the teacher or counsellor who observes the behaviour of the student describes the incident to show the real picture of his behaviour. The teacher may provide such records to the counsellor to understand the student better.

The **purpose of anecdotal record** is to narrate the behaviour of the student during the incident.

Anecdotal records may be prepared in a given format.

A sample format of Anecdotal Record :

1. Name of the student
2. Class
3. Observation made with date
4. Place where observation was made
5. Narration of the incident

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6. Situational details and setting
7. Any triggers identified
8. Observations of the observer
9. comments from the observer
10. Recommendations

Such records about the individual should be maintained and collected for integration and guidance. This kind of behaviour observation may provide clues about the individuals relationship with peer group, with teachers, his aspirations and motivations, aggression, fears etc.

(ii) The (problem) Checklist

Checklist method in observation is used when the purpose of the teacher or counsellor is to identity certain specific personality characteristics in a student. The list of traits is provided to the observer and he has to tick the trait, which he observes the individuals to have. **For example,** the traits may be hardworking, calm, decision maker, irritable, etc.

Example :

Problems : A girl studying in Class VIII standard. Her academic achievement is not upto the mark.

Checklist :

- Attentive to the lectures
- Takes notes
- She is hard working
- Takes interest in the subjects.
- Talks with classmets during the class
- Aggressive
- Avoiding in answering

The above checklist would provide information about the listening, learning and answering methods of the girl in the class, her characteristics whether she is hardworking and laborious.

(iii) Rating Scales [Referred in unit-2, 2.2.1.2]

Rating scales may also be used as instruments for observation. Rating scales provide comparability of observations.

While Anecdotal records are **'observer descriptions,'** 'the rating scales are **'observer evaluations.'** The Rating scales also provide information about the degree of the characteristics.

Preparing a Rating scale, teacher can list out the characteristics that are to be rated. These could be *self-confidence* in the student, *self-dependence*, *industriousness*, *cheerfulness*, *helping attitude*.

(iv) Case Study

Case study is characterised as the detailed, realistic and concrete description and explanation of a case. Case study can be defined as an in-depth study which is concerned with pertinent aspects of a particular case, unit, situation or behaviour. The case under study may be an individual, some phase of life history of the individual or it may represent the total life history or total functioning of the individual.

Case studies being conducted on the individuals may be linked with the biography of child development, mentally retarded child, psycho-analysis of a particular individual, growth and development pattern of a gifted child, problem learner etc.

The main purpose behind case studies is to discover all the variables which are important in the history development and functioning of the individual unit. The enquiring terms like 'why' 'what', and 'how' come in the process of the study.

The characteristics of well organized case study can be mentioned as follows :

- **Continuity :** Like other methods of scientific enquiry, case study requires a continuous and systematic procedure of data collection.
- **Completeness :** In case study several data gathering devices– observation, interview, tests etc. are needed to be used in such a way that the investigator can easily gather data regarding the complete picture of the case.
- **Authenticity of Data :** Case-study method lays more emphasis on accuracy and adequacy of data collected through various sources.
- **Confidential Recording :** Data in connection with personal nature, difficulties of pupils in relation to discipline, achievement, mentality, etc are required to be recorded and kept under secrecy.
- **Scientific Synthesis :** Along with the above mentioned characteristics, case study depends upon scientific synthesis of diagnosis of identification of causal factors, with a prognosis that shows the means of remedial procedures.

Under this method, the major activity is to **collect all the information** from various sources and techniques. This can be the information from the *school record*, from *achievement record* of the students, the

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psychological tests, or *information collected by teachers*. All these collected bits of information may be **systematically reviewed** and **analysed** and **prepared** in the form of the case study.

For preparing the case study, some order of reporting may be prescribed, say, introduction, scores on achievement test, school progress, teacher's observations, learning defects, family history, social background, health background, scores on psychological tests, personal problems.

Case studies are important records for problem learners where individual counseling is required. They can serve as successful cases to be referred by other students.

★ **(d) Sociometry :**

The sociometric technique is used when information is required on how a learner perceives himself and other in the group in which members in the group are near to him and who are at a distance. This tells about the relationship of the learner among peers; the leader in the group. Whether the learner is a rejected lot or is accepted in the group.

In this technique, children are asked to name two or three of their peers, with whom they would like to work. Sometimes they are also asked to name those with whom they may not like to sit or work. Information, thus, collected provides clues on the patterns of interactions among individuals.

The teacher can identify the **isolates** and the **stars** with the help of sociometric analysis of class structure. Usually there are limited number of isolates in the class, they need special guidance of the teacher of their adjustment in their class as the whole. The teacher try to identify the problem learners and their problem by discussing with them. Teacher can use physical, psychological and educational test for the diagnosis purpose of the problem learners.

❑ 5.2.2 Identification of Cognitive class, Affective class, and Structural class problem learner :

(A) Cognitive Class :

Cognitive class problem learners can be identified by following techniques

1. Testing Techniques :

(a) Educational & Psychological Test :

(i) Discovering the child's A-Q. Tests in Arithemitic, language and general knowledge can be used for discovering the Learner's A.Q.

(ii) **Discovering I-Q :** Feeble minded and slow learners can be identified calculating their exact I-Q

(iii) Standardized diagnostic test.
(iv) Ability test
(v) Achievement test
(vi) Daily assessment test

2. Non-Testing Techniques :

(a) Observation Method :

(i) Rating Scale : Following the above, rating by teachers should be sought concerning children who appear to be problem learner in respect of cognitive class difficulty so that the results of tests are confirmed by educated insight

(ii) Check list
(iii) Anecdotal record

(b) The problem) case study : After all the above tests have been completed, the child's detailed life history should be prepared.

(c) Sociometry

(B) Affective Class :

Affective class problem learner can be identified by the following :

(i) Testing Techniques
(ii) Non-testing Techniques

- Psychological Tests
- Observation
- Rating Scale
- Check List
- Ancedotal Record
- Sociometry

(C) Structural Class :

Structural Class Problem Learner can be identified by the following techniques.

(1) Testing techniques : Educational tests & Psychological tests :

(i) Diagnostic test (ii) Prognostic test (iii) Attitude test (iv) Interest test (v) Projective test (vi) Aptitude test (vii) Daily assessment test

1. Non-Testing Technique :

(a) Observation : Observation by the parents & teacher.

(b) Check list for problem learners with structural disorder.

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- Identification
- Behaviour
- Appearence
- Complaints

(c) Rating scale

(d) Anecdotal record

(e) Case study

5.3 Remidial Measures – Guidance & Counselling :

Guidance of Problem Learners with Learning Difficulties :

The following strategy is suggested for providing guidance to the students who have learning difficulties.

(1) Observe the interaction style of the student in the class, their assignment and other records.

(2) Administer specially designed diagnostic test

(3) Identify the students for guidance purposes.

(4) Analyse the causes for learning difficulties

(5) Plan alternate approaches for overcoming the difficulties.

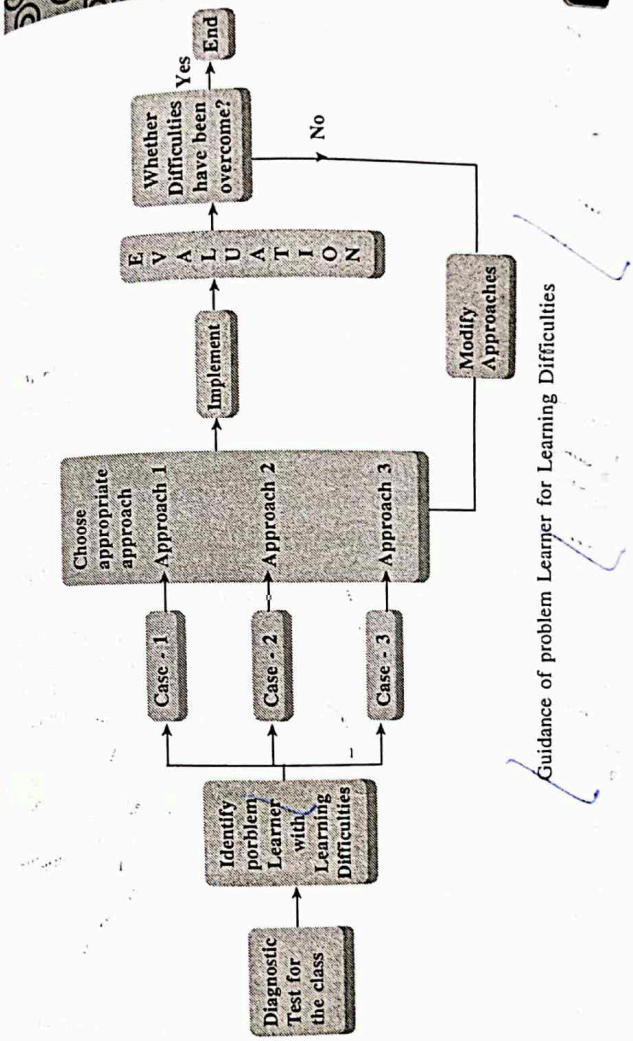
(6) Implement the approaches

(7) Evaluate the approaches.

S–T–P Model :

The S–T–P Model is an excellent approach for identifying and categorizing **Problem Learners** and also provides some suggestions on how to help them.

As problem learners can be difficult to manage and there are differing perceptions of the problem learner (types, frequency and difficulty of management), there is a need to follow guidelines when developing strategies to manage these students. Therefore, this model follow **Problem Solving Process** through which unique solutions for different problem learners can be developed. This process incorporates two principles.



Guidance of problem Learner for Learning Difficulties

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1. **Feed back** and 2. **Problem solving**

The S– T-P model consists of the following steps—

Step – 1 Specify the problem (S)

Step – 2 Desired Target State (T)

Step – 3 Procedure, plan, or path to get from S to T (P)

Step-1 : Once the teacher recognize that a learner's academic performance is below potential, the teacher should start asking why academic performance is below potential, what is the existing situation, and what is wrong with the way things are now.

When specifying the problem, the teacher should try to identify if the problem learner has an affective, cognitive, structural difficulty or some combination thereof.

When attempting to specify the problem, the teacher may engage in a mutual feedback session that encourages the learner to do a self-assessmet in an attempt to identify the problem.

Step-2 : During this stage, the goal is for the preceptor and the learner to envision an ideal state with regard to the **problem identified in step-1.** This stage should be marked by collaboration and generation of ideas.

Step-3 : This is the active planning phase of the S–T–P model designed to move the problem learner from **step-1 (the problem) to step-2 (the target state).** There should be mutual collaboration among the teacher and the learner and perhaps the Head of the Institution to address & work through the problem.

Learner	S–T–P Model	
Diagnosis using tests & techniques	S ↓	Specify the Problem
Desired outcome of Treatment	T ↓	Target state
Treatment Plan	P ↓	Procedure Plan

Fig.– 1 : S–T–P model parallels with Teacher-Learner relationship

❑ 5.3.1 Guidance of Cognitive class Problem Learner :

Learners with cognitive disorder should undergo evaluation for a learning disability. They often benefit from test taking and reading skill improvement courses.

Cognitive class problem learner should be guided in the following ways.

(a) Data collection – Maximum information about such learner should be secured. and their interests should be discovered.

(b) Special method of teaching with the following characteristics.
- Pace of teaching should be slow
- lesson should be repeated more than once.

(c) Individualized instruction

(d) Special classes

(e) Partial segregation – It has been stated "The children should be included in the 'total school-set up', regularly participating in assembly programmes, organized play, and other activities enjoyed by all children." The problems should be clearly explained.

(f) Short assignments – Assignments given to the students should be broken up into short and simple units.

(g) Drill work – Sufficient drill work should be done.

(h) Summaries – Frequent summaries of the important points of discussion should be used.

(i) Praise – Learners should be praised occasionally when they have done their assignments well.

(j) Proper Evaluation – Good set of tools should be provided for proper evaluation.

(k) Close supervision

(l) Audio-Visual Aids – Auditory and visual aids facilitate learning among slow learners.

(m) Opportunities for Creative Expression.

(n) Diagnostic Test – Diagnostic Tests should be used in working with slow learning children.

(o) Curricula According to Interests – Courses and curricula should be selected by the students on the basis of aptitude, interest and need with the help of their counsellors.

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(p) Vocational programmes – Vocational programmes should not be forced upon slow-learners as such children do not always have the necessary aptitude to acquire vocational skill.

(q) Equality of opportunity in Recreational Programme – Recreational programme, athletics, music, art, dramatics etc should be opened to all on an equal basis.

(r) Remedial Teaching : Remedial teachers may be appointed who meet such students twice a week.

(B) Some learners might be facing problems in reading or understanding, others in writing. Some children may have problem with solving mathematical problems.

- Severely learning disabled children require intensive intervention may need special schools or constant supervision or continuous tutorials.
- **Special Tutorials :** In the regular classroom, special tutorials with direct instructions would be helpful.
- **Social Skill Training :** Social Skill training, use of equipment to overcome learning problems, practice in speaking and writing, adapted curriculum should be provided.
- **Simple Assignment :** Simple assignments should be given and those students should not be punished because of their slow pace of learing.

➡ Various approaches for the education and training can be implemented like.

- Process training
- Multi sensory approach
- Environmental approach
- Cognitive training

➡ **Other special approaches and activities.**

- Listening Exercises
- Discrimination Learning
- Visual reception training
- Visual memory training
- Spatial training
- Auditory Awarness training
- Auditory Discrimination Exercise
- Auditory memory and Sequencing training

➡ **Remedial Instruction :**

(i) Eliminating in effective habits and re-teaching skills which have been incorrectly learned

(ii) Teaching for the first time those habits, skills and behaviours which have never been learned but should have been learned by the child to acquire academic skills.

➡ **Special Teching strategies**

(i) The regular teacher should provide support for risk taking and call attention to the sucessful work of a problem learner.

(ii) Making use of technology

(iii) Using television & video.

(iv) Music sounds and graphic

❑ 5.3.2 Guidance of Affective Class Problem Learner :

Learners with affective disorders usually require psychological assessment and may benefit form counselling

- First step is to identify children with affective disorder and to identify their specific problem.
- Co-operative attitude of teachers & learners
- Actvity centred instruction
- Group learning
- Participation in co-curricular activities.
- Organising Discussion, Debate, Speech etc & motivate the learner to participate
- Psychological treatment
- Rationale attitude towards the child's imagination
- Positive instruction.

❑ 5.3.3 Guidance of Structural Class Problem Learner :

Learners with structural disorder may benefit from organization & time management training.

(A) Some modification in the teaching methodology may be needed for visual impairment learner.

- Use of remaining sight – partially sighted children are to be encouraged to use their remaining sight or residual vision as much as possible.

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- Closed Circuit Television : A camera with a zoom lens photographs, parts of a page of print and projects a magnified image on the television screen. The student moves the book while reading so that the appropriate portion of the page is magnified.
- Magnifying glasses and Hand magnifiers : The partially sighted and low vision learner should be encouraged to read the print through magnifying glasses or hand magnifiers.
- Providing large print materials
- Training to use Braille
- Using talking calculator.
- Use of **tape recordings** as a method of teaching language, history, geography, science etc.
- General Curriculum with modified experience
- Recommending the plus curriculum : The special areas are—
  - Braille
  - Orientation and mobility
  - Daily lining skills
  - sensory training
  - Social skills
  - Use of equipment like brailles and abacus.
- Opportunity for participation in co-curricular activities like Singing, playing instrument, debating, composing poems, games and sports with provision of auditory cues.

(B) The following preventive measure are useful to prevent hearing problems among problem learner in teaching learning situation.

- To use hearing aid regularly
- To see working condition of battery & appropriate amplification used.
- Teachers should not give a blow to the tender ears or give a strong cap to the ears of problem learner
- To use sign language.
- Finger spelling as a mannual representation of written language.
- Speech reading (Lip reading)
- Auditory Training
- The total Communication Method
- Curriculum Adaptation and Teaching Strategies

- Managing hearing-impaired learner, teacher should develop a positive attitude, show love affection, encourage and follow the teaching strategies to the needs of the problem learner.

(C) The learner with speech disorder, should be given—

- **Speech Training and Auditory Training**
- **Language Training**
  - Listeners with attention
  - Provide ample opportunity for the learner to speak and to express.
  - Care in correcting mistakes in learner's utterances
  - Talk to the children in Pree-schools.
  - Provide language experience through stories & songs.
- **Success Experience :** Should be given the opportunity of participating in art, dance, other co-curricular activites and experiencing success.

(D) Some educational programmes to be implemented for the learner with physical and neurological disorder.

- Removal of architectural barriers in the schools.
- Arranging aids and equipments for the learner like wheel-chair, crutches etc.
- Participation in co-curricular activies
- Teacher's acceptance and attitude towards the learner with the disorder.
- Valueing the individuality and diversity of such problem learner.

5.4 Life Skill Training :

Adolescence, a vital stage of growth and development, marks the period of transition from childhood to adulthood. It is characterized by rapid physiological changes and psychosocial maturation. Adolescence is also the stage when young people extend their relationships beyond parents and family and are intensely influenced by their peers and the outside world in general. As adolescents mature cognitively, their mental process becomes more analytical. They are now capable of abstract thinking, better articulation and of developing an independent ideology. These are truly the years of creativity, idealism, buoyancy and a spirit of adventure. But these are also the years of experimentation and risk-taking, of giving in to negative peer pressure, of taking uninformed decisions on crucial

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issues. Adolescence is thus a turning point in one's life, a period of increased potential but also one of greater vulnerability.

Key issues & concerns of adolesent students :

- **Developing an Identity :**
  - Self - awareness helps adolescents understand themselves and establish their personal identity.
  - Lack of information and skills prevent them from effectively exploring their potential and establishing a positive image and sound career perspective.
- **Managing Emotions :**
  - Adolescents frequent mood changes reflecting feelings of anger, sadness, happiness, fear, shame, guilt, and love. Very often, they are unable to understand have the emotional turmoil.
  - They do not have a supportive environment in order to share their concerns with others. Counseling facilities are not available.
- **Building Relationships :**
  - As a part of growing up, adolescents re-define their relationships with parents, peers and members of the opposite sex. Adults have high expectations from them and do not understand their feelings.
  - Adolescents need social skills for building positive and healthy relationships with others including peer of opposite sex. They need to understand the importance of mutual respect and socially defined boundaries of every relationship.
- **Resisting Peer Pressure :**
  - Adolescents find it difficult to resist peer pressure. Some of them may yield to these pressures and engage in experimentation.
  - Aggressive self conduct; irresponsible behaviour and substance abuse involve greater risks with regard to physical and mental health.
  - The experiment with smoking and milder drugs can lead to switching over to hard drugs and addiction at a later stage.
- **Acquiring Information, Education and Services on issues of Adolescence :**
  - Exposure to media and mixed messages from the fast changing world have left adolescents with many unanswered questions.

  - The widening gap in communication between adolescents and parents is a matter of great concern.
  - Teachers still feel inhibited to discuss issues frankly and sensitively.
  - Adolescents seek information from their peer group who are also ill informed.
- **Communicating and Negotiating safer life situations :**
  - Sexually active adolescents face greater health risks.
  - Girls may also face mental and emotional problems related to early sexual initiation.
  - Resisting the vulnerability to drug abuse, violence and conflict with law or society.

❑ 5.4.1 Definition of life skills :

There are many different understandings of life skills but no definition is universally accepted. Different organisations attach and defines life skills as personal different meanings to the term. **The International Bureau of Education (IBE)** derives its understanding **from the Delors four pillars of learning - learning to know, learning to do, learning to be and learning to live together - management and social skills** which are necessary for adequate functioning on an independent basis.

UNICEF has defined *life skills as psychosocial and interpersonal skills* that are generally considered important. According to UNICEF it is ultimately the interrelations between the skills that produces powerful behavioural outcomes, especially where this approach is supported by other strategies such as media, policies and health services

The Mental Health Promotion and Policy (MHP) team in **World Health Organistion's (WHO) :** Department of Mental Health has produced this definition of life skills: **"Life skills education** is *designed to facilitate the practice and reinforcement of psychosocial skills in a culturally and developmentally appropriate way;* it *contributes to the promotion of personal and social development, the prevention of health and social problems, and the protection of human rights". (WHO 1999)*

It is evident that in addition to practical and vocational skills, other types of skills such as *social, individual* and *reflective skills* are also needed. Life skills programmes emphasise abilities that help *to facilitate communication, negotiation, to think critically and solve problems and*

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make independent decisions. These developments in the field have in fact resulted in important breakthroughs in policy and planning, especially in non-formal education programmes for marginalised and disadvantaged youth and adults (UNESCO, New Delhi 2001). In many parts of the world, life skills form a significant and regular part of the school and adult curriculum.

Life skills have been defined by the **World Health Organization** (WHO) as *"abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life"*.

'**Adaptive**' means that a person is flexible in approach and is able to adjust in different circumstances.

'**Positive behaviour**' implies that a person is forward looking and even in difficult situations, can find a ray of hope and opportunities to find solutions.

They represent the **psycho-social** skills that *determine valued behaviour* and include *reflective skills* such as ***problem-solving and critical thinking***, **personal skills** such as *self-awareness*, and **interpersonal skills.**

Practicing life skills leads to qualities such as self-esteem, sociability and tolerance, action competencies, take action and generate change, have the freedom to decide what to do and what to be.

Life skills are thus distinctly different from physical or perceptual motor skills, such as practical or health skills, as well as from livelihood skills, such as crafts, money management and entrepreneurial skills. Health and livelihood education however, can be designed to be complementary to life skills education, and vice versa.

Life skills"

"Life skills" are defined as psychosocial abilities for adaptive and positive behaviour that enable individuals to deal effectively with the demands and challenges of everyday life. They are loosely grouped into three broad categories of skills: cognitive skills for analyzing and using information, personal skills for developing personal agency and managing oneself and inter-personal skills for communicating and interacting effectively with others.

"Life skills education"

Life skills education is a structured programme of needs- and outcomes-based participatory learning that aims to increase positive and adaptive behaviour by assisting individuals to develop and practise psychosocial skills that minimize risk factors and maximize protective factors. Life skills education programmes are theory- and evidenced-based, learner-focused, delivered by competent facilitators, and appropriately evaluated to ensure continuous improvement of documented results.

What are the **Core Life Skill Strategies and Techniques?**

Life skills include psychosocial competencies and interpersonal skills that help people make informed decisions, solve problems, think critically and creatively, communicate effectively, build healthy relationships, empathize with others, and cope with managing their lives in a healthy and productive manner. Essentially, there are **two kinds of skills** - those related to thinking termed as **"thinking skills"** ; and skills related to dealing with others termed as **"social skills"**. While thinking skills relate to reflection at a personal level, social skills include interpersonal skills and do not necessarily depend on logical thinking. It is the combination of these two types of skills that are needed for achieving assertive behaviour and negotiating effectively.

"Emotional" can be perceived as a skill not only in making rational decisions but also in being able to make others agree to one's point of view. To do that, coming to terms first with oneself is important. Thus, self-management is an important skill including managing/coping with feelings, emotions, stress and resisting peer and family pressure. Young people as advocates need both thinking and social skills for consensus building and advocacy on issues of concern.

NICEF, UNESCO and WHO list the ten core life skill strategies and techniques as:

❑ 5.4.2 Core Life Skills :

1. Social Skills

- Self Awareness
- Effective Communication

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- Interpersonal Relationship
- Empathy

2. Thinking Skills

- Creative Thinking
- Critical Thinking
- Decision Making
- Problem Solving

3. Emotional Skills

- Coping with Stress
- Coping with Emotions

These are essential tools for understanding one's strengths and weaknesses. This leads to the development of a social awareness of the concerns of one's family and society. With life skills, one is able to explore alternatives, weigh pros and cons and make rational decisions in solving each problem or issue as it arises. It also entails being able to establish productive interpersonal relationships with others.

1. Social Skills :

- **Self-awareness :** It includes recognition of **'self, our character, our strengths and weaknesses, desires and dislikes.** Developing self-awareness can help us to recognize when we are stressed or feel under pressure. It is often a prerequisite to effective communication and interpersonal relations, as well as for developing empathy with others.
- **Effective communication :** It means that we are **able to express ourselves, both verbally** and non-verbally, in ways that are appropriate to our cultures and situations. This means being able to express opinions and desires, and also needs and fears. And it may mean being able to ask for advice and help in a time of need.
- **Interpersonal relationship :** This skills help us to relate in positive ways with the people we interact with. This may mean being able to make and keep friendly relationships, which can be of great importance to our mental and social well-being. It may mean keeping good relations with family members, which are an important source of social support. It may also mean being able to end relationships constructively.

- **Empathy :** To have a successful relationship with our loved one's and society at large, we need to understand and care about other peoples' needs, desires and feelings. Empathy is the ability to imagine what life is like for another person. Without empathy, our communication with others will amount to one-way traffic. We will be acting and behaving according to our self-interest and are bound to run into problems. We grow up in relationships with many people - parents, brothers and sisters, cousins, uncles and aunts, classmates, friends and neighbours. When we understand ourselves as well as others, we are better prepared to communicate our needs and desires. We will be more equipped to say what we want people to know, present our thoughts and ideas and tackle delicate issues without offending other people. At the same time, we will be able to elicit support from others, and win their understanding.

Empathy can help us to accept others, *who may be very different from ourselves*. This can improve social interactions , especially, in situations of ethnic or cultural diversity. **Empathy can also help to encourage *nurturing behaviour towards people* in need of care and assistance**, or tolerance, as is the case with AIDS sufferers, or people with mental disorders.

2. Thinking Skills :

- **Creative thinking :** It is a novel way of seeing or doing things that is characteristic of four components - **fluency (generating new ideas), flexibility (shifting perspective easily), originality (conceiving of something new), and elaboration (building on other ideas).**
- **Critical thinking :** It is an ability to analyze information and experiences in an objective manner. Critical thinking can contribute to health by helping us to recognize and assess the factors that influence attitudes and behaviour, such as values, peer pressure and the media.
- **Decision Making :** It helps us to deal constructively with decisions about our lives. This can have consequences for health. It can teach people how to actively make decisions about their actions in relation to healthy assessment of different options and, what effects these different decisions are likely to have.

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● **Problem solving :** It helps us to deal constructively with problems in our lives. Significant problems that are left unresolved can cause mental stress and give rise to accompanying physical strain.

3. Emotional Skills :

● **Coping with stress :** It means recognizing the sources of stress in our lives, recognizing how this affects us, and acting in ways that help us control our levels of stress, by changing our environment or lifestyle and learning how to relax.

● **Coping with emotions :** It means involving recognizing emotions within us and others, being aware of how emotions influence behaviour and being able to respond to emotions appropriately. Intense emotions like anger or sadness can have negative effects on our health if we do not respond appropriately.

❑ 5.4.3 Need and Importance of Life skill education and Training :

◗ Why is there a need for Life Skills Education and training?

The Life Skills programme is a school based programme where Life Skills are imparted in a supportive learning environment. They are applicable for all ages of children and adolescents in school. However, the age group targeted is mainly 10-18, adolescent years, since young people of this age group seem to be most vulnerable to behaviour related health problems. The programme is for the promotion of health and well being and targeted group is all children.

The host of factors that promote high risk behaviour such as alcoholism, drug abuse and casual relationships are boredom, rebellion, disorientation, peer pressure and curiosity. The psychological push factors such as the inability to tackle emotional pain, conflicts, frustrations and anxieties about the future are often the driving force for high risk behaviour. Life skills training is an efficacious tool for empowering the youth to act responsibly, take initiative and take control. We can consider that life skills training are essential for :

- the promotion of healthy child and adolescent development;
- primary prevention of some key causes of child and adolescent death, disease and disability;
- socialization;
- preparing young people for changing social circumstances.

◗ Life skills education contributes to :

- basic education;
- gender equality;
- democracy;
- good citizenship;
- child care and protection;
- quality and efficiency of the education system;
- the promotion of lifelong learning;
- quality of life;
- the promotion of peace.

◗ Life Skill Training :

The method used in teaching of Life Skills builds upon the social learning theory and on what we know of how young people learn from their environment; from observing how others behave and what consequences arise from behaviour. It involves the process of Participatory learning using 4 basic components :

1. Practical activities
2. Feedback and reflections
3. Consolidation and reinforcement
4. Practical application to day to day life challenges

Different methods that can be used to enhance Life Skills in students :

Each workshop is specially designed to impart a particular skill and involves all or some of the **following techniques** :

- Class discussions
- Brainstorming
- Demonstration and guided practice
- Role plays
- Audio and visual activities, e.g., arts, music, theatre, dance
- Small groups
- Educational games and
- Simulations
- Case studies
- Story telling
- Debates
- Decision mapping or problem trees

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Outcomes of Life Skills Training :

Programmes aimed at developing life skills have produced the following effects:

- lessened violent behaviour;
- increased pro-social behaviour and decreased negative,
- self-destructive behaviour;
- increased the ability to plan ahead and choose effective solutions to problems;
- improved self-image,
- Improved self-awareness,
- Improved social and emotional adjustment;
- increased acquisition of knowledge;
- improved classroom behaviour;
- gains in self control and handling of interpersonal problems and coping with anxiety; and
- improved constructive conflict resolution with peers, impulse control and popularity.

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Short Questions & Answers

1. Who are the Problem Learner?

Ans : Problem learners can be found in any teaching-learning setting (e.g. classrooms, beside teaching), and they may be particularly evident in specific situations (e.g. interesting patterns, formulating a differential diagnosis). The semanties used in the description of the problem learner are confusing. **Quirk** referred to *"Students with learning problem"*. Other faculty have informally used terms such as the *annoying student*, *difficult student*, or *stressed student*. Often, the student with a problem in a learning situation is referred to as a *student with a learning disability*.

2. What do you mean by 'Problem Leaener'

Ans : Problem learners are *learners who perform significantly below their potential due to specific defficulties*. **(Vaugh et al)**, Acc to Vaugh et al, the term 'Problem Learner' has a negative connotation.

Quirk M.E (1994) defined problem learner as : "Learner with academic performance that is significantly bellow performance potential because of a specific affective, cognitive, structural or interpersonal difficulty."

3. Specify the different types of 'Problem learner'.

Ans : Quirk (1994) identified three classes problem learners : (1) Affective (2) Cognitive (3) Structural

4. State primary and important steps for the guidance of problem learners with learning difficulties.

Ans : Summarizing the characteristics :

(i) **Learners with cognitive disorders** usually have difficulty in written or oral communication, spatial perception ability, or integration of material.

(ii) **Learners with affective disorders** have problem handling important events, such as new phases of their education, illness or deaths in the family, and difficulties in the other relationships.

(iii) **Learners with structural disorders** have difficulty structuring their experiences in the environment.

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5. Name the testing techniques to identify problem learner.

Ans : Testing Techniques :

Educational & Psychological Tests :

Educational Test	Psycholigical Test
◆ Achievement Test	◆ Intelligence Test
◆ Diagnostic Test	◆ Attitude Test
◆ Prognostic Test	◆ Interest Test
	◆ Projective Test
	◆ Personality Test
	◆ Aptitude Test

6. Mention the non-testing techniques to identify problem learner.

Ans : Non-Testing techniques may be of the following types :
(i) Self reporting, (ii) Observational, (iii) Case study, (iv) Sociometric

7. Write down the steps of S. T. P. model to identify and problem solving of problem learner.

Ans : This process incorporates two principles.

1. Feed back and

2. Problem solving

The S-T-P model consists of the following steps—

Step – 1 Specify the problem (S)
Step – 2 Desired Target State (T)
Step – 3 Procedure, plan, or path to get from S to T (P)

8. Write some techniques to identify Affective class problem learner.

Ans : Affective class problem learner can be identified by the following :

(i) Testing Techniques
- Psychological Tests

(ii) Non-testing Techniques
- Observation
- Rating Scale
- Check List
- Ancedotal Record
- Sociometry

9. What do you mean by "Life skill".

Ans : "Life skills education" :

Life skills education is a structured programme of needs- and outcomes-based participatory learning that aims to increase positive and adaptive behaviour by assisting individuals to develop and practise psychosocial skills that minimize risk factors and maximize protective factors. Life skills education programmes are theory- and evidenced-based, learner-focused, delivered by competent facilitators, and appropriately evaluated to ensure continuous improvement of documented results.

10. Make a list of'Life Skill'

Ans : Core Life Skills

1. Social Skills

(i) Self Awareness
(ii) Effective Communication
(iii) Interpersonal Relationship
(iv) Empathy

2. Thinking Skills

(i) Creative Thinking
(ii) Critical Thinking
(iii) Decision Making
(iv) Problem Solving

3. Emotional Skills

(i) Coping with Stress
(ii) Coping with Emotions

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Probable Questions

Short answer type questions :

Marks : 2 or 3

1. Who are the Problem Learner?
2. What do you mean by 'Problem Leaener'.
3. Write the main characteristics of' 'Problem learner'.
4. Specify the different types of 'Problem learner'.
5. State primary and important steps for the guidance of problem learners with learning difficulties.
6. Name the different techniques to identify the problem learners.
7. Write down the steps of S. T. P. model to identify and problem solving of problem learner.
8. Name the testing techniques to identify problem learner.
9. Mention the non-testing techniques to identify problem learner.
10. How to identify cognitive class problem learner?
11. Write some techniques to identify Affective class problem learner.
12. Specify some remedial steps of guidance of cognitive class problem learner.
13. Write some measures of guidance of structural class problem learner.
14. What do you mean by 'Life skill".
15. Make a list of'Life Skill'.

Essay answer type questions :

Marks : 5 or 7

1. Mention the different types of Problem learner with their characteristics.
2. Elaborate different techniques to identify problem learner.
3. Enumerate different strategies for guidance of problem learner.
4. Summarise different life skills.
5. Mention need, importance and outcome of life skill training

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2nd Half

ASSESSMENT OF THE LEARNING SYSTEM

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Unit 1

Infrastructural Facilities

Structure/Content Outline

1.0 Introduction

1.1 Rooms

1.1.1 Types and Number of Rooms

1.2 Classroom Furniture

1.3 Sanitation Facilitry

1.4 Drinking Water Facility

1.5 Playground

1.5.1 Importance of Games

1.6 Library-concept, objective, library advisory committee, importance of library, present condition and management of school library, role of a teacher

1.0 Introduction :

We have so far learnt that the school is a formal organization and its main function is imparting of education. We have also found out about the school structure. Now we have to learn something regarding the physical infrastructure necessary for schools in general.

School, as we have noted, is an organization whose main task is to provide education which involves a series of programmes and activities. The successful conduct of these programmes and activities depends mainly upon the availability of proper infrastructure in a school. The term 'physical infrastructure' refers to the physical facilities of a school. It is often referred to as school plant which includes various buildings, grounds, furniture and apparatus and other equipments essential for imparting education.

Ideally speaking, a school should be set up in a suitable atmosphere. Its location has enormous significance. It should have plenty of space with shady trees around, far away from the noise of the crowded city and

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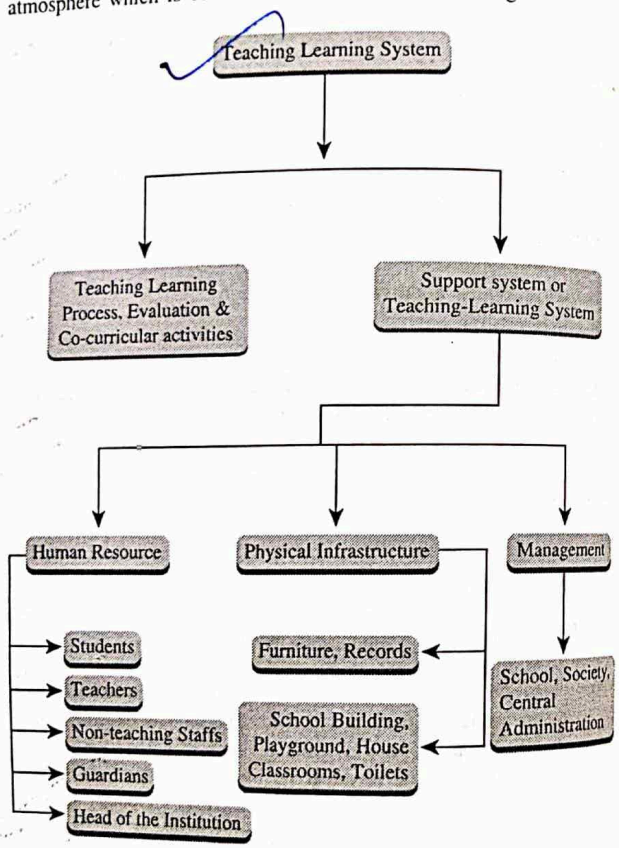
polluting atmosphere. However, this doesn't imply that school site should be so far away as to be inaccessible to children, traffic and essential services. What we imply is that there should be a calm and quiet atmosphere which is conducive to teaching and learning.



The school plant itself should be well planned in terms of space, utility and attractiveness. The school buildings should be attractive, have adequate lighting, comfortable seating, useful service facilities such as

library, multipurpose rooms, functional play grounds, classrooms, chalk and bulletin boards, sinks, work areas, filing and storage space and lockers for pupils and teachers etc. Although financial limitations may not permit all these facilities, an ideal school requires them all. If our school plants are to play the role of learning laboratories where pupils are provided with the opportunity for doing their own study either individually or in groups, to think together, to arrive at conclusions and to plan constructive programmes, etc. all these facilities need to be provided.

School Building :

School buildings should be planned spaciously, functionally and with pleasing architechtural features. They should have all the space and convenience needed for carrying out the multifarious activities and programmes of the school. What is required is that the various rooms in the building should have the required space and facilities needed for carrying out various activities for which they are meant. While constructing a school building, therefore, we should keep in mind the school buildings should have different facilities such as library, different laboratories (physics, chemistry and biology), workshops (to impart work experience), arts and crafts rooms, staff room, principal's office, school office, a multipurpose hall which can serve as assembly hall, auditorium gymnasium, etc.

The architectural design of the building is important. It should allow free movement in and out of classroom for students and teachers while it is often preferred that schools are housed in single storey building in urban areas due to non-availability of land; multi storeyed buildings are constructed for schools.

1.1 Rooms :

We must discuss at first about the school plan, like no. of rooms, type of rooms, area of land, number of students, pupil's requirements according to curriculum, evaluation and planning etc.

Generally in primary school the seating arrangement from lower class to fourth or fifth standard is better to be there in the ground floor. Ages of the Students in this level range from five to eleven years. Children at this age are very restless. So, great possibility is there, that they can fall from uneven places. So as long as possible they must be restricted from using staircase. In primary school there are five to six different classes (preparatory, 1st, 2nd, 3rd, 4th, and 5th students). There are the students

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of different age groups in different standards. So five to six class rooms are required for them. Apart from this headmaster's room, teachers' room, office room, store room for mid day meal stuffs, kitchen, assembly hall, toilets, washrooms are also required.

In higher secondary school, the students are of 12 years to 18 years old. The rate of physical and mental development of the students belong to these seven levels (VI to XII) is very high. The enthusiasm, learning interest, psychological development, and passion of learning, potentials of the students are the factors of curriculum development in state and national level. So the class rooms must be planned according to the curriculum, subjects and their requirements as well. To create an ideal school and teaching learning environment the class rooms must be planned very wisely as per their utility and requirements. The planning of secondary, higher secondary school building depends on the socio economic condition of the locality of the school. The class rooms preferably be U, E, H, L, I shaped. According to this in rural or urban places several class rooms must be constructed in sufficient space.

A detail description of school building must be discussed before hand, so that it can give a clear picture about the structure and utility of the class rooms.

A building is necessary to execute the teaching learning process. The old idea of teaching under a tree is the primary concept of school. When the concept of school had arisen then building must be there. A building is composed of several different rooms. To evaluate the utility of rooms a scientific analysis is required. So the numbers of students, learning, space, proper ventilation, proper seating accommodation of students, light, fan, electricity, teaching aids like board, chalk, duster, projector etc. are the matter to be considered effectively.

The class rooms must be very airy and spacious. If there is shortage of space then proper space management must be done according to the suggestions of the architects. Geometrically the rectangular rooms are preferable. The structures of proper class room are discussed below :

❑ 11.1 Types and Number of Rooms :

Different types of rooms are required in a school. They are as follows :

- **Classroom :** It is difficult to decide the exact number of class rooms in a school. Generally the number of class room depends on the level of school (primary, secondary, higher secondary) and number

of sections assigned per class. The class rooms must be spacious. The class rooms must be of 24 ft × 18 ft and 10 ft to 12 ft in height. There must be 10 sq. ft. area for each student. So for 45 students the floor size must be of 45ft x 10ft = 450 sq. ft. According to the instruction of West Bengal Board of Secondary Education the floor size and area that have to be allotted per student must be 400 sq. ft. and 10 sq. ft. respectively.

- **School building as per Secondary Education Commission or Mudalier Commission (1952- 53) :**
  - While planning for a school building it must be considered that 10 sq. ft. area is required for each student.
  - The minimum number to student in a class will be 50 and maximum 60 (not more than that). The total number of students in a school is minimum 500 and maximum 750 (not more than that).
  - In a review of 2012 it is observed that in different countries of the world the number of student lies in between 20 to 52 per class. (Minimum can be observed in Russian Federation and maximum can be seen in China). But in primary section 30 students per class is preferable.
  - The class rooms of coeducational schools must be bigger in size than that of boys' or girls' school.

Apart from this some other points are related to class room that are mentioned below:

- The class rooms must be airy. There must be a balcony adjacent to the class room.
- The class rooms must be teacher and student friendly for proper execution of teaching learning process.
- The class rooms must be comfortable for the students during all season.
- The class rooms must be set in such a way so that the student can write properly during examination.
- At least 12 class rooms are required, if there is one section allotted per class from five to twelve. For additional subjects of class IX, X and elective subjects of XI, XII, extra class rooms are required.
- There must be proper ventilation in each class room.

For two or more sections a large room is arranged. Some class rooms

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accommodate 70 students and some are arranged for 30 to 40 students. One fourth class rooms must be larger and one fifth must be smaller than the normal ones. A black board must be there in each class room. Class rooms for Physics, Biology, and Geography must be well equipped with necessary instruments.

The ambience of each class room must be comfortable and pleasant. The wall must be well decorated and painted with light colour. North and East facing class rooms must be orange or yellow coloured and South and West facing class rooms must be either green, blue or grey coloured. The ceiling of dark coloured rooms must be white or cream.

◆ Standards–Guidelines :

A school must have appropriate, sufficient and secure buildings.

- **Schedule of accommodation :** This section sets the space requirements and the standard of the quality of those spaces.
- **Class rooms/Basic teaching areas :** The design of classrooms must be comfortable, accessible, flexible and adaptable and provide sufficient space to ensure children's dignity, health, safety, well-being for successful learning.
- **Internal Floor Area :** A standard class room must make provision of a minimum 1.0m² floor space per pupil recommended area of 1.2m2 per pupil. The furniture type will dictate the area requirement within this floor area range. Floor area is calculated from internal wall to internal wall, as shown in the diagram below. Dimensions are not provided in the standard as the size of room will depend on each project considering number of pupils, site area available.
- **Class room layout :**
  - Two mean of exit should be provided. This is to allow a second means of escape in case of fire, security incident or earthquake. The pupils must be able to escape to safe grounds as indicated on the diagram below. The second door must be able to be used as emergency exit and able to be opened from the inside without the use of a key.
  - Two blackboards should be installed in each room (One minimum).
  - A Cupboard to store books and notebook should be available in each classroom.
  - A Display area/science corner : Allow a wall space sufficient for displaying didactic materials within the classroom.

According to the curriculum, additional space allowance for Science, ICT, Library or Cooking may be added to the standard class room size.

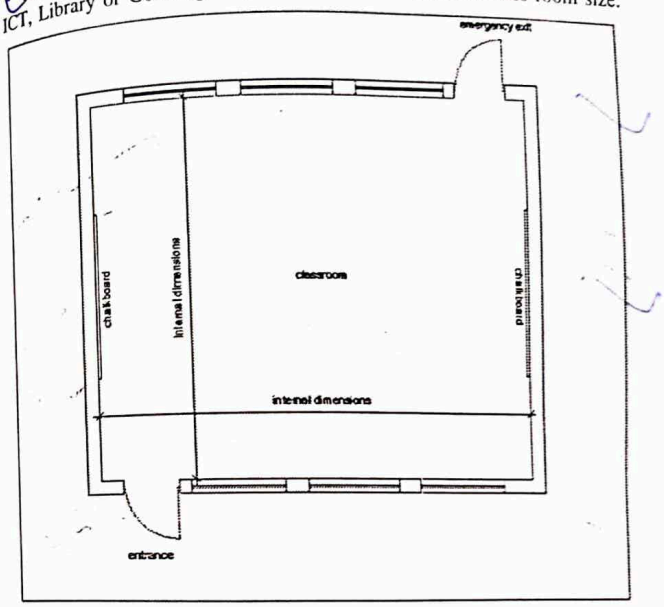

Fig : Class room layout

◆ Head Teacher's Room :

A school must have an office for the head teacher. The room should have adequate space for a table, chair and cupboard, plus area to hold meetings. Recommended area is **minimum 13m² floor space**.

The head teacher's room should be located close to staff rooms, as well as located where there is good connection surveillance to the main school grounds.

◆ Staff Room/Teachers Resource Room :

A school must have a work and social space for teaching staff. This room will be used for preparing for class, a place to exchange information among teachers and a place to take a break. This can be either a staff room or teacher resource room.

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Staff room/teacher resource room should be centrally located to provide surveillance of the school grounds.

A standard Staff room/teacher resource room should be minimum 16m2 floor area for up to 6 teachers and 2.6m2 floor space per additional teacher.

◆ Storage Space :

A school must have a safe, secure, lockable and dry storage space for didactic material, sports equipment and cleaning material. The recommended space is in the range of 10-15m2 floor area. This store must be located in a location easy to be monitored by a member of staff or care taker.

◆ Science Laboratory :

A Laboratory should include sufficient workbenches with basins and water supply for the pupils. A separate teacher's workbench should be located to the front of the class room to allow demonstration to be observed by all students equally. A separate lockable chemical store/ preparation room should be located adjacent to the main laboratory with workbenches with basin and lockable storage space.

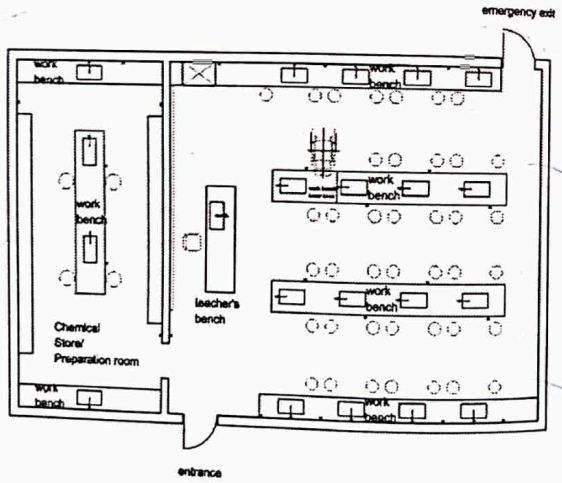

Fig : Laboritory room layout 42 workbench places with Preparation room

◆ ICT Room :

Dependent upon many factors, such as availability of electricity, availability of computers and the availability of ICT educational programmes, Tronc Commun schools **should** make allowance for ICT teaching and primary schools **may** make allowance.

This allowance may be made by a room dedicated to ICT or through making allowance within the class rooms.

ICT allowance within the class room can include electrical power sockets or laptop charging stations and the ability to re-organize furniture.

Dedicated ICT rooms **must** have the following qualities;

Dust free, good ventilation (to prevent over heating due to the heat from equipments) and no glare by providing window blinds and lockable.

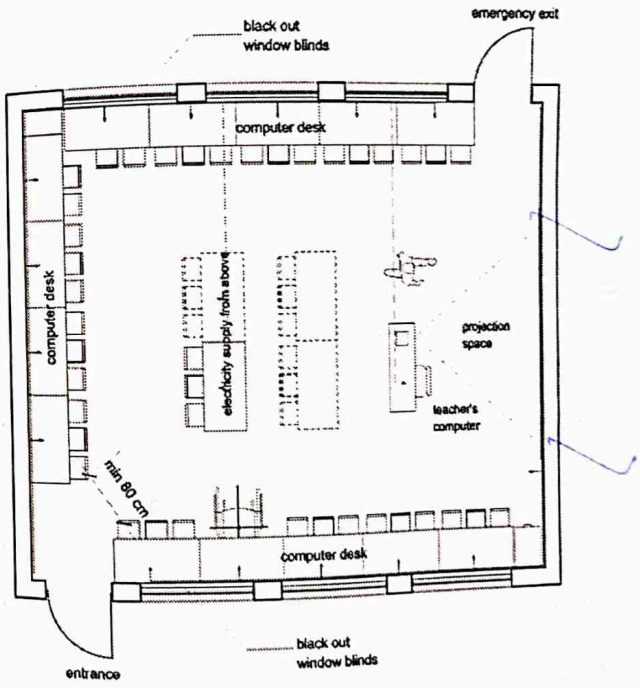

Fig : ICT room layout 15 computer points per 3 pupils + expansion possibility

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The ICT room should be organized in such a manner that students can share the computer stations and an area to the front of the class room should be kept clear for projections. The room may be organized in such a way that it allows easy electrical supply to the computer stations, preferably along the wall by cable trunking to secure cables from damage. If computer stations are located to the middle of the room the electricity supply/cable trunking should be from above and not over the floor to avoid trip hazards.

Note: Electrical sockets **should** be mounted at 450mm centre above finished floor level to allow a person in a wheelchair to access the sockets.

◆ **Outdoor Learning Area/Habitat Area :**

Schools should have outdoor learning areas which are spaces where formal or informal teaching can take place. These spaces may be directly connected to the class rooms or located centrally as a court yard. These areas may have a variety of qualities; it may be enclosures created by vegetation with external furniture. Schools should also have habitat areas where the school community grows flowers, vegetables and trees and/or keep livestock i.e. cows, rabbits, pigs, chickens etc. which may be used for hands on learning.

◆ **Library/Learning Resource Area :**

●A school must offer facilities for storing and displaying educational reference materials to cultivate the culture of reading and researching.

This room may be a centralized room i.e. a library or a corner with shelves within each class room as a learning resource area.

The consideration of accessibility of pupils with SEN and disabilities is particularly important for these spaces.

◆ **Multi Purpose Hall :**

A multipurpose hall may be built after the basic requirements of a school are met. A hall may be of various sizes and various degrees of enclosure according to the intended use.

The hall may be used for assembly dinning, physical education, music, drama, and for parents' meetings and social events.

Halls can contribute to the community as venues for gatherings such as public performances, music, drama, debates and presentations. Thus it must be easily accessible to visitors.

Dependent upon the use of the hall, ancillary spaces, such as stores for equipment and dining furniture, an adjacent kitchen with serving area and other facilities should be provided.

◆ **Medical 'Slash Sick Room :**

A medical slash sick room, where sick pupils can rest until they are picked up by parents may be offered in a school. This room may also be used for visiting therapists or other support for pupil with disabilities. This room may furthermore be used for pastoral support and interviews which requires privacy.

This room should be near staffroom administration area, near the school entrance.

However a school must have a medical First Aid kit available.

◆ **Game Room and Gymnasium :**

- Large rooms 20′ × 25′ size along with a good height, should be arranged for the table tenis and indoor games as well to save the students from getting injured.
- Soft floor mat can also be spread over the floor of the game room and gymnasium, so that, the students do not get hurt if they fall on the floor suddenly.
- Generally the room for indoor games and gymnesium should be situated side by side.

◆ **School Playgrounds :**

Schools should have well maintained playgrounds. Sports and games play so vital roles in education that they cannot be totally dispensed with. /Playgrounds not only enable pupils to develop their physical health but also help them to grow cognitively, socially and effectively. Hence any school that has its eye on the total development of children should have enough facilities for indoor as well as outdoor sports and games. A number of schools have now gymnastic for athletics and sports room for indoor games. Of course, it is important that schools should have enough funds to purchase sports and Physical education equipment.

◆ **Computer Lab/funds :**

In the present teaching-learning system, computer plays huge role in every facets to disseminate the education effectively to each and every

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learners and thus it has been taught in the schools, now a days, as a compulsory subject and by the benevolene of Computer Literacy Mission. (A joint venture of State & Central Govt), school computer lab is being built up in each and every school.'

Computer rooms should be of 40' x 40' in size, where at least 10 to 20 computers can be placed and 3/4 students would be able to work on one computer at a time.

The tables on which the computers would have been kept, must be wide enough and there should be the provision of good electric facility for doing different tasks using computer.

♦ Assembly Room/Auditorium :

Assembly room/Auditorium is the most important as well as largest room of a school which acts as a common forum ventillated. It acts as a well ventillated multi purpose room/hall, where at least 1000-1200 people may be assembled for any occassion or programme. It should be provided with a stage or pordium along with many chairs to sit.

- This room must have many wide doors and windows that can be opened both inward and outward; this room can be surrounded by large balcony all around.
- Daily morning prayers different programmes, seminars, workshops, exhibitions are being indicated here in this room.

♦ Office Room/Administrative Block :

The school office should be centrally located so as to serve as a good coordinating centre which is easily accessible to visitors, teachers, and pupils. The principal's office should be large enough to accommodate small conferences, and should open into the general office as well as to the corridor. A good office of a large school requires a room for the principal, a waiting room for visitors, an office for clerks, a store room with shelves and cupboards for office and files. In addition, the office should have such equipment as a typewriter, a duplicating machine, a desk calendar, rubber stamps, and such other materials to facilitate the performance of various functions.

♦ Rest Room/Common Room :

- Size of the Room : 10′ × 20′
- A sick bed and an armed chair must be there.
- If any students or teaching staff falls sick, they may take rest here.

- Sometimes, it may also be utilized by the visitors as the wating room.

♦ Tiffin Room :

- There should be a seperate room with proper facility of drinking water for the students of a school to have their tiffin during reases.
- It should be hygienic and clear as well.

♦ Kitchen/Cooking Room :

Schools may have kitchen but when they offer meals, the school must have adequate and hygienic kitchen area. The size of the core preparation area will depend on the equipments needed, number of pupils and also on the effective number of sittings.

♦ Kitchen facilities must include:

(a) Facilities for preparing food and safe drinking water.
(b) Areas for washing up afterwards from a clean water source.
(c) Adequate facilities and area for safely preparing and cooking food with energy saving stoves with an effective chimney to extract smoke.
(d) Separate facilities for storing cleaning materials.
(e) Separate secure storage for dry goods.
(f) Adequate circulation for goods in and waste out.
(g) Adequate facilities for disposal of waste

For arranging mid-day meal there should be a big kitchen in every school along with a large space or dining hall, adjacent to the room where the students would be able to dine.

♦ Special qualities :

♦ Internal temperature

- Internal Temperature of a class room should be at a comfortable level. Over-heating of rooms should be avoided as it reduces the pupils' concentration capacity (in hilly regions).
- Over-heating and glare should be controlled by adequate solar shading by the use of overhanging eaves to windows, and also can be prevented by the siting the building so that the windows face North and South.
- In hot climates classrooms should have a ventilated ceiling to reduce heat transmission and the planting of vegetation can dramatically reduce the surrounding temperatures

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● **Ventilation :**

- Rooms must have adequate ventilation to maintain a healthy internal environment.
- Design must allow adequate fresh air in take through openable windows. Minimum openable window area is $5m^2$.
- Air flow should be maximized with cross-ventilation, openable windows should be situated on opposite sides of the room.
- Ventilation should be maximized in hot climates to reduce inside temperature and minimized in cold-climates to retain the heat.

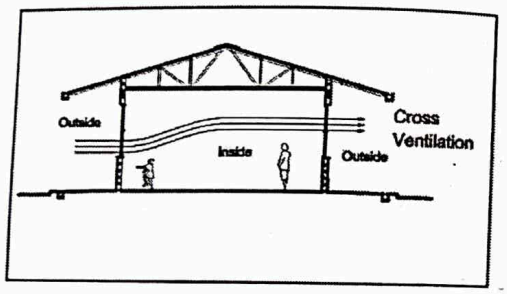

Fig : Cross Ventilation Diagram

● **Day Lighting :**

- Daylight should be the main source of light. Ample natural light and good illumination levels should be provided.
- Where there is no glass fixed to the opening, when it rains the shutters must be closed and then the class room becomes totally dark, so the class has to pause until the rain stops (artificial lights, can be arranged).
- The use of glazed windows or other solutions should maximize the use of natural light.
- Adequate light levels must be achieved by providing unobstructed window area of $12m^2$.
- Window openings should be equally spaced on two sides of the room to avoid dark corners. It is especially critical is to have good lighting at the chalkboards and desktops.

● **Acoustic :**

Each room or other space in a school building must be designed and constructed in such a way that it has good acoustic conditions appropriate to its intended use.

(a) The school design must consider reducing noise penetrating class rooms from the out side. Noise from the playground, main road or traffic is to be minimised so not to disturbed the pupils.

(b) The school design must consider reducing noise transfer between internal rooms i.e. Class rooms

(c) The class room should consider the reduction of echos within the class room through use of sound absorbing surfaces and furniture.

(d) The building must reduce any noise created by rain or wind.

(e) Roof noise should be prevented while designing and choosing materials. Roof insulation might be used.

(f) Noise from the surroundings should be avoided while selecting and locating the site.

(g) Location of sport grounds and open areas should take into account classrooms layout to isolate them from distractive noises.

♦ **Water penetration :**

All buildings must be water tight.

(a) Roofs must not leak. Adequate gutters and or site drainage channels must be installed.

(b) Water must not penetrate through walls

(c) Water must not be able to enter the class rooms.

(d) Roof over hangs, eaves should protect walls from excess rain water penetration.

♦ **Dust :**

All rooms must be dust free to protect the pupils and staff from health risks and to prevent distraction.

Existing buildings using mud for walls or mud mortar for roof tiles must be sealed to prevent dust.

♦ **Safe and Secure buildings :**

All school buildings must adhere to National Building Code. The following are school specific issues which need to be addressed.

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a. Fire

–Spread of fire between rooms
–Fire breaks between blocks
–Escape route out of building
–Outward opening door
–Dormitory needs special precaution
–Kitchens needs special precautions as a source of fire.

b. Wind

–Depending on geographical location
–Vegetation can be planted as wind breaks.
–Ensure roof covering, battens, purlins, rafters and roof trusses are securely
–fixed to main structure to prevent the roofs being blown away.
–External fixtures such as external window shutters and external doors are to be securely fixed back to the main structure.

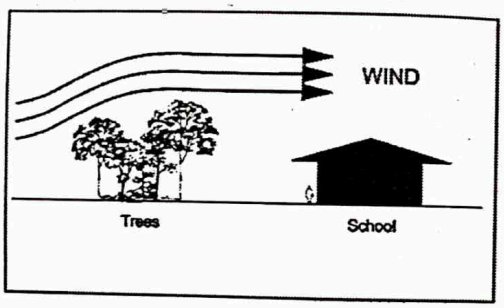

Fig : Wind-breaker Diagram

c. Earthquake

School building must be safe and resisit earthquakes until the occupants reach safe evacuation zones. However at every school;
Evacuation drill must be practiced at schools; Escape routes to Safe areas must be dedicated; Tall furniture must be securely fixed.

d. Volcano

Locate schools away from risk areas.

e. Lightening

Buildings in lightening prone areas, lightening conductors should be installed.

• **According to Bureau of Indian Affairs (Nov. 2005) the size of classrooms are as follows :**

For whoms	Number of Students				Unit
	<100	100-199	200-399	499+	
Head Master	150	150	150	150	Sq.ft.
Part-time Teacher	*	*	150	150	Sq.ft.
Office	120	120	240	360	Sq.ft.
Assistant Teacher	300	400	600	800	Sq.ft.
Store Room	150	150	150	150	Sq.ft.
Conference room	200	200	200	200	Sq.ft.

1.2 Classroom Furniture :

There must be a cordial relationship in between the teacher and the learners for the effective transaction of a lesson and to sustain this the following articles are very much essential :

(i) High and Low Benches for the Students :

- These are the most essential furniture of the classroom.
- The height of the benches should be made according to the age & height of the students otherwise it creates lots of commotions in the classroom.
- This benches can be either with single desk where only oner person can sit or with two desks where two pupils can sit and work together.
- All the benches should be arranged basically in 3 rows.
- The sitting arrangement can be of many types viz, rowwise, circular, semi circular, U-shaped etc.
- The sitting arrangement can be changed according to the need so that the presentation would have been audible and visible to all the students, in a classroom

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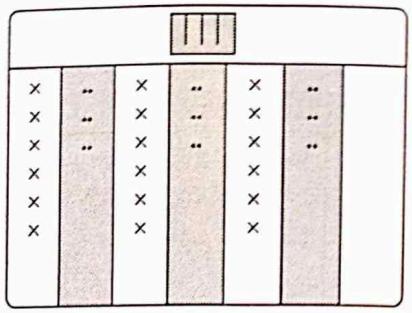

Fig : Sitting arragement in a secondary classroom

- **Height of Desks, Chair and Students (in cm)**

Height of Desks	Height of Chair	Height of Students Average
76	44	180.0
73	42	172.5
70	40	165.0
67	38	157.5

Table-A

Height of Desks	Height of Chair	Height of Students Average
64	36	150.0
61	34	142.5
58	32	135.0
55	30	127.5
52	29	120.0
49	27	112.5

Table-B (Source : Google.com.in)

(ii) Desk and Chair (According to Height) :

- Single desk and chair is being made which can be moved very quickly due to their light weight.
- These benches or desks can be arranged from low to high sequence just like the gallery system.
- The students should be told to sit in the classroom according to their height.

(iii) Black Board/White Board :

- It is the most essential and readily available teaching aid which has to be used by the teacher for explanation, pictorial representation, drawing that leads to concept formation of the students in the classroom.
- It should be placed in such a position within the classroom, so, that it can be seen by all the students from different corners of the classroom.
- To avoid the dust that is being caused by the use of chalk, now a days, white board is being used in the classrooms on which, the teacher can be able to write by using a blue/black coloured pen that can be wiped out by using a special duster or wet cloth.

(iv) Arranging Wall/Board and Table for Keeping/Hanging the Charts, Atlas and Models :

- To demonstrate the maps, charts and models etc. a part of board/ wall can be used; but it should be kept in mind that these teaching aids should be hanged/placed in such a way so that it can be visualized by all.

(v) Computer and Computer Table :

- In present system of education by the application of technology the new concept of smart classroom has came into being and all the teachers want to use computers to make the demonstaration and execution of the lesson more effective and for this school must arrange certain softwares, CD, DVD, Mobile, LCD projectors and internet access etc. to enhance the use of computer in the teaching learning system. The teachers sometimes bring and use their own laptops and tabs also in the classroom for better execution of the lessons.

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(vi) LCD Projector and Screen :

Since this is an age of technilogical progression, for better execution of the effective lesson along with the previously used overhead projector the LCD projector can also be used where the lesson can be shown by ppt presentation with pictorial exhibits and thus, there should be a LCD white screen or a white, smooth, clear wall on which the matter can be projected/ reflected by the LCD projector machine. Use of laser torch can also be observed.

(vii) Teacher's Table :

There was a tradition to keep a set of chair and table for the teachers in the classroom for their convenience while executing a lesson. But now, to hold the attention of the students in a better way and to enhance the active participation of the students, a 6' × 3' (minimum) table only is being placed at the centre of the classroom for the teachers, on which necessary teaching aids, models, requirements, computer etc., can be put and standing arround the table the teacher teaches the students in the classroom.

(viii) Smart Board :

The schools that possess well equipped infrastructural facilities are having the provision of using smart board or electronic board, using the Information Technology for the betterment of the teaching-learning process.

(ix) Facility of Electric Fan :

As the average temparature of our country is 40°c – 50°c and as it prevails almost through out the year, there should be many fans there in the classroom for the convenience of both the teachers and the students. At least one fan has to be provided for 15 heads/students in a particular class room.

(x) Ensuring Barrier Free Access in Schools and Arrangement of Necessary Articles and Equipments to Promote and Sustain/Inclusive as well as Special Education :

- Barrier free access implies that the physical design of the school building should be made in such a way that all children, including children with disabilities should be able to reach all the areas of the school and use all of its facilities.

- All the external and internal facilities and services in the school will have to be reviewed to assess wheather, they allow access to children with disabilities, particularly for :
  - (a) Ramps with railings of two levels.
  - (b) Ramp slope to be not less than 1 : 12 and width not less than 1200 mm.
  - (c) Hand rails on steps.
  - (d) Drinking water unit with proper access.
  - (e) Accessible, adjustable toilets with handrails, grab rails.
  - (f) All doors for toilets not to be less than 900 mm width.
  - (g) Barrier free access required from entry of the school to all components within the campus.
  - (h) Children with locomotion impairment, non ambulatory, semi ambulatory disablities to have approach road and steps to allow for smooth movement.
  - (i) For children with low vision or total blindness, design windows and illumination level to reduce glare use contrasting colours and texture to aid identification, reduce distance between the child and the chalk board and provide embossed charts on the wall.
- Specially trained teachers must be there in all the schools to bring the CWSN children in the main stream of our society.
- Adjustable chairs, tables, benches, modified text books, microphone, boards and other necessary equipments should be kept in the classroom set up to foster inclusive education.

(xi) Microphone System :

There should be the provision of using microphone system along with the audio visual system for the teachers, to transact a lesson more effectivity in the classroom that contains a large number (45/50) of students. Otherwise it would have been very staneous for the teachers to deal and hold the attention of a large class.

(xii) Facility of Electric Light :

Each and every classroom should be illuminated enough for the teaching-learning process to be taken place properly. Compact Flurosent light or CFL can be used for this purpose which is cost-effective in nature.

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1.3 Sanitation Facility :

It has long been recognised that investments in school sanitation and hygiene education together can create improved learning environments, thereby facilitating increased attendance and retention of students. The impact is most pronounced among girl students, when their special needs of adequacy and privacy are catered to. Children are effective change agents and serve to spread their best practices into their homes and communities. The overall long term impact of improved water and sanitation facilities in schools are thus phenomenal.

However, mere creation of infrastructure, that does not assign due importance to students' needs, can cater only to short term solutions and are largely unsustained. It is important to recognise and distinguish between the needs of girls and boys separately, of children of different age groups and the special needs of the physically challenged.

Development of infrastructural facilities needs to be combined with raised awareness about the importance of proper hygiene and the various ways of preventing water related ailments.Also needed is the evolved attitude of the adults i.e. teachers, school authorities and parents, who should systematically support the initiatives with a positive disposition towards safe water and sanitation and healthy habits of children.

- **Concept of Sanitation :**
  - Sanitation is one of the basic determinants of the quality of life and human development index. Th e concept of sanitation was earlier limited to disposal of human excreta and construction of lavatories. Today it includes personal hygiene, safe water, human excreta disposal, waste water disposal, solid waste disposal, food hygiene and environmental sanitation (in and around the school).
  - The components of sanitation are as follows:

- **Personal Hygiene :**

Besides general aspects of cleanliness for children the key issue is hand washing before handling food and after using the toilet. This can result in a substantial reduction in the incidence of diseases like diarrhoea etc.

- **Safe Drinking Water :**

Drinking water for children should always be taken from a safe water source. The water should be collected, stored and used hygienically eliminating any chance of contamination.

- **Human Excreta Disposal /Toilets :**

As human excreta is responsible for the transmission of several diseases, a sanitation barrier by way of an appropriate toilet and a safe disposal system is necessary to break the chain of transmission of disease.

- **Disposal of Waste Water :**

Waste water accumulation in the school campus leads to the breeding of vectors which are responsible for transmission of diseases. The management of waste water (for recycling and reuse) is necessary to eliminate this threat. It also educates children about the importance of water.

- **Waterless Urinals :**

These urinals need to be popularized as not only do they save precious water but also serve as an excellent example and illustrate alternative methods of effective water conservation.

- **Solid Waste Management :**

Waste segregation and disposal is important for the school. Accumulation of waste particularly organic waste is not only unaesthetic but leads to the breading of insects such as flies etc. which help in disease transmission. Measures such as vermi-composting, traditional-anaerobic composting or bio-dynamic quick composting are quite popular.

- **Food Hygiene :**

Food which is cooked, stored, or served to children in schools should be done under hygienic conditions in order to minimize the chances of contamination and disease transmission.

- **Environmental Sanitation :**

Proper cleanliness should be maintained within the school buildings (classrooms corridors etc.) as well as within the school campus.

- **Challenges :**

The overall average for sanitation coverage is about 22% in West Bengal. Majority of the schools in rural West Bengal, especially senior secondary schools with large student strength, run with inadequate drinking water and sanitation facilities. This is not because investments have not been made. Structures have been installed, but without considering the needs of the school in terms of student strength or sex division. Further, systems

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for maintenance and upkeeping of the structures have neither been thought about nor installed in the institutions, resulting in gradual degradation of the toilets and water sources and colossal waste of resources.

It is common to find only urinals, but no latrines for girls and sometimes boys, in the schools. In most senior schools, there is usually a single water source for a 1000 plus student strength, located outside the school toilets. This also serves as the only drinking water source and when occupied, children collect water from the nearby ponds to use in toilets. Lack of adequate water impedes hygienic behaviour, keeps the toilets dirty and unfit for use.

For boys coping is easier as they are habituated to open urination and defecation, around the school premises. But girls find it difficult to manage and prefer staying away from school.

Problems for girls and lady teachers are more pronounced during their menstruation days. Poorly designed infrastructure, without considerations for disposal of menstrual waste, pose challenges that are both hazardous to health and challenging psychologically. It is not surprising that absenteeism is higher among girl students in these schools.

Managing with poor infrastructural support has become the norm where guardians and teachers act as indifferent and passive stakeholders, doing little to alter the situation. Schools receive sanctions from various departmental schemes for infrastructural improvements, which are used for adding rooms to the school building and rarely for upgrading water and sanitation facilities. When it is mandatory to do this, the resources are often not commensurate with the needs or capacity of the school. What is needed most is an inclusive approach aiming at convergence of all available inter-sectoral resources along with inbuilt mechanisms for operation and maintenance.

◆ Water for People—India Intervention [WASH Initiatiatives] :

Since 2005, Water For People—India has promoted initiatives for sustainable programmes for safe drinking water, sanitation and hygiene education in schools in rural West Bengal. Well programmed water and sanitation facilities along with effective hygiene education were considered to be a powerful incentive for children to attend schools. To ensure sustainability, these interventions needed to be spruced with arrangements for proper use and maintenance.

Experiences over the years directed the need to add a gender sensitive dimension to programmes. Periodic reviews prompted considerations for the special needs of girl students, especially during the menstruating days. With the conviction that young girls would be the best judge of their needs, attempts were made to involve them in designing the sanitary blocks being installed in the schools with support from Water For People and partners.

A series of discussions and workshops with school students and teacher bodies were facilitated by the organisation's partner NGO's that exposed and identified the special needs of the students (especially girls), about the existing water sanitation facilities. Students were encouraged to lay out a preferred design that would be technically sound and meeting their needs. These exercises also brought forth the need to identify and understand the implications of menstrual management practices of young girls and draw up a holistic programme for water and sanitation in schools that would be sustainable.

A pilot study was commissioned for this and its findings were shared widely with stakeholders. The child friendly school sanitation programme of Water For People-India is an outcome of these exercises and a vital component of the overall WASH initiatives.

• Sanitation Facilities (Toilet and hygiene) :

The link between poor sanitation and poor health is evident. Also the lack of adequate sanitation facilities is a major reason why many children, particularly girls, fail to attend school. The lack of facilities affects the performance and achievement of all pupils, and is certainly detrimental to the working conditions of teachers.

The role of the child friendly schools is to create learner friendly environments. This is achieved not only through formal classroom education, but also by promoting good practice in daily living and environment. Sanitation is an essential aspect of promoting good practice and schools have a duty to promote its implementation.

• Sanitation Facilities Quantity :

Appropriate quantity of sanitation facilities must be provided according to the ratios shown in the table below.

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Sanitary facility ratio
Girls
➢ 30 girls to 1 cubicle ➢ Inclusive of 1 girl's accessible/disabled cubicle ➢ 1 hand wash point with tap and soap per 2 cubicles ➢ Minimum 1 Hygiene cubicle
Boys
➢ 50 boys to 1 cubicle ➢ Inclusive of 1 boy's accessible/disabled cubicle 50 boys to 1 metre of urinal ➢ 1 hand wash point with tap and soap per 2 cubicles
Staff
➢ 25 staff to 1 cubicle with separate Women and Men including 1 accessible cubicle ➢ 1 hand wash point with tap and soap per 2 cubicles

(a) Girls and boys must have equal access to adequate sanitation facilities in schools.

(b) Girls and Boys sanitation facilities must be separated with their own wash basins and taps. The separation must have adequate visual, noise and odour separation.

(c) A personal hygiene compartment where girls are able to wash during menstruation must be offered.

(d) The provision of sanitary towels, hygienic pads and disposal facilities should be made available at schools for girls in menstruation. Hygienic and safe disposal practice must be practiced.

(e) Accessible toilets must be provided.

(f) Staff toilets must have separate women and men cubicle with adequate noise privacy.

• Cubicle doors

➢ The cubicle doors can open inwards or outwards.

➢ Advantages of inwards opening doors are-privacy, particularly when the door lock is missing or broken.

➢ Elimination of hazard to those outside the cubicle.

➢ The doors are hung so that empty cubicles have open doors and are easily found; Inward-opening doors can be designed so that they can be lifted off their hinges should access be necessary when someone has fallen against one.

➢ Advantages of outward opening doors are-more space within the cubicle.

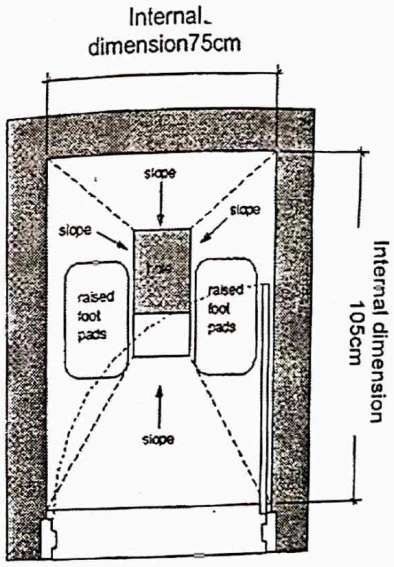

Figure : Sample Toilet Cubicle

• Sanitation Facilities Quality :

Sanitation facilities must be of appropriate quality.

(a) All structures must be made to a high standard without environmental risks such as unstable floors or full pits.

(b) All structures and surfaces must be constructed to be able to be kept clean and hygienic.

(c) All sanitation facilities must have adequate (natural or artificial) light.

(d) All sanitation facilities must have adequate ventilation.

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- **Cleaning and maintenance practices :**

-use smooth durable floor surface which can be cleaned easily.
-consider water and liquid run off directions to avoid pools of stagnant water.
- consider lower height handles for smaller children
- consider smaller holes for smaller children.

◆ **Sanitation Facilities Usage :**

The sanitation facilities must be appropriate for effective usage :

- The facilities must be located in the right place and designed to account for local customs and cultural sensitivities.
- Every facility must be easily supervised from the class rooms and accessible from out of doors.
- The sanitation facilities must be clear distance away from class room to avoid smell. Consider wind direction in locating sanitation facilities.
- Avoid areas where there is a risk of flooding.
- Consider access of maintenance vehicles according to latrine system.

◆ **Technical solutions :**

Depending upon the schools requirements, site and access conditions, different water and sanitation options must be considered to reach the best solutions. Consult a water and sanitation engineer for professional advice, as per need.

◆ **General Guidelines for Toilets and Sanitation Set-up in School Premises :**

In the context of the schools, ecological and safe sanitation in fact, ensures that the human excreta and school waste water as resources are recovered, treated where necessary and safely reused.

While planning/designing school toilets the internal rules of the establishment have to be considered :

- Build separate toilet rooms for girls and boys.
- A closed container for the disposal of sanitary napkins has to be provided within each cubicle for girls and women teachers.
- Urinals and toilets for boys and toilets for girls to be installed as per the ISI norms.
- Hand washing facility must respect children's height and size.
- A toilet cleaning and maintenance service has to be activated within the school.

- In Muslim schools (as in Muslim homes) there should be the provision of separate toilet buildings for girls and boys; sitting and facing direction must respect the religious norms.

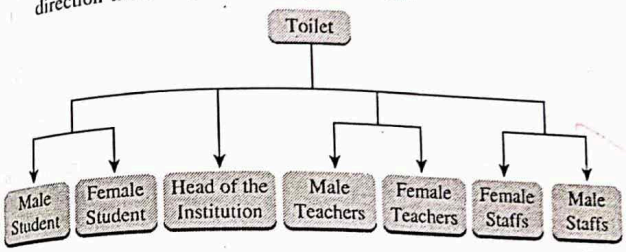

Figure : Schematic representation of different types of toilets in a school

◆ **Detailed Guidelines for School Sanitation Programme :**

Facility : Ensuring adequacy in terms of number of urinals and latrine units would be one of the key focus areas of the intervention. Construction would be as per the design suggested by the students and school authorities, taking into consideration their special needs. School sanitary blocks will be designed using the following guidelines:

- Adequate number of urinals and latrines in accordance with the student strength. Urinals for boys should be placed at different heights, to accommodate boys of all age groups. Urinals for girls should be adequately wide to provide enough space to conduct her activities comfortably. Height of door knobs should be kept within the reach of students. Doors should be sturdy and provide the necessary privacy.
- Running water should always be available in all the urinals and latrines.
- Hand-washing stations located near the toilet block, should always have soap for proper hand-washing.
- Drinking water stations with multiple water taps, placed at differing heights to accommodate students of all age groups.
- 2-3 enclosures with special fittings in the sanitary block, designed to help girls to accommodate their menstruation management needs. E.g. Connection to a disposal pit (incinerator) for used menstrual cloth, 2 tap connections at different heights with running water, a wash basin with a mirror, provision for hanging garments, wall cupboard/an accessible place for storing napkins, and adequate space catering to the needs of menstruating girls.

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- Proper drainage for safe disposal of waste water from sanitary block.
- Arrangement for safe disposal of all solid waste, ensuring environmental cleanliness.
- Special arrangements for physically challenged.
- School sanitary block/water and sanitation facilities, within safe distance from school.

◆ Improvement/ Modification of existing structures :

Water For People proposes the following improvement/modifications of the existing sanitation facilities to incorporate needs of young adolescents and children.

◆ Proposed child friendly design :

The water and sanitation facilities in the school would follow the minimum specifications as proposed for design and construction of child friendly facilities suitable for the children.

A. Drinking water and hand washing facilities :

a. Drinking water station with height of drinking water facilities and taps as per the age of children.
b. Hand-washing station with soap where younger children can easily reach it. Proper drainage of after every hand washing is ensured.
c. Hand-washing facility located near toilet so that children are likely to wash their hands after defecation.
d. Proper drainage (soak pit) for safe disposal of waste water.
e. Safe disposal of solid waste to keep the school environment clean
f. Catering to children of all age groups
g. Urinals at different heights for children of different ages
h. Special arrangements for the physically challenged

◆ Maintaining safe distance from school :

(a) School sanitary blocks should be constructed in close proximity to school. Children especially girls should feel and comfortable to visit the toilet. Menstruating girls need privacy when entering the toilet and using facilities.

◆ Ensuring proper menstrual management for girls :

In addition to latrines and urinal units, a provision for 2 enclosures with special fittings within the school sanitary block (girls section) is planned to take care of the needs of menstruating girls.

◆ The following facilities would be available within the rooms :

(a) Adequate space within the unit. A preferred size of (6'x 4') as suggested by the girls is being planned. Privacy of menstruating girl's would be ensured.
(b) Two tap connections with running water, one at a lower level for washing after urination and another slightly higher level for washing menstrual cloth.
(c) A wash basin with a mirror above it.
(d) A provision to hang clothing while using the urinal.
(e) A wall cupboard for storing soap, detergent, and other cleaning agents.
(f) A safe, dry and accessible place to store sanitary napkins/menstrual cloth.
(g) Provision for disposing used sanitary napkins/menstrual cloth.
(h) At least 2 urinal units to be connected to a disposal pit with incinerator facilities. Arrangements for clearing the disposed napkins would be ensured.

◆ Hygiene Promotion :

- Hygiene taught at school has ripple effects, as children can act as primary agents for hygiene promotion and behaviour change in the communities they come from. Through theinterventions in schools, Water For People-India has strategically focussed on a child centrichygiene promotion campaign, building awareness and finally the demand for safe water and sanitation in their homes and communities.
- Developing and using effective communication tools to promote child friendly hygiene education. Exploring ways that aid children to experience, discover, create and construct their own knowledge. Encouraging schools to communicate hygiene messages through joyful learning sessions and organise events like drawing/poster competitions, drama, wall paintings, quiz, health exhibition, rallies, around the subject of safe water and sanitation and proper hygiene behaviour.
- Constituting student committees whose primary responsibility will be to monitor and supervise hygiene promotion and behaviour change among fellow students and oversee maintenance and upkeeping of the school sanitary block and drinking water facilities.
- Periodic training of teachers about key messages of hygienic behaviour and practice and developing their skills to impart the same education to their students.

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- Special training on addressing issues on menstrual management behaviour-building teachers' and student's awareness about menstruation hygiene and the health impacts of poor management. This will be accompanied by promoting appropriate sanitation facilities in schools and training the groups about best practices in menstrual management.

Sustenance and Maintenance :

- Involving student's to regularly monitor and promote behaviour change using child to child, peer education techniques. Promoting constitution of committees (students and teachers), for supervision and maintenance of the sanitation infrastructure.
- Collection of Annual subscription from students to ensure resources for long term maintenance of the sanitary block. Mobilise parents and school authorities to communicate the necessity of designated funds for water and sanitation infrastructure.
- Requesting schools to create a separate bank/post office account to deposit the constituting student committee's fund.
- Design and execute a simple Monitoring system to help the schools to track and assess periodical maintenance of the sanitary block.
- To develop a self sustaining environment and system in the school that would ensure periodic operation and maintenance of water and sanitation facilities.

Stakeholder's Involvement :

- Bring in as many stakeholders as possible into forums where each gets an opportunity to be appraised and contribute towards sustainable water - sanitation initiative in schools. Promote an Association of school committee members, guardians, and teachers that actively addresses maintenance management issues in the school.
- Ensure periodic meetings within school managing committees, teachers and guardians, for sustenance of school water & sanitation systems and leveraging financial and other support from the guardians and local government. These stakeholder consultations, through the effective medium of Parent Teacher Associations (PTA) would preclude finalisation of the sanitation programme. This would give the school an opportunity to lend their suggestions about the programme and optimise the use of available resources for the construction.

- Organise Block / District level workshops to strategise mechanisms for overall sustenance of school sanitation programme generating awareness at community level on safe water and sanitation.

Norms for Water and Sanitation Facilities in Schools :

- **Determining the Need :**

School Toilets :

To begin any school toilet design exercise, it is first important to establish the need and then follow the norms for provision of facilities. The norms for school toilets, urinals and washing facilities have been defined in the National Building Code (NBC). However, it should be noted that the norms must be simple, pragmatic and based on :

- Field experience of the ground situation (s)
- Observed pattern of usage of these facilities
- Methods that connect directly with planning of school classrooms and other infrastructure provisions (planned for multiples of 40 children)

For example, in most day-schools the frequency of use of urinals is much higher than toilets as compared to residential schools. Most norm based calculations are envisaged for 'peak' load situations of usage. If such peak times can be offset by creative planning of the time table, the provision of infrastructure may be optimized without compromising on quality. For example, if in larger schools, the lunch break is staggered for primary and middle schools, the number of urinals and toilets to be provided may be reduced without causing any inconvenience and ensuring better utilization of available resources. Hence, one toilet for every 80 children has been suggested.

It is also noticed that school toilets are being constructed across the country without following any clearly defined norms. Certain criteria need to be kept in mind while deciding on the number of and provisions provided to a structure. There are studies on queuing time for toilets is schools and how many toilets and urinals should be made available according to the number of students (both boys and girls). The following norms have been developed for school sanitation keeping the above criteria in mind. Separate tables have been prepared for non-residential schools and residential schools since the patterns of usage differ in both the cases.

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❖ **Norms tor provisioning of SSHE facilities (for day schools without residential facility)**

	Provision head*	Numbers to be provided	Remarks
1.	Girls' toilet squatting pan *	1 unit for every 40 girls + lady teacher	Day school without residential fasility.
2.	Girls' toilet for CWSN	At least 1 unit in a girls' toilet block	In case only 1 girls' toilet is needed in a school, this single toilet must be designed for CWSN*. In case more toilets are needed, the others need not cater to CWSN.
3.	Wash tap in girls' toilet*	1 tap in each toilet	Located conveniently for use by children as well as adults.
4.	Clothes hanging hook*	Hooks in each toilet	At least 2 hooks at different child accessible heights - suitable for a S year old child to an adult.
5.	Niche in wall*	1 niche in each toilet	Recessed in the wall to keep sanitary napkins.
6.	Ventilation arrangement*	1 opening for ventil-ation in each toilet	Size 450 x 450mm at a height and location that allows sunlight to penetrate for a few hours in a day for self drying.
7.	Door*	1 door in each WC	Door to be 2100mm high with child accessible latching arrangement.
Girls' Urinal			
8.	Girls' Urinal*	1 urinal for every 20 girls	With partitions. Two minutes waiting/ queuing time for using the facility at peak hours.

Children With Special Needs.

Girls' Urinal			
9.	Self cleaning system	1 flushing system in each urinal	Any flushing system that washes the soiled surface with minimal water is acceptable. Use of recycled water is desirable. Use of standard urinal or toilet flush is not compulsory.
10.	Ventilation arrangement*	1 opening for ventilation in each urinal	Height and location that allows sunlight to reach the floor for few hours in a day for self drying.
11.	Screen door	1 door tor each urinal	Screen door to be 1500mm high with child-accessible latching arrangement.
12.	Boys toilet squatting pan*	1 unit for every 80 boys + male teacher	Day school, without residential facility.
13.	Boys* toilet for CWSN	At least 1 unit in a boys' toilet block	In case only 1 boys' toilet is needed in a school, this single toilet must be designed for CWSN. In case more toilets are needed, the others need not cater to CWSN.
14.	Wash tap in boys' WC*	1 tap in each WC	Located conveniently for child as well as adult use.
15.	Clothes-hanging hook*	2 hooks in each WC	Hooks at different child-accessible heights from 5 year old child to adult.
16.	Ventilation arrangetnent*	1 opening for ventilation in each toilet	Size 450x450mm at a height and location that allows sunlight to penetrate for few hours in a day for self drying.
17.	Door*	1 door in each WC	Door to be 2100mm high with child accessible latching arrangement.
Boys' Urinal*			
18.	Boys' Urinal*	1 urinal for every 20 boys + male teacher	With partitions

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19.	Self cleaning system	1 flushing system in each urinal	Any flushing system that washes the soiled surface with minimal water is acceptable. Use of recycled water is desirable. Use of standard urinal or toilet flush is not compulsory.
20.	Ventilation arrangement*	1 opening for ventilation in each urinal	Height and location that allows sunlight to penetrate to the wet wall/urinal pan and floor for a few hours in a day for self drying.
Hand Wash			
21.	Hand wash	Minimum of 2. One wash tap for every 20 children	Can be provided (toilet/urinal)* as common/separate for girls' and boys' toilet blocks.
22.	Hand wash MDM kitchen*	Minimum of 3. One wash tap for every 20 children thereafter	To be provided near MDM kitchen. Preferably, should be segregated and separate from toilet hand wash for hygiene purposes.
23.	Soap tray with soap*	1 with every two wash taps	Soap type can be according to feasibility.
24.	Mirror	1 in each hand wash unit	
25.	Wash water storage tank*	Minimum 500 litres for a school of up to 100. children	Subsequent calculation @5 litres per child. I he tank capacity does not include a buffer storage reserve in case of emergency.

❖ **Norms for provisioning of SSHE facilities (for residential schools with boarding facility)**

Girls' Toilet			
26.	Girls' toilet squatting pan*	1 unit for every 20 girls + lady teacher/ supervisor	Residential school with boarding facility.
Boys' Toilet			
27.	Boys' toilet squatting pan*	1 unit for every 20 boys + gent teacher/ supervisor	Residential school with boarding facility.

It may be noted that provisions mentioned in 26 and 27 will replace provision mentioned in 1 and 12. All marked with '*'are essential and mandatory.

♦ **The following must be noted :**

- It is mandatory to make separate toilets for girls in the school. Special ami exclusive provisions for girls and-ladies must be made in these toilets.
- Exclusive toilets must be avoided altogether for teachers or head masters/mistresses. Toilets should have a universal design approach for use by children, CWSN as well as adults.
- In the spirit of inclusive education, toilet designs must be developed with the assumption than CWSN-are attending and will attend the schools in larger numbers in times to come. Under the act "Persons with Disabilities" (Equal Opportunities, Protection of Rights and Full Participation) enacted by the Government of India in January 1996 and passed by the Indian Parliament, it is mandatory that amenities in school are accessible to each CWSN. The design must address the needs of the types of CWSN attending school and at least one toilet and one urinal in the boys' and in the girls' toilet blocks must be accessible to CWSN.

♦ **Table : Sanitary fittings for Schools (Extract from IS:8827-1978 published by Indian Standards Institute)**

Fitments	Pre-schools	Primary & Secondary schools (Boys)	Primary & Secondary schools (Girls)	Staff
Water closets	1 per 15 students or part thereof	1 per 40 students or part thereof	1 per 25 students or part thereof	1 per 30 members or part thereof
Urinals	Not specified	1 per 20 students or part thereof	Squatting plate urinals 1 per 20 students or part thereof	Not specified
Drinking water fountains	1 per every 50 students or part thereof	1 per every 50 students or part thereof	1 per every 50 students or part thereof	1 per every 50 or part thereof
Ablution taps	1 in each water closet and 1 water tap with draining arrangements shall be provided for every 50 students or part thereof in the vicinity of water closets and urinals.			

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1.4 Drinking Water Facility :

All school must have a healthy, clean, secure and learner protecting environment.

◆ **Healthy and clean environment :**

A combination of dirty drinking water, dirty environment and improper disposal of excreta contributes to the degradation of health at schools. A concerted effort to supply safe water, clean sanitation facilities and teach the practice of hand washing with soap will drastically reduce illnesses at schools. This should be complemented with teaching to nurture in youths sense of ownership of common goods and their proper operation and maintenance.

◆ **Water :**

Water can be collected from many sources including: piped water from spring or a treatment plant, rain water, and open source such as river, stream, and lakes. The annual rainfall cycle varies throughout and within the regions, thus a water management plan needs to be made and implemented. When considering new school sites, availability of clean water access must be of the highest priority.

- **Rainwater harvest** systems are encouraged and should be used as a method of obtaining water. This will also limit the effect on the environment.
- **Potable water (safe drinking water) :**

  A school must offer adequate access to safe drinking water. A minimum of one safe drinking water point must be installed at each school together with a hygienic way to drink the water i.e. availability of water containers and/or cups.

  (a) **Potable water quantity :** The amount of potable water required for a pupil to remain healthy will depend upon many factors; size of child, climate, cultural and religious practices and activities carried out at school. The table below gives guidance on the minimum amount of water which should be available per pupil.

  (b) **Portable water/quality of Safe drinking water :** Safe drinking water should be odourless, colourless and tasteless (as per the context). Therefore, its turbidity should not exceed 5 NTU. Its conductivity would preferably be equal or less than 2000 S/cm. If up to 10 fc/100 ml (fc = faecal coliform colonies) are found,

a chemical treatment can be performed for disinfection; in this case, the residual chlorine should range from 0.2 to 0.5 mg/l to avoid any recontamination. Other treatments options such as membrane or candle filtration could be considered. Water should be exempt from arsenic, fluoride, nitrite/nitrate and heavy metals unless in concentration recommended by WHO for human consumption.

Pupil occupancy at school		Quantity of drinking Water (litres/pupil/day)
Full time pupils	Lunch at school	2 litres /day
	Lunch at home	1 litres /day
Boarding pupils		2.5- 3litres /day

◆ **Non potable water :**

A school must offer adequate access to water for cleaning and washing at schools with washing points with taps and soap. Minimum 1 washing point per 100 pupils with adequate drainage channels must be available.

(a) **Non potable water quantity;** The amount of water required for a pupil to retain hygienic level will depend upon many factors such as size of child, climate, cultural and religious washing and cleaning practices carried out at school.

The table below gives guidance on the amount of non-potable water which should be available per pupil.

Pupil occupancy at school		Minimum Quantity of non potable Water (litres/pupil/day)
Full time pupils	Lunch at school	10 litres /day
	Lunch at home	7 litres /day
Boarding pupils		20 litres /day

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(b) **Non potable water Quality :** A clear sign should be affixed beside each point to inform users of its non portability. It can contain up to 10 fc/100 ml but should preferably be colourless and exempt from suspended solid particles. Otherwise a decantation and clarification can be achieved in a storage tank prior to its use. It should be exempt from arsenic and other hard metal unless in quantity prescribed by WHO for human consumption.

◆ **Water supply systems :**

Each school should have a water storage facility for up to 40 to 60% of the daily children's water demand. If a municipal network exists, preferably arrangement should be made to connect the school to it. All connections to the existing mains shall be made with the utmost care using the correct type of couplings and note that additional treatment may be required for drinking purpose. The making of these connections shall be planned carefully so as to prevent or limit any disruption or interruption of the existing water supply service to the minimum. The school management should also ensure provisions are made to pay for the service unless otherwise regulated by the government for public institutions (free for instance or subsidized). Otherwise, a borehole can be sunk in school yard or its vicinity and equipped with a manual hand pump. Rain water or spring water can also be protected (box) and piped to the school. In exceptional circumstances, water can be transported to the school by tanker or rudimentary means (bottles, jerry can or drum in wheelbarrows)

◆ **Testing water supply systems and the quality of water delivered to children:**

At least three tests should be carried out in each school upon completion of works or/and subsequently once a year: water quality test, leakage and pressure testing. They can all be performed by their respective district engineers. Each pipeline shall be tested progressively for leaks as pipe laying proceeds in suitable lengths not exceeding the distance between adjacent isolating valves. The test pressure shall be twice the normal design pressure and shall be maintained for 3 hours.

Leakage tests shall be carried out only after the pressure test has been satisfactory. The Contractor shall prepare the pipeline section and connections and all necessary appliances for the leakage test. Each test shall be of two hours' duration with the pressure at the normal design

pressure. Leakage is defined as the quantity of water that is to be supplied into the pipe so as to maintain the pressure (after air has been expelled).

No pipeline is acceptable if the leakage is more than 2 liters per 50 mm of pipe diameter per 500 length per 24 hours, unless the Enginner decides otherwise.

Physical and biological test can be conducted using a DELAGUA type portable laboratory.

◆ **Drinking Water Provision :**

In a school, provision of drinking water must be made as per the following norms. The actual requirement may vary according to the climatic conditions, physiological needs and other factors.

◆ **Drinking water may be provided through any of the following modes:**

(1) Tested hand pump, bore well or any other traditional water structure.

(2) Piped drinking water supply based on ground or surface water.

(3) Rain harvested water (after it has been treated and found safe for drinking).

◆ **Norms for Drinking Water :**

Drinking Water			
a.	Safe Drinking Water Source	At least 1 source inside the school premises, irrespective of whether there is another one outside or near the school campus.	A dedicated safe drinking water source for a school is a must. Hand pump with a force lift is desirable for lifting water. Potability of water to be tested for safety as per the prescribed schedule. Source to be located at least 10 metres away from toilet soak pit.
b.	Water Storage Tank	Minimum 500 litre tank for every 100 children including buffer reserve. At least 5 litres per child to be provided.	The tank capacity assumes a buffer storage reserve in case of emergency or maintenance work, etc. for two days.

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◆ Drinking Water and Health :

The following measures can be undertaken to avail purified drinking water to maintain one's health and it ultimately helps to develop the quality of learning :

(a) Arrangement of one or more deep tube-well.
(b) Supply of drinking water from municipality (corporation) and panchayet by storing water in reserve tank.
(c) Cleaning of water storage and tanks after a regular interval with the help of chlorine water, bleaching powder etc. so that the water borne diseases can be restricted.
(d) Wastage of water must be stopped by proper supervision and a prior guidelines must be provided to the students regarding the use and maintenance of water taps and sources.
(e) Students may carry drinking water from home within water bottle.

✪ 1.5 Play/ Games /Leisure Area :

Sports and play are a fundamental need for the pupils' education. A school must offer access to play grounds, leisure areas and sport pitches.

Locations where land is limited or that the school is within a difficult terrain, alternative solutions to enable pupils to gain access to play grounds should be explored. Solutions such as using community fields can be alternatives.

(a) Common sports played in primary and secondary schools are: Volleyball, Basketball, Athletics and Football.
(b) The pitch must be level with a smooth surface.
(c) The surface must not be hazardous.
(d) Shaded outdoor play areas should be provided, such as groups of trees or canopies.
(e) The creation of sports, pitches and its maintenance may be carried out by the community work.

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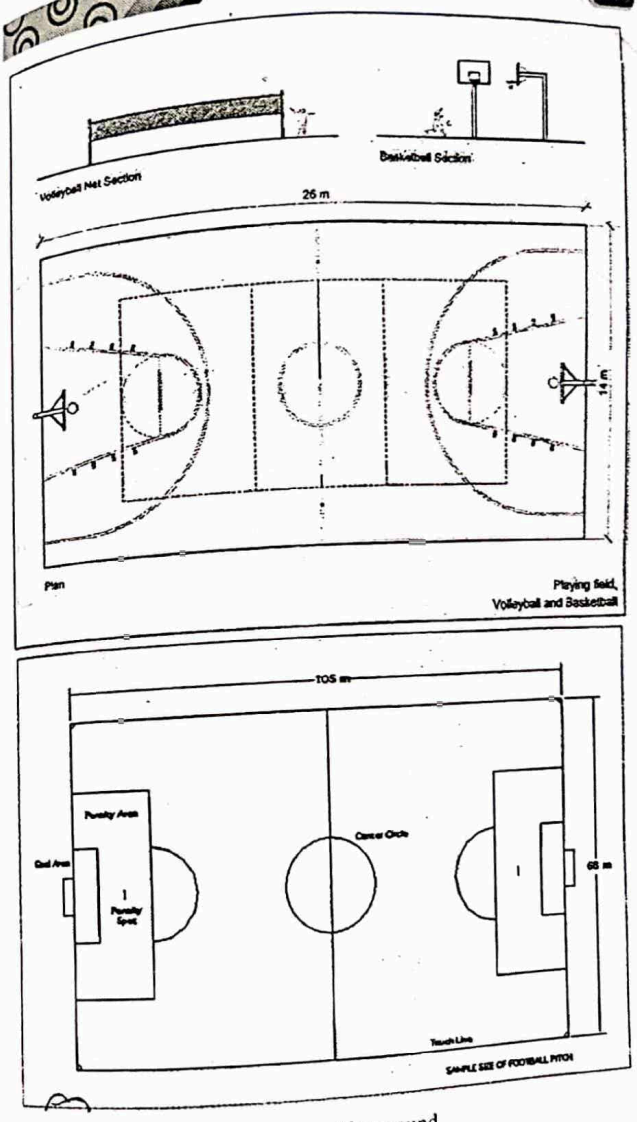

Figure : Playground

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◆ Importance of Games and Sports :

Games and Sports have acquired a dignified place or special value in modern world. Special talents are emerged out from sports. By participating in international championship they enrich their country as well as established themselves. Many of these talents are get facilities from school and become successful in state, national, international level of sports. Not only boys but also the girls are very much successful in football, cricket, badminton, gymnastics, swimming, ha-du-du, kabaddi, yoga etc. They are glorifying their institute as well established themselves in different occupations. Considering all these things sports are given a special value by education commission or committee.

The all round development of the students depend on their physical fitness to a great extent. A few vital qualities viz. empathy, collaboration, cooperation, positive attitude towards life and society, companionship, entertainment can be developed through sports. Presently, especially in many schools of urban areas, sometimes there is no provision of play grounds. But in villages, there are more than one play grounds in schools and therefore, many talents are emerged out of those schools under the proper supervision and guidance of the teachers.

At least two to three acre lands should be allotted for this play ground in every school depending on the number of students. Indore games are given much priority where there is no facility of play ground. There should be the provision of a special room for yoga in every school.

The minimum area of a school play ground should be (according to the advise of School Building Committee of Central Advisory Board of Education) as follows :

Number of students	Area of play ground
160	2 to 3 acre
320	4 to 5 acre
430	6 to 7 acre

Both teaching and non teaching staffs are interested to incorporate sports into present curriculum. If a school doesn't have its own play ground then it may arrange playground in nearby clubs or borrow the playground of other institute to encourage the students.

West Bengal Board of Secondary Education categorized different games and sports and activities under the subject Physical Education. On the basis of classes, eight different types of games, sports and activities are classified that are as follows:

- Formal games: drill, exercise, yoga, sit-ups.
- Individual games: swimming, racing, gymnastics etc.
- Organized games: football, volleyball, hockey, ha-du-du, Kabaddi, kho-kho etc.
- Low organized games: tug of war
- Defensive games: judo, wrestling etc.
- Rhythmic games: Bratachari, local dance, stick dance etc.
- Outdoor games: tracking, rock-climbing, travelling etc.
- Games related to patriotism and civic development: N.C.C, Boy Scout, Girl Guide, celebrating national festivals etc.

◆ **Playground and its management :** After discussing the importance of games and sports, now the matter of discussion will be what type of indoor games, outdoor games or gymnastics can be organized for the students according to the size of the play ground. Play ground should not be a football ground always. It is undoubtedly better to have a football ground in schools but empty rooms, balcony, water bodies can also be utilized as a place for conducting sports. Few matters related to play ground are discussed below:

- The govt. aided schools in villages have their own play grounds and large spaces. So football, cricket, athletics can be arranged there with the help of modern technologies. Selection of sports to be played depends on the area of the play ground. If, students will be able to run freely in a play ground, that would also improve their physical fitness which will in turn develop their personality, companionship, concentration as well.
- If there is pond or water body in the school, swimming or water polo can be played.
- Several schools in urban area and small municipal area don't have their own play ground. In that case terrace or any empty large hall at ground floor can be used as a play ground. In these cases indoor games must be organized. Yoga, gymnastics etc. which are competitive and good for students' health must be practiced in school.

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➢ There may be some ground inside the school premises which can be manged for ha-du-du or Kabaddi. If so, then the play way method of learning can really be fostered in school.

At the end, it can be said, that sports motivate students towards learning. Thus, at present physical instructors are appointed to every school to ensure the physical fitness, personality development, and discipline in students.

1.6 Library as Learning Resource Centre :

Introduction :

- The word 'library' is rich in tradition, meaning, and usage. The definitions of 'school library' given by various library scientists and associations reflect this heritage. Throughout the world the Library of a school is considered as part and parcel of the academic set-up. It is created and maintained to serve and support the educational activities of the school. The recommendations of numerous commissions and committees established by the Government of India and various other states for the improvement of school education can bring in desired results provided the school has the full complement of library resources, personnel, and necessary infrastructure. So far the school library has not been given its rightful place in the scheme of things. Nevertheless, it can play a very important role and help the school in achieving the educational objectives. If we recognize the value and importance of informal system of education, then library method of self-education is sure to get its due place.
- The school Library provides information, inculcates ideas, and develops knowledge that is so essential for functioning successfully in today's information and knowledge based society. It is fundamental to school library to equip students with life long learning skills and develop in them creative thinking and imagination, and enabling them to live as ideal and responsible citizens.
- Thus, the school library must be made the hub of all the activities planned and executed in school. It can be used by students to prepare for their next class period, homeexamination, general education, information, competitions, recreation and inspiration. To cater to the wide varieties of demands of students and teachers it has to judiciously select and procure the prescribed/ recommended text-books and other

reading material from different sources, technically process it by making use of a standard scheme of classification, catalogue it to provide various access points, organise the collection on scientific lines, circulate the documents and disseminate the information in such manner most liked by the students and teachers. In addition, the school library has to serve as a resource centre as well.

- In Europe and other developed countries of the world a greater emphasis is laid on the library method of teaching. The School Library Staff support the use of books and other information services which range from the fictional to documentary, from print to electronic within the four walls of the library as well as outside. This is all done to enthuse the young minds of pupil to unfold their self and discover their potential. A lot of assignments are given to the pupil for which they have to sit and work in the library itself. This method of teaching makes them skillful and discriminating users of library resources and services.
- Although the school library has been recognised as an essential component of a good school, yet many schools of our country lack library facilities. From the prevailing picture of school situation in our country, it can be seen that much remains to be done in providing our schools with well-organised libraries, particularly so in far flung rural areas. Currently, the situation is such that a few books locked in a classroom are given the status of a library. Millions of our school children, other than those studying in public schools, are being deprived of the full complement of library resources and services, which they need and are entitled to. Even in schools where library facilities exist, the picture is not very bright. The condition of these libraries is below the standard when compared with their foreign counterparts.
- In the education of young child, the printed and other audio-visual resources are essential and needed in abundance. These resources are the basic tools, which are required for the effective teaching and learning. Our educational planners and administrators have rightly stressed the point of view of quality education. It is through the library that the material needed by teachers and students can be supplied efficiently and economically and its adequacy and quality assured. Merely stocking the reading material in schools is not enough. Care must be taken to get these materials properly organised and make the same easily available to the students and teachers. All schools,

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irrespective of the number of accessible to students registered, should be provided with a library organized on modern lines and supervised by a qualified trained librarian. The provision of adequate supporting staff is very much essential in achieving excellence in library and information services.

- The provision of School Library service must be open to the whole school community regardless of gender, race, and economic and social status, religious faith, nationality, language, and physical disabilities. The School Librarians should see to it that specific services and materials are provided to those who are for some reason unable to use mainstream library services.
- All schools have a Library period in their Time Table for all classes. Students go to the Library during this period to get the books issued or returned. The time available with the Librarian for each group is so little that he hardly gets any time to do any thing else other than normal 'issue and return' of books. The school authorities will do well to relieve the Librarian from any formal teaching work and encourage him to take extra interest in promoting library use for the larger good of students. The Principal of the school should ensure regular and timely release of funds for the purchase of reading material. Necessary tools required to technically process the reading material such as latest edition of classification scheme; cataloguing code; and list of subject headings should be made available to him. Full cooperation needs to be extended to the Librarian in the timely dissemination of information.

◆ School Library Objectives :

It is needless to emphasize that School Library is essential to every long-term strategy for

- ➢ Literacy
- ➢ Formal Education
- ➢ Information Provision
- ➢ Economic, Social and Cultural Development.

Thus it must be supported by the local, state and national governments of the day.

In conceptual planning and development of school library services, the librarian is guided by the stated objectives of the school. These

objectives mostly pertain to the provision of reading material, guidance in reading, reference service, instructions in the use of library catalogue and reading materials, personal and social guidance to students etc. With little modifications here and there, different school libraries decide about the priorities of services to be offered and frame a set of objectives to be achieved. The major objectives of a school library are to :

- ◆ Effectively participate in the teaching-learning programme of the school;
- ◆ Provide the students with appropriate library materials both printed as well as audio visual and services for the overall growth and development of the personality of the students as an individual;
- ◆ Develop reading ability and interest, and inculcate love, enjoyment and pleasure of reading amongst the students;
- ◆ Assist the students to become skillful and discriminating users of library;
- ◆ Offer opportunities for experiences in creating and using information for knowledge, understanding, information and enjoyment;
- ◆ Support all students in learning and practicing skills for evaluating and using information, regardless of form, format or medium, including sensitivity to the modes of communication within the community;
- ◆ Stimulate and guide each student in the selection and use of books and other reading materials for the building of taste at appropriate level of maturity;
- ◆ Workout a programme in consultation with teachers for the effective use of all types of library materials;

The above-mentioned objectives focus upon the most important functions of the library in a school situation.

In order to achieve these objectives the School Librarians need to:

- ◆ provide the students equal access to all library resources.
- ◆ arrange for high quality customer service to students, organized on modern lines.
- ◆ be familiar and aware of popular books and magazines, the students enjoy most.
- ◆ arrange for reading sessions of popular books and magazines and talks by the celebrity authors.
- ◆ make the library inviting and pleasing with comfortable furniture.

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- involve teachers and students in making the collection up-to-date.
- draft student friendly library rules.
- sign MOU (memorandum of understanding) with sister libraries for mutual help and cooperation.

• Library Advisory Committee :

Of late the committee pattern of administration is gaining momentum. Most of the institutions have a committee to advise. It will be advantageous if the school creates an advisory committee with the following terms of reference:

- To recommend suitable budgetary provisions for the library and resource centre;
- To formulate policy in relation to the development of resources for reading, reference and projects;
- To develop a general programme of library service to suit the interest and requirements of different teaching departments of the school;
- To frame, review and approve library rules;
- To make recommendations for proper functioning of School Library Resource Centre;

• The Committee may comprise the following :

- Principal/Vice Principal (Ex-officio Chairperson),
- One representative from each of the Subject Departments,
- Six student members from classes VIII, IX and XI (2 from each class),
- Librarian (EX-officio Member-Secretary).

The Committee may invite any other person(s) if found necessary from time to time. It should constitute sub-committees for specific functions like 'Book Selection Sub-Committee', 'Stock Verification Committee', 'Weeding/Withdrawal Committee', etc.

• Importance of Library :

Books are friends and treasure houses of wisdom. They give us pleasure and lead us to great heights.

The need for a good library service in a modern school is no longer an issue for debate. All thinking people, who are informed about the purpose of education, nature of the learning process, curriculum and the instructional process, and procedures in today's schools, agree on the important contribution which library services make to the character and quality of educational programmes. Schools that have a good library service usually have better instructional programmes than those without an effective library service.

With the changed concept of education as a process of self-education, where the teacher's role is largely to be of a guide and a facilitator, the role of library has assumed major importance. The modern trend in education is to encourage students to collect, on their own, information from various sources. From this point of view reading in a library itself is a part of school education. A library is indispensable for such modern methods of teaching as problem-solving method, project method, assignment methods, supervised study etc. Thus, a library is the hub and centre of intellectual activity in a recognised school and plays the same part, for all subjects, as does a laboratory for science subjects, or a workshop for technical subjects.

According to the Education Commission (1964-66), a collection of books, even a collection of good books does not constitute a library. A library should be the centre of intellectual life, of a school, available at all times for reference, for study and for private reading. It should be a quiet place, provide an environment which encourages study and reading, and furnished and equipped for comfortable use.

Yet, not all schools have recognised important part which a library plays if more modern techniques of teaching are utilised to provide education and growth of children. In some cases, library facilities are generally inadequate or totally lacking, while in other schools, there is constant effort to improve facilities so that the library becomes the focus of many instructional activities.

In schools, the textbook is an important means of learning for teachers and the taught. It provides a specific approach to pass on information and knowledge as briefly as possible. While it has advantages, there is a serious drawback in it. With total reliance on a textbook, teachers and students can limit their thinking to whatever material is available in the textbook. With today's procedures of teaching-learning, textbook material is not considered sufficient. Supplementary reading, both on the part of the teachers and pupils, is essential. Besides using library by themselves teachers must motivate and stimulate pupils to undertake independent study and learn to use the resources that a library has. In modern times library is an essential educational aid and proper use of it must be made.

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● **The present condition of school libraries :**

The present condition of school libraries is deplorable, to say the least. Unfortunately, this aspect of education has generally been neglected. There are very few schools with functional libraries. There are very few books in school libraries. They are usually old and outdated and often purchased just to oblige publishers without any regard to student's requirements and interests.

The purpose of a library cannot be realised if it is not properly housed, maintained and equipped.

- In most secondary schools, there are no separate rooms for libraries. Even if a room is provided, there is hardly any sitting arrangement. Suitable library furniture is not available.
- In a majority of schools, where there is a library, there is no full time trained librarian. He/she is often an overworked teacher who does not have the time to look after the library. Further, those teachers who are given the responsibility of looking after the library have no training in the organization of libraries. Naturally, therefore, there is nothing like an imaginative, and well planned library service which could assist and inspire students.
- Although in many schools there might be a large number of books in the library, most of them have not been properly selected after taking into consideration the needs and interests of the students or even teachers.
- It has been observed that most teachers do not have any love for reading. Neither are they interested in reading nor do they stimulate the students to read.
- At the time of an inspection, some books, maps, charts are purchased for the purpose of window-dressing.
- Most schools face financial difficulties. There are no budget allocations for libraries in private schools. In Government and local body schools, allocation is meager, and does not allow purchase of cupboards, shelves, furniture and other necessary equipment. Hence it is not possible to build a library.
- Unfortunately, library reading does not find any place in the school curriculum. There is no library period in the time table. Schools subscribe to a number of journals and newspapers, but these are not used by teachers and students. The school time table is so overcrowded that students do not find time to make use of its facilities.
- Even if the school library is well equipped and good library service is available, most students do not avail of this facility. Their attitude towards library — reading is not healthy. The reasons are overcrowded curriculum, defective examination system, lack of interest on the part of teachers and unhealthy home environment.

● **Managing Library :**

The various factors which contribute to an efficient running of a school library are as follows:

(i) Location : A library is known as the soul of an institution. Therefore, its location, arrangement and equipment must receive special attention.

- It should bein quiet corner of the school building so that it is free from noise and disturbances.
- It should be well lighted and airy. The interior of the hall should be properly maintained and it should be as spacious as possible.

(ii) Equipment : It should have a large number of plain tables and comfortable chairs. Another important requirement for a good library is to have a number of large almirahs. Other equipment necessary for the library are newspaper stands, sloping magazines shelves, display boards, notice board, librarian's counter and bulletin boards, wherein jackets of new arrivals are displayed.

A catalogue of books must be arranged subjectwise and authorwise so that students do not waste their time hunting for books.

(iii) Selection of Books : In the words of the Secondary Education Commission, "The guiding principle in selection should not be teacher's own ideas of what books the students must read but their natural and psychological interests."

The authors should be of good reputation. The subject matter should be meaningful and in psychological sequence. The schools should constitute a committee for recommending books to be purchased. In the case of books which are in greater demand it is desirable to purchase multiple copies so that students do not have to wait for long periods to consult or to borrow a book.

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(iv) Organisation : Books should generally be kept in shelves, by subjects, so that all books on a subject can be found at one place. In schools it is desirable that there is an open shelf system, which will allow students to pick up books they desire to read. However, some reference materials can be kept separately to meet the speed, needs of students and teachers. A library should allow students and teachers to borrow books for study at home.

(v) Library Rules : Some specific rules should be displayed for the use of readers.

◆ **Role of a Teacher :**

A large number of secondary schools do not have any librarian. The job is generally entrusted to a teacher as an extra chore. He/She is not competent and also does not find time to perform his/her duty well. The result is that the library remains unutilised by students. A school should have a full time qualified and trained librarian. To assure the best results it would be necessary to provide regular and continuous service by a librarian in the use of the library.

It has been very aptly said that "No library can be maximally successful unless the teachers use it, are aware of its resources, see the possibility of its use as an instructional aid and stimulate its use through the procedures, they employ in their teaching". Teachers can achieve this by:

- Asking students to go to the library whenever they feel the need for reference material arises.
- Training students in the use of catalogues so that they can locate books .
- Telling students about books that might interest them.
- Developing assignments which would require students to use the resources of the library.
- Distributing suggested readings through mimeographed materials.

The best use of the library can be assured by scheduling the time table so that all students visit library regularly sometime during the day or week. There should be library period for each class when students come to the library to read materials of their own choice.

The need for extra reading among students is indeed great. They should be encouraged in this direction through all possible means. It would be very encouraging if a library is kept open after school hours. This will allow students to read whenever they feel like reading something.

Short Questions & Answers

1. What are the major objectives of school library?

Ans. The major objectives of a school library are to, as follows :

- Literacy
- Formal Education
- Information Provision
- Economic, Social and Cultural Development.

2. What is the importance of Games and Sports in School?

Ans. Games and Sports have acquired a dignified place or special value in modern world. Special talents are emerged out from sports. By participating in international championship they enrich their country as well as established themselves. Many of these talents are get facilities from school and become successful in state, national, international level of sports. Not only boys but also the girls are very much successful in football, cricket, badminton, gymnastics, swimming, ha-du-du, kabaddi, yoga etc. They are glorifying their institute as well established themselves in different occupations. Considering all these things sports are given a special value by education commission or committee.

The all round development of the students depend on their physical fitness to a great extent. A few vital qualities viz. empathy, collaboration, cooperation, positive attitude towards life and society, companionship, entertainment can be developed through sports. Presently, especially in many schools of urban areas, sometimes there is no provision of play grounds. But in villages, there are more than one play grounds in schools and therefore, many talents are emerged out of those schools under the proper supervision and guidance of the teachers.

3. Mention a few measures that can be undertaken to avail purified drinking water.

Ans. The following measures can be undertaken to avail purified drinking water to maintain one's health and it ultimately helps to develop the quality of learning :

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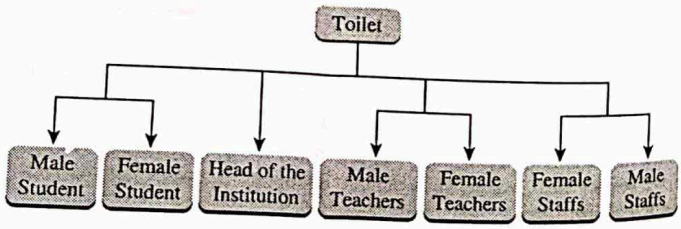
(a) Arrangement of one or more deep tube-well.
(b) Supply of drinking water from municipality (corporation) and panchayet by storing water in reserve tank.
(c) Cleaning of water storage and tanks after a regular interval with the help of chlorine water, bleaching powder etc. so that the water borne diseases can be prevented.
(d) Wastage of water must be stopped by proper supervision and a prior guidelines must be provided to the students regarding the use and maintenance of water taps and sources.
(e) Students may carry drinking water from home within water bottle.

4. Describe general guidelines for toilets and sanitation set-up in school premises.

Ans. General Guidelines for Toilets and Sanitation Set-up in School Premises : In the context of the schools, ecological and safe sanitation in fact, ensures that the human excreta and school waste water as resources are recovered, treated where necessary and safely reused.

While planning/designing school toilets the internal rules of the establishment have to be considered :

- Build separate toilet rooms for girls and boys.
- A closed container for the disposal of sanitary napkins has to be provided within each cubicle for girls and women teachers.
- Urinals and toilets for boys and toilets for girls to be installed as per the ISI norms.
- Hand washing facility must respect children's height and size.
- A toilet cleaning and maintenance service has to be activated within the school.
- In Muslim schools (as in Muslim homes) there should be the provision of separate toilet buildings for girls and boys; sitting and facing direction must respect the religious norms.



5. Name the essential furniture in teachers' room.

Ans. These are as follows–table, chair, cupboard, computer table and so on.

6. Name four essential rooms in a school building.

Ans. These are as follows : Classroom, Library, Headmaster's room, Assitant Teacher's Room.

7. Describe the location of library.

Ans. A library is known as the soul of an institution. Therefore, its location, arrangement and equipment must receive special attention.

- It should bein quiet corner of the school building so that it is free from noise and disturbances.
- It should be well lighted and airy. The interior of the hall should be properly maintained and it should be as spacious as possible.

8. Write a note on school play ground.

Ans. Schools should have well maintained playgrounds. Sports and games play so vital roles in education that they cannot be totally dispensed with. /Playgrounds not only enable pupils to develop their physical health but also help them to grow cognitively, socially and effectively. Hence any school that has its eye on the total development of children should have enough facilities for indoor as well as outdoor sports and games. A number of schools have now gymnastic for athletics and sports room for indoor games. Of course, it is important that schools should have enough funds to purchase sports and Physical education equipment.

9. Describe the role of a teacher in library management.

Ans.

- Asking students to go to the library whenever they feel the need for reference material arises.
- Training students in the use of catalogues so that they can locate books.
- Telling students about books that might interest them.
- Developing assignments which would require students to use the resources of the library.
- Distributing suggested readings through mimeographed materials.

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10. Give your opinion regarding the nature of classroom.

Ans.

- The class rooms must be airy. There must be a balcony adjacent to the class room.
- The class rooms must be teacher and student friendly for proper execution of teaching learning process.
- The class rooms must be comfortable for the students during all seasons.
- The class rooms must be set in such a way so that the student can write properly during examination.
- At least 12 class rooms are required, if there is one section allotted per class from five to twelve. For additional subjects of class IX, X and elective subjects of XI, XII, extra class rooms are required.
- There must be proper ventilation in each class room.

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Probable Questions

Objective answer type questions :

Marks : 2

1. What is the space normally required by a student in classroom?
2. Why does the height of high bench should differ from class to class?
3. What difficulty does a student of class XI face when he uses the bench of class V ?
4. In a multistoried school building where should the room of the headmaster be located ?
5. Name 4(four) essential rooms in a school building.
6. "School building should be situated in a very isolated place"-Give your opinion one in favour of and one against it.
7. Name the different types of visitors visiting headmaster's room.
8. If sufficient land is available, even then school building should be multistoried-Comment.
9. Name the essential furniture in a teachers' room.
10. Wooden chair and plastic chair-which is more suitable for a class-room?
11. Find the location of office room with respect to the headmaster's room.
12. Name the sources of drinking water in the urban and rural schools.
13. Find the relation between girls' enrolment and sanitation facilities in school.
14. Name different types of books to be on the racks of library of a school?
15. Give two points on how library can develop discipline among the students.
16. Give two uses of playground in a school.

Short answer type questions :

Marks : 5

1. Give the characteristic of a classroom in a school.
2. Give the necessary characteristics of a assembly hall in a school. What are the uses of an assembly hall?

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3. State the importance of Headmaster's room in a school.
4. How can the sanitation process of a school be developed?
5. Write the pros and cons of constructing toilets attached to main building of the school?
6. State the different uses of water in a school.
7. Discuss the different processes of minimizing wastage of drinking water in a school.
8. What alternative arrangements can be done if a school does not have its own playground?
9. In coeducational schools what should be the arrangement of toilet facilities and how they used?
10. Estimate the present position of school library and their functions.
11. A school s can easily function without school library.-Give your views with examples.
12. What should be the location of a school laboratory with respect to the main building and why? Give a list of furniture required for the school laboratory ?

☛ Essay answer type questions : **Marks : 10**

1. Discuss the plan of any school building you have ever visited. Critically discuss whether that school is favourable for better teaching learning.
2. Critically discuss the conditions of drinking water and sanitation facilities in schools. Give your views on how these facilities can be given in rural schools. What is the responsibility of a teacher in this respect?
3. If you were a headmaster /mistress in a school how would you develop a good library in your school by using materials and human resources of the school?

Unit 2

Human Resource

❑ Structure / Content Outline :

2.0 Introduction

2.1 Teaching Staff (Full Time + Part Time + Para Teacher)

2.1.1 Full Time Teacher

2.1.2 Part Time Teacher

2.1.3 Para Teacher

2.2 Non-Teaching Staff

2.2.1 Staff Pattern

2.3 Students : Boys/ Girls/ SC/ ST/ OBC/ Minority / Special Needs Children

2.3.1 Students

2.3.2 Boys

2.3.3 Girls

2.3.4 SC/ST

2.3.5 OBC (Other Backward Category/Class)

2.3.6 Minority

2.3.7 Special Needs Children (Concept of Exceptional children. Special Education and children with special Needs, Integrated Education and Mainstreaming)

2.4 Teacher-Student Ratio

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✪ 2.0 Introduction :

Two types of resources are very much essential for every institution- one is physical resource and the other one is Human Resource. One is complementary to the other. Only physical or natural resources cannot bring an institution to its destination, again only human resources cannot bring the institution to its success until having the assistance of the necessary infrastructure.

In the previous unit, physical resources were described. In present unit teachers, teaching staffs, students, teacher- student's ratio will be described.

✪ 2.1 Teaching staff (Full Time + Part Time + Para Teachers) :

Teachers refer to full time teachers, part time teachers and para teachers. For the suitable infrastructure of secondary school, full time efficient teachers are required. The role of teachers is very important to teach students. A school is being built out of syllabus oriented by board or council, rightly developed infrastructure and trained full time teachers who have perfect job security and are easily available at any time of a week. If the number of students is more or the content of any subject is very large, then part time or Para teachers are headed along with the full time teacher.

❑ 2.1.1 Full time teachers :

Generally in every secondary school full time teachers are divided into three categories; such as-

- One : according to the diversity of subjects to be taught in the school.
- Two : on the variation of different levels-upper primary, secondary, higher secondary.
- Three : according to the number of students.

Teachers are also recruited or divided into different categories on the basis of their teaching subjects :

- One : linguistics-first language (Bengali/Hindi/Arabic/Urdu), second language (English), third language (Hindi, Sanskrit, Arabic)
- Two : sociological subjects-History, Geography, Economics, Political Science, Environmental Science, Philosophy, Sociology etc.

- Three : general science, Biology, Physics, Chemistry etc.
- Four : Mathematics, Statistics, Computer etc.
- Five : Co-curriculum subjects including Technical education, Physical Education, Music, Work Education etc.

The number of teachers are determined and employed on the basis of the number of students enrolled in secondary and higher Secondary level. Some teachers are employed on the basis of general caste, SC, ST. and OBC category as per reservation norms of govt. for recruitment of teachers.

These teachers are employed in govt. and govt. aided schools by following govt. rules and regulations.

Generally male teachers are employed in boy's schools, female teachers are employed in girl's school, and both teachers are employed in co-education schools. But there is no strict rule to employ in this manner in the system of education.

In higher secondary level, sometimes, female teachers are employed in boys' school and male teachers are employed in girls' schools. The teachers who are agreed to go even in remote villages and areas, are appointed or employed there according to the need of the hour. This rule is applicable for the recruitment and appointment of the Work Education, Physical Education and Music Teachers.

❑ 2.1.2 Part Time teachers :

Part time teachers need not take classes of 39/45 periods in a week. Mostly they have to take 6 periods per week. Their economic liabilities are undertaken by the schools and sometimes state education department takes care of their development. Their employment is temporary, as per the necessity of the schools. The reasons behind the employment of the Part Time Teachers are discussed below :

(a) When there is no full time teacher for teaching a subject can be found in the school at Higher Secondary level.
(b) When there is no full time teacher for teaching optional subjects can be found in the school at secondary level.
(c) When there is no full time teachers can be found in the school for teaching a subject which has very small content for example Music, Sports, and Computer etc.
(d) When the full time teacher goes away for B.Ed. training, a part time teacher is being employed on Deputation Vacancy. Previously a full time teacher was employed on Deputation Vacancy and the State Govt. used to give him/her salary.

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❑ 2.1.3 Para Teachers :

The quantity or number of students has been increased much in every places of all over India because of the impact of Sarva Shiksha Avijan, but the amount of teachers cannot be increased proportionately because of financial scarcity.

Although the teaching learning process can be enabled because of the efficient para teachers who are being employed with the help of govt. treasury. Para teachers are full time contractual teachers. According to the rules, they have to take classes for 4 days for in a week. They have to spend the rest of the two other days to encourage the guardians of the children who are deprived of education, to send their children to schools. The para teachers may or may be not be trained always. They have recruited as well as selected by the members of managing committee of the school. They are not at all selected by TET Examination. They get very small remuneration regularly from the govt.

There was no concept of Para Teachers till the end of the lost century. They were being employed as a result of Sarva Shiksha Avijan to manage the increased number of students in the schools of West Bengal. In case of para teachers the following facts can be seen :

- ✦ The number of male teachers (52000) is more than the female teachers (36000)
- ✦ The highest number of Para teachers can be seen there in Uttar Pradesh, then in Assam, Andhra (undivided)

■ Qualification of the Teachers :

Learning process can be effectively enabled through the help of skilled and trained teachers. NCTE (National Council for Teacher Education) declared to employ trained graduates for lower secondary classes and for secondary and higher secondary classes a teacher has to be Honours Graduate and trained as well. Now let's see, what conditions should be applied to employ the teachers and what rules and regulations are being set up there in state and national level to employ the teachers at different levels of school.

NCTE is an autonomous body that is being formed to train the teachers, was established through an Indian parliamentary act in the year 1993. This institution/body, determines the pre-conditions which should be applied to employ the teachers. According to the set rules, a teacher has to possess the following qualifications :

(i) Primary teachers must have to pass H. S. Examination with minimum 50% marks from any authorized board or council.

(ii) The primary teachers must have to pass Two year D.El.Ed. (Diploma in Elementary education) course from recognized board or council.

(iii) No framing can be given if he/she lacks adequate educational qualifications.

(iv) The teachers have to pass TET (teachers Eligibility Test) before employment.

The Educational qualification needed for full time as well as or part time teachers at upper primary (VI-VIII), Secondary (IX-X) and higher secondary (XI-XII) level are given below :

Level	Educational qualification	Required Training
Upper primary (VI-VIII)	50% in B.A./B.Sc/B.com (pass)	B.Ed.
Secondary (IX-X)	50% in B.A. (pass)/ Honours/or Masters/P.G.	B.Ed.
Higher Secondary (XI-XII)	50% in honours/ masters	B.Ed.

But in case of Para teachers the rules can be relaxed both in training and qualification to employ young educated local people on Contract basis to continue, the teaching learning process in the school.

Those who completed Masters with honours must obtain 50% marks in any one of them. Moreover he/she has to obtain 50% in B.Ed. along with interest and aptitude towards teaching.

In present scenaric distance education plays an important role to improve the educational qualification and training for Para teachers also. Govt. has also taken initiatives regarding this.

■ Assessment of Other Qualifications of the Teachers :

Assessment of a teacher is being done or determined by his/her qualification, efficiency and dedication towards his/her profession. There are a few conditions which are considered to be essential for assessing a teachers are as follows :

(1) The educational qualification of a teacher as determined by the state or central govt.

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(2) Minimum Required Professional training as determined by the central or state govt.
(3) Interest and aptitude towards teaching profession.
(4) Empathetic attitude and motivation towards teaching-learning process and learners.
(5) Systematic dedication towards profession by maintaining discipline
(6) Positive/Respectful attitude towards administrative laws of school.
(7) Sympathetic attitude towards socio economic condition of the local people, guardians.
(8) To encourage the students for participating spontaneously in curricular and co-curriculus activities to build up and foster creative attitude amongst them.
(9) Attempt to create secularism, well equipped culture, patriotism, universal brotherhood among the students by abiding the postulates of constitution of our country.
(10) To involve all the students in various activities by overcoming the economic and religious divisions/barrier, on the basis of their merits.

If the upper primary level is included within the secondary school, the teachers of upper primary school have to be Graduate (Pass 50%) along with B. Ed. but if the upper primary level remains as a separate section of the institution, the above mentioned teachers can be able to teach there along with another group of teachers who are having 50% marks in their higher secondary level and D.El.Ed, training, who can also teach there. A graduate having B.Ed. rather than D.El.Ed. is also eligible to teach.

■ **The Number of Male and Female Teachers :**

Though the number of female teachers were very less in past century, but at present in national level their number is 38% (secondary), 41% (higher secondary) and in West Bengal 30% and 26% respectively in secondary and higher secondary schools. [Source 7th Survey of Education, Provisional, 2005].

■ **Head Master and Assistant Teachers :**

Teachers are divided into two categories or part :
(1) Headmaster (2) Assistant Teachers

■ **Headmaster : Govt. aided school :**

(i) SSC (School Service Commission) selects or appoints the headmaster.

(ii) The minimum qualification for being a headmaster is minimum 10 years experience of teaching in a secondary or higher secondary school as a full time teacher.
(iii) Minimum educational qualification is Post Graduate and at least 50% marks in Graduation or post graduation level and 50% marks in B.Ed.
(iv) There is no major difference between the headmaster of higher secondary school and secondary school in terms of their qualities and qualifications except the head master of the higher secondary school is being given two more increments rather than the Headmaster of the Secondary School.

The headmaster becomes the secretary of Managing Committee (MC) by Ex-officio. On the other hand the Managing Committee is the authority to appoint or select the headmaster.

■ **Govt. school :**

The selection and employment procedure of the headmaster is a bit different in case of govt. schools. and the promotion process is also quiet different in govt. school. Headmaster is selected and appointed in Govt. Schools in two ways :
(i) Directly recruited by P.S.C
(ii) By efficiency and experience

There is no difference in structure of pay scale between the headmasters in govt. aided schools and purely govt. school. But there is an opportunity of promotion on the basis of experience in govt. school. Even a headmaster can be promoted as Deputy Director of School Education at senior level of his service.

■ **Other types of govt. school :**

There is another type of govt. school, that are situated at Dowhill region in Kurseong. These schools were founded in British era especially for Anglo Indian students and for the children of govt. officers who hold higher posts. The name of the girls' school is Dowhill School for Girls' and boys' school is Victoria School for boys. Here the gradation or post of assistant school teachers is equivalent to DI (District Inspector) and the post of Headmaster is equivalent to Deputy Director/ Joint Director of School Education.

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■ **Responsibilities of Headmaster :**

The Head Master has to shoulder many administrative and educational responsibilities that are as follows :

(i) The Headmaster acts as the administrative head of a school. All the Administrative works are done by him.
(ii) He makes all the assistant teachers understand their duties and responsibilities and makes the time table for different classes and students according to their needs (by discussing with other teachers) as well.
(iii) He divides and distributes all the responsibilities amongst the teaching staffs accordingly.
(iv) He monitors and supervise the works done by teachers and other staff.
(v) He regularly communicates with guardians by calling Guardians' meetings.
(vi) He carefully monitors students' health, daily lessons, class and school displine regularly.
(vii) He regularly communicates with he senior authority, D.I., Managing Committee (MC), school board and council.
(viii) He has to monitor co-curricular activities including health, mid-day meal, sports. etc.

■ **Responsibilities of Assistant Teachers :**

The functions/responsibilities of Asst. Teacher are as follows :

(i) To be responsible for better transaction of the teaching-learning process abiding rules.
(ii) To maintain healthy relationship with other colleagues.
(iii) To make students respectful towards school discipline.
(iv) To prepare himself/herself for better execution of daily lesson.
(v) To encourage the students to be creative.
(vi) To encourage the students to take part in social development.
(vii) To encourage the students for taking part in co-curricular activities.
(viii) To help to run the school according to headmaster's instruction by cooperation of the other staffs.
(ix) To evaluate students impartially.
(x) To identify and rectify students' flows and problems and help them to develop their personality by overcoming their flows.

★ **There are some inevitable responsibilities as mentioned in the Right to Education Act (2009) for the teachers that are as follows :**

(i) To be regular and punctual in school.
(ii) To direct and complete lesson as per curriculum within the stipulated time.
(iii) To evaluate every students' learning ability and to help them to improve as per their needs.
(iv) To call regular meeting with parents and guardians and to ensure children's improvements, learning ability and development.
(v) To perform other task as per instruction.
(vi) To face punishment if he/she fails to perform their duty.
(vii) To inform school authority if he/she has any complain.
(viii) The teachers cannot be employed for other jobs except census after every ten years, to face devastation, parliamentary election (Bidhansava and local election) etc.

■ **Responsibilities of part time teachers :**

(i) To be enthusiastic to perform his/her duty for which he/she is employed in school.
(ii) To be dedicated to help the students to improve their efficiency in different subjects.
(iii) To perform his/her duty obeying the instructions of headmaster for the welfare of the students.
(iv) To evaluate the students and to perform school duties properly.

■ **The state of teacher before and after National Education Policy (1986) :**

Before 1986	After 1986
1. Lack of adequate educational qualification	1. Adequate qualification of the teachers found
2. Most teachers are from nearby area of the school.	2. Most teachers are from distant area.
3. Strong relationship between teacher and students was observed.	3. Teacher-student Relationship is not strong at all.
4. Strong relationship between teachers and guardians can be seen.	4. Parent-Teacher relationship is like producer and consumer.
5. Lecture method was mostly used	5. Constructivistic approach is being followed.

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Before 1986	After 1986
6. The use of computer was very rare.	6. The use of computer is multifarious.
7. Scarcity of house/room/school building etc.	7. Not very much.
8. Life was not so much busy.	8. Life is very busy.
9. Female teachers were very few in number.	9. The number of male and female teachers is nearly/almost equal now.
10. The salary was less.	10. They are well to do than before in terms of salary paid.
11. There was no chance of training except B.Ed./ B.T.	11. There are lots of training courses and multiple opportunities for doing training.
12. Previously the use of teaching aids was less.	12. Teaching aids are mostly used now a days during classroom transaction.
13. Evaluation was backdated/ backward.	13. Evaluation is complex but suitable and appropriate.
14. There were no Para teachers.	14. There are the Para Teachers in today's school education system.
15. Attitude towards teaching profession was deep.	15. Cannot be told correctly.
16. Upper class people used to come forward in teaching profession mostly.	16. Now a days, people from every class and strata of our society come forward in teaching profession.

■ **Responsibility of Para teachers :**

(i) Para teachers will be more dedicated towards the development of the students as they are mostly local.
(ii) They will take care of students' learning and behavioral modifications.
(iii) They will be involved in other school related tasks.
(iv) They will help Headmaster in manifolds to run the school smoothly.
(v) They will be able to manage the dropped out students to come back to school for learning.

2.2 Non teaching staff :

We mostly remember and praise the singer who sings the song on a stage. But the success of a song depends on the combined effort of all the musicians along with the singer himself. If the teacher is compared to the lead singer then the non teaching staffs of a school will be compared with the musicians who assist the singer. They play the role of a communicator who implements the instructions. They mainly act as a link amongst the Headmaster, teachers, students, guardians and managing committee. They help to maintain the school discipline, enhances beauty and cleanliness of the school.

It needs to be discussed how many non-teaching staffs are required to run a school smoothly and what will be their types that are described below :

There are 3 kinds of non teaching staffs observed in school that are as follows :

1. Unskilled and under qualified staffs. (educational qualification up to class iv)
2. Little bit skilled staffs (educational qualification up to class VIII)
3. Skilled non-teaching staffs who have passed Madhyamik or H.S. Examination.

At the first level /stage, local uderqualified, unskilled people are being appointed to do the following tasks, for example peon, matron, gardener, guard, night guard, sweepers, hostel staff, cook etc. They are employed on contractual basis. Generally in govt. and Govt. aided schools full time staffs are appointed for this purpose. At local administrative stage employment related workds are completed. Non-govt /private school administration itself recruit these staffs against advertisement.

At the second level/stage, Some people are being appointed to do the following tasks, for example (1) to ring the bell timely, to put the notice on notice board and convey the same in each class, (2) To convey the teaching learning materials such as - books, copy, various registers, answer scrips , question papers etc. 3) official works related to bank, mid day meal management etc. In these section thus, some staffs are appointed whose educational qualification can be upto class VIII. In these sections second class staffs are needed. These staffs are employed on the basis of the number of students and volume of work either by the govt. or on contractual basis as per the capacity of school fund.

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At the third level/ stage, one or more than one clerk is employed. For library work, all administrative tasks, labrelated work D.I., office and board or council related works the school needs some staffs who are either secondary or higher secondary passed. They are employed either by Govt. or on contractual basis. Some skilled staffs are employed against advertisement in case of private schools. The number of clerks to be appointed will depend on the number of students. Sometimes, male clerks are also recruited in girls' school. There is another post of non-teaching staff i.e. librarian. though the grade and educational qualification of a librarian is equal to an assistant teacher. There is no post of librarian that can be seen in non govt. schools. There was a controversy if the post of librarian will be included within the category of teaching staffs/Non teaching staffs. Right now in higher education institutes the librarian is considered as a teacher. An assistant teacher has to deal with the library related issues in a general school as there is no librarian post.

❑ 2.2.1 Staff pattern in a school :

There are various types of staffs in a school. Though their salary, duties and responsibilities are quiet different, yet they are equally essential for the development of the school. So it is necessary for the headmaster/ headmistress to have a list concerning the staff pattern of his/her institution. The qualification and responsibility of various staffs is given below. (Through here the description of permanent and full time staffs is provided)

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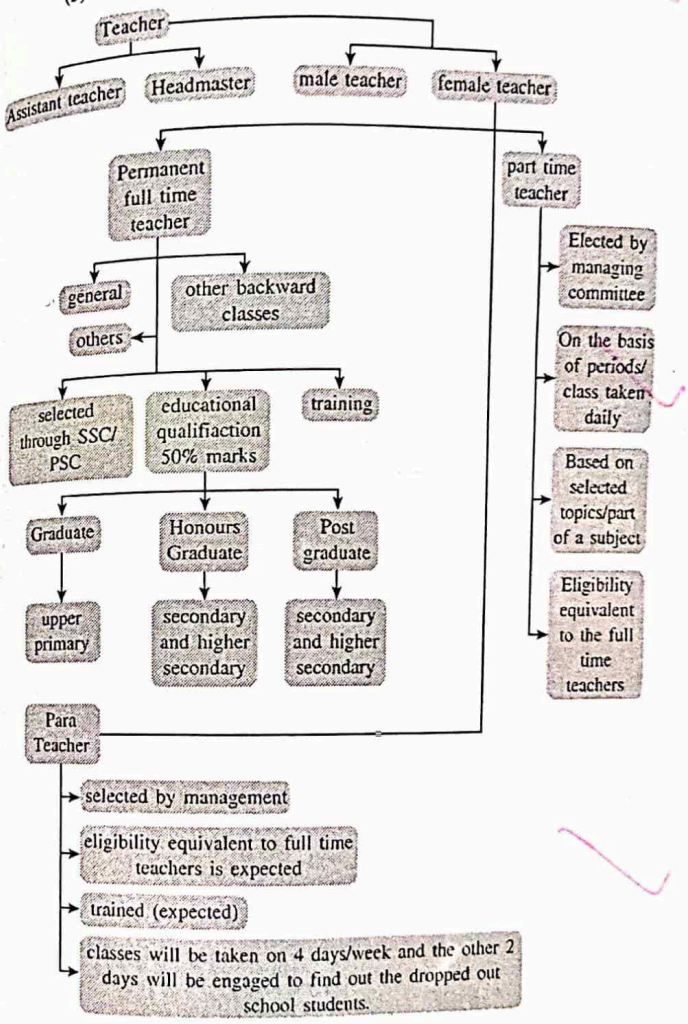
Schematic Representation of Techers and Their Qualifications :

Note : (1) SSC : School Service Commission
(2) PSC : Public Service Commission
(3) MC : Managingcommittee



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⚙ 2.3 Students : Boys/ Girls/ SC/ST/OBC/Minority/Special Needs Children :

❑ 2.3.1 Students :

It is inevitable in case of assessment of teaching learning system to keep in mind that students are the central part of our education system. The thoughts and arrangement of education system, especially in school education, are moving around the students' need. Through education, the future state, nation and world in wider sense will get such a good citizen who will be an honest, righteous, virtuous human being and contribute in every dimensions for the betterment the nation. Industrious and skilled citizens are the future human resources which must be treasured in the world. Wherever they work, (industry/office/educational institution / hospital / battle field / even in any other general sector's) their participation and contribution will enhance all those sectors.

■ Women's Education :

It is a symbol of narrow mindedness to consider the boys only as the students. The efficiency and contribution of women of all over the world has been recognized in every sectors. Women show equal skill, cordiality, even equal physical, mental ability and honor to build the whole world a unique palace. Therefore, it is necessary to help the girls to grow up properly. The girls primarily have to face many obstacles because of their home, culture, social customs, religious conservations, superstitions and narrow mindedness of the guardians. But the contributions of the pioneer women reformers like Sister Nibedita, Mother Teresa, and Begum Rokeya had opened our eyes. Today, the girls are no more being considered as burden but as special human resources. If today they can properly be educated, tomorrow they will definitely venture freely from education sector to battle field of war and participate in developing the society, nation and the world in wider sense. So it is essential to take care of the education of the woman equally.

■ Different Races and Reservation :

As India is an ancient country, there are various kinds of people living here who are different in terms of their religion, culture, race and language. They have been scattered in every nook and corners of the city and villages. According to Indian constitution every citizen should have equal

right to enjoy all the facilities related to education and work. After achieving freedom, the Constitution of India creates special reservation policies that will be applicable in education and employment sectors, to help the backward community, race and minority group to come forward and reach the position of equal dignity.

■ RTE :

The school has the liability to protect the reservation system. Right to Education Act was included in the constitution in the year 2009 to give every child a special right. For the overall development of all kinds of students including those who are backward (economically and socially)- RTE plays significant role. Every child will get free and compulsory education upto 14 years to become the asset of the nation, according to this act irrespective of their class, caste, creed, religion, gender, social and financial constructions.

❑ 2.3.2 Boys :

■ Why do the boys go ahead?

In pre independent India the boys get privilege from school education to higher education. It was happened as in the male dominating society, the girls were ignored by keeping them under the veils. For this reason through school education the boys got advantage along with the advancement of science and they left agricultural sectors for entering the industries by achieving technological skill. As the boys got privilege to study in the schools they play important roles in the formation of resources.

■ Boy's natural power/ability :

The boys are considered as special assets in the learning process because of their :

(a) Advanced physical capability/ability
(b) Acquired special skills and capacity neded for games and sports
(c) Skill of defense
(d) Capability of doing heavy works at industries
(e) Driving skill etc.

So, The school makes the boys ready for those works where physical strength is necessary, and the school gives more priority on exercise, sports etc. Apart from teaching and learning, the school must put stress on maintenance of discipline, developing the quality of leadership, practice

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of intellect, social consciousness, work capability, honesty, skill development etc. so that each boy will be transformed into an asset for the society in near future. Handicapped students might also be able to achieve skills and thus transformed into human resources if they get proper opportunity along with the normal boys.

■ How can the students be transformed into human resources? :

Through the benevolence of school learning system, the boys can be transformed into human resources, that can be described as follows :

- ✦ Modern scientific research and practice on the basis of talent/ merit and interest.
- ✦ On the basis of merit and special attitude there should be the right to be a doctor, engineer, advocate.
- ✦ To serve our nation through political and administrative works, for example being an IAS or WBCS.
- ✦ To contribute uniquely in different cultural sections including literature, music etc by developing self skill and creativity.
- ✦ To establish oneself in the field of games and sports : such as in football, cricket, volleyball , hockey, athletics or swimming etc by using one's physical ability.
- ✦ To establish oneself by building up small and medium industries
- ✦ To establish small, medium, and large scale industries to prosper in trade and commerce section.
- ✦ To establish oneself as an expert businessman by developing one's skills in the section of agriculture and animal husbandry.
- ✦ To establish oneself as a social worker by developing proper attitude to serve for the welfare of the society.

❑ 2.3.3 Girls :

■ Why did the girls remain behind?

The contribution of male and female is equal in the development of human civilization. Since, the middle age , women were ignored, tortured and dominated in every places, through out the world: For many illogical causes, religious bindings and superstitions, women were not being able to participate in the development of Nation and creation of resources. Lack of true education is one of the major cause of deprivation of women along with lack of consciousness.

■ What is their present condition?

At present women have overcome all the obstacles and have come forward in every sphere in all over the world. In those modern and democratic nations where women have got the chance of having proper education along with the men, have been able to develop themselves both personally as well as socially, who can contribute also for the welfare of the humanity and society as a resource, being compatible with the men.

It can be observed from the perspective of all India that the girls had participated almost equally with the boys in the system of education at the beginning of this century more than the 90th decades of last century. According to national level survey, at upper primary stage there are 56% boys and 46% girls. In West Bengal at school level there are 54% boys and 49% girls.

At the secondary and higher secondary level the increase in the number of the girls is incredible. It is 71% and 152%(In West Bengal) and 62% and 107% in national level respectively.

In our country after independence women studies get much importance. School education system and RTA (2009) assure compulsory education for every child. So each girl will also get the opportunity of getting free learning up to class VIII or till 14 years. It is mandatory to have a primary school within 1 km and there must be one upper primary school and secondary school within 2 to 3 km, so that each girl will get proper chance of receiving education. They will be able to protect themselves from being underestimated as a women by establishing themselves properly as a resource with the help of proper education.

■ The role of UNESCO into the transformation of women's condition :

The dignity of women, as a human resource is accepted in all over the world. The article 15(3) of Indian Constitution declared that there would be no obstacle in passing any act in favour of women and children education. UNESCO has asked every nation to give emphasis on women studies, considering them as the special power that must be treasured. To change the socio-economic system of a nation, the role of women is very much essential. So, in every school the woman should also be given proper dignity during their evaluation along with the men, irrespective of the gender bias.

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■ **If they get proper education into what type of human resources will the girls be transformed?**

The process of teaching-learning system helps the girls to be transformed into the human resources, are described below:

- ✦ Learning will help girls to achieve/form liberal and logical attitude.
- ✦ Through the education the girls will be able to eliminate superstitions by the formation of scientific attitude with the light of true education.
- ✦ They can participate in scientific research oriented activities at state or national level, being educated with modern education.
- ✦ If they get proper education and guidance they will be able to be efficient doctors, teachers, engineers etc. and will help in the progress of the nation and the world.
- ✦ Achieving the quality of leadership through the acquired talent and proper attitude, they will be able to engage themselves in political administrative tasks and play vital role in various dimensions like social development, child development and women welfare etc.
- ✦ Receiving modern education, the girls will be able to engage themselves in teaching profession from primary level to university level and contribute to raise standard of our prevailing education system and human resources.
- ✦ In all other sectors such as commerce, agriculture, industry, medicine, conservation of environment and even in the field of human resource development, women will play significant role by the benevolence of modern school education system.

■ **Girls' natural power/ability :**

The following are the dimensions where the girls are more skilled and efficient rather than the boys :

- ✦ Literary activities, recitation
- ✦ Cultural activities
- ✦ Dance, drama, stage decoration, decoration of floor by drawing.
- ✦ Service oriented activities.
- ✦ IT(information technology)
- ✦ Counseling

❑ 2.3.4 Scheduled Castes and Scheduled Tribes (SC and ST) :

■ *SC/ST :*

In assessment and evaluation of education system, it can be said that every human being should be considered as an asset of any institution. The main task of school, as an institution is to build up an environment congenial to impart education and also to help in creating and developing human resources. According to Indian constitution, some backward classes of our country are declared to be Scheduled caste or SC. and extremely backward classes are declared to be Scheduled Tribes or ST. The goal of this part of constitution is to give extra facilities to these backward group of people (except normally developed castes), so that they can be able to develop in every dimension including education and employment. That is why 22 %(SC) and 6 %(ST) seats are reserved in West Bengal, regarding education and employment of the SC and and ST people.

■ **SC/ST and constitutional security armour :**

The family members of these SC and ST group are ignorant and indifferent regarding their rights. So, inevitably it is the responsibility of the govt. and administration as well to educate them. Properly the educational and financial security of the weaker section of our society is protected in the article 46 of the India Constitution. According to Article 46 it has been told that the govt. should take care of the educational and financial responsibilities of the weaker sections of our society (SC and ST) and protect them from every social injustice and exploitation.

■ **The development of hidden potentials of SC and ST students and their education :**

At school the hidden potentialities of a person is being expressed through the inter mingling of domestic, local, social, and scientific education. It is usually observed that the ancient tribal groups possess some prejudice, habit and internal qualities which are not possessed by other. Those qualities must be found out and nurtured properly. The school teachers can identify, nurture and assess those qualities and take care of the students. For example, the male members of Cole, Ville, Munda, are very skilled hunters. So, the students of these group might be identified, so that they can be taught well to be a successful as skilled bowmen in national and international level.

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■ **Teaching learning process :**

- ✦ SC and ST can be considered as an anthropological asset of a nation as well as the whole world and thus they should be enlightened by the light of modern education to preserve their literature, culture and heritage.
- ✦ It is the duty of the school teachers and local administration to make the parents of SC/ST students conscious or aware of the importance of their child's education.
- ✦ Hostel accommodation can be arranged for the SC, ST students for giving them suitable educational environment to study.
- ✦ The development of every human asset is necessary. It must be assured that these students must not be deprived of the extra facilities that are reserved by the govt. for their development. The school administration must take initiatives to build up empathetic attitude of the other students towards them.

Assessment of learning system of other backward class as human resources :

❑ 2.3.5 Other backward class :

By the effort of Babasaheb Ambedkar, special reservation system was secured in Indian Constitution for the SC and ST group and similarly the same reservation system was also made for other backward classes. "Mondal Commission" was come into effect during Prime Minister Biswanath Pratap Sinha's tenure.

15% seats are reserved in education and in every other sectors as well as in the employment system also for the OBC people including primary to higher secondary schools. So, not only in upper primary level but also in higher studies, this reservation policy prevails that helps to develop human resources.

It is true that in colonial India, Hindu community were much facilitated than the other communities, but those facilities were limited within a small groups of people. The Brahmins were one of them who enjoyed, all the facities. Those who were the laborers or small businessman become mostly backward financially. Another large community of the Muslims was also lagging behind. Their history is the history of backwardness in terms of education and economy during colonial India. So these, Hindu and Muslim people who were backward both educationally and economically were included within the Other Backward category or Class. This other backward class is also being divided further into A, B and C sub-classes according to their index of backwardness to secure reservation system and the facilities related to it.

At present in school Education system, Right to Education Act (RTA) is effected for the free and compulsory education of the children upto class VIII. These schools also facilitate "Other Backward Class" to minimize the wastage of human resources. Yet the consciousness amongst the guardians of these students must be increased. For the development of the society, these schools must show much cordialities and empathy. If the educational development of this Other Backward Class can be done, their socioeconomic condition would be changed automatically and the volume of human resources must be increased. New resources of the nation can also be created through economic development.

The Ministery of Human Resource Development of India (MHRD) has arranged many scholarships for the meritorious students from school to university level on the basis of MERIT and qualities of the students. If the school teachers, DI of school and local administration are conscious enough, the students of Other Backward Class must get the opportunities to avail these facilities and become human resources. Through sports, other co-curriculum activities and practical activities in the laboratory, their skills can also be developed and thus the consciousness of the guardians can also be increased.

The schools can provide hostel facility to the socio-economically backward students to develop their condition. MHRD takes necessary steps for the development of these issues.

❑ 2.3.6 Minority :

There are various types of people who live in India are of different in religion, language and culture. The people who belong to minority group in India are can be categorised as follows :

1. Religious minority
2. Lingual minority
3. Cultural minority

In India 'minority' mostly refers to religious minority. Thus religious minority groups in India refer to Christians, Muslims, Buddhist, Jain, Jarathustra, Shikh, Bahai etc. We consider Muslim community as the

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chief minority group in terms of their majority (on the basis of the number of people).

In Colonial India various Muslim community disagreed to accept British language and culture. So, they were lagging behind in terms of developing modern education and economy. They had emotional barrier to receive general school education with others in formal set up. There were a few students studying in Madrasha, but their number was very less in other school. Due to superstition, the muslim girls used to face many problems in receiving education. Another hindrance of girls education was early childhood marriage as well (Hindu society was not an exception). This situation had been changed slowly. Indian constitution introduced many articles and sub-articles to promote the education of the people of minor communities, for example article no. 30.

■ **According to Article 30 :**

1. Religious and lingual minority groups have the right to establish and direct educational institution according to their own preference.
2. No division can be made in giving govt. grant or aid just because the schools are directed by the religious and lingual minority.

According to the 7th All India Education Survey at upper primary level the presence of Muslim students is 12% amongst all other students. Though Muslim girls are less in number than Muslim boys, yet regarding the rate of admission in school their number is very close (boys 6.5%, girls 5.5%). At secondary level, there are 15% of Muslim students amongst total number of students. The admission rate of Muslim boys and girls - boys 9% and girls 6%.

At upper primary, secondary and higher secondary level, the manner and ability of Muslim students would be as same as other students in all the educational institution. The major characteristics of Muslim students that can be seen at schools are as follows :

1. Respectful towards teachers
2. Very eager to learn
3. Disciplined and shy
4. Students living in village have the knowledge of the animal husbandry and agriculture
5. Eager to sports.

The human resource cannot be properly developed and utilized in Muslim community especially as the Muslim girls are deprived of receiving proper education. In this case the following issues must be considered :

- To increase the quantity of human resources, the students (both boys & girls) of minority group must be registered/enrolled in schools and the teacher must be present at class room regularly to develop the quality of the students.
- To develop education among minority students so that their hidden potentiality cannot be spoiled due to deprivation.
- To eliminate discrimination between majority-minority classes by intermingling them to enjoy growing together and to assist each and every child of minor community in receiving education, so that, the minority classes become human resource.

At present both central and state govt. have taken special initiatives to help the minority group for receiving education. The Minority commission creates special provision for the admission of the children from different classes like Muslim, Christian, Buddhist, Jain and so on. Now a days, Madrashas are getting many grants to spread modern education. The syllabus of Madrasha board is getting modified by the effort of W.B. Madrasha Service Commission. It can be observed that the number of minor students especially, the number of Muslim girls has been increased in the field of education. By the special assessment of teaching learning system, the quality of students, liberal perspective and competitive attitude have been developed and the socio-economic condition of the minority group has been changed.

There are some "Al-Amin mission" that imparts higher education to the talented Muslim students. The process as well as quality of the teaching-learning system is as seems in Ramkrishna Mission. In various entrance exams, their success is very luminous.

■ **Lingual minority :**

Lingual minority is different from religious minority. Though in West Bengal Bengalis are majority but they are the minority group in Bihar and Kerala. Lingual minor is the one, who gets admitted into a school where another language is the mother tongue of the majority group. Thus, It is difficult to learn in a classroom, where there is major language difference amongst the learners.

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The probable solutions are as follows :

- To practice the language of majority group for maximum hours frequently and to practice the language of minority group sometimes (rarely).
- To encourage the learners from the minority group to be mixed up with all the other students.
- To encourage him or her to deliver speech, recite, sing etc. The question of lingual minority will never be arisen if tri lingual-method or formula is followed in teaching-learning system.
- In classroom there must be the use of those languages that can be understood and communicable to all.

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Distribution of student According to Reservation of the Available Seats Name and Address of School Number of Students

No. of Male Student						No. of Female Student						Total No. of Students
General	SC	ST	OBC	PH	Total	General	SC	ST	OBC	PH	Total	
No. of Male Student/Class-V						No. of Female Student/Class-V						Total No. of Students/ Class-V
General	SC	ST	OBC	PH	Total	General	SC	ST	OBC	PH	Total	
No. of Male Student/Class-V						No. of Female Student/Class-V						Total No. of Students/ Class-VI
General	SC	ST	OBC	PH	Total	General	SC	ST	OBC	PH	Total	

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Assessment of Learning System of the Special Needs Children as Human Resources :

❑ 2.3.7 Concept of Exceptional Children :

■ The term 'exceptional' means different things to different people. Some use it when referring to the particularly bright children or the child with unusual talent. Others use it when they refer to any typical or deviant child. Telford and Sawrey (1972) said, "To be exceptional is to be rare or unusual."

Kirk (1962) defines an exceptional child as "that child who deviates from the average or normal child in mental, physical, or social characteristics to such an extent that he requires a modification of school practices, or special educational services in order to develop to his maximum capacity."

Cruickshank (1974) also holds similar view when he defines an exceptional child as "a child who deviates intellectually, physically, socially, or emotionally so much from what is considered to be normal growth and development that he cannot receive maximum benefit from regular school programme and requires a special class or supplementary instruction and services."

Hewett and Forness (1984) have given a comprehensive definition of exceptional learner : "An exceptional learner is an individual who, because of uniqueness in sensory, physical, neurological, temperamental or intellectual capacity and/or in the nature and range of previous experience, requires an adaptation of the regular school programme in order to maximize his or her functioning level." All -children traditionally labeled as exceptional fall under this definition.

An analysis of these definitions indicates the following facts about the exceptional child :

(i) The exceptional child is one who is waiting to be taught in right direction with suitable methods and materials in a suitable environment and with right spirit.

(ii) The exceptional child is a unique child. His uniqueness may be noticed in one or more of the following dimensions — vision, hearing, movement, perceptual-motor, communication, social-emotional and intelligence,. Thus, the blind, deaf, crippled, learning disabled, speech handicapped, emotionally disturbed, socially disadvantaged, mentally retarded, slow learner and the gifted children are exceptional.

(iii) The uniquenf j of the exceptional child may be also noticed in the amount and quality of previous experiences received in the home.

(iv) The uniaueness of the child may be in the negative direction (as in case of handicapped children) or in the positive direction (as in case of gifted and creative children).

(v) Contrary to the popular view, the exceptional child has potential for growth and learning. But he cannot profit from the regular school programme.

(vi) He requires modification or adaptation of school practices, special education and other related services in order to maximize his functioning level.

(vii) The disabled, disadvantaged, disturbed and the gifted children are exceptional children. Recently such children are called "children with special needs."

■ Positive and Negative Deviations :

Children are unique. If we survey a busy playground we see a spectacle of this uniqueness. Some children move more quickly and with better coordination than others. Some children are surrounded by admiring friends whereas others sit alone at some distance. The differences we observe on the playground are more obvious than those we might see inside the classroom. The field of special education is concerned with children who deviate from normal children to the extent that matters very much for learning in schools and functioning successfully elsewhere. There are seven critical dimensions related to successful learning in school and successful adaptation elsewhere. These seven dimensions are —vision, hearing, movement, communication, perceptual-motor, social-emotional and intelligence. An exceptional child deviates from normal children on any one dimension or more either in positive direction or in negative direction.

• Vision : The dimension of vision is critical with respect to instruction in the classroom and free, independent movement through the environment. We all vary visually. Some of us who have excellent vision and can see farther and more clearly than most deviate from the normal individuals in the positive direction. Many of us fall around the mid-point of the vision dimension. Those who wear corrective lenses, those who have visual problems and the blind deviate from the normal individuals in the negative direction. Again those who deviate in the negative direction fall at varying points within this range.

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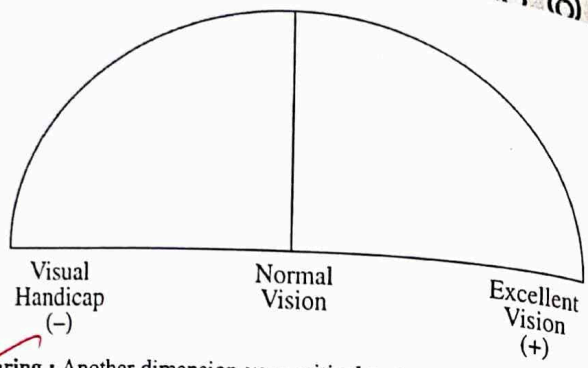
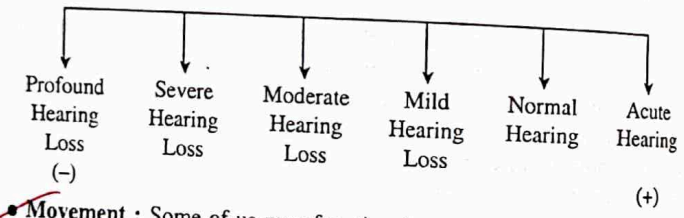


• **Hearing :** Another dimension very critical to learning is hearing. Some of us who deviate from the normal individuals in positive direction have acute hearing and are able to detect even the faintest sound at a distance of more than 250 feet. Most of us fall near the middle on the hearing dimension. Some of us who deviate from the normal individuals in the negative direction experience difficulties in hearing. Those who deviate in the negative direction have varying degrees of hearing loss and need varying degrees of amplification provided by a hearing aid. Even some fall far down the problem range and are deaf.



• **Movement :** Some of us may function far up in the positive range on the movement dimension like the gifted athletes. Most of us are likely at mid-point. Some of us deviate in the negative direction and have problems of movement unless provided with braces or a wheel chair. Even some are completely immobilized and are confined to their beds. The orthopaedically handicapped, children with cerebral palsy or crippling conditions deviate from the normal in the negative direction.

• **Perceptual-Motor :** The perceptual-motor dimension is concerned with how accurately we perceive stimuli in our environment and respond to them. Some of us have no problems in recognizing, speaking, reading,

writing or understanding words and numbers. The learning disabled children have difficulty in speaking or reading or writing or using numbers or comprehending facts. Some learning disabled children may perceive everything visually as upside down and backwards. Such children may have minimal brain dysfunction.

• **Communication :** Communication is very essential in every day life and for learning in school. Somb individuals are very positive and communicate freely and accurately using the right vocabulary and structural patterns at the right moment. Some of us, however, have difficulty in communicating with others. Individuals with stuttering, stammering and articulation problems deviate from the normal individuals

• **Social-Emotional :** The social-emotional dimension has to do with how well we get along in our day-to-day living, particularly how well we relate to others. Some of us are real winners. Some of us are loved, respected, sought out, surrounded by admiring friends, and happy. Others manage to get by. Some of us are emotionally stable and socially matured. Some children display problem behaviour in some situations and not in others. But some children like the delinquents, emotionally disturbed and particularly the autistic children, fall at the extreme end of the negative range along this dimension.

• **Intelligence :** Intelligence is such a dimension along which both the positive and the negative directions are of concern to teachers and administrators. In the positive range we have individuals with superior intelligence—the gifted ones. In the negative range we have mentally retarded individuals. In each direction individuals fall at varying positions in terms of IQ ranges. For example, mentally retarded individuals who deviate from the normal individuals in the negative direction may be mildly retarded (IQ 55-70), moderately retarded (IQ 40-54), severely retarded (IQ 25 to 39) or profoundly retarded (IQ below 25). In school situation children having IQ 50 to 75 are educable mentally retarded, children having IQ 25 to 50 are trainable mentally retarded, and children having IQ below 25 are custodial mentally retarded. Children who deviate from the normal either in the positive direction or in the negative direction are exceptional so far as school learning is concerned.

▪ Concepts of Impairment, Disability and Handicap :

In the field of special education the three terms Impairment, Disability, and Handicap are very often used interchangeably. Thus, we come across

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expressions like hearing-impairment, hearing-disability, and hearing-handicap to refer to hearing loss. These three terms actually mean different things.

★ An impairment is a permanent or transitory psychological, or anatomical loss and/or abnormality.) This may be so from birth, or acquired later. Example : a hole in the ear drum, a missing or defective part of the body, paralysis after polio, myopia, low level of intelligence, etc.

Impairment may cause functional limitations. Functional limitation means partial or total inability to perform those activities necessary for motor, sensory or mental functions within the range and manner of which a human being is normally capable such as walking, lifting loads, seeing, speaking, hearing, reading, writing, taking interest in and making contact with surroundings. A functional limitation may last for a short time, be permanent or reversible. Limitations may be progressive or regressive.

★ Impairment leads to disability. Disability is defined as an existing difficulty in performing one or more activities which are generally accepted as essential components of daily living) Due to the impairment there is a reduction in functional ability. For example, due to the hole in the ear drum, the child is unable to hear normally. A visually impaired child cannot see properly because of faulty image formation. An orthopaedically handicapped child cannot use the arms and fingers for gripping. A learning disabled child cannot calculate or understand number relationships like a normal child. Depending in part on the duration of the functional limitation disability may be short-term, long-term, or permanent.

Medically, Usability is physical impairment and inability to perform physical functions normally. Legally, disability is a permanent injury to body for which the person should or should not be compensated. Disability can be divided into three periods :

(i) Temporary total disability,
(ii) Temporary partial disability,
(iii) Permanent disability.

Temporary total disability is that period in which the affected person is totally unable to work. During this time he may receive orthopaedic, optalmological, auditory or speech or any other medical treatment. Temporary partial disability is that period when recovery has reached the stage of improvement so that the person may begin some kind of gainful occupation. Permanent disability refers to permanent damage to or loss of some parts of the body even after any medical treatment.

★ Just as impairment leads to disability, disability handicaps the individual.(Handicap means a restriction imposed/acquired by the child's disability which affects the efficiency of his/her day-to-day life activities.) (The term handicap refers to the problems a person with a disability or impairment encounters in interacting with the environment) A disability may pose a problem in one environment but not in another. The child with an artificial limb may be handicapped when competing against non-disabled peers in a football match but experiences no handicap in v the classroom. Thus, a disabled person is not handicapped, however, unless the physical disability leads to educational, personal, social, vocational, or other problems. The handicapping effects of a disability can be reduced by corrective services like hearing aids, artificial limbs, medical interventions, etc.

The differences between these three terms can be summarized as follows : Impairment is structural, disability is functional and handicap is social-psychological.

■ Types of Exceptional Children :

Exceptional children are of various types such as the following :

(i) Children with Hearing Handicap
(ii) Children with Visual Handicap
(iii) Children with Mental Retardation
(iv) Children with Learning Disability
(v) Children with Orthopaedic Handicap
(vi) Children with Emotional Disturbance
(vii) Children with Speech Handicap
(viii) Children with Special Health Problems
(ix) Children with Multiple Handicaps
(x) Gifted Children
(xi) Children with Creative Talents
(xii) Socially Disadvantaged Children

■ A brief dfecriptipn of these children is given below :

• **Children with Hearing Handicap :** The hearing handicapped are those children who have a damaged hearing mechanism and face difficulty in speech and language development. There is loss of hearing. The degree of hearing loss is less in some children while it is more severe in others. The hearing handicapped children may be hard-of-hearing or deaf.

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The hard-of-hearing children are those children who have hearing loss but who can hear if spoken too loudly ^ivithout a hearing aid. A hearing aid will enable them to hear better. For such children education in general schools in common with other children is ,not difficult. Most of them are already studying in the general cjassroom.

The deaf are those who cannot hear eveifi if spoken to very loudly. They require preparation in basic skills thfqfugli special techniques before they are admitted in general schools. Hearing aids help them to become more functional.

Children with hearing impairment need hearing aid, auditory training, more of Visual cues in the teaching-learning situation, services of audiologist, ENT specialists, special education and other supportive aids and services. The special needs of such children differ depending upon the type and nature of hearing loss, the quality of previous training received in the home and pre-school centres etc/.

• **Children with Visual Handicap :** The visually handicapped children are those who have problems with vision. Some visually handicapped children can read large print and are functional in their environment whereas some have severe vision loss and cannot be taught through visual methods. The visual loss is measured with the help of Snellen Chart. Depending upon the degree of loss they may be partially sighted or blind.

The partially sighted are those who require large print or magnified print materials. Their visual acquity (sharpness of visual image) is very low (20/70 in the better eye). This means that the child can see at 20 ft. distance what a normal child sees at 70 ft. Their eye-sight may be weak due to short sightedness, long sightedness, astigmatism, glaucoma or muscle detachment.

The blind are those who need to be taught through braille or through aural method. Their visual acquity (sharpness of visual image) may fall at 2/200. Such children must be prepared in pre-academic skills like braille reading, braille writing and use of cane for mobility before they are admitted in general schools. They need orientation training, mobility training and more of oral instruction depending upon the degree of loss of vision.

• **Childern with Mental Retardation :** Mentally retarded children are those who have a lower level of intellectual functioning and have problems' in social adaptability. There are various degrees of mental handicap. Consequently there are various categories of mentally handicapped children—the educable mentally retarded (EMR), the trainable mentally retarded (TMR) and the custodial mentally retarded (CMR).

The educable mentally retarded are those who have minimum educational retardation in school subjects. Such children have problems of social adjustment, but are usually not recognised as mentally retarded at the pre-school level. They need repet .ion of instruction. The adaptive behaviours of such children should be observed carefully by the teachers so that they can be identified in the early stages.

The trainable mentally retarded can be trained in vocational areas. They are poor in adaptive behaviour and may need training in daily living skills at the initial levels.

The custodial mentally retarded need help in developing daily living skills. They can be educated in special institutions/special classes. They are very poor in adaptive behaviour. They need constant care and attention.

• **Children with Learning Disability :** These children are like other children in intellectual functioning. They are not mentally retarded, nor^ do they have visual or hearing problems. But they have problems in spelling, reading, writing, arithmetic, listening and comprehension. Their problem may be due to cerebral dysfunction/emotional/behavioural disturbance, but it is not due to mental retardation, sensory handicap or instructional practices. Depending upon the degree of disability such children may be categorised into mild learning disabled and severe learning disabled.

Such children have a severe discrepancy between their achievement and intellectual ability. Such children may have the following specific problems :

Reading disability
Writing disability
Problems in comprehension and communication
Problems in numerical ability.

Such children need repetition and drill, cognitive modelling, process training, multisensory experiences and remedial instruction.

• **Children with Speech Handicap :** Speech handicap refers to minor and major speech and language problems. There are children with mild language and speech disorders in our classrooms, and they often go unnoticed. While speaking and writing they tend to omit, distort, add or

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substitute words, phrases, letters of the alphabet etc. They stammer and are quiet or have long gaps in speaking full sentences. Their problems should be corrected before they start school. The major types of speech disorders are :

voice disorders,
articulation or pronunciation disorders, and
fluency disorders.

Children with Special Health Problems : Under this category we have children whose poor physical condition makes them inactive and who require special health precautions in school and adequate medical check-ups and support. Such children can be categorised into two groups:

Children with mild health problems, and
Children with severe health problems.

Epilepsy, diabetic problems, asthma, pain in the joints and anaemia are some of the special health handicaps.

Children with Multiple Handicaps : Multiple handicap refers to more than one handicap in the child. A child may be blind and deaf, blind and orthopaedically handicapped, deaf and orthopaedically handicapped, mentally retarded and orthopaedically handicapped and so on. In case of multiple handicap one handicap may be primary handicap and the other secondary or one handicap may be more severe than the other handicaps. It is, therefore, important to identify the primary handicap and take measures accordingly. Such children need intensive medical care, superior instruction from the teacher and a little love and affection from the parents and teachers.

Children with Orthopaedic Handicap : Some children have orthopaedic handicap or locomotor handicap. Locomotor handicap refers to problems with the functioning of bones, joints and muscles. In some cases the problems are so severe that they require artificial limbs to compensate for their crippling conditions. In other cases they need wheel chair or crutches. They need removal of architectural barriers and some environmental modifications in the school. Usually mildly orthopaedically handicapped children do not have learning problems. They can be integrated in the regular school without much difficulty.

Children with Emotional Disturbance : Children with emotional disturbance are very often considered as problem children in the school. An emotionally disturbed child has certain inner tensions which create anxiety, frustration, fears and impulsive behaviour. Such a child may find

excuses for his inner tensions in some physical difficulty. An emotionally disturbed child may attempt to solve the anxiety by behaving in a premature or childish way, becoming aggressive towards other people, or withdrawing himself to the world of fantasy. Such children need love and protection, security and recognition, pleasant and success experiences in the home and the school.

Gifted Children : Gifted children are in some way superior in intellectual ability to other children of the same age. Gifted children are those who have demonstrated high ability (including high intelligence), high creativity and high task commitment—a high level of motivation and the ability to see a project through to its conclusion. A variety of terms have been used to describe individuals who are superior in some way such as 'talented', 'creative', 'genius', and 'precarious' (remarkably early development in particular areas like language, music, mathematical ability). Most of these children remain unidentified in the class. Specific efforts are also not made to meet the special needs of such children. Such children who do not profit much from the regular school programme need early admission in schools, skipping grades, telescoping grades, early admission in secondary schools and colleges and enrichment activities and materials.

Children with Creative Talents : In a school teachers may come across few students who have the ability to produce something new—a composition, a system of ideas or a material or a process which is essentially new or novel, and previously unknown to them. Such children behave differently. They are courageous in their convictions. They have independent thinking and adjustment. They become absorbed and preoccupied in what they are doing. They are curious. They take risks. They are flexible in their opinions. They are intellectually self-confident. The prevailing school practices and situations create hindrance for their creative expressions. Teachers need to modify their attitudes towards such children and employ suitable strategies for promotion of their creativity.

Socially Disadvanted Children : Most teachers encounter a group of children in their classrooms who appear lifeless, incurious, and deceptively unintelligent. They show lack of interest, involvement, and motivation for academic success. They show general academic underachievement. The cumulative deficiencies in learning ultimately lead to their wastage and stagnation. These children are socially, economically,

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and educationally disadvantaged. School readiness programmes in preschool centres, enriched experiences, and remedial instruction are very useful for them.

■ Needs and Problems of Exceptional Children :

All children have certain basic needs. The needs of children are often accompanied by or result in certain problems. The needs and problems of exceptional children are similar to and at the same time different from those of non-exceptional children. The needs and problems of exceptional children also vary depending upon the direction and degree of their deviation from normal children and their type of exceptionality. For example, the needs and problems of mildly and moderately handicapped children are different from those of severely handicapped children. Similarly the needs and problems of handicapped children are different from those of children with superior ability. Even though the needs and problems of exceptional children are related to their characteristics they have certain common needs and problems such as, need for appropriate education, need for independent functioning, need for respect for their individuality, etc.

Disabled children are like non-disabled children except their specific disabilities. For example, a blind child is like any other sighted child except his loss of vision. Disabled children have a fundamental right to live and participate fully in all settings and programmes that are as normalized as possible. But consciously or out of ignorance we tend to treat them differently in school, at home, in the work place, and in the community. Our differential treatment creates in them and among their peers a feeling of 'otherness'.

Disabled children have a strong desire for independent functioning. Instead of assisting them to maximize their independent functioning in normal environments we make them dependent on others. It is perhaps for this reason that many blind and orthopaedically handicapped children resort to begging. One of the objectives of special education is to teach the disabled children self-help skills, daily living skills, vocational skills, and to assist them to manage their own affairs independently during adulthood.

An exceptional child, whether he is handicapped or gifted, has an individuality of his own. He thinks, learns, acts and adapts in his own way. He has the capabilities to live a better life and to improve his

functioning level in the community. Teachers need to have confidence on his capabilities and respect for his individuality. In schools exceptional children do not have the opportunity to express themselves fully. Their individuality is suppressed and at times punished by teachers.

Exceptional children need free and appropriate education to maximize their capabilities. Such education should not be provided to them out of sympathy or as a privilege granted to them. Education is a basic human right and this must be granted to them just as we provide free and compulsory education to non-exceptional children. India is under pressure from international agencies to make education a basic right of the child. But it is surprising that the bill making education a basic right of the child is in the cold storage of the MHRD.

Many exceptional children and their parents experience difficulties relating to appropriate education. Appropriate education for exceptional children can only be provided in regular schools. But most teachers are reluctant to admit handicapped children in the regular schools on the false impression that educating handicapped children in regular schools will adversely affect the education of non-handicapped children. In most cases the blind, deaf and MR children are refused admission in regular schools. The principle of "zero reject" stipulates that no handicapped child should be denied the opportunity to receive education in a school of his choice. Moreover there is no provision of appropriate education for gifted and creative children in our schools excepting providing the same type of education that are provided to average students. There are also no special schools for gifted, creative, emotionally disturbed and even the learning disabled children.

The handicapped children need equality of educational opportunity. The indicators of equal education opportunity for the handicapped have been spelt out by NCERT (1987) as follows :

(i) Equal access to educational institutions in common with others.
(ii) Access to special education institutions where needed.
(iii) Resource facilities to support educational programmes.
(iv) Equal access to curriculum.
(v) Curriculum adjustment to the needs arising out of a disability wherever needed.
(vi) Adaptive aids and equipment to ensure optimal access to curriculum,
(vii) Adjustment of instructional methods and materials to ensure optimal access to curriculum.

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(viii) Adjustment of evaluation and examination procedures to offset handicapping effects of the disability.

(ix) Trained manpower for equal educational opportunity in general and special institutions.

(x) Educational administrator's response to the needs of the disabled children.

(xii) Commitment to education and rehabilitation of the disabled.

The POA (NPE, 1986) also stipulates the above mentioned measures for appropriate education of handicapped children. But handicapped children experience problems of access to and success in educational institutions. There are a limited number of general schools enrolling handicapped children along with normal children. Even these schools are not properly equipped with materials, and special education provided in such schools is not appropriate to the needs of handicapped children. The evaluation and examination procedures are not adjusted to the special needs of such children.

Exceptional children need special education and related services. This requires proper assessment and classification of exceptional children. The problem is that in most cases the assessment procedure is not objective and systematic. This is why many children with temporary learning problems are classified as mentally retarded or learning disabled. Moreover, what is the cut-off points between a mildly retarded and moderately retarded? With limited and incomplete understanding about these children we tend to classify them and label them as retarded, deaf, handicapped, crippled, disabled, etc. Labelling itself is not a healthy practice for a number of reasons :

(i) Labels usually focus on a child's negative aspects. Once a child is labelled we tend to think about the child only in terms of his inadequacies or defects.

(ii) Labels lead to low expectations from teachers, parents and others about what a child can do.

(iii) Once a child is labelled teachers tend to explain the child's poor performance only in terms of his disability and not in terms of instructional failure.

(iv) A labelled child may develop a poor self-concept.

(v) Labels may lead to rejection by the peers.

(vi) Labels create a sense of helplessness, inferiority and stigmatization.

Exceptional children need special aids, equipment and learning materials to profit from regular and special education programmes and to meet their special needs. The blind children need braille materials and other aids; the low vision children need large print materials and magnifying glasses; the deaf children need hearing aids, speech trainer, visual materials, etc.; the MR children need games and play materials and other concrete objects; the LD children need alternate learning materials, work books, etc.; and so on. Gifted children need advanced learning materials, encyclopaedia, etc. In most schools aids, equipment and learning materials are not available for exceptional children. As a result exceptional children are not able to maximize their capabilities. Discrepancy between what they are capable of doing and what they do gradually widens. This also causes a huge wastage of human resources.

Exceptional children, particularly the disabled ones, need incentives and financial assistance—conveyance allowances, allowances for purchase of learning materials, uniform dress, etc. The state Governments are not in a position to provide such assistance to disabled children. They simply depend on the assistance provided by the MHRD, Govt, of India. In most states the education of disabled children has been neglected due to withdrawal of assistance by the MHRD, Govt, of India. This is a recurring problem for most disabled children.

How are exceptional Children to be Educated–Measures :

There are various types of exceptional children. Educational programmes should vary from one category to other categories of exceptional children. Education of each category of exceptional children will be discussed separately in later chapters of this book. In this section a general discussion on their identification, assessment, placement and education has been made.

Identification and assessment : Many exceptional children remain unidentified whether they are in the school or out of school. Consequently they are not able to maximize their potentialities. This calls for early identification of such children. Regular teachers should observe the behavioural characteristics of children suspected to be exceptional and refer them to specialists for medical and psychological assessments. In our country, particularly in rural areas, school authorities have been facing difficulties for medical and psychological assessment of exceptional children due to non-availability of specialists. In such cases teachers can

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conduct functional assessment which indicates what a child can do and what he cannot do (Refer to Functional Assessment Guide developed by the Department of Teacher Education, Special Education and Extension Services, NCERT, New Delhi). Functional assessment is not a substitute for medical and psychological assessment. In every case exceptional children should be subjected to medical and psychological assessment if intervention programme is to be effective.

• **Placement services :** After medical and psychological assessment exceptional children should be placed in a suitable grade in a suitable educational institution. The degree of deviation of an exceptional child and the nature and range of his previous experiences usually determine his placement in an educational institution. So far as handicapped children are concerned the following placement programmes are followed in our country:

(i) Full time placement in regular class.
(ii) Part time placement in regular class with part time placement in special class.
(iii) Full time placement in special class.
(iv) Full time placement in special schools.
(v) Full time placement in residential schools.

Since we do not have special class and special school provision for gifted, creative, emotionally disturbed and socially disadvantaged children, they are usually educated in regular schools. However, various types of scholarships such as NRTS, NTS, Merit scholarships, etc. are available for bright students.

• **Emphasis on individuality :** Exceptional children constitute a heterogenous group. There are various categories of exceptional children. Each category of exceptional children has unique characteristics. Again in each category there are various classes of children depending upon their degree of uniqueness. Education of exceptional children should match with their individual characteristics. In fact the individuality of each exceptional child should be the basis of all that we are doing and all that we want to do for his education.

• **Emphasis on learning :** It is worth noting that children are required to learn in the way the teacher teaches. Since emphasis is being shifted at present from teaching to learning, teachers should teach in the way the child learns best. This emphasis on learning rather than teaching is rightly justified while planning any educational programme for exceptional children, whether they are disabled, disturbed, disadvantaged or gifted.

• **Special school setting :** In our country a large number of special schools have been established for education of severely handicapped children, particularly the blind, the deaf and the mentally retarded children. In special schools severely handicapped children are educated by specially trained teachers with the help of special aids and equipment and a curriculum adapted to their needs. Excepting a few Government institutions, education in special schools is very expensive. Thus, many handicapped children are forced to be out of schools as their parents are not in a position to meet the expenses of their children's education in special schools.

• **Integrated setting :** The recent trend in the education of disabled children is to educate them in common with non-disabled children in general schools. The National Policy of Education (1986) envisages that "wherever it is possible, education of children with locomotor handicap and other mild handicaps will be common with that of others. Special schools with hostels will be provided, as far as possible, at district headquarters, for severely handicapped children.... Voluntary efforts for education of the disabled will be encouraged in every possible way."

• **Provision of incentives :** Government of India have made certain provisions of incentives for the education of disabled children. These include transport allowances, uniform allowances, purchase of books, escort allowances, attendance scholarships, etc. Disabled children should be guided to take advantage of such incentives. In addition to these, gifted and talented children should be also guided to take advantage of NRTS, NTS and other scholarships.

• **Preparatory classes :** Disabled children should have some preparation before they receive formal education in a school. Such preparation can be made either in a special school or in ECEC centre, anganwadi, balwadi or preparatory classes in a primary school. For this purpose the teacher should conduct a screening test first, and then administer individual tests, interview parents and their disabled children to assess what the child knows and can do and what he does not know or what he cannot do. A blind child must receive mobility training, orientation training and training in daily living skills and braille writing. A learning disabled child must be trained to sit and be attentive. Many disabled children need preparation in pre-academic skills. Such preparation is very essential for successful progress in primary grades. But once a

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child has completed preparation in pre-academic skills, communication skills, daily living skills, mobility training and orientation training he should be encouraged to receive education in a general school in common with others.

In integrated settings disabled and non-disabled children are faught by the regular class teacher with support from the resource teacher, and instruction in the resource room in areas of their deficiences. "The objective should be to integrate the physically and mentally handicapped with the general community, to prepare them for normal growth, and enable them to face life with courage and confidence" (NPE, 1986).

- **Resource teacher support :** Every school admitting exceptional children should have a resource teacher for every 8 to 10 exceptional children. The resource teacher may be a foil time resource teacher or an itinerant resource teacher. He is the person to provide support services to exceptional children in the resource room. Since he is an expert in the methodology of educating exceptional children he can also act as a consultant to other regular teachers.
- **Aids and equipment :** Exceptional children who do not profit from the conventional instructional materials, teaching aids and equipment should be provided with aids and equipment in the resource room keeping in view their special needs. Braille materials, large print materials and magnifying glasses for the visually impaired, hearing aids, speech trainer, and visual materials for the hearing impaired, play and toy materials for the mentally retarded, alternate learning materials for the less abled ones, etc. should be made available in schools for proper education of exceptional children.

■ Concept of Special Education and Children with special Needs :

- **Special Education :** Special education means specially designed instruction which meets the special educational and related needs of an exceptional child. It is distinguished from regular educational programme meant for non-exceptional children by some unusual quality, something uncommon, noteworthy. It is something special — special materials, special training .techniques, special equipment and special help and/or special facilities may be required for special categories of children having special needs.
- **Special education as teaching :** We may look at special education in ferms of who, what, where, and how. Who? Special education is meant

for exceptional children whose special needs or abilities necessitate an individualized programme of education. An inter-disciplinary team of professionals—special educators, regular classroom teachers, psychologists, speech therapists, physiotherapists, specialist doctors bear the primary responsibility for helping exceptional children maximize their capabilities. What ? Special education is sometimes differentiated from regular education by its curriculum—that is, by What is taught. For example, teaching self-help skills or training in reading and writing braille is an important part of curriculum for severely handicapped children (the blind) in special education institutions which is not found in regular education. It is said that in regular education the school system dictates the curriculum, but in special education the child's individual needs dictate the curriculum. Where ? Special education can sometimes be identified by where it takes place. Whereas regular education is provided in the regular classroom, special education may be provided in special class, resource room, special school or in residential school. How ? Special education can be differentiated from regular education by the method used by teachers. One special educator may use sign language to communicate with his students. Another special educator may use task analysis and skill training for mentally retarded children. Still another special educator may use multisensory approach and process training while teaching a LD child.

- Special education as intervention : Special education is an intervention strategy to eliminate, or at least reduce, the obstacles that might keep a child with disabilities from full and active participation in school and society. There are three basic kinds of intervention efforts such as :
  - — Preventive Efforts (Keeping possible problems from becoming a serious handicap).
  - — Remedial Programmes (Overcoming disability through training or education).
  - — Compensatory Efforts (Giving the child new ways to deal with the disability).

Special education is a profession, a service with tools and techniques to meet the special needs of exceptional children. It is individually planned, systematically implemented, and carefully evaluated instruction to help exceptional learners achieve the greatest possible personal self-sufficiency and success in present and future environments (Heward and Orlansky, 1992).

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• Historical Perspective of Special Education :

Place	Personality	Year	Initiative of Special Education
1. Spain (Valladelid)	Pedroponce deleon	1555	Initiated book for Deaf & Dumb, and special school for Deaf
2. France	Juan Publo Bonet	1620	Finger Spelling was started
3. England	John Bulwer	1644	Discovery of book for HI
4. England	George Dalgamo	1680	Instructional Process for Deaf & Dumb was initiated
5. Great Brietain (Edinberg)	Thomas Braidwood	1767	Sign Language was initiated
6. German	Samuel Heinicae	1778	Lip reading was initiated
7. America	Gallandel	1847	American school for the Deaf was established
8. New York	Graham Bell	1874	Adult education was initiated for Deaf
9. Paris	Abbe Charls Michael et. al	1950	Public School was established for HI
10. Paris	Hany Valentins	1764	National Institute was established for VI
11. Masachuset	Samuel Grindley	1829	Special School established VI
12. France	Louise Braille	1829	Brail discovered for VI
13. France	Itard J. M. G	1866	Ideocy & its treatment by physiological Method book was wrote for MR
14. France	Alfred Binnet	1905	Discovery of Intelligence test

• Special Education in India :

Serial No.	Place	Time	Initiation of Special Education
1.	Baranasi	1829	Raja Kali Sankar Ghosal initiated the education of VI
2.	Madras	1841	Ashram was established for idiots
3.	Mumbai	1884	Institute for the Deaf and Mute was established
4.	Ambala (Punjab)	1886	Teaching in Braille was started
5.	Cursiong	1918	Special school was established for MR & OH
6.	Ranchi	1934	PsychomedicalRetardation Centre was established.
7.	Chennai	1939	Govt. Mental Hospital, Madras had started school for MR

■ Principles of Special Education :

Special education is based on the following principles :

- **Individual differences :** There are inter-individual differences and intra-individual differences. In other words, some students are very different from most in ways that are specific regarding education, and special education is required to meet their educational needs.
- **Zpro reject :** All children with disabilities must be provided a free and appropriate education. The school systems do not have the option to accept or reject a child for education in a regular school.
- **Nbn-discriminatoty evaluation :** Students who need special education rhusi be clearly identified to ensure that they receive appropriate services. Each student must receive a full individual examination before being placed in a special education programme with tests appropriate to his cultural and linguistic background. A re-evaluation is required at intervals to assess his progress and difficulties in learning.
- **Individualized education programme :** Students with special needs require individualized education programme either in a resource room or a special class in the regular school for some part of the day. Such education must match with their current level of functioning and their special needs.
- **Least restrictive environment :** As much as possible, children with handicaps must be educated with children who are not handicappa" the regular classroom. The regular classroom provides the least rest environment for handicapped children.
- **Due process :** Due process implies that the parents of handicar children have the right to evaluate the efforts of the school system identify and assess the handicapped children, to modify the programme of the school to meet the special needs of these children and, if they are not

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satisfied with the programme of the school, they have the right to withdraw their children from that school for a better programme in any other educational institution.

- **Parental participation :** Special education can be made effective if parents participate actively in the educational (programme designed for handicapped children.

- **Development of special education in India :** Special Education in India has a snort history. There is no verifiable record of special education for exceptional children in ancient India or thereafter during the pre-independence period excepting few special schools for the blind which were established during the last part of the 19th century. After independence, the Constitution of India was framed in 1950. In pursuance of the provision made in Article 45 of the Constitution measures were taken to provide free, compulsory and universal primary education to all children in the age group of 6 to 14 including the handicapped children. Few special schools were opened in different States for blind and deaf children during the period 1950-1970. The number of special schools for blind, deaf and M.R. children established by Government increased thereafter. These schools catered to the needs of severely handicapped children. Training centres for teachers of handicapped children were also established by the Central Government and State Governments. But mildly and moderately handicapped children were deprived of special education facilities. Three situations were noticed with regard to education of mildly and moderately handicapped children in our country :

(i) Most of them were out of school;

(ii) Some of them were forced to receive education in special schools and

(iii) Some of them remained unidentified and uncared for in general schools leading to their wastage and stagnation.

After 1974 attempts were made to educate mildly and moderately handicapped children in general schools having IED units.

The dismal picture of the education of handicapped children in our country continued up to the formulation of National Policy of Education (1986). The NPE (1986) put emphasis on mainstreaming the handicapped children with the general community. It states : "The objective should be to integrate the physically and mentally handicapped with the general community as equal partners, to prepare them for normal growth and to enable them to face life with courage and confidence." This resulted in

modification of our attitude towards the disabled, new realization about the educability of the disabled, establishment of new special schools for the blind, deaf and severely mentally retarded, higher enrolment of mildly and moderately handicapped children in general schools, appointment and training of resource teachers, etc.

The Project Integrated Education for the Disabled (PIED) was implemented in different blocks, and the Centrally Sponsored Scheme of IED was also seriously implemented in different States to create awareness, organise parent contact programme and community contact programme, provide training to regular teachers on IED and to monitor and evaluate the system of IED. Voluntary agencies and NGOs came forward in large numbers to cater to the special educational and related needs of disabled children.

Special education in India has become so popular that different Universities have already started new courses — B.Ed. (Special Education) and M.Ed. (Special Education). Even research scholars have also come forward to undertake research projects leading to Ph.D. (Special Education). As new research findings are established, the scope of special education has widened and the concept of disabled children has also undergone a change. Now disabled children are regarded as "Children with Special Needs" and as "Differently Abled Children".

During the short period of 1950 to the end of the 20th century, special education has developed so much that it deserves to be considered as an independent discipline.

Objectives of Special Education :

Special education has the same objectives as those of regular education—human resource development through providing appropriate education to children, national development, social reconstruction, civic development, vocational efficiency, etc. In addition to these objectives special education has certain special objectives such as the following :

(i) Early identification and assessment of special needs of handicapped children.

(ii) Early intervention to prevent a handicapping condition from becoming a serious one for remediation of learning problems and compensation by teaching the child new ways of doing things.

(iii) Parent counselling about prevention and remediation of defects, care, and training of handicapped children in daily living skills, self-help skills, pre-academic skills and communication skills.

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(iv) Community mobilization and awareness of problems of handicapped children and their education.

(v) Rehabilitation of the handicapped.

The National Policy of Education (1986/1992) clearly stipulates that: The objective should be (i) to integrate the physically and mentally handicapped with the general community as equal partners, (ii) to prepare them for normal growth and (iii) to enable them to face life with courage and confidence."

The following measures have been envisaged in the Programme of Action (NPE—1986) for attainment of these objectives :

(i) Wherever it is feasible, the education of children with motor handicaps and other mild handicaps will be common with that of others.

(ii) Special schools with hostels will be provided, as far as possible, at district headquarters, for severely handicapped children.

(iii) Adequate arrangements will be made to give vocational training to the disabled.

(iv) Teacher training programmes will be reoriented in particular for teachers of primary classes to deal with special difficulties of handicapped children.

(v) Voluntary efforts for education of the disabled will be encouraged in every possible way.

■ The Resource Teacher :

• **Resource Teacher :** The resource teacher is a key person in the IED programme. The success or failure of the IED programme depends primarily upon how the resource person implements the programme. He is the specialist teacher, special education teacher, or the support teacher who provides the support services to the disabled children studying in the IED school. But he is not an extra teacher in the school as he is sometimes considered by the regular teachers of the school.

• **Appointment of Resource Teacher :** The centrally sponsored scheme of IED has provision for appointment of one resource teacher for every 8 disabled children enrolled in the Primary or Secondary school. If a particular school does not have 8 disabled children on roll then one resource teacher can be appointed for a cluster of schools in a particular locality. Such a teacher who is called an itinerant teacher has to visit a number of schools implementing the scheme of IED and attend to the special needs of disabled children studying in these schools. Resource teachers are to be appointed by the competent authority empowered by the government following the normal recruitment procedure.

• **Qualification :** The minimum qualification for the post of resource teacher as envisaged in the centrally sponsored scheme of IED is :

(i) 10+2 with D.Ed. (Special Education) for Primary stage and

(ii) B.A. or B.Sc. with B.Ed. (Special Education) for secondary stage.

The candidates must have D.Ed./B.Ed. (Special Education) with specialisation in any field such as visual impairment, hearing impairment, mental retardation, etc.

• **Scale of pay :** The resource teacher gets the same scale of pay as applicable to other regular teachers in the respective category.

• **Special pay :** The resource teachers are entitled to a special pay of Rs. 150 p.m. in urban areas and Rs. 200 p.m. in rural areas in addition to their pay.

• **Training/Preparation :** The resource teachers are required to prepare themselves adequately and develop their competencies so that they can perform their functions successfully. A resource teacher has to attend training programmes, short orientation courses and refresher courses organised by various agencies from time to time. The following courses are offered by various institutes :

D.Ed. (Deaf)	—	Regional Training Centres for Teachers of the Deaf, National Institutes for Hearing Handicap.
B.Ed. (Deaf)	—	National Institutes for Hearing Handicap.
D.Ed. (Blind)	—	Regional Training Centres for Teachers of the Blind, National Institutes for Visual Handicap.
Diploma in M.R.	—	National Institutes for Mental Retardation, Chetana Institute of Mental Retardation.
Short-Orientation Courses & Refresher Courses	—	State Council of Educational Research and Training, Regional Institutes of Education, National Council of Educational Research and Training.

• **Duties and Responsibilities of a Resource Teacher :** The resource teacher is a catalyst who works for the successful implementation of the scheme of IED. He is like a mirror to reflect the policy of the government for the welfare of handicapped children. He has a number of duties and responsibilities. He has to work very closely with handicapped children in collaboration with other regular teachers, community members, parents,

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specialists and administrative personnel. His duties and responsibilities can be discussed under three heads :

(a) Before the school hour (b) During the school hour (c) After the school hour

(a) Before the school hour :

(i) **Identification of disabled children :** The resource teacher has to conduct community survey and, if possible, door to door survey to identify disabled children in different categories in different age groups, sex wise, and in-school and out-of-school.

(ii) **Creating awareness :** The resource teacher has to create awareness among community members, parents and teachers about education of disabled children in general schools. Such awareness can be created through community contact programme, parent contact programmes, and in centre-meetings of primary school teachers. The resource teacher can make use of video cassettes and seek the assistance of health personnel and other experts for the above purpose.

(iii) **Arranging preparatory classes :** In most cases the resource teacher may find that disabled children seeking admission in the general school have not learnt certain skills which are prerequisite to learning academic skills in the school. In such cases, instead of admitting the children directly in Class-I the resource teacher has to prepare them for a period of one to two years in prerequisite skills. He has, therefore, to arrange preparatory classes (Prep-I and Prep-II) for those disabled children who are in need of it.

(iv) **Assessment of disabled children :** One primary responsibility of the resource teacher is to arrange for medical and psychological assessment of disabled children. If such assessment is not possible due to unavailability of the assessment team or other reasons he has to conduct functional assessment before he starts formal training.

(b) During the School Hour :

(i) **Care of disabled children :** During the school hour the resource teacher is in full charge of disabled children. Like any other teacher, the resource teacher has to play the role of a mother in taking care of disabled children. He should be "at their service" any time.

(ii) **Full and special attention :** The resource teacher has to pay full and special attention to disabled children to meet their special needs.

(iii) **Periodical testing :** The resource teacher is expected to conduct periodical testing for disabled children. He should first conduct a screening test for all disabled children at the time of enrollment. Then he should administer individual test on those children who failed in the screening test. This will given him a clear picture about the abilities and specific limitations of disabled children and how he should proceed in teaching them.

(iv) **Maintaining pupil information card :** The resource teacher has to maintain a 'Pupil Information Card' for each and every disabled child. Such a card which is made up-to-date from time to time should contain bio-data, family background, what the child can do, what he cannot do, his problems and difficulties, intervention required, etc.

(v) **A referral agent :** The resource teacher has to act as a referral agent. He is the right person to understand the disabled child better. Whenever he notices any specific problem with the child which is beyond his ability to deal with he may refer the case to appropriate specialist for intervention.

(vi) **Maintaining the resource room :** The resource teacher has to maintain the resource room with all the aids, equipment and materials which are required for specialised instruction.

(vii) **Resource room teaching :** The primary duty of a resource teacher is teaching the disabled children in the resource room. Lip reading, daily living skills, social skills, communication skills, academic skills and remedial teaching are fundamental aspects of resource room teaching. The amount of time required for resource room teaching for disabled children depends upon the degree of their disability and the nature and type of home training received by such children prior to their enrollment in the school.

(viii) **Regular classroom teaching :** In addition to teaching disabled children the resource teacher should also teach in regular classrooms. The resource teacher is not a subject teacher, but a specialist in the methodology of IED. His teaching to disabled and non-disabled children in the regular classroom will enable him to

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understand how non-disabled children accept their disabled peers, and how the disabled children are able to adjust with their non-disabled peers, and other regular teachers.

(ix) Positive attitude towards the disabled : Equally important for the resource teacher is the fact the he should show positive attitude towards disabled children. He should avoid as far as possible and advice other regular teachers to avoid labeling of any kind because labeling has adverse effect on the child's personality and ego development. In order to develop in the child a positive ego/self-concept the resource teacher should provide success experience to him. A child may be disabled in some respect but he may have potentiality for success in other areas. This is why disabled children are now called 'differently able' children. The teacher should recognise his potentialities for success and arrange activities and provide opportunities to the child to succeed.

(x) Organising cocurricular activities : Related to the above is the duty of a resource teacher to organise cocurricular activities such as sports and athletic events, music, dance and drama, drawing and painting exhibition, etc. The resource teacher must ensure that both disabled and non-disabled students participate cooperatively and competitively in such activities. Such activities like the Special Olympics have tremendous value in knowing each other, identifying the talents, harnessing and improving their talents, positive ego development, mutual respect and acceptance among disabled and non-disabled children.

(xi) Consultant for regular teachers : The resource teacher has to act as a consultant to other regular teachers. He should help and advice regular teachers in the methodology of teaching, making seat arrangement, and in all matters relating to mainstreaming of disabled chiidren.

(xii) A link : The resource teacher should act as a link between regular teachers and disabled students, administrators and the school parents and teachers.

(xiii) Help and advice in rehabilitation : The resource teacher should also provide help and advise disabled children and their parents in rehabilitation, vocational training and further education of such children.

(c) After the School Hour

(i) **Counselling to parents :** The resource teacher should give counselling to parents on the care of the mother during pregnancy, pre-natal and post-natal care, care of the eye and ear, language and other training at home, services available in various centres, etc. Parent contact programme and home visits give opportunity to the resource teacher for the above purpose.

(ii) **Arranging resources :** The resource teacher's responsibilities are not limited to teaching the disabled children with the available resources in the school. He should try to arrange resources for the IED unit from various service agencies and Departments of government such as the Rotary Club, Lion's Club, Social Welfare, Child Welfare, Vocational Rehabilitation Centre, UNICEF, NCERT, SCERT, business organisation and community leaders.

■ The Resource Room :

Resource Room : The resource room is a fast growing and a very common educational arrangement for disabled children studying in general schools. It is essentially a special setting in a school to which disabled children can be referred for brief periods of specialised instruction which they might not be able to receive in the regular classroom. In short it is a place where disabled children get the assistance from the specialist teacher. The resource room is not "any room" of the school because a room should have some important provisions to enable it to the name 'resource'. But it is possible to convert 'any room' into a resource room and exploit the best of the available facilities. For this purpose improvisation is necessary. The Centrally Sponsored Scheme of Integrated Education for disabled children visualises, "The resource room may be set up preferably in an existing room in the school. A new room may be built only where no accommodation is available to the satisfaction of the state Government. Grant shall be available for construction of resource room in schools in such circumstances subject to a maximum of Rs. 40,000". If this grant is inadequate the Village Education Committee or the School Managing Committee may be involved to bear the additional expenditure to be incurred in the construction of the resource room.

Resource Room, Special Class, and Resource Centre : The three terms mentioned above need little explanation to avoid confusion. If a

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disabled child is enrolled in a class with specially trained teacher, and spends most of the day there, it is usually referred to as a special class. If, on the other hand, the disabled child is enrolled in the regular classroom and goes to the special room only for specialised instruction for brief periods of time, say 1 or 2 periods every day it is usually called a resource room. Thus, the difference between a special class and a resource room depends upon the amount of time spent by the disabled child in the special room. Ideally speaking every primary school implementing the scheme of IED should have resource room facilities. A resource centre, on the other hand, is properly equipped with staff and material which can be shared by a number of schools in a particular locality. For all practical purposes a special school can serve as a resource centre for all IED schools in the locality. There should be three types of resource centres such as :

(i) The State Resource Centre to be set up in the State capital or in the institution which coordinates the implementation of the scheme of IED in the state.

(ii) The District Resource Centre to be set up in each district headquarters, and

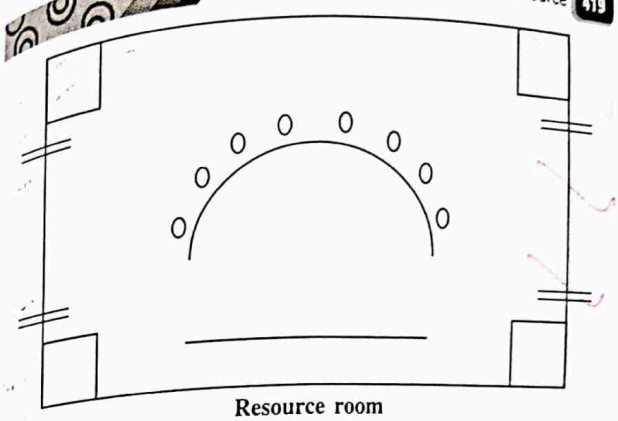
(iii) The Block Resource Centre to be set up in each block headquarters.

- **How a Resource Room should be like?**

(i) A resource room is not a formal classroom where abled and disabled children attend formal lessons from the first period till the last period.

(ii) It does not belong to a particular child or class. All disabled children in different categories and studying in different classes should be given resource room facilities. All disabled children studying in the school should have access to it.

(iii) It should be centrally located in the school so that disabled, children can reach the room without any difficulty and without wasting time and energy to reach the room. If it is located in a corner of the school the disabled children may waste unnecessarily much time and energy to reach the room.



Resource room

(iv) It should be properly electrified to facilitate use of aids and instruments which are required for their specialised training.

(v) The resource room should have good lighting condition and furniture. This will give a psychological comfort to the disabled children.

(vi) The resource room should not be a big one. The size of the resource room should be 15″ × 10″ which is sufficient to accommodate 4 to 8 disabled children at a given time.

(vii) The resource room should be free from unnecessary noises. Children should not be assembled in the resource room unless they have specific work to do.

(viii) The resource room should have equipment and materials which are required for specialised instruction and training. What type of equipment and materials are to be stored in the resource room? Equipment and materials vary from programme to programme (programme for visually impaired, programme for hearing impaired, programme for mentally retarded and so on). Equipment will also vary according to the level of the programme (primary, secondary of preschool education or preparatory classes). Equipment will also vary according to use (use by individual children, use by a group of children, and sharing amongst schools.) Thus, it is not possible to make a list of all the equipment and materials required for every resource room. However, a list of aids and equipment

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required for disabled children category-wise and according to use is given in the next section of this chapter.

■ **Need/Importance of Resource Room**

A resource room is needed for the following reasons :

(i) **Additional help :** The disabled children need additional help or support services from the resource teacher to cope with non-disabled children.

(ii) **Specialised instruction :** The disabled children need equal educational experiences to learn the academic skills. Equal educational experiences necessiate specialised instruction in difficult ar· as. Specialised instruction can only be given in the special room. The resource room is also necessary for providing remedial instruction, assignments and enrichment reading etc.

(iii) **Functional assessment :** The disabled children are to be assessed properly before formal instruction is started. But in most cases specialists are not available, particularly in rural areas, to conduct medical and psychological assessment. The resource teacher can conduct functional assessment which will indicate what the child can do, what he can not do, his educational needs, etc. Functional assessment is to be conducted with the help of toys and play materials and in a conducive environment. The resource room is the place which provides a conducive environment for carrying on functional assessment of disabled children.

(iv) **Privacy :** The resource teacher is required to interview the parents and their disabled children for purpose of gathering information about the problems, difficulties and special needs of such children. This calls for privacy to be ensured. The special room provides the privacy which is basic to understanding disabled children and their needs.

(v) **Individual attention :** The disabled children have certain special needs. This also necessiates individual attention to disabled children. The resource teacher can pay individual attention to disabled children in a special room only.

(vi) **Preparing instructional materials :** The resource teacher is required to prepare instructional materials which may be necessary

for specialised instruction. He has also to display the materials in a special room. He needs space for storing the materials and using different aids and appliances during specialised instruction. A special room is needed for preparation, storing, display and use of aids and equipment. A well maintained resource room also gives a general idea to the visitors about the type of services provided to disabled children.

Aids and Equipment :

Importance of Aids and Equipment : The success or failure of integrated education for the disabled depends critically upon the availability of aids and equipment for learning purposes. The importance of aids and equipment in the education of disabled children can be stated as follows:

(i) If a teacher can present concepts, ideas or principles through spoken words, it is fine. But disabled children in general, and mentally retarded, learning disabled and the hearing impaired children in particular, do not learn as much as they are capable of learning through teacher's verbalisation. Aids and equipment help the teacher to avoid excessive, empty and meaningless verbalisation in teaching.

(ii) Specially designed teaching aids provide direct sense experience to the disabled.

(iii) They help disabled children to form clear and accurate concepts in different subjects.

(iv) They help teachers in communication of ideas in a more effective way.

(v) They provide concrete and specific experiences to the disabled children.

(vi) Teaching aids and equipment are not substitutes for teacher's presentation. Rather they supplement ideas gained through other means.

(vii) They help in creating and sustaining children's interest in learning situation.

(viii) They make disabled learners active and enthusiastic in learning different subjects.

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(ix) They help in effective teaching, efficient learning and consequently in better retention.

(x) Aids and equipment add colour and beauty to the resource room. A resource room without aids and equipment is like a deserted river.

Although teaching aids and equipment are valuable means of teaching and learning, they should not be used indiscriminately for all disabled children and in all situations by all teachers. Moreover some of the aids and equipment are very costly. In such cases equipment available in one school should be shared by a number of schools in the locality. For example, brailler and speech trainers cannot be supplied to or purchased by every primary school. These equipment can be shared by five to ten schools in the locality. Whether teaching aids are supplied free of cost to the schools or the schools have to arrange their own aids it is always desirable to have improvised, low-cost or no-cost aids.

- **Aids and equipment required for a resource room :**

What are the specific aids and equipment necessary for a resource room? It is a question which has no precise answer because :

(i) Aids and equipment vary from programme to programme. For example, if the school implements a programme for visually impaired children, the aids and equipment will be different from those required for a school which implements a programme for hearing impaired children. Similarly teaching aids meant for mentally retarded children or learning disabled children are different from those meant for hearing impaired children.

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Requirements of Equipment for Resource Room Disability-wise : Inventory of Equipment and Materials

Disability	Aids and Equipment: Individual Use	Aids and Equipment: Sharing within school	Aids and Equipment: Sharing amongst schools	Institutional Material
Orthopaedic	Adjustable furniture, special writing material, thick pen.	Adjustable furniture, Povision for development of improvised prosthetics.	—	—
Visually Impaired Blind	Braille slate and Stylus, Abacus, Taylor frame, Mobility canes.	Brailler, Abacus, Taylor frame, Cassette and talking books, Maps, Recreational material, Embossed recreational materials.	Braille sheets, Themoform machine, Indu Brailler Maintenance services for Brailler, Embossed recreational materials.	Braille Text-books. Material on cassette and talking books.
Partially sighted and Low vision children	Special adaptive equipment like hand magnifiers to be used with spectacles, portable reading lamps.	Specially designed desks with adjustable magnifiers, white boards in place of black boards.	Special arrangements for producing large print materials.	Large print materials.

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Requirements of Equipment for Resource Room Disability-wise : Inventory of Equipment and Materials

Disability	Aids and Equipment			
	Individual Use	Sharing within school	Sharing amongst schools	Institional Material
Hearing Impaired	Individual hearing aids.	Voice trainer, Mirror in size of 3' × 6' for speech therapy, big mirrors 10' × 6' in each classroom, Group hearing aids, cells for hearing aids. Picture albums.	Audiometer, Voice trainer, Maintenance facilities for hearing aids.	Special learning materials like flash cards, charts, educational games, handouts of classroom activities.
Mentally Retarded	Play materials Toys	Sensory apparatus and kits prepared on the lines of Maria Montessori kits or produced by NCERT fo Early Childhood Care and Education.		Material written on a lower reading level than average.

(ii) Teaching aids will vary according to the level of the programme—elementary education or secondary education.

(iii) Aids and equipment also vary according to their use. Some aids and equipment are meant for use by individual children (e.g., individual hearing aid). Some aids are meant for sharing within the school or use by a group of children at the same time (e.g., group hearing aids, maps, charts, pictures, etc.). Some aids and equipment can be shared amongst schools in a particular locality (e.g. speech trainer, brailler, etc.)

Thus, it is not possible to prepare a list of aids and equipment required for a resource room. However, an inventory of aids and equipment required for various categories of disabled children and according to their use is given at pages 36 and 37. Specific teaching aids for learning disabled children have not been indicated in this table. Because learning disabled children need the same teaching aids which are required for (effective) teaching normal children. sp"

Types of Special Education Services :

The type of special education services available for disabled children can be structured along a continuum that ranges from integration to segregation or full-time placement of disabled children in the regular classroom to twenty four-hour institutional care. The type of services required depends primarily on the degree of disability and the nature of special needs. Seriously and profoundly handicapped children usually require more continuous, prolonged, and intensive care in special institutions. The following are various services available for handicapped children.

(i) **Full-time placement in a regular classroom :** The least intensive level of special education service is placement of the disabled child in a regular classroom. The regular classroom teacher is provided with materials, equipment and instructional methods that are appropriate to the disabled child. At this level, the direct services of experts may not be required. The expertise of the regular classroom teacher may be sufficient to meet the child's needs. Usually speech handicapped, mildly mentally retarded, learning disabled, orthopaedically handicapped, visually impaired children who can work independently with braille materials and the hard-of-hearing children can be full-time students in regular classroom.

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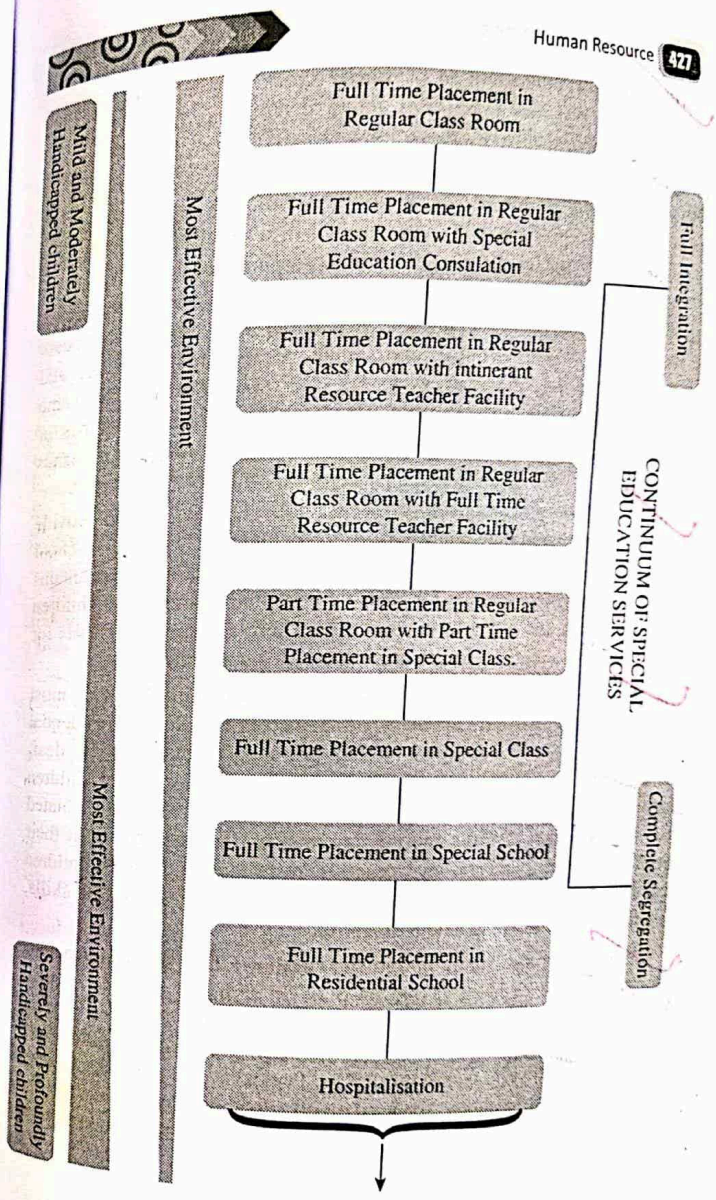
(ii) Full-time placement in a regular classroom with special education consultations : At the next level, the disabled child is a full time student in a regular classroom. The regular teacher has special materials and equipment to teach the disabled child. But he may need consultation with the special educator. The special educator instructs the regular teacher for selection and use of special materials, equipment and methods.

(iii) Full-time placement in a regular classroom with provision of itinerant special educator service : Going a step further, the disabled child is a full-time student in a regular classroom. But he gets the services of an itinerant teacher. The itinerant teacher moves from school to school on a planned schedule and works directly with disabled children either individually or in small groups. He provides specialised instruction to the disabled child once or twice in a week and advises the regular teacher in the use of materials, equipment and methods. This plan can be used in rural areas where schools are far apart and too small to have full-time resource teachers.

(iv) Full-time placement in a regular classroom with provision of a resource room/resource teacher : At the next level, the disabled child is enrolled in the regular classroom. But he receives specialised instruction from a resource teacher in the resource room. The length and frequency of such help depend on the severity of his problems. The resource teacher provides such instruction in the special classroom. The child returns to the regular classroom and participates in regular classroom activities in music, art and physical education in the second half of the day.

(v) Part-time placement in regular classroom with part-time placement in a special class : In this type of service the disabled child is a member of a special classroom. In view of his moderate disability and special needs he receives specialised instruction in academic subjects in a special classroom of the school for a half-day. The resource teacher provides such instruction in the special classroom. The child returns to the regular classroom and participates in regular classroom activities in music, art and physical education in the second half of the day.



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(vi) Full-time placement in a special class : This is the type of service usually provided to severely retarded children. This is also the oldest and traditional type of service for disabled children which has been criticised for it segregates disabled children from their normal peers. In this plan a group of ten to fifteen disabled children belonging to one particular category of disability are enrolled in a special class. Thus all MR children attend one special class. All hearing impaired children attend one special class. These children spend the whole day with the resource teacher in the special classroom being segregated from their normal peers in the school, except during recess, lunch, after school activities and school functions. In rural areas, where ten to fifteen children having same type of handicap are not available, children having different types of disability may be enrolled in a special class. But considerable demands are made on a teacher working with children with diverse problems.

(vii) Full-time placement in special schools : Special schools provide an all day, segregated experience for disabled children. The special school is usually organised for a specific category of disabled children. It contains special equipment necessary for their care and education. The children return to their home after the school hour. There are special schools for blind, deaf and mentally retarded children in our country.

(viii) Full-time placement in a residential school : The most restrictive type of services are usually provided in boarding or residential schools. This type of service is usually provided to blind, totally deaf, and profoundly retarded children. In this arrangement disabled children receive twenty four hour care in the boarding school. They are isolated from their parents, siblings and the community. But they can visit their homes during vacation and on weekends. In residential schools children receive academic instruction in addition to training in social skills, communication skills, self-help skills, etc.

(ix) Hospital and home-bound instruction : This involves teaching the handicapped children in the hospital or at home because of their physical and/or psychological conditions. This type of service is most often required for physically handicapped or emotionally disturbed children when no alternative is readily available. Typically, the child is confined to the hospital or his home for a relatively short period of time and the hospital or home-bound teacher maintains contact with the child's regular teacher.

Special education services in the past were much more restrictive and much less effective than they are today. Now placement of mildly and some moderately handicapped children in the least restrictive and most effective environment of the regular classroom is becoming increasingly common.

• Integrated Education?

Integrated education movement flows directly from the recognition of equal rights for all citizens and equal educational opportunity for all children. It is based on the contention that while disabled children are children with special needs, their education should be provided in the least restrictive and most effective environment. The least restrictive environment which disabled children need can only be provided in general schools. 'Thus, integrated education refers to education of disabled children in common with others in general schools with provision for extra help for the disabled. It refers to integrating the physically and mentally handicapped children with the non-disabled children in regular classroom and providing specialised services to meet their special needs'.

Integrated education is the outcome of significant modification in strategies related to the planning and delivery of services to the disabled. These significant modifications are :

— from protection to emancipation
— from wardship to independence
— from separation to integration
— from exclusion to inclusion
— from restriction to expansion

Least Restrictive Educational Setting

Level A Full time Regular Classroom attendance with Resource Teacher Support.

Level B Regular Classroom attendance plus Part time Resource Room Support.

Level C Special Class with Integration.

• Four key processes are important in integrated education : Normalization, Deinstitutionalization, Mainstreaming, Inclusion.

(i) Normalization is the process of creating a learning and social environment as normal as possible for the exceptional child and adult.

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(ii) Deinstitutionalization is the process of releasing as many exceptional children and adult as possible from the confinement of residential institutions into their local community.

(iii) Mainstreaming is the process of bringing exceptional children into daily contact with non-exceptional children in an educational setting.

(iv) Inclusion is the process of bringing exceptional children of whatever condition into the general classroom for their education.

Integration is the opposite of segregation. Segregation is the process by which a special group in society is identified and gradually the social and physical distance between this group and the rest increases. A feeling of otherness develops in the group which alienates the former group. Integration is the process of bringing the 'part' (the handicapped) to the 'whole' (the society). The indicators of integration are that (i) handicapped persons enjoy the same right as the rest; (ii) have equal opportunity for growth and development in environmental conditions available to the rest; (iii) have access to the quality of life like any other citizen and (iv) are treated as equal partners in the community. The process begins by physical proximity, i.e., reduction of physical distance. It continues with mutual sharing of the physical facilities and progresses towards reduction of social distance. The reduction of the physical and social distance results in social integration in which the groups become equal partners in the community.

• Mechanics/Nature of Integrated Education

(i) Integrated education is an educational setting in which disabled children receive education alongwith non-disabled children in the regular classroom with provision for extra help for the disabled. Thus, integrated education is a practical solution to the problem of segregation of disabled children.

(ii) Integrated education is not an alternative to special education. Rather it is complementary to special education. Only mildly and sometimes moderately handicapped children can be enrolled in integrated schools. Severely handicapped children who are enrolled in special schools can also be admitted in integrated schools after they acquire communication skills, daily living skills, study skills, and other pre-requisite skills.

(iii) It is designed to provide equal educational opportunity to the disabled and to prepare them for independent living like other members of the society.

(iv) It provides the least restrictive and the most effective environment to disabled children so that they may grow and develop like other children.

(v) It is an educational setting which promotes a healthy social relationship between the disabled and the non-disabled children at all levels and reduces the physical distance between them through equal participation in social activities.

(vi) It is an arrangement in which disabled children are considered as important as their non-disabled peers.

(vii) It accepts the disabled child as an individual in his own rights.

(viii) In ensures civic rights to the disabled in order to raise their standards of living.

(ix) It is an economic system for the education of disabled children and solves the psychological problems which these children face in special educational settings.

(x) It is based on cooperative efforts of regular classroom teacher, the specialist teacher, parents and community members.

(xi) It is a viable approach to attain the goals of universalisation of elementary education by providing equality of educational and development opportunities to the disabled who were denied equality so far.

• Scope of Integrated Education

Integrated education is proposed to provide educational facilities to the following types of disabled children.

(i) Children with locomotor handicap (orthopaedically handicapped).
(ii) Mildly and moderately hearing impaired.
(iii) Partially sighted children including one-eyed children.
(iv) Educable mentally retarded.
(v) Children with multiple handicaps (blind and orthopaedic, hearing impaired and orthopaedic, EMR and orthopaedic, visually impaired and hard of hearing).
(vi) Children with learning disability.
(vii) Blind children who have completed preparation in braille reading and writing, orientation and mobility training.

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(viii) Deaf children who have acquired communication skills and learnt speech reading.

The scope of integrated education includes pre-school training for the disabled, counselling for parents, primary education, secondary education, +2 level of education, and vocational courses.

• **Educational Provisions**

There are children with some impairment who can be educated in general schools with the existing facilities by general teachers without any formal training or preparation. There are children with certain impairments who can be educated in general schools with some preparation and slight modifications/adjustments/adaptations in teaching methods and materials. There are also a limited number of children with disabilities who will require comparatively prolonged formal preparation before they are educated in general schools.

Children with different types and levels of disability will require educational provisions matched with their needs. The educational provisions may be considered on the basis of the extent of their participation in educational activities in common with other children. The educational provisions in general schools will be as follows :

(i) General classroom in general schools : Disabled children receive education in the general classroom in general schools with other children. They are taught by general teachers. For example, children with locomotor disabilities, visual impairment with correction, mild hearing impairment and cases of marginally low intellectual functioning follow the same curriculum as their non-disabled peers.

(ii) Education in general schools with adaptations and modifications of curriculum transaction : The disabled child receives education in general schools in the general classroom following the same curriculum as others. However, adaptations of teaching techniques or materials according to his specific needs are made by the general teacher. This is specifically applied to low vision children, such cases of hearing impairment where hearing can be corrected through aids and, children with learning disabilities.

(iii) Education in general classroom with support from special teacher : Where the general class teacher has instructional or behavioural problems with the disabled child, he can seek the help of the special education teachers for instructional adaptation and modification. The special education teacher suggests educational alternatives to general class instruction. Thus, the disabled child receives services without being moved to a special class/or resource room through guidance from the special teacher.

(iv) Education in general classroom with part-time withdrawal for special instruction : A disabled child, though still in a general class setting, receives special part time instruction through a special teacher. For example, a child may need special assistance in reading or require extra time for a particular curriculum area. The child may go to a special teacher for between one and three class period(s) a day according to his need. For example, a blind child may go for special practice in language-learning.

(v) Education in special class in general schools : Some disabled children need full-time special class placement (self-contained class) to receive appropriate individualised instruction. It may be specifically required for severe and profound cases of hearing impairment and mentally retarded children. For example, mentally-retarded children may work in an integrated setting for non-academic activities like music, painting, and drama and may attend a special class for academic activities. Their curriculum is also different.

The educational provision described above indicates that special support can be provided for these children in a general classroom. For some children, however, these facilities will have to be provided in a resource room/centre where children with specific difficulties for which help cannot be extended in the general classroom are given instruction by the special teacher (resource/itinerant teacher).

(vi) Preparation for education in general schools : Severely handicapped children can benefit from education in general schools when they have the necessary communication skills, orientation and mobility skills (for blind children) and access to the school. Severely handicapped Children get such preparation in the home and ECCE centres, pre-schools attached to general schools, preschools and parent counselling centres, and special schools. Those children who have completed their preparation can be educated in general schools.

(vii) Compensatory aids and appliances : As discussed earlier some disabled children need special aids and appliances to compensate for their deficiencies. General schools admitting disabled children should arrange to provide the following aids and appliances.

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For orthopaedically handicapped children

Adjustable furniture
Special writing material (thick pen)
Artificial limbs
Wheel chairs and crutches

For blind children

Braille slate and stylus, braille sheets Abacus
Taylor frame
Mobility canes
Cassette and talking books
Braille text books
Bulletin board
Flat desks
Embossed graph sheets with rubber band and push pin tactile maps
Concrete objects to teach shape, size, thickness, weight, ascending and descending, etc. number, texture and motor coordination.

For partially-sighted and low vision children

Magnifying glass Spectacles
Portable reading lamps
White board in place of black board
Large print materials.

For hearing impaired children

Hearing aid (group hearing aid and individual hearing aid) Speech trainer or voice trainer.
Mirror (big and small)
Special learning materials like flash cards, educational games and toy materials, hand-outs of classroom instruction.

For mentally retarded and learning disabled children

Educational games and play materials Concrete objects for teaching different concepts Picture cards and pictures Day, Date and Month Calender Tool box
Aids for sensory-motor.coordination Alternate learning materials (simplified).

- **Importance of Integrated Education**

Education of the disabled in common with others is justified for the following reasons :

(i) The Programme of Action (NPE, 1986) indicated that out of 12 million disabled persons, 4.3 million comprise of UPE age group. To this may be added 1.4 million in the earlier age group which has relevance for early identification and preparation for education. But these children are so scattered throughout the country that at any point of time in any place the number of disabled children is very neligible to warrant establishment of special schools for them.

Due to lack of adequate facilities for the education of disabled children, the enrolment of disabled children is very low even in special schools. A large number of such children are also out of school unidentified. These factors suggest identifying, assessing, and educating these disabled children in common with others in general schools.

(ii) With limited infrastructure for identification and inadequate facilities for their education, a large number of disabled children do enter the general schools. Due to lack of sensitivity to their needs in the school system, they experience learning problems and drop out. The exact magnitude of such drop-outs is not available but it is expected to be high. A systematic procedure of identification and assessment of their disability, qualitative improvement of education in schools, training of specialist teachers and provision of specialised help in integrated schools will ensure higher retention and lower drop-out rate among disabled children.

(iii) Once a child is placed in a special school, teachers tend to have low expectations of academic abilities of even mild and moderately disabled children with the result that their attainments fail to reach the optimum level owing to self-fulfilling prophecy. Even gifted handicapped children also fail to perform well in special schools. Integrated education, through the improved school atmosphere, and greater concern for the needs of disabled children, will tend to decrease the effects of self-fulfilling prophecy.

(iv) Education in common with others also provides a natural environment for interaction with non-disabled peers, to learn to cope with the environment, to accept, and to be accepted by their peers, to adjust emotionally to their personal capacity, to acquire a sense of competency and independence, and above all for socialisation.

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(v) It is desirable that the scanty resources available for education should be fully utilised. Thus, for economic reasons, a large number of disabled children can be educated in common with others. As education in special schools is very costly, this facility has to be used only for those whose needs cannot be met in general schools.

(vi) In a UNESCO study conducted in 1985 involving fourteen countries the teachers teaching in general schools are reported to have expressed the opinion that they can teach children with certain disabilities with additional training input and organisational support.

• The NPE (1986) and the POA relating to Integrated Education :

The NPE (1986) underlines the fact that despite the enormous expansion of primary education in the post-independence period, the population of disabled children has not been adequately served as a part of UPE. Outlining the steps for ensuring equal educational opportunity for the handicapped the NPE states that the objective should be to integrate the physically and mentally handicapped with the general community, to prepare them for normal growth, and to enable them to face life with courage and confidence. It envisages that :

(i) Wherever possible education of children with locomotor handicap and other mild handicaps will be common with that of others. The children with severe handicaps are proposed to be enrolled in special schools with hostels at district headquarters.

(ii) As education in special schools is very costly, it will be ensured that only those children whose needs cannot be met in common schools are enrolled in these schools. As soon as the disabled children enrolled in special schools acquire the communication skills and study skills, they will be integrated into common schools. It is assumed that with the improved efficiency of the common school system the capacity of the common schools to cater to the needs of the disabled children will also improve.

(iii) Since special schools are costly and preparation of special teachers and other specialists will take time efforts should be made to increase enrolment of language handicapped and other mildly handicapped children and their retention in common schools by 25 per cent each year during the current plan period.

(iv) To achieve the above purpose (iii) the POA envisages the following steps :

Organising advocacy programme for administrators and teachers in the common school system.
Training of teachers on the management of disabled children.
Orientation of administrators.
Providing supervisory services to the teachers managing this group of children.
Developing alternative learning materials for children and teachers' handbook.
Supplying additional materials/equipment to the school.
Developing psychological services for the assessment of disability.
Mobilising support from other departments such as health, industry, social welfare and voluntary organisations.

(v) The following provisions including incentive have been proposed in the POA :
Provision of aids and appliances in the area to be covered.
Adequate provision for the payment of transportation allowance (Rs. 50 per month).
Provision for capital cost for the purchase of school rickshaw in rural areas to an institution which has at least 10 handicapped children.
Removal of architectural barriers in school building where at least 13 handicapped children are enrolled.
Supply of textbooks and uniform free of cost as given to S.C. and S.T. students.
Attendance incentives as given to girls and S.T. children.
Arrangement for the preparation of these children in early childhood centres for education in schools.
Provision for admission of children older than the eligibility (upto 8-9 years instead of 6 years).

• Mainstreaming :

What is Mainstreaming? The concept of mainstreaming owes its origin in the work and ideas of Samuel Gridley Howe, an American Physician, who took keen interest in the education of blind and deaf children. As early as 1851, Howe had stressed that blind children should be educated in regular schools because of the social advantages of such a setting. He was advocating in favour of "exposing the disabled to an educational experience as close to that of non-disabled as possible". In other words

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he was advocating in favour of mainstreaming the handicapped children in the general schools. It was in 1975 that the concept of mainstreaming was introduced in the "Education for All the Handicapped Act (USA)."

Mainstreaming refers to an educafional placement procedure and process in which disabled children are educated in the least restrictive environment to satisfactorily provide for their educational and related needs. The concept of mainstreaming is based on the conviction that :

(i) Disabled children have a wide range of special educational needs.
(ii) The special educational needs of disabled children vary greatly in intensity and duration.
(iii) There is a continuum of educational settings which may be appropriate for an individual child's needs.
(iv) Disabled children should be educated with non-disabled children.
(v) Special classes, special schools and other ways of segregating the disabled from the non-disabled may be necessary only when the special needs of disabled children cannot be satisfied in general schools even with the provision of supplementary aids and services.

According to Kauffman et al (1975) "Mainstreaming refers to the temporal, instructional and social integration of eligible exceptional children with normal peers based on an ongoing, individually determined, educational planning and programming process and requires clarifications of responsibility among regular and special education, administrative, instructional and supportive personnel."

Components of Mainstreaming. According to this operational definition, there are three components of mainstreaming :

(i) Integration
(ii) Educational Planning and Programming.
(iii) Clarification of Responsibilities.

★ **Integration :** Integration is the opposite of segregations. Segregation is the process by which children with special needs or the disabled children are identified as a separate group and are educated in special schools in the company of other disabled children of the same category being alienated from the parents, siblings, non-disabled peers and their own community. Gradually the social and physical distance between this group and the rest increases. A feeling of 'otherness' develops in the group. Integration is the process of bringing the 'parts' (the handicapped children) to the 'whole' (the society). The indicators of integration are that disabled children enjoy the same right as the rest, have equal opportunity for

growth and development in the least restrictive and most effective environment, have access to the quality of life like any other children, and are treated as equal partners in the school and community. The process begins by reduction of physical distance. It continues with mutual sharing of the physical facilities and proceeds towards reduction of social distance. The reduction of the physical and social distance results in social integration in which the groups become equal partners in the community.

Integration is basic to mainstreaming. Integration should be temporal, instructional and social. The child with special needs should be placed in a regular class with other children for a period of time which may vary from two periods to six periods every day. Along with temporal integration there should be social and instructional integration. The special child should be accepted by his peers, regular teachers and should participate in all social activities of the school. Instructional integration is the most difficult component for mainstreaming. The special child's instruction should be so designed that he participates in classroom activities with normal peers yet does not have difficulties in learning. The efficacy of mainstreaming depends in part upon the amount of time the special child spends in the regular classroom, the extent to which he is accepted by normal peers and participates in social activities, and the success of instruction in the regular classroom.

★ **Educational planning and programming :** Simply placing the special child in the regular classroom with other children is not enough for mainstreaming to succeed. The educational programme of the mainstreamed child needs to be planned carefully. Special efforts must be made to plan the programme for the unique needs of such children so that they can achieve the maximum benefits of participation in the regular classroom. For this to occur, supportive personnel and services should be provided both to the child and the regular class teacher.

★ **Clarification of responsibilities :** In some mainstreaming situations the regular teacher must assume total responsibility for the special child. But usually resource teachers are appointed in mainstreaming situations. When both regular teachers and the resource teacher are working with the child, there may be confusion regarding who is responsible for what. The child's total needs can be met when their respective roles are clearly and carefully delineated. The efficacy of mainstreaming depends upon both

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the regular teacher and the resource teacher discharging their respective responsibilities sincerely.

• Efficacy of Mainstreaming :

In summarizing what has been discussed above it can be said that the efficacy of mainstreaming depends on the following conditions :

(i) There should be temporal, social and instructional integration of handicapped children.

(ii) Educational programmes for the mainstreamed handicapped children should be planned carefully to meet their special educational needs.

(iii) Supportive services and personnel should be provided both to the children and the regular class teacher.

(iv) The responsibilities of the regular teacher and the resource teacher should be clearly delineated.

(v) The regular class teacher should ultimately take the responsibility of educating the handicapped children in the general school.

(vi) Only mildly handicapped children should be exposed to mainstreaming situation. Severely handicapped children who have completed their preparation and learnt the pre-academic skills, daily living skills, communication skills, and other pre-requisite skills in special school settings may be later mainstreamed in the general schools.

(vii) The regular teachers must accept and agree to implement mainstreaming in their classrooms and schools.

(viii) The regular teachers must prepare themselves for their new and difficult role. The authorities must arrange to provide inservice and pre-service training on characteristics and special educational needs of handicapped children to the regular teachers.

(ix) In all cases parents should be involved in the care, training, and placement of their handicapped children.

• Integrated Education :

The major pre-condition of Mainstreaming of CWSN is integration as well as inclusion. The concept of integration should not only be confined within the periphery of educational development of the special children. Special care and emphasis should be put on the various other facets of the children with special needs viz. social as well as professional development etc.

According to K.C. Panda (2010) the concept of integrated education enlightens the following major aspects:

(1) Provides special service in the general school according to the need.

(2) Provides necessary help to the teachers and school administration for integrating the educational provision of the CWSN.

(3) CWSN should be provided the equal as well as same quality of education along with the general children in the school.

(4) CWSN should be encouraged to take part in all the curricular and co-curricular activities spontaneously organised by the school authority along with the other children.

(5) Special children should be allowed to avail and use the school library, play ground according to their need as and when required along with the other students of the school equally

(6) Formation of cordial as well as friendly relationship amongst amongst the CWSN and other learners.

(7) Awareness should be built upregarding the individual difference of all the learners (CWSN and general learners).

(8) The opinion of the parents of the CWSN should be taken into account and considered with utmost care.

(9) Individualised educational planning should be done according to the need and aspirations of the learners.

(10) Special children should be taught in general environment as per their needs.

★ According to Reynolds (1980), the following steps/measures can be undertaken to make the integrated education of CWSN successful :

(1) Teachers must have adequate knowledge regarding the subjects and activities that should be included within the curriculum and also should have proper experience to apply their knowledge accordingly.

(2) Teachers should have sound knowledge on the development of the primary ability /skill of the learners.

(3) Teachers have to be well equipped in maintaining the classroom management along with adequate discipline.

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(4) Teachers should be enthusiastic enough to solve the divergent problems of the learners actively as and when required.

(5) There must be a healthy relationship that has to be built up between the teachers and the parents/ guardians of the CWSN along with cooperative attitude.

(6) Teachers should try to foster mutual interaction in between the general and special children.

(7) Teacher must be aware of the different characteristics of a special child and they must also know about the process and places to where the special children can be referred for their betterment.

(8) Teacher should be well equipped in the assessment of all the students and must have essential knowledge on Individualised Educational Planning.

(9) Teacher should be aware of the needs and right of the CWSN students that can be reflected on the planning and administration of the education system meant for the all group of pupils.

It is clear from the above discussion that the following aspects such as social awareness, teachers' tranning and attention on the needs of the special children have great importance in the successful accomplishment of the integrated education. But in reality, it actually depends more on the student's own desire to receive the education spontaneously as there is no imposition on the part of state, country and the school authority for the active participation of the learners.

Thus, the concept of the inclusive education has been established that assure the active participation of all types of learners in the process of education.

✪ 2.4 Teacher-Student Ratio :

Teacher-student ratio denotes the number of existing students and number of the existing teachers as well in a particular school. The teacher student ratio with respect to our country should be 1:30 but in case of villages it can be seen that the number of student is much higher than the number of teachers if compared to cities/towns. For example the 7th All India Educational Survey Provisional ,2005 is being shown below to give an idea regarding the present scenario of teacher student ratio of our country :

• Teacher Student Ratio In Upper Primary Schools :

Country/ State	Village	City	Comment
Bihar	77	51	Highest in both stages
Mizoram	09	14	Lowest in both stages
West Bengal	52	39	More than India
India	35	32	

• Teacher Student Ratio In Secondary Schools :

Country/ State	Village	City	Comment
Bihar	48	48	Highest
Mizoram	11	15	Lowest
West Bengal	61	41	More than India
India	31	29	

Significance of teacher student ratio :

As lecture method is a teacher centric method through which although we can impart the knowledge to a large number of students at a time, yet it is not at all considered as a psychologically approved method of teaching as there is no scope of interaction in between teacher and student.

It is an age of child centric education where a teacher has to provide quality education instead of quantity and therefore every teacher has to pay individual attention to all their learners.

Thus, this ratio is very much essential for an effective classroom transaction.

• Students number vs teachers number in secondary school (V – X) :

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Number of Students v/s Number of Teachers in Secondary School (V – X)

Number of Students	Head Master/ Head Mistress	Teacher of Mother Tongue	English Teacher	Social Science Teacher	Mathematics Teacher	Physical Science Teacher	Life Science Teacher	3rd Language Teacher	Physical Education Teacher	Work Ed./ Music Teacher	Total Number of Teacher
≤ 240	1	2	2	1	2	1	1	1	1	—	12
241–280	1	2	2	2	2	1	1	1	1	—	13
281–320	1	2	2	2	2	2	1	1	1	—	14
321–360	1	2	2	2	2	2	2	1	1	—	15
361–400	1	2	3	2	2	2	2	1	1	—	16
401–440	1	2	3	2	3	2	2	1	1	1	18

From the above mentioned chart it is said that when studentnumber is 240 or less than 240 then a single section will be formed in different classes of the school. At that moment thr number of the teacher is minimised and it is 12.According to the importance of the subjects 2 teachers will be recruited for the mother subject ,math,English. There should be one head master for each school irrespective of the no of students. When the number of students will be 500 or more than that , there is a chance to get an assistant head master (but it is not shown in the chart). Number of physical education teacher will be one if there is not more students in that particular subject. In various classes usually at the begining number of periods allotted for the subjects like science, social science, physical science are less in number and thats why number of teachers recruited for these subjects will be less in number.Gradually it is being increased accordingly. The number of teacher for the third language is also too less as this subject is less important with respect to other subjects.

One teacher will be recruited or added of different subjects on the demand of the school as per the increase in number of students (1:40).

The recruitment process is of H.S. Teachers is completely subject oriented and here the law of one teacher per 40 students will not be followed always.

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Short Questions & Answers

1. When are the part time teachers employed in an institution?

Ans. The reasons behind the employment of the Part Time Teachers are discussed below :

(i) When there is no full time teacher for teaching a subject can be found in the school at Higher Secondary level.

(ii) When there is no full time teacher for teaching optional subjects can be found in the school at secondary level.

(iii) When there is no full time teachers can be found in the school for teaching a subject which has very small content for example Music, Sports, and Computer etc.

(iv) When the full time teacher goes away for B.Ed. training, a part time teacher is being employed on Deputation Vacancy. Previously a full time teacher was employed on Deputation Vacancy and the State Govt. used to give him/her salary.

2. Write the function of part time teacher.

Ans. Part time teachers need not take classes of 39/45 periods in a week. Mostly they have to take 6 periods per week. Their economical liabilities are undertaken by the schools and sometimes state education department takes care of their development. Their employment is temporary, as per the necessity of the schools.

3. Who are the para teachers?

Ans. The quantity or number of students has been increased much in every places of all over India because of the impact of Sarva Shiksha Avijan, but the number of teachers cannot be increased proportionately because of financial scarcity.

Although the teaching learning process can be enabled because of the efficient para teachers who are being employed with the help of govt. treasury. Para teachers are full time contractual teachers. According to the rules, they have to take classes for 4 days for in a week. They have to spend the rest of the two other days to encourage the guardians of the

children who are deprived of education, to send their children to schools. The para teachers may or may be not be trained always. They have recruited as well as selected by the members of managing committee of the school. They are not at all selected by TET Examination. They get very small remuneration regularly from the govt.

There was no concept of Para Teachers till the end of the lost century. They were being employed as a result of Sarva Shiksha Avijan to manage the increased number of students in the schools of West Bengal. In case of para teachers the following facts can be seen :

- The number of male teachers (52000) is more than the female teachers (36000)
- The highest number of Para teachers can be seen there in Uttar Pradesh, then in Assam, Andhra (undivided)

4. Find the minimum qualification of an Asst. Teacher serving a secondary school.

Ans. NCTE is an autonomous body that is being formed to train the teachers, was established through an Indian parliamentary act in the year 1993. This institution/body, determines the pre-conditions which should be applied to employ the teachers. According to the set rules, a teacher has to possess the following qualifications :

(a) Primary teachers must have to pass H. S. Examination with minimum 50% marks from any authorized board or council.

(b) The primary teachers must have to pass Two year D.El.Ed. (Diploma in Elementary education) course from recognized board or council.

(c) No framing can be given if he/she lacks adequate educational qualifications.

(d) The teachers have to pass TET (teachers Eligibility Test) before employment.

The Educational qualification needed for full time as well as or part time teachers at upper primary (VI-VIII), Secondary (IX-X) and higher secondary (XI-XII) level are given below :

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Level	Educational qualification	Required Training
Upper primary (VI-VIII)	50% in B.A./B.Sc/B.com (pass)	B.Ed.
Secondary (IX-X)	50% in B.A. (pass)/ Honours/or Masters/P.G.	B.Ed.
Higher Secondary (XI-XII)	50% in honours/ masters	B.Ed.

But in case of Para teachers the rules can be relaxed both in training and qualification to employ young educated local people on Contract basis to continue, the teaching learning process in the school.

Those who completed Masters with honours must obtain 50% marks in any one of them. Moreover he/she has to obtain 50% in B.Ed along with interest and aptitude for teaching.

5. What are the duties and responsibilities of the Head Master?

Ans. The Head Master has to shoulder many administrative and educational responsibilities that are as follows :

(a) The Headmaster acts as the administrative head of a school. All the Administrative works are done by him.

(b) He makes all the assistant teachers understand their duties and responsibilities and makes the time table for different classes and students according to their needs (by discussing with other teachers) as well.

(c) He divides and distributes all the responsibilities amongst the teaching staffs accordingly.

(d) He monitors and supervise the works done by teachers and other staff.

(e) He regularly communicates with guardians by calling Guardians' meetings.

(f) He carefully monitors students' health, daily lessons, class and school displine regularly.

(g) He regularly communicates with he senior authority, D.I., Managing Committee (MC), school board and council.

(h) He has to monitor co-curriculur activities including health, mid-day meal, sports. etc.

6. What are the functions of Asst. teachers?

Ans. The functions of the Asst. teachers are as follows :

(a) To be responsible for better transaction of the teaching-learning process abiding rules.

(b) To maintain healthy relationship with other colleagues.

(c) To make students respectful towards school discipline.

(d) To prepare himself/herself for better execution of daily lesson.

(e) To encourage the students to be creative.

(f) To encourage the students to take part in social development.

(g) To encourage the students for taking part in co-curricular activities.

(h) To help to run the school according to headmaster's instruction by cooperation of the other staffs.

(i) To evaluate students impartially.

(j) To identify and rectify students' flows and problems and help them to develop their personality by overcoming their flows.

7. What are the functions of non-teaching staffs?

Ans. We mostly remember and praise the singer who sings the song on a stage. But the success of a song depends on the combined effort of all the musicians along with the singer himself. If the teacher is compared to the lead singer then the non teaching staffs of a school will be compared with the musicians who assist the singer. They play the role of a communicator who implements the instructions. They mainly act as a link amongst the Headmaster, teachers, students, guardians and managing committee. They help to maintain the school discipline, enhances beauty and cleanliness of the school.

8. Name any four types of disability.

Ans. The four types of disabilities are : Hearing Handicap, Visual Handicap, Mental Retardation, Learning Disability etc.

9. What is Mainstreaming.

Ans. According to Kauffman et al (1975) "Mainstreaming refers to the temporal, instructional and social integration of eligible exceptional children with normal peers based on an ongoing, individually determined, educational planning and programming process and requires clarifications of responsibility among regular and special education, administrative, instructional and supportive personnel."

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10. What are the objectives of special education?

Ans. Special education has the same objectives as those of regular education—human resource development through providing appropriate education to children, national development, social reconstruction, civic development, vocational efficiency, etc. In addition to these objectives special education has certain special objectives such as the following :

(a) Early identification and assessment of special needs of handicapped children.

(b) Early intervention to prevent a handicapping condition from becoming a serious one for remediation of learning problems and compensation by teaching the child new ways of doing things.

(c) Parent counselling about prevention and remediation of defects, care, and training of handicapped children in daily living skills, self-help skills, pre-academic skills and communication skills.

(d) Community mobilization and awareness of problems of handicapped children and their education.

(e) Rehabilitation of the handicapped.

The National Policy of Education (1986/1992) clearly stipulates that : The objective should be (i) to integrate the physically and mentally handicapped with the general community as equal partners, (ii) to prepare them for normal growth and (iii) to enable them to face life with courage and confidence."

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Probable Questions

Objective answer type questions : Marks : 2

1. Find the minimum academic qualification of a teacher serving a secondary school.
2. Find the minimum academic qualification of a Headmaster/mistress serving a secondary school.
3. What are the additional duties of a para teacher?
4. Why and when were the para teachers appointed in the schools of WB?
5. Mention the different types of staff engaged in a school.
6. What do you mean by contingent staff?
7. What is meant by pupil teacher ratio?
8. When part time teachers become essential in a secondary school?
9. Mention four points of difference between a fulltime teacher and a para teacher?
10. Mention four points of similarities between a fulltime teacher and a para teacher?
11. Mention responsibilities of para teacher in SSA.
12. How the no. of fulltime vacancies are determined in a school?
13. Mention an Indian state with minimum pupil teacher ratio.
14. Mention the Articles of Indian Constitution providing reservation of Bacckward caste students in Educational Institution.
15. What is a special teacher?
16. What is Inclusive education?
17. Give the full expression of the terms PWD & MSK.

Short answer type questions : Marks : 5

1. Who are the children with special needs? How would you identify them?
2. How does an inclusive classroom differ from a normal one? What are causes of large pupil teacher ratio in WB and very small in Mizoram?

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3. What special measures would a school take to suit the need of a coeducational school?
4. Find the better area of performances (both cognitive and noncognitive) of boys and girls respectively in a school.
5. Show how the non teaching staff boost the educational activities in a school.
6. Find the role of the advanced students in cooperative learning?
7. As a headmaster/mistress how would you boost the morale of non-teaching staff?
8. Who would require special care in an institution–a religious minority or a linguistic minority other things remaining same? Why?
9. Describe the picture of teachers' room during the school hours.

Essay answer type questions : Marks : 10

1. Describe how teacher in a school can develop human resource with available resources in school.
2. How does a headmaster develop rapport with his/her asst. teachers and students.
3. Discuss the facilities to be developed in a school for inclusive education.
4. Why does pupil-teacher ratio varies in a school? Discuss effect of increasing pupil- teacher ratio on learning atmosphere in a school.

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Unit 3

Management & Record Maintenance

Structure/Content Outline

3.0 Introduction
3.1 Managing Committee
3.1.1 Functions of School Managing Committee
3.2 Committees and Sub-committees for the Academic Purposes
3.3 Different Committees in School
3.4 Fee Structure of Students
3.5 Number of Units/School Hour/Time Table/Periods
3.5.1 Number of units/sections in school
3.5.2 School hour
3.5.3 School Time Table and Its Importance
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3.7.6 Maintenance of School Records

3.0 Introduction :

All the schools are social organizations and thus, it must have an organizational planning which will help in the social development through the dissemination of education and other related matters too. Sometimes this organization is getting economic help from the Government. Some

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times, it is being directed by many peoples' donation, contribution interms of financial help. As schools are run by the help of both the Government and public' contribution and economic help, naturally schools have to shoulder some duties and responsibilities towards our society. People always want to get a transparent, corruption free school, environment which is not an easy task that can always be offered and for this reason the managing committee of the school has to be built up properly. The nomination and election needs to follow proper norms to form the Managing Committee (MC) where there are the representatives of all types of people of the society and school organization.

Apart from these schools have some other types of works and activities, such as teaching-learning, conducting tests or examinations, financial transaction, developmental activities, sports and cultural activities, arranging various facilities for teaching and nonteaching staffs, and students, curriculum evaluation, maintaining school discipline and different records, time table preparation, organization of students' self government etc. If a principal/headmaster can make different types of committees and subcommittees to deal with all these above mentioned activities, it will become very much easier to run a school effectively and create a happy environment for the students and guardians and teachers too.

From the initiation of a school, all the information and documents should be conserved systematically and carefully. School managing committee especially principal or head master should be very careful about these issues.

✪ 3.1 Managing Committee :

School is a social organization. Primary school to university all the educational organizations are run or directed by the Government accredition which signify the affiliation of the general people of our society. So where ever the Govt. school or govt. affiliated schools are established or will be established, it will cause an overall welfare in local, state and national level of our society through cooperative participation of the community members and school management. And for that a well planned, structured and legalized management committee (MC) has to be contructed or formed.

In our state, education minister is the main person who holds the highest designation of the secondary education system. Secretary works under him and additional secretary and assistant secretary work under the

secretary. Thus secretariate is being formed. School Inspectors supervise the administrative works related to school education at district level. Lowest part of the secretariate constitutes school managing committee. In each and every school the managing committee follows the stipulated govt. rules and regulations of the school.

Till 1961, management of all secondary schools, was for smooth running controlled by the West Bengal Board of Secondary Education. But in the year 1981, a law is being made through which the responsibility was transferred to the School Managing Committee. According to the West Bengal Board of Secondary Education Act, 1981, the School Managing Committee is being formed according to the mentioned/ suggested constitutional structure and all works have to be done according to this act, that may be rectified as and when required by following the necessary protocols.

At present this act and its revised version is being followed by the secondary and higher secondary school managing committees. Its constitutional structure and procedures are described below:

At present, following types of upper primary, secondary and higher secondary schools can be observed in our sate, that are as follows :

- Government School
- Government Aided School
- Government Sponsored School
- Private/Self financing school

Each school has a managing committee (MC) for smooth running of the school. The naming of school managing committee is different for different types of school, such as—

- Governing Body in case of Government Schools
- School Managing Committee in Government aided Schools
- In Govt. sponsored school it will be Management Committee
- In private/self financed schools it will be Board of Directors/ Trusty Board or Body

At present, maximum govt. aided schools of West Bengal are being converted in to the govt. sponsored schools according to the special circular of School Education Department of West Bengal. In another circular, of the Govt. the model structure of the school managing committee (MC) is given for each school. The election for the fomation of School

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Managing committee (MC) has been stopped by this circular and its tenure is being fixed for 3 years. The School Managing Committee will be composed of 12 members.

1. Chairman will be nominated by the Education Department and he must be a graduate. (minimum)
2. Head master will be the secretary in view of his designation or position.
3. Two academicians will be nominated by the Education Department.
4. Two guardians will be nominated by the chairman and secretary or by the Education Department. The tenure of their membership will be of 1 year.
5. Three teachers will be nominated and elected.
6. 1 non teaching staff will be nominated or elected.
7. Circle SI will be a Govt. representative member.
8. Block health officer will also be a member. (BMOH)

Previously the structure/body of the school managing committee (MC) in govt. aided school was composed of 10 members that are as follows:

1. Headmaster
2. 3 elected teacher members/representatives.
3. One non teaching staff.
4. One circle SI. (Govt. Representative)
5. Three guardian members.
6. One member representative nominated by the local governing body (Panchayat) or municipality.

In this case one chairman and one secretary will be elected out of these 10 members. If headmaster or head mistress has not been elected as the chairman, then he/she will be designated as the Joint Secretary of the committee. Any teaching or non teaching staff would not able to be the chairman or secretary of the committee.

- **Description of Formation of School managing committee, members, foundation date :**

SL no.	Name	Address and mobile no.	Category	Office bearer
1.2.3	—	—	—	—

☐ 3.1.1 Functions of School Managing Committee :

It is mentioned earlier that the tenure of every managing committee is 3 years. The important responsibilities that can be done or executed by the members of the managing committee during this working period are as follows:

1. **Recruitment of new teachers :** One of the most important task of school managing committee is to recruit or appoint new teachers. The school managing committee will take the responsibility to appoint or recruit the eligible teachers selected, recommended and sent by the School Service Commission for that particular school and for this reason the school managing committee will have to maintain proper communication with the District School Education Department and ultimately appoints the teachers by giving them appointment letters.
2. **Recruitment of non teaching staffs :** The school managing committee will also perform the required tasks for the recruitment of non teaching staffs such as clerk, librarian, laboratory attendant, peon, guard etc. according to govt. rule. For this purpose they have to maintain a good communication with the School Inspector of District Education Department.
3. **Confirmation of Jobs/Making the teaching and non teaching staffs permanent at their job :** Any teaching or non teaching staffs will be on probationary period (in provisional appointment) for 2 years after his/her joining of the service. Thereafter, steps to be under taken to make them permanent. At present the duration off this provisional period is 1 year. If the performance of teaching or non teaching staffs is satisfactory during the provisional period then the school managing committee will follow up necessary actions or steps for making their jobs permanent.
4. **Termination of teaching and non teaching staffs :** If any permanent or provisional teaching and non teaching staff does any offence and if, the act of their offence is proved then the school managing committee has the power to terminate them from their service. For this purpose the school managing committee has to follow the rules, recommended by the Board of Secondary Education.
5. **Leave sanction for teaching and non teaching staffs :** Teaching and non teaching staffs may take different types of leave according

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to their needs, for example-medical leave, casual leave, child care leave, leave for teacher's training, or any special leave etc. Only headmaster/head mistress can sanction casual leave. But for other types of leaves, the teaching or non teaching staff has to apply to the chairman of school managing committee. School managing committee will consider and sanction all their leaves. Any leave took by the headmaster would also be sanctioned by the school managing committee.

6. **Recommendation for In-service training and higher studies :** If any in-service untrained teacher wants to go for doing teachers' training or wants to enrich his/her educational qualification, then the school managing committee has the authority to give him/her permission to pursue the course according to their needs.

7. **Monitoring of financial transactions of the school :** An important task of school managing committee is to look after all kinds of economic transactions made by the school. Supervision of govt. grant-in aids or any other kind of donations received from different organization like -MP, M.L.A, or local body will be managed by the finance subcommittee formed by the school managing committee. In this type of financial transactions, headmaster will play very important role as Joint Secretary or as the case may be the Secretary.

8. **Preparation and approval of yearly holiday list :** An important task of school managing committee is to decide and frame out the yearly holidays list. Due to death of any important person or any other special occasion that are related to the school, the school may declare a full day or half holiday as per the decisions made by the secretary of the managing committee or on Headmaster's discretion.

9. **Planning for overall development of school :** The overall development of school is one of the major responsibilities of school managing committee. For this, proper planning and act according to that planning is required. In this case the important role is played by school managing committee in various facets.

10. **Preparation of annual report :** Proper Analysis and Assessment of different tasks done by the school in an academic session throughout the year is very much essential. The description of overall tasks performed by the school is given in the school annual report. Aims of school, effective management strategies, and unachieved goals

are listed and the overall developments of the school are also depicted in school annual report prepared by the school managing committee can be presented on any occasion of the school.

11. **Formation of new managing committee :** The tenure of a school managing committee is 3 year. Few months before the completion of the stipulated time period, every necessary step for the formation of a new committee must be undertaken by the previous committee as per the set rule.

12. **Formation of different subcommittees for proper management :** Every school managing committee desires to run a school properly. For this they can form 3 subcommittees which are as follows–
   - Academic council
   - Staff council
   - Finance subcommittee etc.

The above mentioned subcommittees are described below :

- **Academic council :**

There must be an academic council in each school. The members of this council are as follows-headmaster/headmistress, assistant headmaster/headmistress by the power of their position, 3 other members of Academic council will also be elected from other teachers and Librarians or Assistant Librarians (if any); but they must have at least two years of experience in their service in the same designation.

- **Structure of Academic council :**

(1) chairman—headmaster/headmistress
(2) Secretary—assistant headmaster/ headmistress
(3) Three members—elected from other teaching staffs

If there is no assistant headmaster /headmistress in any school then any one teaching staff of the three elected teaching members will be designted as secretary. Special metting will be called to fill up any suddenly vacant posts within the council. The maximum number of members of the academic council is five. (including chairman and Secretary)

- **Functions of academic council :**

1. To take Student's admission related decision.
2. Analysis and Discussion on the facilities of study in different classes.

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3. Selection of text books for different classes.
4. Preparation of class time table/routine.
5. Taking necessary actions for the development of the teaching-learning process and co-curricular activities.
6. Proper planning to be done for the improvement of the teaching learning process.

Headmaster will act according to the advice of the academic council on the above mentioned issues. But in some cases he/she can reject/alter the advice or decision of academic council by submitting written explanation. Any agitated member of the Academic Council can go against the decision of headmaster and can place his/her views in front of the managing committee. In that case the decision that would have been taken by the managing committee will finally be considered.

- **Staff council :**

In each govt. aided school a staff council is formed to assist the managing committee. The staff council is formed with the full time or part time teachers and nonteaching staffs who have at least two years experience in the full time permanent or additional post along with the headmaster of the school. Headmaster/headmistress is appointed as the chairmen of the staff council. The secretary of staff council will be elected amongst by the other members of the staff council.

- **Functions of staff council :** The main role of staff council is to solve different education related problems and other school related problems and to circumspect every aspect for proper development of the school. Another task of staff council is to assist the managing committee by giving valuable advise about the necessary steps to be under taken for overall development of the school. School managing committee always puts more importance to the advices of staff council regarding the development of school.

- **Finance subcommittee :**

One of the most important tasks of school managing committee is to supervise the economic transaction done by the school, but this role is mainly played by the finance subcommittee. West Bengal Board of secondary Education had mentioned clearly in article no. 15 of the rules and regulation of formation of school managing committee, that the structure of finance subcommittee must constitute of the following members :

- Chairman (secretary of school managing committee)
- Secretary (headmaster/headmistress)
- General members (one teacher nominated elected by school managing committee)

Functions of finance subcommittee :

1. Budget preparation according to school infrastructure and planning.
2. Necessary steps to be undertaken for considering the 'out report'.
3. Supervision of bills related to the monetory transaction.
4. Call/invite necessary tenders as per requirement.
5. Distribution of orders for different types of work.
6. Examine and consider different types of voucher.
7. Supervision of financial issues of school managing committee (MC).

3.2 Committees and Sub-Committees for the Academic Purpose :

When we discuss about the roles of school management in the assessment of the teaching learning process of the school, it should be kept in mind that learning is the main moto of a school. For the development of the existing teaching-learning system of a school, some committees and subcommittees that are related to different activities of the schools, like time table preparation, curriculum evaluation, examination, active participation of the students in co-curricular activities, educational tour, cultural programs, sports, exhibition etc., must be formed by the headmaster. The responsibilities of different committees can be given to one or to more than one assistant teachers. Eager, efficient and skilled teachers will take the responsibility of these committees according to their own choice and expertise and can change it also in near future if they want.

- **Different committees formed for academic purpose are discussed below :**
  - Academic council including all the teachers.
  - Self government subcommittee for the students.
  - Subcommittee for textbook and curriculum analysis and evaluation.

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➢ Subcommittee for evaluation of examination system (existing).

In maximum schools, academic council, itself plays the role of these above mentioned subcommittees.

● **Structure of Academic Council :**

The academic council is being formed under the supervision of the school managing committee. This council has five members. Headmaster will be the chairman of this council. Assistant headmaster and three other assistant teachers will be the members of this council. Though, it has been told, that in case of Higher Secondary Schools, there should be one representative from different branches/streams in the academic council of the school but the number of members should not be more than five.

■ **Functions :**

- ➢ Preparation of rules and regulations of admission related issues and procedures as per govt. norms and taking decisions about any admission related problems. (if any)
- ➢ Selection of text books through proper discussion.
- ➢ Analyze the progress of curriculum and giving opinions about this.
- ➢ Preparation of school time table and follow it up properly.
- ➢ Framing promotion related norms for the students to be promoted in the next class.

● **Students' Self Government :**

Students' self govt. is formed for directing different tasks in and out of the classrooms like maintenance of discipline, arranging literary activities etc. The members of this self govt. will be elected by the students under the supervision of the assistant teachers. In every year Chairman, secretary, assistant secretary will be nominated from the students to form students' self govt. All actions should be intimated to the academic council and in accordance with their permissions all programs are being arranged.

● **Subcommittee for text book evaluation:**

This subcommittee is formed with three or five members selected from the assistant teachers who will place their opinion in front of the academic council. Under the supervision of the headmaster

Academic Council will accept or reject their opinion regarding selection and purchase of text books.

● **Subcommittee for examination and evaluation :**

The main role of this subcommittee is to conduct examination and to declare the results within the stipulated time. To assist the academic council this subcommittee is formed for conducting unit tests and declaration of results, with the help of some assistant teachers. This committee is formed by the instruction of the headmaster to conduct the examinations and evaluation properly.

3.3 Different Committees in School :

There are many different committees and sub committees that are formed/ established in a school to assist the headmaster in proper management of the available resources for the development of the school.

Different subcommittees are also formed to perform different functions of a school. But there are some common and compulsory tasks that have to be performed in every school. For that reason a few common committees and sub committees must be formed in all the schools. For example- academic council and finance subcommittee etc.

● **A list of these committees and sub committees are given below :**

1. Finance subcommittee.
2. Subcommittee for timetable formation/preparation of Time Table.
3. Subcommittee for dealing with issues related to school admission.
4. Subcommittee for examination and evaluation.
5. Subcommittee for text book selection.
6. Subcommittee for magazine publication.
7. Subcommittee for educational tour/excursion.
8. Cultural subcommittee.
9. Subcommittee for sports.
10. Subcommittee for library.
11. Self government.
12. Building subcommittee.
13. Subcommittee for maintaining school discipline.
14. Scouts/N.C.C/N.S.S subcommittee etc.

One or more teachers shoulder the responsibilities of these subcommittees in every school. Some of the students are also included as

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the members of some of these subcommittees. These subcommittees plan for execution of any tasks in school and convey it to the academic council. With their permission and headmaster's concern they execute that task as per their planning. For this reason students together with their teachers can actively participate in different school programs which will grow their interest, leadership quality and self confidence.

■ **These different subcommittees are described as follows :**

- **Finance subcommittee :** Finance subcommittee plays the most important role just next to the managing committee and academic council. The financial transaction must always be democratic and transparent. Each school receives two types of grants - government fund and private or school fund. The account related records or audit of expenditure of the received government fund should be submitted to the government. The account related record comprises of each and every expenditure of all the subcommittees and other finance related issues must be conserved and documented properly and transparently and place in front of managing committee (MC) at the time of meeting. So responsibility of finance subcommittee is very much essential.
- **Subcommittee for time table preparation :** The members of this subcommittee are basically the assistant school teachers. This subcommittee prepares time table according to the government's education rules and policies, difficulty index of the subjects, needs and aspirations of the students by discussing with all the other teachers of the school. Proper time table is required for proper execution as well as transaction of curricular and co-curricular activities, and all other school oriented tasks.
- **Subcommittee for school admission procedure :** The roles of this committee are as follows:
  a. Formulation of rules and regulation of admission procedure as per govt. norms and convey it to the MC i.e. managing committee.
  b. Publication of advertisement regarding admission with the permission of managing committee (MC).
  c. Admission should be made on the basis of merit of the students through proper evaluation only.
  d. To deal with the quiries of the guardians.

  The members of this committee will be both the teaching and nonteaching staffs.

- **Subcommittee for examination and evaluation :** Three to five teachers have to be the members of this subcommittee. The roles performed by this subcommittee are as follows :
  - ➢ Preparing the Academic calendar regarding the unit test, half yearly and annual examinations.
  - ➢ Giving instructions to the teachers for preparing question papers and sending the question papers for printing accordingly.
  - ➢ Proof reading of the question papers should be done for making it free of errors.
  - ➢ Invigilator selection and notify everybody about their duties to be performed.
  - ➢ Handover the answer scripts to the examiners and collection of the same after evaluation in due time.

  But all of these tasks are executed according to the instruction of academic council. So the headmaster must be aware of all the activities of this subcommittee.
- **Subcommittee for text book selection :** The members of this subcommittee will be a few assistant teachers and librarian. The roles of this subcommittee are as follows:
  - ➢ Selection of proper text book as per the stipulated syllabus by analyzing the curriculum thoroughly.
  - ➢ Sending the list of required books for getting the approval of the academic council.

  Another task of this subcommittee is to give suggestions for purchasing the of reference book as per the needs of the students. These books can be purchased only in accordance with the approval of the Academic council, finance subcommittee and managing committee.
- **Subcommittee for magazine publication :** One or more than one teachers will be the members of this subcommittee. Some students of literary club can also be the members of this subcommittee. Their role is very significant. For illuminating the creativity of the students this committee will encourage them to publish handmade wall magazine and annual magazine and for this purpose, inviting write ups from students, collection and editing of the received write ups and publication of the final matter is done by this subcommittee. But this subcommittee has to ask for financial assistance from the finance subcommittee for the execution of their tasks.

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- **Subcommittee for educational tour/Excursion :** One teacher basically leads this subcommittee. A few students are also act as the member of this subcommittee. Some subjects in higher secondary level like Physical Science, Life Science, Geography, History etc. need field study and for practical exposure from class V to X educational tours must be conducted at various places which are related to these subjects. Like museums, science city, botanical garden, historical places etc.

The following tasks have to be performed by the member of this subcommittee before conducting a tour :

- Planning of excursion according to the need.
- Budget calculation.
- Booking transport and arranging accommodations as per need.
- Taking medicines as per requirements.
- Collecting money from the finance committee as per budget/ requirement.
- Collection of subscription from interested students.

Through this kind of ventures the teacher-student relationship becomes more friendly, cordial as well as empathetic and thus the Students get proper exposure and pleasure of practical education.

- **Cultural subcommittee :** Different cultural programs are held throughout the year in every school. Different types of cultural programs are arranged on different observation days and issues like republic day, independence day, annual function, birthday celebration of Rabindranath Tagore, Netaji, Vivekananda, Vidyasagar. Debates, quiz, seminar etc are also organized as a part of co curriculur activities. One or more teachers who are the members of cultural subcommittee shoulder the responsibility to arrange these type of cultural programs. Students celebrate these programs as per the instructions given by their teachers. The important roles played by this subcommittee are as follows:
  - Planning and execution of different programs in an academic year.
  - Budget calculation for each programs to be observed.
  - Selection and training of participants who will participate and perform in the programs
  - Approval of finance and academic council to be collected.
  - These type of cultural programs will lead the students in different cultural dimensions in future.

- **Subcommittee for sports :** students must be encouraged for their active participation in physical education, sports, and athletics in every school. Many students have the skills and interest for different types of games and sports. For this purpose physical educators with the help of the sports subcommittee must train the students and make them able to participate in local, state and national level games and sports to glorify the name of the school. This subcommittee—
  - Conducts annual sports, intra and inter school football, cricket, table tennis, badminton competition etc.
  - Calculates budget.
  - Gives awards to the successful participants to encourage them.
- **Subcommittee for library :** A subcommittee is formed with the librarian and teachers for the library management. Students will also be the members of this subcommittee. The roles of this subcommittee are as follows :
  - For proper use of library, instruction to be imparted to the students.
  - Advise should be given for purchasing necessary books for the library to be enriched.
  - Budget calculation.
  - Collection of money from the finance committee for purchasing books.
  - To encourage the students for reading books.
- **Self Government :** For maintaining proper discipline and to develop self discipline amongst the students a self government is formed in every school. Students perform their tasks under the supervision of the teachers. This will help to the develop personality and leadership quality of the students.
- **Building subcommittee :** Headmaster and one or more teachers are in charge of this subcommittee. This subcommittee plans for repairing buildings, construction of new class room or building and sends the proposal to the managing committee through finance subcommittee. With the approval of school managing committee the proposal is sent to the government office and sometimes the committee tries to arrange some local funds also.
- **Subcommittee for maintaining discipline :** Though the discipline in school is maintained by the self government yet a discipline subcommittee is formed, yearly in every school, if any major

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problem took place. Teaching and nonteaching both staffs are there in this subcommittee. By the advise of this subcommittee, academic council and managing committee take necessary steps or actions to sustain the learning atmosphere in the school.

- **Scouts/N.C.C/N.S.S subcommittee :** This subcommittee is not formed in every school. This subcommittee is formed only in the schools that have N.C.C or N.S.S. One or more teachers are there in charge/responsibility of this subcommittee. The proper management activities of this subcommittee helps to develop positive attitude, discipline, physical fitness, social welfare attitude, healthy mentality in the students. Students gain different experiences through participating in different wellfare programs and training camps, which will increase both their knowledge and experience.

A school can run well through the collaborative and cooperative approach of different subcommittees including both the teachers and students. If Headmaster, the members of school managing committee and academic council don't interfare much in all the work of these subcommittees, then every person of the school can participate independently in the process of development of school which will ultimately flourish the education system of the school.

✪ 3.4 Fee Structure of Students :

A clear idea about the financial transaction in school is needed for proper assessment of the teaching learning process of the school. The present fee structure of Govt. and govt. aided school are discussed below.

In past students of govt. and govt. aided school have to pay fee in a particular rate. These fees were varying from class to class. Highest fee was in class XI and in class XII. But in 1981 the fee system is entirely dropped in govt. and govt. aided schools. With that half fee and full fee studentship were also abolished. Though there is no provision of fee but students have to take some responsibilities of the school. Those are as follows :

- Development fee
- Library fee
- Laboratory fee
- Electric fee
- Computer learning fee

- Educational excursion fee
- Cultural fee
- Games and sports fee
- Other charges/fee etc.

At present the annual fee is Rs.75/- and Rs. 100/- for the students of class V to X and class XI and XII respectively.

No student pays more than Rs. 250 to 300 per year with all other additional charges. A portion of this fee is deposited in government treasury and the remaining part is being spent for different purposes of school throughout the year as and when required.

✪ 3.5 Number of Units/School Hour/Time Table/Periods:

❑ 3.5.1 Number of Units/Sections in School :

Here, unit denotes the numbers of classes/grade along with the number of sections allotted for each grade or class. While we are trying to assess the prevailing teaching-learning process/system of the school, the number of units present in a school play a significant role. Thus in this regard the factors affecting the number of units must be discussed in details.

The number of unit in any school depends on the following factors :

- Proper number of classrooms.
- Number of teachers available.
- Total number of students.

The Number of units from class V to X depend on the above mentioned factors. If inclusive education facilities would be there in the school, additional class rooms for some special subjects must be arranged there for the children with special needs (CWSN).

The number of unit in the higher secondary school depends on the number of elective/ optional subjects. The more the number of the optional subjects, more the units are required to be arranged.

In panchayet (village council) area the number of girls' school is very less. If the numbers of male and female students are almost same then separate class rooms for boys and girls should be arranged.

Generally in secondary schools the unit number is more in class V and VI. From class VII onwards the unit number decreases as the number of student is being decreased.

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Through retention expedition student are prevented from being dropped out of the school. Due to this sometimes the unit number remains same in class V and VIII.

In Sarba Siksha Avijan students got admitted in the schools from Madhyamik Siksha Kendra or MSK and for this reason separate units are required. For increasing number of students Appointments of Para teachers needed. But in urban areas the opposite scenrio is being observed. There, the number of student is decreasing day by day.

Minimum six units should be there in secondary schools up to class X. (at least 1 unit for each class/grade) As large number of students are there in village, there should be more than one unit and in urban areas one unit will be sufficient due to less number of students.

- **Conditions for opening new units in secondary school :**

In West Bengal, 40 students are allotted per units and per class in govt. aided schools. If the number of students would be increased up to 60 a new unit must be opened. Similarly, if the number of student exceeds 100 in a class then the third unit is being required to be opened and fourth, fifth units may be required accordingly with the exceeding number of students.

❑ 3.5.2 School Hour :

School hour is one of the most important issue factor, associated with the management of teaching-learning process of a school.

Depending on the following measures or facts, the duration of the school hour will be determined :

- Number of compulsory subjects.
- Number of elective subjects.
- Number of periods to be a alloted per subject.
- Different activities of school like-
  - Teaching learning related activities
  - Additional duties and activities
  - Co-curricular activities
  - Tiffin hour/Recess
  - Number of breaks and their duration
  - Number of tutorials to be arranged
  - Number of internal assessments to be undertaken etc.

At the beginning of the present century in West Bengal the School hour in govt. and govt. aided school was 11:00a.m. to 4:00p.m. The school hour for V and VI was 11:00a.m. to 3:30p.m. Science practical classes were extended after school hour. From Monday to Friday 7 periods per day and 6 periods per day were allotted for class VII class X and class V and VI respectively. On every Saturday 4 periods were allotted for every classes. Class wise 34 to 39 periods are allotted in a week generally.

The usual trend of taking seven periods daily was changed since 2005, when Environmental education is being included as a Compulsory Additional subject. Though many changes had taken place in our present day curriculum yet the numbers of periods to be taken by the teachers (during school hours) are as follows :

Class	Number of period from Monday to Friday	Saturday	Total periods in a week
V	6 x 5 =30	4	34
VI	7 x 5 = 35	4	39
VII - X	8 x 5 = 40	4	44

Though environmental science is not taught as a separate subject in present day curriculam, as before, but the number of periods remain same even after mid day meal scheme is initiated to balance the time schedule.

- **Number of period in higher secondary level and duration of period:**

Usually the duration of all periods remains same for all the classes in every school if the session was initiated at the same time and generally two to three consecutive periods are being allotted for the practical classes in school.

- **Duration of period :**
  - The duration of the period is 40 minutes each before recess/tiffin break and additional 5 minutes are allotted for the first period for the purpose of role calling/attendance.
  - At present, the duration of the periods after Tiffin is 30- 35 minutes each. These periods are allotted for those subjects which have less difficulty index as per student's ability.

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- There are some residential schools viz. Some govt. schools Purulia Ramkrishna Mission, Kurseong Dow Hill school, and Victoria where the school hour ranges from 7:00 a.m. to 5:00p.m. as the students have to stay there in the hostels.
- Prayer, drill, taking down notes and study in the school library are the activities that are included within the allotted school hours.

❑ 3.5.3 School Time Table and Its Importance :

Have you ever thought of how a school runs smoothly? How does a teacher know which class he has to go for teaching? How do students come to know that a teacher is engaged in the class? Is there any framework to know all these things? Yes, this framework is known as the time table. It occupies a very important place from the point of view of administration because it determines how the whole programme of the school is carried out.

Time table is an very important framework and the school authorities should devise it very carefully so that the time of students and teachers is utilized to the maximum and they derive the greatest advantages from the resources of the school. According to H. G. stead, "It is the time table that supplies the frame work within which the work of the school proceeds. It is the instrument through which the purpose of the school is to function".

● Time Table :

The school time table is a chart which indicates all the activities undertaken in a school. It shows:

- hours of work
- teacher at work and at rest
- rooms being used in certain periods
- recreational time
- time of morning assembly
- time of roll call
- time of co-curricular activities
- class engaged in games
- playground being used

In short, time table is a schedule which tells what work is being done during which period, by whom it is being done, where it is being done and when it is being done.

● Importance of the Time Table :

As we have discussed that time table is a necessary tool for efficient working of a school.

The question is how does time table help to make functioning of a school smooth? The importance of time table is presented by the following figure as drawn below :

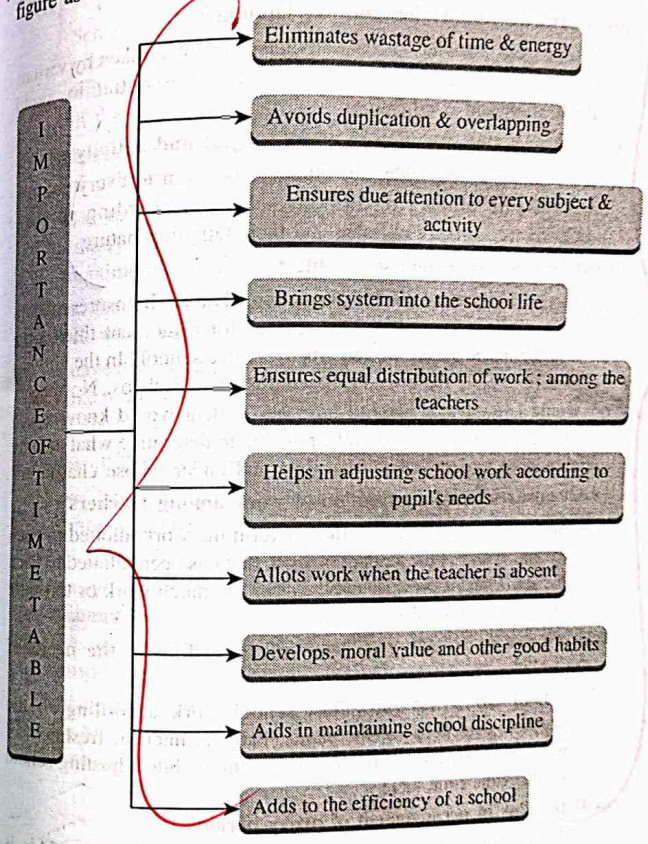

Fig : Showing Importance of Time Table

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● **The functions that a time table performs are listed below :**

(i) It eliminates wastage.of time and energy :

Time table shows exactly what is to be done at a particular time. It thus directs both teachers' and pupils' energy and attention to one thing at a time by, placing proper persons at their proper places at the proper time.

(ii) It presents duplication and overlapping :

A time table, showing various activities to be undertaken by various classes and under whose supervision, is essential to avoid duplication and overlapping.

(iii) It ensures due attention to every subject and activity :

By framing a time table, due attention is given to every subject. Periods are allotted to difficult subjects according to their importance, difficult of value and their fatiguing nature.

(iv) It brings system into school life :

Every activity of a school is planned in advance. It ensures smooth and orderly working of school. Let us for a moment think what would happen if there was no time table in a school? In the absence of a time table there would be confusion and chaos. No teacher would know which class to take. No student would know which class to go to. Now would it be possible to determine what activity should be undertaken at what time and under whose charge.

(v) It ensures equal distribution of work among teachers :

Time table indicates in a summary form the work allotted to each teacher. It shows the amount of work that has been allotted to each teacher. Thus, it prevents allotment of too much work or too little work to any one of the teachers.

(vi) It helps in adjusting school work according to the needs of pupils :

School authorities can adjust school work according to the psychological needs of the pupils. Fatigue, interest, freshness of mind and body are taken into consideration while adjusting school work in the time table.

(vii) It helps in arrangement of proxy periods :

Time table shows vacant or free periods of all teachers. This is helpful in allotting work when some teacher is absent.

(viii) It develops moral values and other good habits :

Ttme table helps to develop qualities like punctuality and regularity both in teacher and the taught by placing before them a set programme of activities. It develops methodical attitude towards work among pupils and teachers.

(ix) It promotes school discipline :

School time table directly promotes discipline in a school to a great extent By keeping students busy in desirable activities, and with everyone minding his own business, discipline is maintained in the school.

(x) It adds to the efficiency of the school by maximum utilisation of existing resources :

The time table can be framed in such a way that science laboratory, library, art room, 'assembly hall, play ground etc. are used to the maximum extent and help attain the goals of an institution.

From the above discussion, we can say that time table not only facilitates work, but it also adds to the efficiency in various spheres.

We have discussed that nature of a time table, and its importance. .We would like to know that how many types of time tables are to be prepared to make the function smooth.

● **Types of Time Tables :**

We have discussed that how time table is an effective instrument and how it promotes efficiency in a school. Now we will see, what are the different types of time table to be prepared in a school.

When you visit any school and meet the headmaster you must have seen a comprehensive time table lying under the glass of his table. It is known as master time table or general time table. We can also name it as a consolidated time table.

On the basis of the master time table, a class teacher prepares the time table for his class and it is put in every classroom. This is known as the class time table.

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A teacher, for his own record, prepares a time table.

From this discussion, we can say that there are at least three types of time tables available in the school as indicated below :

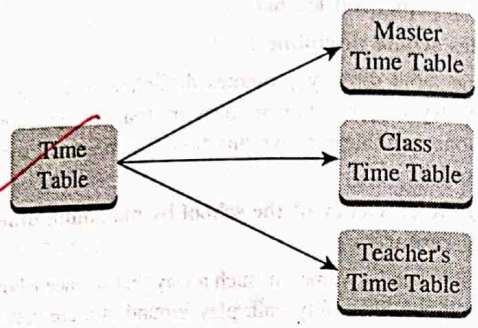

Fig : Types of Time Table

Let us discuss in brief each of these time tables.

- **Master Time Table :**

This time table gives a complete, correct and comprehensive picture of the entire school programme. It is a consolidated form of class time tables and teacher's time tables. This time table is generally meant to be used by the headmaster.

- **Class Time Table :**

This time table shows the daily programme of a class i.e. distribution of subject with teacher for each class. It also indicates the breaks and the periods for games and other co-curricular activities. Each class follows its time table and a copy of its time table is to be hung in each classroom.

- **Teacher's Time Table :**

Every teacher has a copy of his own programme showing details of his academic and non-academic work.

There are three types of time tables. For preparing Master Time Table, one requires certain skills and a person should know some basic principles. A person should have knowledge of how to overcome the defects of

Master Time Table. Now let us discuss the basic principle of time table construction.

■ Principles of Time Table Construction :

We have already studied that time table is an important instrument, which gives clear and comprehensive picture of school activities i.e. what work is being done during which period, where, by whom and when. It is really a complicated task because it is determined by a number of factors and conditions which change from place to place and from school to school.

Again, framing of a time table is a time consuming task, which also requires specific skills. One has to keep in mind that available resources are used to the maximum, because the purpose of a school is to function effectively and systematically.

The question arises of how to construct the Master Time Table? What are the factors to be kept in mind while framing the Time Table? Are there any principles to be followed? What are those principles?

The following principles have to kept in mind for preparing a Time Table.

(i) **Type of School :** The type of the school i.e. boys or girls or mixed school, urban or rural school, secondary or higher secondary school or both, determine the nature of activities of a school and accordingly a time table is framed.

One more point that is to be kept in mind is that specific needs of a school are to be taken into consideration while framing time table.

(ii) **Departmental Regulations :** Generally, the State Department of Education fixes length of the school year, and its terms i.e. when air academic year starts and when it ends, the duration of the school day and even the number of periods for each subject. It is essential that the school time table is in agreement with Government regulations.

(iii) **Amount of Time Available :** A time table is to be framed keeping in .view the available time i.e. length of the school year and total number of holidays. For example, in a double shift schools, the duration of the school day is naturally shorter.

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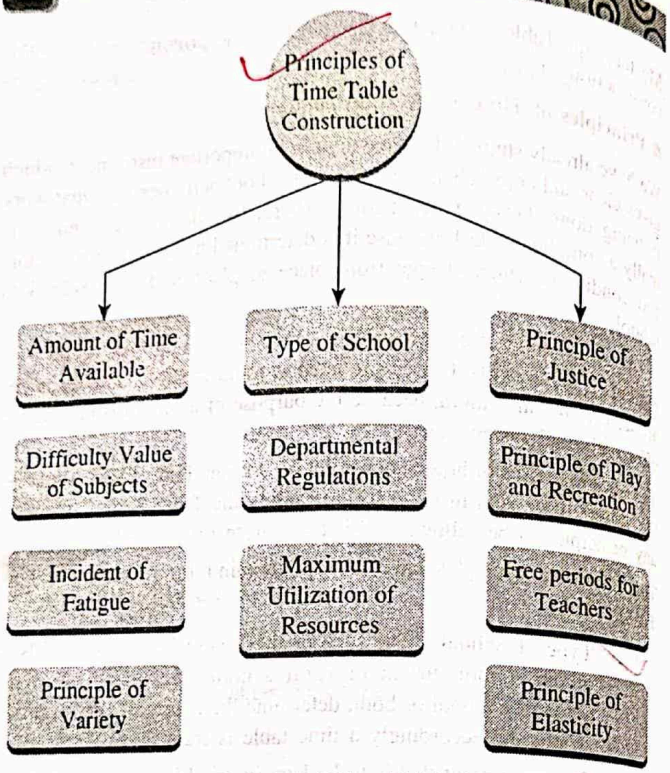

Fig : Major Principles of Time Table Construction

(iv) **Principle of Justice :** In assigning work, care has to be taken that :

(a) each teacher is assigned those subjects which he/she feels he/she is best qualified to teach,

(b) he/she does not teach in more than two departments,

(c) teaching load for every teacher is about equal to that of others.

(v) **Relative Importance and Difficulty Value of Subjects :** Time has to be provided to each subject according to its importance and its difficulty value. For example, more time is required for Mathematics and English, not because they are more important but because they are more difficult.

Besides, there are certain social and economic considerations that determine the importance of a subject in the school curriculum and accordingly, time is allotted to them in the time table, for example, in rural schools more time is required or devoted for practicals.

(vi) **Incidence of Fatigue :** The element of fatigue influences the construction of school time table in a number of ways. Children are fatigued at certain periods or on certain days. Fatigue is not only physical but it is also psychological in nature, which results in a definite weakening of attention and diminishing interest and affects learning.

(a) Work Rate: In school some subjects are more fatiguing than others. They involve more mental strain and effort. Such subjects are to be taught during early hours when the students' minds are fresh.

(b) It is a common feeling to think that mental freshness is the greatest in the morning. This is also true just after recess. The order of subjects causing strain is as follows :

(1) Mathematics (2) English (3) Other languages (4) Sciences (5) Social Studies/ Humanities' (6) Science practical (7) Drawing.

However, this needs not be true for all students. Some might find learning of Languages more difficult than Mathematics. Some find Sciences more difficult to learn.

(c) The fatigue principle is true for days of the week also. Tuesdays and Wednesdays are considered to be the best days in which maximum work could be done. Towards the end of the week fatigue is the greatest.

(d) Younger children are more quickly fatigued. The duration of a class period for them does not generally exceed 30 to 35 minutes. Psychologically also, their minds are likely distracted to some other activities.

(e) Certain seasons too cause fatigue. In summer due to heat, we do not like to work. So the duration of the period needs to be reduced. If it is possible, change timings and keep the school in the morning during summer season.

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(vii) **Principle of Variety :** Time table has to be constructed in a manner so that it allows frequent change of places and postures for pupils. It has been seen experimentally that change of room, seat and posture usually is an antidote against weariness. This applies to both, students and teachers. Variety can be introduced in the following manner.

(a) No subject except Science pracucals should be kept for two consecutive periods, as it will cause monotony.

(b) The same class should not, as far/Us possible, sit in the same room for the whole day.

(c) The same teacher should not have two consequtive periods in the same class, as far as possible except in primary classes.

(d) If a subject is taught only 2/3 times a week, periods should follow at intervals.

(e) The physical training periods, science practical and drawing work allow a change.

(viii) **Free Periods for Teachers :** Free periods for teachers need to be provided so as to increase their efficiency and also to provide time for their correction work. e.g.

1. Language teachers need more; free periods as they have to do more correction work.
2. In the periods immediately preceding science and other practical periods, a teacher should be kept free to enable him/her to make necessary preparations.

(ix) **Principle of Play and Recreation :** Careful attention needs to be given to provide for rest and recreation and provision for various co-curricular activities should also be made in the time table, to avoid monotony.

(x) **Maximum Utilization of Resources :** While constructing a time table, number of teachers, their qualifications and experience, number and size of classrooms and material resources available, should always be kept in mind, so as to make the maximum use of all the resources and avoid wastage or under utilization of resources.

(xi) **Principle of Elasticity :** We know that time table is an instrument to help school carry on its work smoothly and efficiently. It should not be fixed or rigid, but should provide scope for adjustment and changes to meet specific needs of students as well as of teachers.

The above principles provide bases in framing a time table. The difficult task of framing the time table becomes easier, if one knows the basic principles and tries to implement them. It is not everybody's cup of tea. One should possess the skill of framing a time table.

Role of a Teacher :

Teachers should also have a role in the preparation of the time table, because after all it has to be implemented by them. It so happens, some of the days, a teacher has so much of work that he/she hardly gets an opportunity to rest. Whereas there might be days when teachers are totally free. What can you expect from an exhausted teacher? Not only is the quality of teaching affected, there is lack of enthusiasm and lack of any innovative idea as well.

If teachers are taken into confidence and then according to the principles of time table making, a time table is prepared, its implementation will be smooth.

A teacher should take care that they do not waste time of another teacher while teaching in a class after the period is over. Nor should teacher leave a class before the period is over. The incoming teachers should also come on time. After all, teachers are role models. Students learn punctuality from their teachers. Teachers who have been assigned extra duties, should get some relaxation in the time table. All teachers should cooperate to make a time table functional.

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Example Of a Time Table (Class Wise)

[For Class-X]

Day	1st Period	2nd Period	3rd Period	4th Period	5th Period	6th Period	7th Period	8th Period
Monday	English	Mathamatics	Bengali	History	Life Science	Physical Science	Work Education	Community Outreach Activity
Tuesday	English	Mathamatics	History	Geography	Physical Science	Bengali	Life Science	Environmental Science
Wednesday	English	Mathamatics	Geography	Life Science	Bengali	Physical Science	Physical Education	
Thursday	English	Mathamatics	Physical Science	History	Bengali	Geography	Work Education	Creative Work
Friday	English	Mathamatics	Life Science	Geography	Physical Science	Bengali	Physical Education	
Saturday	English	Mathamatics	History	Bengali	—	—	—	—

Teacher's Time Table

Day	1st Period	2nd Period	3rd Period	4th Period	5th Period	6th Period	7th Period	8th Period
Monday	—	IX-A History		XII Education		VIII-B Life Science	XI Education	
Tuesday	—	VIII-C History	VII-A Life Science	XII Education	XI Education		XII Education	IX-B Environment Science
Wednesday	—	IX-A History	XII Education		VIII-B Life Science	XI Education		
Thursday	—	VIII-C Histo.y	VII-A Life Science	VIII-B Life Science		XI Education	XI Environment Science	
Friday	—	IX-A History	VII-A Life Science	XII Education		XI Education	VIII-B Life Science	
Saturday	—	VIII Life Science	VIII-B History	—	—	—	—	—

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❑ 3.5.4 Distribution/Allottment of Periods in School Time Table :

● **Duration of Period :**

Duration of a period depends on the following aspects :

1. School hours.
2. Number of subjects to be taught per week.
3. Required number of periods per subjects.
4. Teaching methods to be implemented.
5. I.Q. ratio and difficulty index of a particular subject.
6. Time to be assigned as playing hour.
7. Co-curricular activities.
8. Break time/recess.
9. Other tasks/activities to be performed according to the need.

For the proper assessment of teaching-learning process of a school, the number and duration of period is very much essential. In all over India the Right to Education Act of RTE is being effectied from the year 2010. It is stated, in this act, that in school time table at least eight periods per day (Monday to Friday) must be alloted. There must be the provision of Mid-Day meal for the students upto class VIII and if necessary it can be continued for the students of class IX also. Therefore, regarding the time, nature and distribution of the period, the following issues can be said :

- 35 to 40 minutes time will be allotted for the periods prior to Tiffin break.
- At the first period will commence just after the assembly, 40 to 45 minutes should be allotted for the first period. This extra five minutes is given for roll call/attendance of the students.
- After tiffin break or mid day meal the duration of each period will be of 30 minutes
- 1 or 2 physical education and work education classes will be allotted per week after Tiffin break. Last two periods preferably can be allotted for these subjects.

At present system of education the number of periods is being increased from 39 to 44 per week. So, the duration of each period becomes 35 minutes. Thus 6 or 7 periods are allotted per day from Monday to Friday for class V to VI and on Saturday there will be 4 periods only for all the classes. From class VII to class XII, 8 periods are allotted per day in a week. For this reason usually the school hour may be started from 10:30 am. continues to 4:10 pm. and in some schools it may be from 11:00 am. to 4:40 pm. Cocurricular activities like quize, debates, seminars etc. can be organized on Saturdays, generally after the scheduled class hours.

❑ 3.6 Student's Participation : Student's Self Government :

● **What is meant by "student self Government"? :**

- It means participation of pupils in matters concerning organisation administration, functions and control through delegation of power and responsibility to the student body.
- By inspiring and motivating individual student to follow certain ethics and code of conduct, under the supervision of their own peer group.
- Setting up of certain norms of behavioural practice by students themselves and auto-discipline is the guiding principal.
- In present day system all progressive countries of the world, there is an increasing tendency to associate pupils with administration of school in various forms and devices have been tried and accepted. Collectively these forms come under **"Self Government in School."**

● **Objectives of Students Participation :**

(1) **A knowledge of theory of democracy :** Most of the time information regarding democracy is kept bookish, so in order to avoid that, student himself participates in election campaign, evaluating qualification of candidate voting, representing a group, discussing on policies serving as committees, discharging asigned responsibilities, gets a first hand experience in democracy.

(2) **Sentiments of law and order :** Students have a clear conception of laws needed, how to set up the goal of self-discipline and how to achieve it.

(3) **Intelligent respect for authority :** As the students have direct and personal interest as he is part of school's democracy, so the student obtain thrill in electing their representatives, formulating policies associated with assembly organisation, recreational programmes and financing.

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(4) **Increasing self-direction and self dependence :** In order to give effective training of social living at school level, formation of self govt is actually initiation of miniature society in which students learn partinent knowledge; accepts worthly idea and actually practices the habits necessary for successful membership.

(5) **Prudent leadership and intelligent followership :** An elected leader who is autocratic, arbitary in decision making, careless in his commitments will soon be discussed and replaced by the followers for whose vote school suffers, will soon recognise his own fault.

(6) **Co-operation :** It helps in functional teaching of co-operation for which curriculum actually provides very less opportunities as for every subject the moto is "go and get it yourself."

SCHEMATIC REPRESENTATION OF FORMS OF STUDENTS SELF GOVERNMENT

For small schools

- Class monitors (whether nominated or as single simple elected) committee
- Monitors reporting to respective class teachers.

For large schools

- School council consists of members of grade council.
- School council which initiates organisation of National Government.
- These can be 3 councils (formed by students)
  - Legislative
  - Judicial
  - Executive.
- School council may intiate Municipal organisation with Municipal President, Commissioners, HOD's like health, recreation, finance etc.

(7) **Morale :** The two elements of morale to be loyal to feeling of personal responsibility is developed for example—
- courtesy to visitors
- friendly aid to new students
- keeping school plant neat & clean.

- ***Precautionary measures to be undertaken for successful implementation of students' self govt :***

(1) Student govt. in school should not be given any political covering.
(2) The objectives must be clearly and specifically defined.
(3) There should be a real demand from the students for students' council.
(4) Students' particpation in school adminstration and school control should be introduced in gradual stages.

- **Types/Forms of Students' Self Government :**
- **Guiding Principles for Representation in School Self Government :**

(i) The council should represent school as a whole and not just a part of it.
(ii) The average student should feel that he is represented and it should not be based on academic distinction.
(iii) Both the student body and teaching staff should be represented.
(iv) The council should not be too large.
(v) Council should have definite power as well as responsibility. Every student should know their powers and their limitations.
(vi) The head of the school, should have the power of veto, as he is officially charged with responsibility.

- **Council Activities and Projects :**

1. The activities should be interesting and desirable.
2. Activities should enlarge student's horizon.
3. Activities should develop responsibility and co-operation.
4. Activities should promote worthy school citizenship.

- **Services Rendered by Council :**

1. **Public functions :** Assume and supervise general and special assembly programmes, promote music concerts, contests, organise patriotic programmes and celebrations, sponsor exhibitions, organise and conduct Children's Day, Teacher's Day, Picnics etc.

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2. **Drives and Campaigns :**
   (a) Safety
   (b) Better health
   (c) Punctuality
   (d) Better speech
   (e) School beautification
   (f) Good sportsmanship
3. **Carer of school and Personal Property :** Organise and conduct lost and found dept., promote care of desk, wall, school equipment, ground, encourage respect for all public property.
4. **Education :** Trips and Tours; what other schools are doing, school orientation.
5. **School Equipment :** Museum, equipment and exhibits, athletic equipment and material, stage curtains and equipments.
6. **School Publication :** Newspaper, magazine, school history, report, bulletin and notices.
7. **Finance :** Organise and adopt financial system, develop budget for co-curricular activities, supervise money rising plans.
8. **School gardening and Landscaping :** Organise and supervise campus beautification project, beautifying classrooms, organising competition in fruit, vegetables and flower growing etc.
9. **National Emergency :** Collection of funds and articles for welfare of jawans promotion of relief drives, organising cultural programmes in aid of defence.

✪ 3.7 Record Maintenance :

• School Record :

A record is defined as a documented proof of a transaction. This can refer to any activity which falls within the normal routine of an organisation. Thus, it can be said that school record is a documented proof of a transaction or activity that is routinely done by a school. These activities range from the purchasing of learning resources to accounting for the number of learners and teachers present, absent or ill at school. Records are therefore an important means of accountability because they provide proof of actions taken and decisions made by either the school management team or the school governing body.

Schools have the task of teaching and providing a learning environment. In so doing, teachers and other members of staff are employed, materials are acquired, pupils are admitted, tested, examined and so forth. Any

written or recorded item that shows the existence of a particular pupil, how many pupils there are in the school, if a pupil has been transferred, how many desks have been acquired, etc, is a record.

In short, records contain information important to the daily running of schools. Some activities in a school need to be accounted for, especially when resources have been or need to be used. It is important for a teacher or school head to justify certain actions. In the absence of proof of the activity having taken place, it is difficult to explain or account for the resources that may have been expended in the course of the activity.

Records, therefore, are an important means of accountability because they provide proof. For example, there are instances when a school has to ask for certain facilities from the Ministry or any other funding organisation. Unless the school can show that it does not have adequate facilities or that it has admitted more pupils, it is difficult for the funding organisation to justify sending any of the requested items.

• Role of Records :

- Records have a dual function. Not only do they enable a school to have a clear picture of what is available and what is required, but they also provide justification of certain needs.
- Furthermore, they serve to extend the memory by which persons and/or organisations can pass their cultures and achievements on to future generations.
- Record keeping is vital to an education system's information cycle as a whole, because of its fundamental role in the process of efficient information production and collection. Since some of the most crucial information is produced at the school level, the importance of creating a systematic record-keeping culture at that level cannot be stressed enough.
- For records to exist in the first place, the need for them has to be identified. Such

a need may be a matter of policy or a requirement of the school authorities. Once this need has been highlighted, one can turn to the issue of the effective management of the records.

• Purpose/Significance of Record Keeping :

Record keeping generally concerns the administrative activities that are concerned with achieving cost-effectiveness and efficiency in the creation,

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maintenance, use and disposal of the records of educational institutions throughout their entire life cycle and in making the information they contain accessible in support of the school business administration (UNESCO, 2005).

Thus, it is essential that records are kept in school for effective administration, because proper record keeping facilitates retrieval of valuable information that might be helpful in day-to-day operations and decision making in school systems globally (Durosaro, 2002). According to Ololube "the importance of good record keeping transcends into short and long term benefits and affects the overall achievement of educational objectives". Ololube (2013) identified some additional and important reasons for records keeping in schools:

- **Accountability :** Record keeping is vital to an education system's information cycle as a whole, because of its fundamental role in the process of efficient information production and collection. School records are an important means of accountability because they provide proof. Records such as cash books and stock books help to ensure accountability as they show income, expenditures and stock levels in a school. These cash and the stock books can then be made available to auditors on demand for the auditing of school funds and facilities.
- **Decision Making :** School records help school administrators to make decisions. Records provide raw data that enable coherent, balanced and objective decisions on issues such as promotion, student and staff discipline, and teaching and learning performances.
- **Employment :** Properly kept records on the human resources serve useful employment and planning related purposes. The number of staff, their areas of specialization, qualifications, age, gender, and so on will help the principle to determine the human resource needs and assets of his or her school. Consistent information kept about employees can also be used in employee performance appraisals.
- **Guidance Counselors :** School records are of great importance to school guidance counselors as these records can provide counselors with a holistic picture of the students they counsel (academic grades and achievements, disciplinary measures taken and/or extracurricular activities) and can help counselors to track student progress.
- **Information Bank :** Records kept in schools serve as an information bank from which school administrators can recall information as needed.

- **Information for Parents :** Parents often want to know how their children or wards perform academically. Records of school report cards and/or end of term results should be kept by schools should parents wish to review or discuss past student performance.
- **Planning :** Accurate data assists educational planners to identify areas of need that should be addressed or accorded priority attention.
- **Student Academic Achievement and Behavior :** Certificates and testimonials are issued to graduating students to show how they performed during their studies. Properly kept records can help considerably in the accurate production of thorough certificates/testimonials.
- **Subject Time Table :** School time tables help in the coordination of staff student activities and work. Keeping track of time tables from year to year can help a school and school administrators determine which combination of classes and teaching assignments work best to optimize teaching and learning.
- **Supervisors/Inspectors :** The availability of records enables supervisors or inspectors to objectively assess student and staff performance and offer advice or proposals for improvement.

Types of School Records :

Educational management involves planning, controlling, implementing and monitoring of policies, as well as teachers and students activities. It embraces daily management as well as the formulation of short, medium and long-term objectives, policies and strategies in support of the educational goals (Bock, 2011). Good record keeping is critical to the success of any school system, no matter the size and whether or not it is in the public or private (UNESCO, 2005). In the public sector, the rendering of accounts for public scrutiny is key to accountability in governance (Ololube, 2009). As such, records keeping play a significant role in effective school management, and if records are not well managed, the school management function suffers (Gama, 2010). To this end, school records can be classified into two types: statutory and non-statutory records. Statutory records are records prescribed by education edicts and laws of a state which must be maintained by school administrators. Non-statutory records, while not prescribed by law, are equally as important to the smooth functioning of a school.

Ololube (2013) has identified a number of examples of the records found in schools and school systems:

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1. Admission and withdrawals register : The admission and withdrawals register shows the names of students that are enrolled each year in various classes in a school and the names of those who withdrew from various classes in the school.

2. Attendance register : Attendance register shows the daily record of student attendance in each class in the school. At the end of every term, the class teacher closes the register and submits it to the school head to crosscheck and sign.

3. Class timetable : Class timetables are a record of how, when and where classes are held. These keep students organized and informed about upcoming classes and help students to manage their time and schedule.

4. Education edicts and laws : Education edicts are announcements of a law governing an educational system. They are decrees or proclamations issued by an authority that have the force of law.

5. Health records : Are records of the names of students who were ill and sent to local health centers, school sick bays or the hospital for treatment. These records indicate the nature of the sickness and the treatment administered.

6. Individual cumulative record card : This is a continuous record or a combination of records that contain comprehensive information about a student. It provides a summary of a student's academic progress in school and also includes the student's name, age, date of birth, date of admission, family background, social or extracurricular activities, etc.

7. Lesson plan : Lesson plans are records kept to guide teachers during their teaching activities. These are written on a weekly basis to determine what and how the teacher will teach. A lesson plan is developed based on the school's scheme of work, unit plan or curriculum. It is presented to the head teacher for assessment, signature, date and name before it can be used for teaching.

8. Log book : A log book is an important official record kept to track significant happenings that take place in the school such as the death of students and staff, dates of resumption and closing of the school term, staff and student misbehaviour, etc. The head teacher keeps this book safely secured and must be presented to the Ministry of Education or School Board upon request.

9. National Policy on Education : The National Policy on Education (NPE) is a policy formulated by a government to promote education across the country. The policy covers early childhood, primary (elementary), secondary, and higher education. It also includes adult and non-formal education, technical and vocational education, distance education, educational services, planning, administration and supervision, and financing education.

10. Disciplinary records : Disciplinary records are kept to protect students from arbitrary punishment from teachers and to exonerate teachers from unwarranted criticisms by parents or students. In most cases, the head teacher approve of any disciplinary action before it is administered to a student or students. Records concerning the disciplinary action and its approval are documented for future reference.

11. School cash book : A school cash book is a system that helps organise school finances. It is a simple record that details all payments made and income received. It shows receipt of items and all expenditures. This book is kept with the accountant or clerk in the absence of a school treasurer.

12. School stock book : The school stock book shows the current supply of equipment and other materials in the school. It is usually divided into two parts. The first part showing the consumables items (chalk, dusters, diary, registers, etc.) and the other are showing non-consumable items (furniture, television, tape recorders, sporting and athletic equipment, etc.). It contains name, date of supply, and expiring dates of goods supplied, if applicable.

13. School timetable : A school timetable is a table used for coordinating four basic elements (students, teachers, subjects, and time slots, otherwise called periods) in a school system.

14. School diary : The school diary, also known as a teacher's record of work, shows the things that are to be done and have been done each term for each class/subject in a school. This record helps to keep teachers motivated and on task (to complete the syllabus by the end of the term) and ensures continuity.

15. Staff and student movement book : The staff and student movement book details the entry and exit of staff and students in a school.

16. Transfer and leaving certificates : Transfer and leaving certificates are the forms approved by the Zonal Inspector of Education and signed by

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the haed teacher at the request of parents to permit their children to leave one school to attend another as a result of a parent's work transfer, etc.

17. Visitor's book : The purpose of a visitor's book is to keep records of the names and addresses of visitors, date and time of visits, purpose of visits and who the visitor requested to visit. This book is kept by the head teacher or his or her assistant.

18. Syllabus : A syllabus is an outline and a summary of topics to be covered in a school. A syllabus for a certain subject is often set out by an examination body such as the West African Examination Council (WEAC) who conducts, supervises and controls the quality of examinations for uniformity.

19. Scheme of work : A scheme of work is a guideline that defines the structure and content of a subject. It shows how resources such as books and equipment are to be used and how class time, class activities and class assessments are to be carried out to ensure that the learning aims and objectives of the subject are met. A scheme of work can be shared with students so that they have an overview of their subjects

20. Curriculum : A curriculum is the set of subjects and their content offered at a school. A curriculum is prescriptive and is based on a more general document that which specifies what topics must be understood and to what level to achieve a particular grade or standard in an educational system.

• Characteristics of Good Record Management :

Managing school records according to Fasasi in Osakwe (2011) is meant to enhance the performance of school administrators. An adequate records management programme co-ordinates and protects an institutions records, sharpens the effectiveness of records as management memory, and helps to simplify intra-organisational and communication problems.

The management of records in schools, like in any other organization, is a cyclic process involving principals, teachers, students, messengers and cleaners. Most records are handled by school heads and are kept manually, hence the processing, retrieval and ultilisation of records is not always easy. According to Ibara (2010) the following are characteristics or attributes of good record management (although modifications can be made):

Completeness : Complete and comprehensive records should be kept to give users all the information needed to plan and make effective decisions.

Cost : Records should not be too expensive to keep. This means that the financial cost of collecting, analyzing, synthesizing, storing and retrieving records should be low.

Flexibility : Data is flexible if it can be used by more than one user at different times for different purposes.

Quality : The quality of any information contained in any record must be accurate and reliable. The greater the accuracy and reliability, the higher the quality of information, and the more likely the information system is to work well.

Relevance : A relevant record is one that is useful to the needs of the system. A good deal of irrelevant information is kept, particularly in schools. Data that is no longer relevant and not required by law should be securely disposed of.

Retention and Disposition of Records : The disposition of records does not entirely mean destruction. Disposition can also include transfer of records to a historical achieve, to a museum, etc. In the case of schools, however, most records are disposed of when no longer needed. The public officials concerned may destroy these records upon expiration of the retention period.

Timeliness : Information contained in a record should be retrievable as it is needed rather than after important decisions have been made.

Variability : This refers to the degree of consensus arrived at among various users examining the record. The greater the consensus among users, the more accepted the record.

Maintenance : The maintenance of records involves all activities that ensure that they are in good condition, and kept in an orderly state. This is a central function of records management.

• Safely Managing and Preserving School Records :

School records management involves the storage, retrieval and use of information. It is the application of systematic and scientific control to all the recorded information that schools need for school administration. Poor records management results in difficulties in administering, planning and monitoring of educational systems globally (Ololube, 2013). In fact, poor records management and the lack of staff development with regards to the entire information cycle are responsible for a number of management and policy implementation problems in schools and Ministries of Education (Chifwepa, [n.d.]). While different methods or systems can be used to

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bring about efficient records management, there are some basic rules that must be respected.

The management of school records involves all activities that ensure that they are in good condition, and kept in an orderly state (Ololube, 2013). Some of the ways records can be safely managed and preserved according to are:

- **Classification :** This is the methods of arranging records and files perfectly into groups according to subject. It ensures that school records are arranged in a logical order. The logical arrangement of files is central because it guarantees that files have their specific places and can be retrieved without snag and significant loss.
- **File Storage :** After a classification system has been determined and files have been labeled, files should then be arranged accordingly and kept in a filing cabinet drawer. A filing cabinet or cabinets should be used for this purpose. The cabinet drawers in which the files are housed must also be labeled clearly and the files appropriately organized so as to maintain the relationship of the files to one another.
- **File maintenance :** It is important to check the files periodically to ensure that they are in good condition, since they are prone to wear and tear. Some records in files may be loose and could fall out easily. These should be securely attached and reattached.
- **Check Out :** When records or files are lent to users, a system must be worked out that tracks where and when certain files or records were lent to a user. Small cards may be designed to enable efficient control over the flow of files.

Natural factors: School records should be properly arranged and secured from natural hazards such as flooding, insects, rain, sun, termites and wind.

❑ 3.7.1 Accounts Related Records :

School is a non profitable social institution that serves for the all round development of our learners and thus it gets different funds from the Govt., NGOs and personal donation as well as contributions from different people of different strata of our society that has to be documented properly for further verification and utilization.

The following records are being maintained for the above mentioned account and finance related Issues :

1. **Cash Book Register :** income and expenditure related to the received Grant-in Aid and Building Grants along with their sources and causes of expenditure, cheque numbers along with dates and each and every bill number should be documented meticulously here in this register.
2. **Acquittance Register :** it can be of 2 types viz. Staff aquittance register where all the teaching as well as non teaching staffs have to sign to receive their salary and student aquittance register where usually the particulars of any received student scholarship is being documented along with the student's signature.
3. **Internal Accounts Register :** the sources and particulars of the other funds i.e. admission and examination fees,monthly fees (if any) apart from the grant in aids are being documented here in this register.
4. **Bank Pass Book :** shool funds should be deposited and operated through a nearest state/centralized bank and its pass books should be maintained authentically to have transparency regarding the use of funds in different facets as and when required.
5. **Bill Book and Bill Register :** it has to be well maintained as it has to be sent to the treasury.
6. **Receipt Book :**
7. **Maintenance Register :** school related all types of transactions are documented here.
8. **Student Scholarship Register :** Here, in this register, the particulars and amount of the scholarships received by the students are documented

❑ 3.7.2 Staff Related Records :

These records keep the to personal and professional informations of the Head master, all the Assistant teachers and Non-teaching staffs related to the school for the betterment of the work culture of the institution.

- **Information Related to Head Master :**
  - Qualifications and experiences
  - Date of joining in school as H.M. (Head Master).
  - Date of Birth of H.M. (Head Master).
  - Administrative skills and experiences.

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- Special achievements or awards received (if any).
- Residential address and contact number.
- Relation with other staff members of the school.
- Concepts and innovative ideas related to the over all development of the school.
- Necessary salary related knowledge.

• Information Related to other Teachers :

- Information regarding the subjects taught by the teacher.
- Qualifications along with the obtained grade/division (1st class/2nd calss etc.) and experiences
- Date of joining in school
- Date of Birth
- Acquired special skills and experiences; knowledge and experience in computer related work.
- Special achievements or awards received if any.
- Residential address and contact number
- Relation with H.M. and other staff members of the school
- Concepts and innovative ideas related to the over all development of the school.
- Necessary salary related knowledge.
- Name and academic purpose of visit to other countries/abroad to be documented.
- If the teacher has ever been invited as a resource person.
- Role played in Guidance and Counselling of the students.
- Teacher's contribution in curriculum construction.
- Documentation of the Research papers, Articles, Books, Innovative teaching strategies published and invented by the respected teacher.
- Hobbies of the teachers.
- Nature and number of leaves taken by the teacher (causual leave, medical leave, El, child care leave, special leaves etc.)
- Opinion of the students, parents, colleagues and non-teaching staffs towards the teacher.
- Whether the teacher possesses any leadership qualities.
- Organisation and participation in seminars and workshops.
- Whether the teacher ever recrived any punishment for miss conduct.

• Information of Non Teaching Staffs :

- Nature of work for which the staff is being appointed.
- Qualifications and experiences (if any) along with pay band.
- Date of joining in school
- Date of Birth and name
- special skills and experiences.(if any)
- achievements or awards received (if any).
- Residential address and contact number
- Relation with other staff members i.e. Head Master and other teacher of the school.
- Concepts and innovative ideas related to the over all development of the school.
- Necessary salary related knowledge.
- Whether the person is rebiable or not.
- Nature and condition of his family.
- Leaves taken (number and nature of leaves)
- Efforts made to improve his/her educational qualification

3.7.3 Students Related Records : School Diary, Student Profile and Others Students Records

Previously, we have discussed various types of records that a school has to prepare, how these records are useful to various agencies like the Government, parents, students, teachers community and to the management. We have also emphasized the need for maintenance of these important documents for longer periods.

Now, we will discuss some of the important records of students and teachers. Let us first discuss the school diary.

• School Diary :

The School Diary is a mirror of a school, wherein there is the logo of the school. The motto of the school is written in it and the entire year's programme is listed. The following can be found in a school diary.

- There is a transparent plastic cover.
- On the cover page, in the centre or at the top there is the school emblem and the name of the school.

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- On the bottom, there is space for writing name, standard, division and address.
- On the first page there is personal memoranda wherein again name, address, number of siblings studying in the same school, date of birth, age, sex, nationality and blood group are mentioned.
- On the second page details regarding the Trust and office bearers of the school are written.
- From third page onwards various prayers are listed daywise.
- After various prayers, there is a list of instructions regarding discipline of school and penalties for breaking school discipline.
- The school also includes a list of holidays and the tentative schedule of school activities.
- At the bottom of every page in the diary there can be a thought or a proverb or some quotation.
- There is a place for recording results of pupils.
- There can be a complaint or remark coloumn, wherein special remarks like untidy uniform, incomplete homework, late arrival, instarees of mischief etc. can be written and sent to parents for signature.
- At the end there can be a record of various activities in which the child has participated.
- Last page contains the emblem of the school.

Now let us discuss the importance of school diary.

• Importance of School Diary :

School diary is helpful to everyone- Trust members and management, parents, teachers and students.

Trust members can have telephone numbers of office bearer and teachers so that they are to be contacted as and when required.

Parent can know various activities of the school, their children's progress, complaints against the children, homework given to children, etc.

The diary is helpful to a teacher. He/she can know the progress of students and bring it to the notice of parents. Teachers can ask students to note homework in their diary. Teachers can find the personal details like blood group, home address etc. of students as and when required.

Pupils get an opportunity to learn to fix priorities depending on amount of work. They can note down homework in the diary. They learn how to

maintain a diary. They can learn various prayers. They can read various quotations. From the diary, they can know about discipline of the school and various penalties for breaking school discipline.

School diary is useful to one and all in a school and also to others outside the school.

• Student's Profile : Cumulative Record Card

As we all know that the main aim of education is to develop all-round personality of the child. To discharge this function, it is absolutely essential to keep a profile of his/her growth and development. During his/her schooling, he/she has to decide the subjects which she/he will study and after schooling take a decision regarding his/her profession or vocation. Usually parents take advice of teachers. If a teacher gives guidance without any authentic data, is it helpful? If it is not, then what is to be done by a teacher? He/she has to prepare a profile which gives information about a student. What is that Profile? It is known as Cumulative taste Record Card. (CRC)

• Cumulative Record Card (CRC) :

It is a record of child indicating growth and development while in school in all aspects from beginning to the end of his school career.

It is a mirror which reflects the many sided development of a pupil.

Cumulative Record Card is a very important record. Let us see why it is as important as, claimed.

• Importance of CRC :

The Secondary Education Commission emphasized the importance of Cumulative Record Card in the following words:

"Neither the external examination nor the internal examination, singly or together, can give a complete and correct picture of pupil's all-round progress at any particular stage of his education, yet it is important for us to assess this, in order to determine his future course of study or future vocation. For this purpose, a proper system of school records should be maintained for every pupil indicating the work done by him in the school from day-to-day, from month-to-month. from term-to-term, and from year-to-year. Such school records will present a clear and continuous statement of the attainments of the child in different intellectual pursuits throughout successive stages of his education."

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Thus, from a CRC, useful, valid and authentic information can be collected.

- It helps in deciding upon the vocation and profession for a student.
- It helps to observe various aspects of child's personality.
- The data helps when a student leaves the school and gets admission in another school.
- It helps in identifying an abnormal child and those who are weak in studies.
- It helps in solving the problems of the child.

Thus, Cumulative Record Card differs from other pupil's record. All other pupil records give one-sided view of the child's development individually and not cumulatively, but Cumulative Record Card provides information on various aspects physical, cultural, aesthetical, moral, intellectual, and social. Since we are educating the 'whole' child., this record is multi-dimensional.

From this discussion, we can find out characteristics of a CRC easily.

- **Characteristics of CRC :**
  - From the time a child enters school till his/her completion of studies, maintaining a record is a continuous process.
  - This record is not meant for criticism.
  - The information should be valid, reliable and correct.
  - Every aspect of the child is to be seen in a progressive way.
  - It is a comprehensive and continuous record. Information should be entered every month, every term and every year.

There fore, It is said that CRC is a comprehensible and multi-dimensional record.

- **Contents of Cumulative Record Card :**

It contains a pupil's personal data, socio-economic data, attendance, physical and medical reports, scholastic achievement, interests and aptitudes, personality traits etc. in short, a complete history of his/her stay in school. Now we will discuss the contents in detail.

(i) Personal Data

(1) Name and sex (2) Class to which admitted (3) Date of birth in words and figures (4) Permanent address (5) Father's or guardian's name (6) Present address (7) Previous school attended with date of joining and leaving with reasons.

(ii) Socio-economic Data

(1) Occupation of father and mother (2) Number of brothers and sisters with their ages (3) Pupil's position among the siblings (4) Economic status (5) Special home conditions if any.

(iii) Attendance

(1) Possible and actual termwise attendance (2) Reasons for long absence, if any.

(iv) Physical/Medical Report

(1) Height (2) Weight (3) Chest (4) Vision (5) Ears (6) Nose (7) Lungs, Liver and Heart etc. (8) Any Special disability (9) General Health.

(v) Scholastic Achievements

There should be at least three tests each year and the results of periodical assessment in each subject should be shown in the form of grades. The child's position in the class should also be noted.

(vi) Interests and Aptitudes

(A) (1) Scientific (2) Social (3) Literary (4) Mechanical (5) Artistic (6) Musical and (7) Adventure etc.

These interests may be rated and recorded.

(B) Pupil's Preferences:

(1) Favourite subject (2) Subject iiked the least (3) Vocational preferences (4) Pupil's general attitude to school.

A rating should be done.

(vii) Personality Traits

(1) Sociability (2) Zeal exhibited (3) Efficiency displayed (4) Success achieved. Rating should be done.

(viii) Co-curricular Activities

(1) Participation (2) Zeal exhibited (3) Efficiency displayed (4) Success achieved. Rating should be done.

(ix) Class Teacher's Remarks :

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Head Master's Remarks :

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All the above information is given on a card, big enough to contain all the data.

• Maintenance of CRC :

Cumulative Record Card, though it is very important, is very detailed. As we all have experienced, that a teacher remains busy with academic as well as administrative work. How does he/she find time to fill up detailed information for each student? Some teachers may feel that this is boring work and time consuming also. As a responsible teacher, one should not think so. We have already discussed the importance of CRC. It also helps counsellors as well as teachers. So, a teacher should spare the time from his routine work. An important point a teacher has to keep in mind, is that while filling the record, he/she should not be biased.

Since the CRC is a very important document, it must be simple, uptodate, accurate and comprehensive. A teacher should fill the information very carefully. Only then can it be useful.

• Pupils Attendance Register and Teacher's Diary :

Each class has its own register, showing names of pupils on rolls of a class. This register is maintained by the class teacher. Attendance is to be marked at the beginning of the school day. After prayer or after assembly ten minutes are given for recording attendance. A class teacher has to take attendance of students daily.

Ink should be used for marking attendance. 'Dots' should not be put in the column, no blank should be left. 'P' for present, 'A' for absent, 'L' for Leave and 'S' for Sick, should be used.

Students who remains absent for many days should be asked to give reasons and if sick asked to bring a medical certificate. The names of the students who are absent without permission for twelve days continuously, should be struck off and reported to parents.

• Teacher's Diary

Teacher's diary is a map for a teacher. It provides a view of the tasks to be performed. Every school should have a teacher's diary. In this diary there is the programme for the entire year, which is followed by daily programme.

Academic Year : ..... **Subject :** .....

Months	Chapters and Topics	Total periods available	No. of periods available
June			
July			
Aug.			

The table given above gives an indication regarding courses to be covered in a month. It indicates as to how many periods will be available? Which chapter will be taken up etc. Similarly, a programme is prepared for the entire year and for all subjects by concerned subject teachers. This programme is approved by the headmaster. After approval, a detailed weekwise programme is prepared regarding topics to be covered, objectives to be achieved, methods to be used, teaching aids required, any homework to be given, etc.

• Weekwise Programme

Topics	Objectives	Approach Method/Media	Teaccching Aid-required	Home Work	Evaluation

A teacher knows what is to be taught, when, it is to be taught from the time table and the monthly chart, what methods, media and approach to be used is also readily available. Finally, type of homework and evaluation are also mentioned in the teacher's diary.

• Daily Record

There is something like a daily record in a school. The daily record is in the form of a register, which is placed in a classroom and in which a teacher enters the matter taught in a period.

Now let us discuss the importance of Teacher's Diary.

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● Importance of Teacher's Diary

It is a blueprint of instructional process for a teacher because it indicates what is to be taught, what are the objectives, how to teach, what homework should be given and so on. The advantages and importance of a teacher's diary include :

- A teacher can do the work in a period according to available time.
- A teacher can study or revise and prepare before teaching, so that a she/he does not loose track of the matter to be taught.
- In a diary the teacher notes down different activities or anecdotes occuring in a class which increases her/his accountability.
- A teacher enters the classroom with self-confidence as he/she is well prepared, due to which the quality of teaching is good.
- A teacher can organize the teaching work in a better way.
- A teacher is able to read books, reference material, teaching material, due to which teaching becomes more intense and concrete.

In this way organized teaching is made lively.

❑ 3.7.4 Curriculum Related Records :

The following issues related to the curriculum should be preserved and maintained properly :

1. Detailed description of syllabus as well as curriculum of secondary and higher secondary classes.
2. Pedagogical Analysis of the syllabus of all the subjects.
3. List of Geographical maps.
4. List of prepared TLM.
5. List of essential equipments related to Language Lab.
6. Curriculum of different states of India.
7. List of essential text books and reference books along with the name of the authors and publishers along with their price value to be listed and kept.
8. Question Bank related to every subject.
9. Question Papers of previous Year should also be preserved.
10. Progress report of academic curricular and co curricular activities should also be recorded.

All the teachers of the school have to shoulder the responsibilities of preparing and maintaining the registers and soft copies of the above mentioned curriculum related records.

❑ 3.7.5 Importance of School Records :

● Importance Of Records :

However, Olagboye (2004) citing Adepoju (1998) & Ojelade (1998) listed some general reasons or importance of keeping school records which includes the fact that school records tells the history of the school and are useful historical sources.

(i) tells the history of the school and are useful historical sources.
(ii) facilitate continuity in the administration of a school.
(iii) Facilitate and enhance the provision of effective guidance and counseling services for pupils in the social, academic career domains.
(iv) provide information needed on ex-students by higher and other related institutions and employers of labour for admission or placement.
(v) facilitate the supply of information to parents and guardians for the effective monitoring of the progress of their children/wards in schooling or performance.
(vi) provides data needed for planning and decision making by school heads, ministries of education and related educational authorities.
(vii) provides a basis for the objective assessment of the state of teaching and learning in a school, including staff and student performance by supervisors and inspectors.
(viii) provides information for the school community, the general public employers as well as educational and social science researchers for the advancement of knowledge.
(ix) enable school heads to collate information on pupils and staff for decision making by higher authorities, the law courts security agencies and other related government agencies when occasion demands.
(x) provides a mechanism such as the school timetable for the productive management of time and coordination of school work and activities.
(xi) serve as data bank on which both the school head and staff and even students can draw on.

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(xii) School is a social institution answerable to parents, managing committee, Education Department, community and to pupils. All this makes keeping and maintaining of records essential.

(xiii) Every school is required to keep an accurate and complete account of each and every pupil on its rolls and submit periodically reports based on these records. These facts and figures are essential as they are the basis for receiving state grants.

(xiv) Records are again essential for furnishing the Department of Education with an overall picture of the school, which is based on facts and figures. These data are utilised for planning future programmes in budgetary form.

(v) A school has to maintain computer records of each student. These records will reveal progress that each student has made and also show the weaknesses and strengths of the educational programme. Where computer facility is not available these records can be prepared manually with the assistance of teacher and administrative staff.

(xvi) School records also assist us in assessing the educational progress and needs of particular locality.

(xvii) Reports based on records are sent to parents. Conferences with parents are also based on definite information, which is available in the records. This is a sure way of getting constructive cooperation from home and community for achieving the aims of education.

(xviii) Again, the school is entrusted with the task of all-round development of the personality of " each child. It is absolutely essential to keep a record of his/her day-to-day growth and development.

❑ 3.7.6 Maintenance of School Records :

The principal is the person who is finally responsible for the school records but since he/she cannot possibly maintain all records himself, these records are maintained by teachers and clerical staff. While maintaining records the following points should be kept in mind.

(i) Prepare a stock list of all registers maintained in the school. It indicates what type of records are kept in the school. This makes record keeping systematic.

(ii) On the outer cover of each register containing records write distinctly:

(a) name of the school (b) name of the register (c) the serial number of the register (d) number of volumes of the register (e) the number of pages of the volume (f) opening and closing date of the volume, etc.

(iii) All files and registers should be kept neat and tidy.

(iv) There should be no over-writing or cancelling of entries. If any corrections are made, these should be signed by the concerned persons.

(v) Make all entries in ink.

(vi) Do not open a new volume of any register every year, if the previous volume contains some blank pages.

(vii) Fill up every column provided in the prescribed register and do no leave any blank spaces.

(viii) Records should be genuine, valid, reliable and accurate. They should be easily understood by those for whom they are meant.

(ix) Records should be kept in the office under proper lock and key and nobody should be allowed to remove them from the school under any circumstances without permission.

Thus records and registers are very useful devices. They should be kept neat and clean and should be maintained carefully and systematically.

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Short Questions & Answers

1. Give two major functions of a managing committee of a school.

Ans. It is mentioned earlier that the tenure of every managing committee is 3 years. The important responsibilities that can be done or executed by the members of the managing committee during this working period are as follows:

2. What is time table ?

Ans. Time table is an very important framework and the school authorities should devise it very carefully so that the time of students and teachers is utilized to the maximum and they derive the greatest advantages from the resources of the school. According to H. G. stead, "It is the time table that supplies the frame work within which the work of the school procede. It is the instrument through which the purpose of the school is to function"

3. What is Cash book register?

Ans. Income and expenditure related to the received Grant-in Aid and Building Grants along with their sources and causes of expenditure, cheque numbers along with dates and each and every bill number should be documented meticulously here in this register.

4. What is the importance of school records?

Ans. However, Olagboye (2004) citing Adepoju (1998) & Ojelade (1998) listed some general reasons or importance of keeping school records which includes the fact that school records tells the history of the school and are useful historical sources.

(i) tells the history of the school and are useful historical sources.
(ii) facilitate continuity in the administration of a school.
(iii) Facilitate and enhance the provision of effective guidance and counseling services for pupils in the social, academic career domains.
(iv) provide information needed on ex-students by higher and other related institutions and employers of labour for admission or placement.

(v) facilitate the supply of information to parents and guardians for the effective monitoring of the progress of their children/wards in schooling or performance.
(vi) provides data needed for planning and decision making by school heads, ministries of education and related educational authorities.

5. Mention importance of time table.

(a) Eliminates wastage of time & energy
(b) Avoids duplication & overlapping
(c) Ensures due attention to every subject & activity
(d) Brings system into the school life
(e) Ensures equal distribution of work ; among the teachers
(f) Helps in adjusting school work according to pupil's needs
(g) Allots work when the teacher is absent
(h) Develops. morla value and other good habits
(i) Aids in maintaining school discipline
(j) Adds to the efficiency of a school

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☛ Essay answer type questions :

Marks : 10

1. Prepare a timetable for any class of your choice for a week mentioning the following :
   [the name of the subjects taught in the class, no. of teachers available for the class, cognitive value of the subjects, no of periods allotted for the class, no. of units in the school, no. of fulltime teachers including para teachers]
2. Write in detail the duties and responsibilities of a school managing committee for the development of a school
3. Write the composition of the committee for academic purpose. Describe their functions for the purpose of academic development of the school.
4. What are the student related records? How many records are necessary for the purpose? Which of the records will be necessary even in the remote future and why?-Discuss

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Unit 4

Special Service Provided

Structure / Content Outline

4.0 Introduction
4.1 Mid-Day Meal Scheme
4.2 Book Bank for Poor Students
4.3 Tutorial for Weaker Students
4.4 Remedial Teaching
4.5 Parent Teacher Association (PTA)
4.6 Staff Welfare Service
4.7 Health Programme–School Health Programmes, Process, Components, Objectives, Targets, School Environment, Role of Teacher and Physician.
4.8 Conducting Talent Search Examination
4.9 Providing Scholarship

4.0 Introduction :

Teaching is a service and thus apart from curricular and co-curricular activities, a teacher has to spontaneously execute many other activities that foster the all round development of the students. Not only the teachers but also the non-teaching staffs along with the parents, some times shoulder the responsibilities for conducting the following activities, that ultimately creates proper ambience of learning and upgrades the quality of life of the people, associated with the institution :

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(i) Mid-Day Meal for students.
(ii) Book Bank for poor students.
(iii) Tutorial for weaker students.
(iv) Remedial Teaching.
(v) Parent–Teacher Association
(vi) Staff Welfare service.
(vii) Health Programme.
(viii) Conducting Talent search Examination
(ix) Providing Scholarship.

✪ 4.1 Mid-Day Meal Scheme :

➢ **Background :**

- To enhance the enrollment, retention and attendance and simultaneously improving nutritional levels among children, the National Programme of Nutritional Support to Primary Education **(NP-NSPE)** was launched as a Centrally Sponsored Scheme on **15th August 1995,** initially in 2408 blocks in the country. By the year 1997-98 the NP-NSPE was introduced in all blocks of the country. It was further extended in 2002 to cover not only children in classes I-V of government, government aided and local body schools, but also children studying in EGS and AIE centres. Central Assistance under the scheme consisted of free supply of food grains @100 grams per child per school day, and subsidy for transportation of food grains up to a maximum of Rs 50 per quintal.
- In **September 2004** the scheme was revised to provide cooked mid day meal with 300 calories and 8-12 grams of protein to all children studying in classes I - V in Government and aided schools and EGS/ AIE centres. In addition to free supply of food grains, the revised scheme provided Central Assistance for (a) Cooking cost @ Re 1 per child per school day, (b) Transport subsidy was raised from the earlier maximum of Rs 50 per quintal to Rs. 100 per quintal for special category states, and Rs 75 per quintal for other states, (c) Management, monitoring and evaluation costs @ 2% of the cost of foodgrains, transport subsidy and cooking assistance, (d) Provision of mid day meal during summer vacation in drought affected areas.
- In **July 2006** the scheme was further revised to provide assistance for cooking cost at the rate of (a) Rs 1.80 per child/school day for States in the North Eastern Region, provided the NER states

contribute Rs 0.20 per child/school day, and (b) Rs 1.50 per child/ school day for other States and UTs, provided that these States and UTs contribute Rs 0.50 per child/school day.

- In October 2007, the scheme has been further revised to cover children in upper primary (classes VI to VIII) initially in 3479 Educationally Backwards Blocks (EBBs). Around 1.7 crore upper primary children are expected to be included by this expansion of the scheme. The programme will be extended to all areas across the country from 2008-09. The calorific value of a mid-day meal at upper primary stage has been fixed at a minimum of 700 calories and 20 grams of protein by providing 150 grams of food grains (rice/wheat) per child/school day.

➢ **Objectives :**

The major objectives of the mid day meal scheme are as follows :

- Improving the nutritional status of children in classes I–VIII in Government, Local Body and Government aided schools, and EGS and AIE centres.
- Encouraging poor children, belonging to disadvantaged sections, to attend school more regularly and help them concentrate on classroom activities.
- Providing nutritional support to children of primary stage in drought-affected areas during summer vacation.

➢ **Significance of Mid-Day Meal Scheme :**

- ***Promoting school participation :*** Mid day meals have big effects on school participation, not just in terms of getting more children enrolled in the registers but also in terms of regular pupil attendance on a daily basis.
- ***Preventing classroom hunger :*** Many children reach school on an empty stomach. Even children who have a meal before they leave for school get hungry by the afternoon and are not being able to concentrate–especially children from families who cannot give them a lunch box or are staying at a long distance far away from the school. Mid day meal can help to overcome this problem by preventing "classroom hunger".
- ***Facilitating the healthy growth of children :*** Mid day meal can also act as a regular source of "supplementary nutrition" for children, and facilitate their healthy growth.

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- *Intrinsic educational value :* A well-organised mid day meal can be used as an opportunity to impart various good habits to children (such as washing one's hands before and after eating), and to educate them about the importance of clean water, good hygiene and other related matters.
- *Fostering social equality :* Mid day meal can help spread egalitarian values, as children from various social backgrounds learn to sit together and share a common meal. In particular, mid day meal can help to break the barriers of caste and class among school. Appointing cooks from Dalit communities is another way of teaching children to overcome caste prejudices.
- *Enhancing gender equity :* The gender gap in school participation tends to narrow, as the Mid Day Meal Scheme helps erode the barriers that prevent girls from going to school. Mid Day Meal Scheme also provide a useful source of employment for women, and helps liberate workingwomen from the burden of cooking at home during the day. In these and other ways, women and girl children have a special stake in Mid Day Meal Scheme.
- *Psychological Benefits* : Physiological deprivation leads to low self-esteem, consequent insecurity, anxiety and stress. The Mid Day Meal Scheme can help to address this and facilitate cognitive, emotional and social development.

➢ **Nutritional content :**

To achieve the above objectives a cooked mid day meal with the following nutritional content has to be provided to all eligible children:

Components	Primary	Upper Primary
Calories	450	700
Protein	12 gms	20 gms
Micro-nutrients	Adequate quantities of micro-nutrients like Iron, Folic Acid and Vitamin-A.	

➢ **Components of Central Assistance :**

Mid Day Meal Scheme provides the following assistance to State Governments/UT Administrations:

(i) Supply of free food grains (wheat/rice) @100 grams per child per School Day from the nearest FCI go-down for primary classes (I-V).

(ii) Supply of free food grains (wheat/rice) @150 grams per child per School Day from the nearest FCI go-down for upper primary classes (VI-VIII).

(iii) Reimbursement of the actual cost incurred in transportation of food grains from nearest FCI godown to the Primary School subject to the following ceiling:

(a) Rs.100 per Quintal up to 30.9.2007 and Rs.125 per Quintal with effect from 1.10.2007 for 11 special category States viz. Arunachal Pradesh, Assam, Meghalaya, Mizoram, Manipur, Nagaland, Tripura, Sikkim, J&K, Himachal Pradesh and Uttaranchal.

(b) Rs.75 per quintal for all other States and UTs.

(iv) Assistance for cooking cost at the following rates:-

- **Primary stage (classes I–V) :**
  - (a) States in North-Eastern Region :- @Rs. 1.80 per child per school day, provided the State Govt. contributes a minimum of 20 paise.
  - (b) For Other States & UTs :- @Rs. 1.50 per child per school day provided the State Govt./UT Admn. Contributes a minimum of 50 paise.
- **Upper Primary stage (classes VI–VIII) :**
  - (a) States in North-Eastern Region :- @Rs. 2.30 per child per school day, provided the State Govt. contributes a minimum of 20 paise.
  - (b) For Other States & UTs :- @Rs. 2.00 per child per school day provided the State Govt./UT Admn. Contributes a minimum of 50 paise.

(v) Assistance for cooked Mid-Day Meal during summer vacations to school children in areas declared by State Governments as "drought-affected".

(vi) Assistance to construct kitchen-cum-store in a phased manner up to a maximum of Rs. 60,000 per unit. However, as allocations under MDMS for construction of kitchencum- store for all schools in next 2-3 years may not be adequate, States would be expected

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to proactively pursue convergence with other development programmes for this purpose.

(vii) Assistance in a phased manner for provisioning and replacement of kitchen devices at an average cost of Rs. 5,000 per school. States/ UT Administration will have the flexibility to incur expenditure on the items listed below on the basis of the actual requirements of the school (provided that the overall average for the State/ UT Administration remains Rs 5000 per school):
   (a) Cooking devices (Stove, Chulha, etc).
   (b) Containers for storage of food grains and other ingredients.
   (c) Utensils for cooking and serving.

(viii) Assistance for Management, Monitoring & Evaluation (MME) at the rate of 1.8% of total assistance on (a) free food grains, (b) transport cost and (c) cooking cost. Another 0.2% of the above amount will be utilized at the Central Government for management, monitoring and evaluation. Programme Intervention and Coverage.

➢ **Monitoring Mechanism :**

The Department of School Education and Literacy, Ministry of Human Resource Development has prescribed a comprehensive and elaborate mechanism for monitoring and supervision of the Mid Day Meal Scheme. The monitoring mechanism includes the following:

- Arrangements for local level monitoring : Representatives of Gram Panchayats/Gram Sabhas, members of VECs, PTAs, SDMCs as well as Mothers' Committees are required to monitor the (i) regularity and wholesomeness of the mid day meal served to children, (ii) cleanliness in cooking and serving of the mid day meal, (iii) timeliness in procurement of good quality ingredients, fuel, etc, (iv) implementation of varied menu, (v) social and gender equity. This is required to be done on a daily basis.
- Display of Information under Right to Information Act: In order to ensure that there is transparency and accountability, all schools and centres where the programme is being implemented are required to display information on a suo-moto basis. This includes information on:
  i. Quantity of food grains received, date of receipt.
  ii. Quantity of food grains utilized
  iii. Other ingredients purchased, utilized
  iv. Number of children given mid day meal.
  v. Daily Menu
  vi. Roster of Community Members involved in the programme etc.
- Inspections by State Government Officers: Officers of the State Government/ UTs belonging to the Departments of Revenue, Rural Development, Education and other related sectors, such as Women and Child Development, Food, Health are also required to inspect schools and centres where the programme is being implemented. It has been recommended that 25% of primary schools/ EGS & AIE centres are visited every quarter.
- Responsibility of Food Corporation of India (FCI): The FCI is responsible for the continuous availability of adequate food grains in its Depots and in Principal Distribution Centres in the case of North East Region]. It allows lifting of food grains for any month/ quarter upto one month in advance so that supply chain of food grains remains uninterrupted.
- For the NP-NSPE, 2006, FCI is mandated to issue food grains of best availabl equality, which will in any case be at least of Fair Average Quality (FAQ). FCI appoints a Nodal Officer for each State to take care of various problems in supply of food grains under the MDM Programme.
- The District Collector/CEO of Zila Panchayat ensures that food grains of at least FAQ are issued by FCI after joint inspection by a team consisting of FCI and the nominee of the Collector and/or Chief Executive Officer, District Panchayat, and confirmation by them that the grain conforms to at least FAQ norms.
- Periodic Returns: The State Government/ UT is also required to submit periodic returns to the Department of School Education and Literacy, GoI to provide information on (i) coverage of children and institutions, (ii) Progress in utilisation of central assistance, including cooking costs, transportation, construction of kitchen sheds and procurement of kitchen devices.
- Monitoring by Institutions of Social Science Research: Forty One Institutions of Social Science Research, identified for monitoring the Sarva Shiksha Abhiyan, are also entrusted with the task of monitoring the mid day meal scheme.
- Grievance Redressal: States and Union Territories are required to develop a dedicated mechanism for public grievance redressal, which should be widely publicized and made easily accessible.

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4.2 Book Bank for Poor Students :

Introduction

- The Book Bank is a student resource for all the course books that a student may require for his/her acaemic pursuits for different classes (generally from class 5 to class 12).

  text as well as reference

- The Book Bank offers issuing text as well as reference books and also provides all the enrolled students with almost all his course books for a particular period to foster the right of free and compulsary education for every child till the age of 14 years.
- Generally the motto of Book bank is to serve the underpriviledged, poor and backward pupils by lending the books where there is no acces of books and this is arranged specially for those pupils who cannot afford to buy their books to study.
- Book bank is an attempt to create self reliant society through efficient and environmentally conscious use of local resources as education is a major right of every children who belong to different strata of our society.
- **Preparation or Organization of Book Bank :** The following steps to be undertaken for the establishment of the book bank-

  (1) The received free specimen copies of the teachers can be put into the book bank of schools, class and subjectwise.

  (2) If the text books and reference books can be bought with the help of the school funds for buying books, those books can also be kept in the book bank for the convenience of the students.

  (3) Book bank can be built up by the donation and contribution of the economically sound as well as liberal people of society in terms of both money and books.

  (4) The students of different classess, especially those who had passed in their board exams can be encouraged to donate their old books to help the other students and to enrich the book bank as well.

  (5) The photocopies (xeroxed copies) of the answer scripts of meritorious students as well as of the rank holders and high achievers can be kept in the book bank.

- **Utilization of the Book Bank :**

  (1) The subject or class book bank should be under the monitoring and supervision of one or more teachers.

  (2) Adequate number of text as well are reference books should be kept there in the book bank.

  (3) There should be a provision for lending books to the needy, poor and financially backward students once/twice in a week or in a month.

  (4) The students of higher classes should come forward to shoulder the responsibility of collecting the books from the students, to whom it was issued/given from the book bank, within the stipulated time.

  (5) Special facility as well as priority should be given to the poor as well as needy but good students.

  (6) Students should be given instructions and guidelines regarding the use and handling of the books.

  (7) As the class book bank is being constructed by the school's own fund, it is easily accessible by all the students.

  (8) The students of class nine and ten who cannot afford the text books and reference books should be able to access the facilities the of book bank.

  (9) Records should be maintained regarding the issue and return of the books.

4.3 Tutorial for the Weaker Students :

- A tutorial is a small class of one or only a few students, in which the tutor, a lecturer or other academic staff members give individual attention to the students.
- A school has to follow its own time bound schedule to complete its stipulated curricular as well as co-curriculam activities. In every class a teacher has to deal with a mixed population of the students which consists of advanced, average and poor/weak learners.
- These weak learners need special attention from their teachers to rectify themselves, lack of which increases their fright towards the study and that leads to the drop out problem.
- To decrease the dropout problem, tutorial for the weaker section of the students should be arranged.

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- **Organization of Tutorial :**
  - Indentification of the waker students on the basis of their performance in unit test, weekly test/monthly test and sometimes the teachers used to execute the diagnostic tests to find out the weaknesses of their learners.
  - Diagnosis of the problems/weaknesses of the students on the basis of portfolio assessment and results of the examinations.
  - The class routine (class-5 to class xii) should be regularly rediscussed and modified by the subject teachers as per need, so that the Head of the Institution may arrange or accomodate special classes for the benefit of the weaker students of our classes to rectify their problems.
  - As suggested by the Members of the Academic council the head of the institution, on the basis of the discussion with the other teachers of the school may arrange these special classes/tutorials after the scheduled school hour or even simultaneously along with the normal school routine.
  - A teacher has to go for prior analysis of the performance of the students to provide/arrange class wise guidance/tutorial for the low achievers.
  - Sometimes tutorial classes are taken by the students together to help the weaker students of the class to overcome their problems.
  - Sometimes the high achievers/meritorious students work along with their teachers to help their classmates to solve their problems regarding their study.
  - Tutorial classes help to increase the rate of better performance average achivement of the school students. The success of the studnets in the board exam brings glory and fame to the school which enhances the esteem of the institution in our soicety.
  - The teachers should come forward spantaneously for taking these tutorial classes even sometimes on holidays or on saturdays along with other weekdays after school, with the consent of the parents of the students who are in need of these special classes.

✪ 4.4 Remedial Teaching :

- The term remedial is employed in a broader sense to connote teaching which is developmental in its scope. Though our schools posses pupils who do not have any particular defects or faults which need correction, yet there are a group of students who urgently need assistance in developing increased competence in reading and the other fundamental processes. In their case, it is not primarily a problem of re-teaching or the remedying of errors, but it is rather teaching them for the first time those basic skills which are solely needed and are apparently lacking. Remedial teaching involves taking a pupil where one is and starting from that point leading one to greater achievement. It is just effective teaching in which the learner and his/her needs occupy the focal point.
- The introduction of compulsory education is one of the main factors responsible for the fall in standards. A large number of pupils who fail to make normal progress in rural schools are merely backward or slow learners. The failure to maintain a standard of scholastic progress compatible with intellectual capacity is associated with factors intellectual and emotional, physical and environmental. According to **Cyril Burt** (1967) ***The educationally backward is one whose disabilities are innate and general but acquired.*** Very poor home conditions which result in an impoverished cultural atmosphere and a limitation of extra experience are some of the causes of backwardness.
- Irregular attendance and failure are some of the other causes. Pupil's scholastic disabilities are of a remedial kind. The problem can be solved at a comparatively low cost. Effective teaching which provides progress for all pupils in the fundamental subjects is a nutritive for the mental health of all children. Happy well adjusted children mean happy well adjusted adults. The necessary emotional adjustment together with the removal of scholastic backwardness can be effected using appropriate remedial measures If remedial teaching is given, dropout, failure and wastage can be avoided. Remedial teaching is an integral part of all good teaching. It takes the pupil at his own level and by intrinsic methods of motivation leads him to increased standards of competence.
- It is based upon careful diagnosis of defects and in general to the needs and interest of pupils. Featherstone of Columbia University, says that the backward pupil learns best, if the teacher provides the following:

(i) Shorter units of instruction.
(ii) More concrete association-to see, hear, feel etc.
(iii) More motivated drill or review.
(iv) More specific direction, purpose.
(v) More illustration and audiovisual aids.

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(vi) More supervision and guidance.
(vii) More time to complex work.
(viii) Personalization of experience.
(ix) Emotional involvement in the activity as in dramatics, dancing and art.
(x) Greater variety of pupil response in a given area of learning.
(xi) Praise for work that shows any indication of work.
(xii) Great variety of stimulation and material.

➢ Need for Remedial Teaching :

- Teaching involves communication. That is, messages are being sent at one end and received at the other. When the messages are received as they are transmitted, then effective communication is believed to have taken place. Sometimes the message may not get across at all or may reach the other end in a garbled, distorted and unrecognizable version. In such instances a 'gap' develops between 'teaching' and 'learning'. Frequently the learner has not learnt what the teacher intended him to learn. In this case, a message is received, but it is not the one which was sent out.
- Several problems arise in dealing with this situation. First of all, the teacher has to find out if the message received by the student is the one sent out. For that, the teacher has to rely on the feed back from the student what he has received. Usually the student finds it hard to express what he has received and this give the teacher the impression that learning has not taken place at all. So the teacher tries to get the message across through repetition. But if the message received is a wrong one, it has to be 'cancelled' before the correct one can be 'written in' in order not to create problems of interference. This is one of the functions of remediation.
- Learning problems are of different kinds and each call for different remedial solutions. Most of the problems are caused by incomplete or inadequate learning. The diagnosis of the learning problem is, hence, ,very important. Wrong learning inevitably results wherever there is teaching. It interferes with the desired learning. There can also be different kinds or degrees of learning requiring different strategies of remediation. The diagnosis of the learning problem is, hence, very important. Remediation may be regarded as an activity parallel to the teaching function of motivation which maintains

constant vigil over his students. But it is possible to create in the students' mind the same kind of 'alertness' which his presence seem to endure. It must be made felt that it is important for the learner not to make mistakes and draw forth censure and ridicule. The correction of wrong 'concepts' and insights, and the strengthening of desired 'concepts' can be affected through explanation of various kinds. If an error seems to be due to interference, a comparison of the two language systems at that point may be provided.

- The wrong learning of certain concepts may also have to be remediating. The learner can be prevented from practicing a wrong concept only if there is constant and effective monitoring, so that the correction is immediate. Unmonitored practice will invariably result in the strengthening of any wrong concept which exists.
- The greatest problem in any type of remediation is to make the new learning abide. Old errors have the habit of 'coming home to the roots'. However effectively they are remediate and there is a point beyond remediation is impossible because no morelearning takes place at that stage. The errors become fossilized.
- Development of the necessary attitudes and determination on the part of the learner is far more crucial than the development of 'concepts' or mere 'habits'. It can be inferred that diagnosis is an important factor in imparting instruction. Instruction will be incomplete without diagnosis and remedial teaching.
- Individuals differ in abilities. Pupils of different levels of ability are likely to be present in a class of forty or fifty. Slow learners, fast learners and average learners–all have to be catered to in different ways. The highly talented should be provided with additional work which requires higher intelligence level and whereas the slow learners have to be specially cared for in order to bring them to the level of the average student. It is valid to consider insight-formation, application, consolidation and revision. Ideally, new learning should not be permitted until wrong learning has been cancelled and corrected. This is, however, impractical since remediation is a slow and laborious process. A thing once learnt is difficult to cancel, whether correct or incorrect.
- Remediation, hence, has to go on simultaneously with the otherteaching functions. The more teaching a learner has had, the more he may be in need of remediation.

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- The possible causes of failure in learning can be due to interference from concepts previously learnt or over generalization on the basis of previous learning. These errors of learning are caused by the learner taking an active part in the process of learning. They tend to adopt a particular learning strategy. Here the learner tries to simplify the task of learning or transfers his precious learning to a new situation. The teacher is in no way responsible for these errors. He can probably do nothing to prevent them.
- Learners seem to learn through their errors. It follows that the teacher should not only permit certain kinds of errors but assist him to form rules or hypotheses which may be used as touch stones and amended if necessary. Each time the error is made, the learner receives 'feed back' which he uses to amend his self- made rules. Then he finally arrives at his linguistic competence.
- The appropriate strategy of remediation can be determined by the types of errors which have to be dealt with. 'They need classifying into groups and types as all the individual errors cannot be dealt with practically.
- Remedial teaching is basically cognitive. The aim is to make the learner conscious about the rules; of concept attainment and his own use of it. A teacher cannot consider remediation as a 'follow-up' or an optimal activity.

➢ **Principles of Remedial Teaching :**

- Remedial instruction consists of remedial activities taking place along with the regular instruction or outside the regular class instruction and usually conducted by a special teacher. The type of remedial treatment given to the students depends on the character of the diagnosis made. If physical factors are responsible, remedial attention should be provided. The results of diagnosis have significance only if they constitute the basis for corrective instruction and for remedial procedures, which remove, alleviate or compensate for causal factors in the child and his I her environment. If a teacher can identify several children who lack a thorough understanding of certain concepts, he/ she may re-teach these concepts through group instruction, demonstrations, and supplementary silent reading by the pupils etc.
- General backwardness in subject is frequently due to inadequate mastery of the basic skills of Reading, Arithmetic, Language, Handwriting and Spelling or Inadequate command of the work, Study skills. etc. Hence corrective work in the basic skills plus improved motivation in the subject may be sufficiient to effect improvement.
- The following are the general principles of remedial teaching:

(a) Individual consideration of the backward pupil with recognition of his mental, physical and educational characteristics.
(b) Thorough diagnosis with a pretest.
(c) Early success for the pupil in his backward subject or subjects by use of suitable methods and materials.
(d) Dissipation of emotional barriers through early success, praise, continuous help, sympathetic consideration of his difficulties and sustained interest.
(e) The need for a new orientation towards the backward subject through new methods involving play way approaches, activities and appropriately graded materials.
(f) Frequent planned remedial lessons.
(g) Co-operation with the parents.

➢ **Preparation of Remedial Materials :**

Preparation of remedial materials for a child is a crucial aspect of corrective instruction. Remedial materials prepared should meet the following criteria:

(i) The difficulty of the remedial material should be geared to the child's readiness and maturity in the subject or skill to be improved. A set of remedial materials should provide a wide range of difficulty, covering several grades.
(ii) The remedial measures should be designed to correct the pupils' individual difficulties. Through the use of observation, interview and diagnostic testing materials, the teacher would have analysed the work of the backward children in order to locate the specific retaining needs. An adequate amount of remedial materials must be provided which is designed to correct the specific difficulties identified.
(iii) The remedial materials should be self-directive. Children may differ widely as to the instructional materials needed to correct their difficulties.
(iv) The remedial measures must permit individual rates of progress.
(v) A method should be provided for recording individual progress. When the child has an opportunity to record his 1 her successes on a progress record, he/ she is given an additional incentive to achieve.

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➢ Implementation of the Remedial Instructional Programme :

Although the selection of the remedial material is highly important, it is only one aspect of the teacher's approach upon learning difficulties and underlying causative factors. The following principles should guide the teacher in planning and carrying out the programme :

(i) One of the first steps should be the correction of any physical factors, which affect learning.

(ii) The co-operation of the parents should be obtained in correcting such physical factors, alleviating emotional tensions, and providing better study conditions and the like.

(iii) If the child has little desire to learn, immediate steps should be taken to try to improve his/her attitude through activities which makes the child enjoy learning.

(iv) Corrective instruction should begin by analyzing with the child the specific strengths and needs, and showing how the instructional materials are designed to correct his / her deficiencies. Making the child aware of his/her problem and providing a method of solving them, based on individual effort, helps to establish a powerful motivating force.

(v) Instruction should begin at or slightly the learner's present level of achievement. Short term goals should be established which the learner considers reasonable and possible to attain. By means of progress charts, praise and social recognition the child's feeling of successful accomplishment should be reinforced.

(vi) Since corrective instruction must usually proceed on the basis of a tentative diagnosis, the teacher must be ready to modify the remedial programme if the approach and materials selected seem to be ineffective.

(vii) Corrective procedures must be modified for children of relatively inferior or superior mental ability.

(viii) The results of corrective instruction should be evaluated. Comparable forms of a standardized test should be administered before and after a period of concentrated instruction. The effectiveness of the programme must be evaluated for each child than in terms of class averages.

(ix) A cumulative record should be made of the results of diagnosis, of methods and materials used, and of the results of corrective instruction. Such a record is helpful in the determination of next steps, and of invaluable help to the next teacher when the child is promoted.

(x) If the children are assigned to a remedial group taught by a special teacher, great care should be taken to integrate the special corrective programme with the developmental teaching in the regular classroom.

➢ Limitations of Remedial Instruction :

In Remedial instruction, the teacher is constantly reminded of a principle, which is frequently overlooked in other teaching situations.

To a remedial teacher, learning rather than teaching is the goal. The growth of each individual rather than the change in group averages is the criterion of success. Hence the teacher needs a rich background in child psychology and educational diagnosis in order to successfully tackle the variety of individual problems which the child presents themselves.

A major problem in remedial instruction is the dearth of effective instructional materials. Most of the published materials have been designed for group instruction. Only a small percentage can be adapted for individual instruction.

If the material is graded carefully and provided for ample practice on each of the basic steps, the teacher can adapt it for individual use by providing self-directive instruction for pupils. The teacher who understands the objectives to be attained, the analysis of individual difficulties, the types of materials needed, and the techniques essential for correction can adapt some published materials and develop additional supplementary materials which will be appropriate for corrective instruction.

Many teachers who attempt remedial instruction are faced with unusually large classes or with a large percentage of children in the class who are educationally backward. A beginning teacher with a large number of pupils in need of remedial instruction has to limit one's work to three or four pupils whose needs are greatest. As the teacher gains experience in the programme. He/ she will be able to extend remedial instruction to all the children who need it.

4.5 Parent Teacher Association (PTA) : Its Importance

Parents send their children to school for education. School educates children. Both are interested in children's progress and both are answerable to each other but we have experienced that illiterate and uneducated

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parents do not understand the importance of education, so they do not provide a good educational environment for their children. In a village, few children complete primary education and the problem of absenteeism from school is more rampant. Parents are busy in agricultural and other activities. They do not keep contact with the school.

On the other hand, educated parents are often busy in their professional work. They might not find time to keep contact with school. It, thus, becomes the responsibility of the school to ensure the growth and development of children.

One-fourth of a child's time is spent in school. Once a child is admitted to a school, parents start thinking that their responsibility is over. Teachers think that parents do not take interest in child's education. On the other hand, parents think that teachers do not teach well in the school. Both are blaming each other. But both are equally responsible for child's progress, so both have to take interest in the child's growth and development.

In such a situation the Parent Teacher Association is a necessity. Apart from getting an opportunity to know the progress of their children it gives a chance to parents to understand needs and ideals of the school and also helps parents to participate in some of the school activities. Thus it helps in developing social aspect of school life.

• Establishment and Objectives of Parent Teacher Association (PTA) :

Only home visits by a teacher are not enough. Parents should take interest in child's education. They should also know problems academics as well as personal problems, that the children facing and with the help of teachers, try to solve them. PTA helps in developing all-round personality of the child. Every school should have a PTA.

For establishment of PTA the following steps need to be undertaken :

- Invite parents to school.
- Explain to them the objectives of PTA.
- Give them brief idea about the activities of PTA.
- Make membership of PTA voluntary.
- All parents should be invited.
- Teachers have to take up the responsibility to conduct PTA meetings.
- Try to involve more parents in activities.

• Benefits of Parent Teacher Association :

A parent teacher association helps teachers and parents in many ways. Some of these include :

- The relationship between parents and teachers will improve if both of them try to know each other.
- Parents and teachers try to give respect to each other and have trust in one another.
- Instead of blaming each other, both should have positive outlook.
- PTA solves the problem of student indiscipline.
- Parents come to know the habits, hidden talents and progress of their children.
- It improves school performance.
- It helps in reducing wastage and stagnation.
- Both realise the responsibility towards the children.
- It helps in developing personality of children.
- It proves that school is a miniature form of the society.

• Objective of Parent Teacher Association :

The objectives of Parent Teacher Association are as follows :

(i) To bring home and the school in close contact :

These days teacher and parents do not come in contact with each other. Parents also do not know the teacher. Both should meet each other on some occasions.

(ii) To promote the welfare of the children in home and community :

Parents are busy in their professions. They do not find time to visit the school and take interest in child's progress. Once a year, the school invites parents, which helps them to know about the child's performance and the problems of the child. Parents come to know the behaviour of the child. Parents and teacher may cooperate with each other intelligently in the training of a child.

Somehow boslj complain about each other. In some cases, parents blame teachers and teachers blame parents for not taking interest.

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If both of them come together, know each other, understand each other, it helps in growth and development of child's progress. Parent Teacher Association also b~lps school to inform the community of what it is doing and the problems it is facing. The involvement of parents and the community might help a school to raise resources for its various activities.

■ **Activities to be Organised in PTA are as Follows :**

The following activities are to be organised in a PTA :

- The performance of a child is discussed.
- The personal as well as academic problems of a child can be discussed jointly and effort made to solve these problems.
- Celebration of festivals can be organised. Invite parents and community members and accept their viewpoints.
- Activities can be taken up with the help of the community e.g. cleanliness of the city or village, shram yagnya, eye camp, tours, funfair, cultural programme etc.

■ **Time to call PTA Meeting :**

- Generally middle of the second term is the appropriate time to organise a PTA meeting. During this time, performance of the child in various subjects is announced so that parents and teachers get an idea of a child's progress.
- In PTA meeting, kmte an educationist can be invited as a chief guest, who will motivate students and give guidance to parents. In a PTA meeting students will narrate their experiences of the school, teacher will express their view points and parents will give their reactions.
- In this way, PTA meeting is to be organised once in a year. It gives good results. The value of such organisation has been fully realised in our country.
- The entire programme of PTA should be chalked out by an executive committee, set up by the association itself. Advance planning, showing dates of major meetings and broad goals of the year's programme proves beneficial.

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9.4.6 Staff Welfare Service :

Staff Welfare Policy :

• *Purpose :*

The purpose of Staff Welfare is as follows :

- To promote the development of high morale among all staff.
- To put in place structures and processes which are supported by school administration.
- To develop a staff understanding of stress and how to manage it.
- To gain an understanding of the Staff Health and Well-being components.
- To support staff to develop practices that will enhance their health and well-being.

• *Goals :*

- To develop an environment that looks at all aspects of organizational health and proactively seeks to support staff development.
- To make the environment functional, safe and healthy but also aesthetically pleasing and stimulating.
- To encourage a positive work atmosphere that encompasses a healthy balance between work and home/leisure activities.
- To improve the efficiency of communication throughout the school.
- To provide staff with opportunities to gain knowledge and an understanding of the expectations within the school.
- To increase opportunities for staff personal time.
- To encourage and facilitate opportunities for the staff to develop a sense of community and support of each other.
- To actively promote and organise staff functions for enjoyment and recreation.

■ **Guidelines :**

The following categories make up the total Health and Well-being of the school :

• **Professional Health :**

Professional health takes into account the relationships between professional growth, job enrichment and morale. The employee understands his/her role at work and how this fits the goals of the school.

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Work needs to be appraised in the context of professional growth. Staff have a right to receive positive, frank, constructive and frequent feedback on their work and should be recognised for their achievements. An effective review process will support professional growth.

- **Organisational Health :**

Staff morale and stress are affected by many elements of the workplace climate-harmonious relationships, effective leadership and staff involvement in decision-making. Specific variables that relate to organisational health include :

- Professional Interaction
- Goal Congruence
- Discipline
- Curriculum Coordination
- Communication

- **Physical Health :**

An environment that is functional, safe and healthy as well as aesthetically pleasing and stimulating.

- **Environmental Health :**

An environment that fosters a positive work atmosphere, that encompasses a healthy balance between work and home activities. A supportive culture can assist staff in making healthy lifestyle choices.

- **Operations :**

Effective system management has been identified as an area which can have a direct impact on staff welfare and job satisfaction. Quality systems management is imperative for staff health and well being.

- **Community Relations :**

A strong positive relationship with the local community can provide a good basis for extending and enriching staff health and well being.

■ **Implementation :**

To assist the school in continuously developing staff health and well being, the following strategies will occur to ensure the promotion and provision of a healthy work environment :

- Each year the staff survey for the annual report will be analysed to identify the needs of the staff.

- An annual strategic plan will be developed to address the needs of the staff and areas of concern.
- An annual staff reflection process will be utilised to address appropriate issues with the school.
- Effective communication, to ensure common understandings and expectations, will be promoted and continually reviewed.
- Meeting structures will be rationalised and planned to address needs.
- Staff Health and Wellbeing will be included in the school's Policies and Program Budgets documents and funded appropriately.
- Staff Health and Wellbeing will continue to be a priority for the leadership team.
- The Staff Health and Wellbeing team will actively address staff morale by ensuring that all Health and Wellbeing categories are being maintained.
- Each term a whole staff forum to express concerns and ideas to be done in teams and shared at leaders meetings.

■ **Evaluation :**

Each year the areas of Staff Health and Wellbeing will be audited using the Staff Opinion Survey data.

◊ 4.7 Health Programme :

Introduction : According to WHO (World Health Organization)–health is defined as a state of complete physical, mental and social wellbeing with absence of disease.

As per WHO school health program can be one of the most cost effective investments a nation can make to simultaneously improve education and health.

WHO promotes school health program as a strategic means to prevent important health risks among youth and to engage the education sector in efforts to change the educational, social, economic and political conditions.

The progress of a nation depends upon its youth, where the physical as well as mental status of the youth is taken into consideration. It is said that if men and women of a country are physically healthy, intellectually creative and morally upright then that nation is sure to have a steady progress because a healthy mind is always living in a healthy body.

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School Health Programme :

- School Health program is a program for school health service under National Rural Health Mission, which has been necessitated and launched in fulfilling the vision of NRHM to provide effective health care to population throughout the country It also focuses on effective integration of health concerns through decentralized management at district with determinant of health like sanitation, hygiene, nutrition, safe drinking water, gender and social concern.
- The School Health Programme intends to cover 12,88,750 Government and private aided schools covering around 22 Crore students all over India.
- The School health programme is the only public sector programme specifically focused on school age children. Its main focus is to address the health needs of children, both physical and mental, and in addition, it provides for nutrition interventions, yoga facilities and counseling.
- It responds to an increased need, increases the efficacy of other investments in child development, ensures good current and future health, better educational outcomes and improves social equity and all the services are provided for in a cost effective manner.
- The programme at the national level has been developed to provide uniformity/guidance to States who are already implementing or plan to implement their own versions of programme and to give guidance in proposing a coherent strategy for school health programme in next year's NRHM PIP to those States who have not yet started their programme.

Concept of School Health Programme :

- 1979, the National School Health scheme was handed over to State Government.
- 1981, a Task Force was established by the Government of India. Ministry of Health and Family welfare to study the progress of School Health programme functioning in various states of the country.
- 1984-85, Delhi had its own comprehensive School Health Scheme which is continuing.

1. **The Three-Component Model :** Originating in the early 1900s and evolving through the 1980s, the three-component model is considered the traditional model of a school health program, consisting of the following basic components:
   - Health education
   - Health services, and
   - A healthful environment.
2. **The Eight-Component Model :** In the 1980s, the three-component model was expanded into an eight-componet model–traditionally referred to as a "comprehensive school health program"–consisting of the following components :

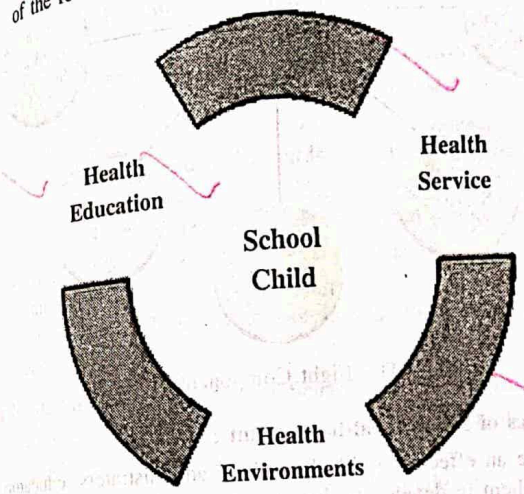

Fig : The Three Component Model

- Health education
- Health services
- Healthy school environment
- Physical education
- nutrition services
- health promotion for-school staff

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- counseling, psychologica, and soical services
- parent and communit involvement.

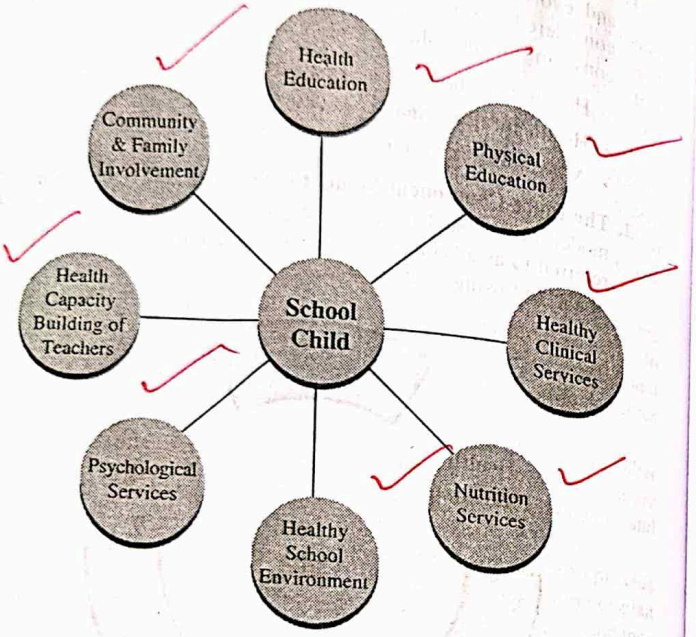

Fig : The Eight Component Model

■ **Objectives of school health program :**

- Provide an effective guide for school administrators/ educators to assist them in developing health promotion of school children.
- Ensure that the school health programs are based on formally assessed and evidence based practice.
- Advocate the value of a comprehensive and planned approach to school health through education sector.
- Encourage partnership with key stakeholders , viz. students, parents, health professionals teachers and counselors.
- The overall objective of these programs is to equip the educational sector to develop health promoting schools.

- prevention and control of health hazards.
- rehabilitation of the handicapped.
- Early detection and care of students with health problems.
- Development of healthy attitudes and healthy behaviors of the students.
- Ensure a healthy environment for children at school.
- Prevention of communicable diseases at school.

■ **The school child is the subject of special consideration for many reasons that are as follows :**

- This group is of vital importance to the health of the community,
- They constitute a sizeable segment of the population.
- School children are subject to the risks and dangers of communicable diseases.
- They undergo the stresses and strains of growth and development.
- The physical, mental and emotional stresses should always be considered.
- Unsanitary environmental hazards are gaining lots of attention due to its impact on health.
- There is a close relationship between health and education:
- Education is fundamental to health and health is vital for efficient education".
- Supervision of health in schools needs to be comprehensive and continuous.

■ **Needs/Importance/Targets of School Health Program:**

- Creation of a suitable environment indispensable for healthy development of the children.
- To have a clear picture of the health conditions of students and employees through various types of medical inspection and evaluation.
- The early discovery of deviations from normal, and the application of prompt corrections.
- Training of scholars in healthy habits through efficient programs of health education.
- Care for the handicapped, maladjusted or crippled.
- The progress of a nation depends upon its youth, where the physical as well as mental status of the youth is taken into consideration. It

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is said that if men and women of a country are physically healthy, intellectually creative and morally upright then that nation is sure to have a steady progress because a healthy mind is always living in a healthy body. Thus, school health program is very much essential.

- Development of healthy attitudes and healthy behaviors of the students regarding health and hygiene that would be spread within the family as well as within the society also.
- School health education provides proper knowledge to develop awareness of cleanliness for having a good health.
- Health education imparts sex education to the adolescents for the sublimation of their sexual needs according to their gradual development.

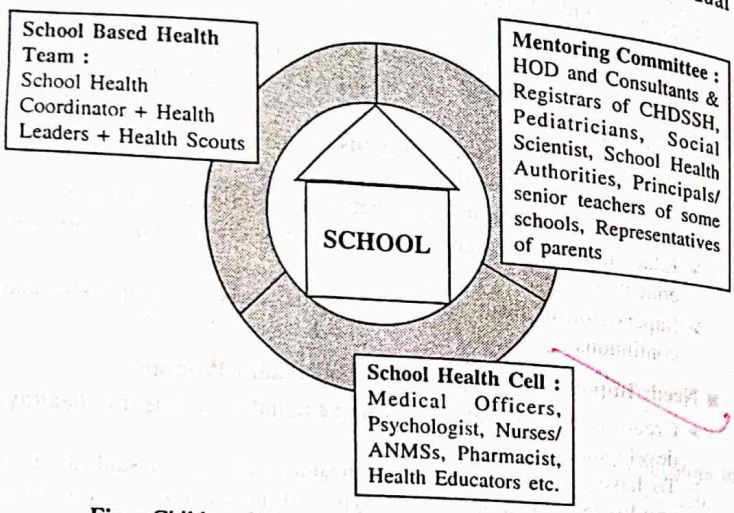

Fig : Child-to-Child School Health Programme Structure

■ Components of School Health Program :

• Health service provision :

- Screening, health care and referral :
- Screening of general health, assessment of Anaemia/Nutritional status, visual acuity, hearng problems, dental check up, common skin conditions, Heart defects, physical disabilities, learning disorders, behavior problems, etc.
- Basic medicine kit will be provided to take care of common ailments prevalent among young school going children.
- Referral Cards for priority services at District / Sub-District hospitals.

• Immunisation/Vaccinations :

- The Health Visitors give to students the routine vaccinations according to the existing vaccination program of the Ministry of Health. The students as well as the parents are informed about a certain vaccine that will be given. In order to vaccinate a student at school it is necessary that the Health Visitor takes the parents or guardians written consent.

• Micronutrient (Vitamin A & IFA) management :

- Weekly supervised distribution of Iron-Folate tablets coupled with education about the issue.
- Administration of Vitamin-A in needy cases.

• De-worming :

- As per national guidelines, Biannually supervised schedule to be followed.
- Prior IEC.
- Siblings of students also to be covered.

• Health Promoting Schools :

- Counseling services
- Regular practice of Yoga, Physical education, health education
- Peer leaders as health educators.
- Adolescent health education-existing in few places
- Linkages with the out of school children
- Health clubs, Health cabinets
- First Aid room/corners or clinics.

• Capacity building.
• Monitoring & Evaluation.
• Mid day meal.

■ **Program of School Health :**

1. Health Promotion.
2. Prevention of health hazards.

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3. Medical Care .
4. Health Education.

- Health Promotion :
  - Adequate nutrition.
  - Sanitary school environment.
  - Meeting the needs for mental development (emotional & behavioral adjustment).
  - Physical fitness and activities (for musculoskeletal development).
  - Prevention of mental fatigue, Social activities and recreation.
- School Environment :
- Value of Sanitary Environment :
  - Basic preventive measure of communicable diseases.
  - Contributes to health promotion.
  - Provides feeling of comfort, and enhances educational achievement.
  - Draws good example of clean environment.
- Components of school Environment
  - **Site and area :**
    - -easily reached.
    - -Located in quite area.
    - -10 - 15 square m./scholars
  - **School building :**
    - -Damp, fire and rat proof.
    - -2 - 3 floors
    - -> 1 stair case.
    - -Governmental design (E, T, L types)
  - **Class rooms :**
    - -Rectangular 6x8 = 48 m2
    - -1-1.5m2 of floor area for primary students,
    - -1.5-2m2 for intermed. & high school students.
    - -Windows location on left side.

- -Allow best illumination.
- -Natural & white ceiling.

- **School furniture :**
  - -Suitably suspended writing board,
  - -Height & slope of desks (15 degree angle)
  - -Size of seats in relation to students age & built and distance between columns of desks 60 cms.
- **Kitchen and Dining :**
  - -Proper illumination & ventilation,
  - -Rat & insect proof,
  - -Washable walls & floors,
  - -Cold & hot water taps,
  - -Refrigerators,
  - -Sanitary refuse baskets,
  - -one door,
  - -Proper control of food handlers.
- **Water, Sewage and refuse disposal :**
  - -Drinking fountains,
  - -one tap/40 students,
  - -one toilette/30 students,
  - -Soap & Paper towels
- **Objectives of medical examination :**
  - -Case finding, specially of unapparent disease ,
  - -Assessment of health status of school children (planning and evaluation of school health services).
  - -Primary examination at school entry (baseline for follow-up of health status),
  - -Health education and guidance of students,
- **Medical Care :**
  - **1. Health Appraisal includes:**
    - -comprehensive medical examination, screening tests,
    - -clinical (curative) service, and
    - -survey studies.

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2. Screening Tests :

- They are simple tests which can be carried out frequently to :
  –To screen for certain pathological conditions or diseases.
  –To screen suspected cases of disease, who need further investigation for final diagnosis.
- Examples of screening tests include :
  –weight and height,
  –visual acuity,
  –acuity of hearing,
  –IQ testing, and
  –dental examination.

3. Clinical Service :

- School health units,
- referrals to specialized clinics,
- referrals to hospitals for diagnosis and treatment of disease.
- Some cases may need specialized diagnosis or/and management.

4. Survey Studies :

- Occasionally required for investigation of a particular disease or health problem, specially when precise data are not available, (e.g. nutritional deficiency and parasitic diseases, and handicapping conditions).

5. Survey Studies :

- Occasionally required for investigation of a particular disease or health problem, specially when precise data are not available, (e.g. nutritional deficiency and parasitic diseases, and handicapping conditions).
- Objective of survey study :
  –to find out ecological data
  (host - agent - environment)
  –or health problem under study,
  (which are needed for planning and evaluation of prevention and control programs).

6. Handicapping conditions :

- May be congenital or acquired.
- Children with minor or mild cases of disability can attend regular schools,

severe forms (e.g. the deaf, blind, or mentally retarded) can attend special institutes.

some forms of handicapping conditions in regular school :

-Heart disease :
-Rheumatic valvular disease is the most important.
-Musculoskeletal deformities :
-Old paralytic poliomyelitis, and healed rickets.
-Impaired vision :
-mainly due to errors of refraction, and may be corneal opacity.
-Impaired hearing:
-neglected chronic otitis media, ear injury by foreign body, and occasionally ototoxic drugs and complicated meningitis.

School Health Record :

-Each school child should have his own health record, for registration of events and activities related to health.

- Contents of Record :
-Personal and social data.
-Results of health appraisal.
-Immunizations /date/age.
-Any morbidity, and management record.

- Value of Health Record :
-For reference whenever registered health data are needed;
e.g. past medical history to assist diagnosis of existing disease.
-Allows follow-up of chronic disease.
-Collecting statistical data and indices of school children, (for future planning and evaluation of health services).

Detailed Structure of School Health Program :

School health program can be defined as a procedure of maintenance and improvement in the quality of health for pupils and school personnel such that the entire school plant can think of healthful living. School health program comprises of-
(a) school health services.
(b) healthful living.
(c) health education or Health instruction.

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School health program is a part of community health program. Community health program can be classified into three categories :

(a) School health program.
(b) Official health agency program.
(c) Home related health program.

■ **School Health Service :**

Significance of school health service are as follows :

(a) for realization of educational aims.
(b) in order to minimize the hazards in attendance.
(c) to adopt student's needs and capacities according to the requirements of the health service programme.

● **Phases of school health service :**

(i) Health Appraisal :

- health appraisal is defined as determination of complete health status of the pupils as well as school personells.
- It is a cooperative effort put forward by the physician, nurse, counselors, principal together with the help of their respective observation as well as complete medical checkup and medical history.
- This helps the schools to maintain accumulative healthreport from the time a student is being admitted into the school till the time the student leaves the school.

(ii) Health Counselling and Follow Up :

This is defined as a procedure by which the condition and the nature of the health revealed or interpreted by the health appraisal to the parents and the pupil.

This process aims at the following issues :

- to help pupil get motivated about taking responsibility of their health.
- It also interprets the results to the guardians such that they can take up adequate care and preventive measures.
- It also helps the students to take adequate treatment, if at all they are suffering from any disease.

(iii) Emergency Care at School Level :

this phase deals with emergency cases which might crop up due to sudden illness and accidents i.e.

- Taking up first aid procedure immediately.
- Guiding parents about the later treatment procedure.
- Getting pupil to a safe place or to home.
- Informing or notifying pupil's guardian.
- Formulating adequate reports and records of the incident.
- In order to take up emergency care every school must have a separate room called health room or sick room where adequate provisions of medicines and other supplies should be present.

(iv) Control of Communicable Diseases :

Communicable diseases are the one which are air or water borne and hence very easily transmitted. When the pupils are at school, it is the chief responsibility of the school to protect their health as aggregation of all the children together in the classroom enhances the possibility of disease getting transmitted. Hence it is role of the school as well as the teacher to constantly approach parents not to send their wards to school when they are not well. It is also the duty of the teacher to motivate the students to take up vaccination programs as well as motivate parents for giving vaccination during early infancy.

(v) Identification and Care for Physically Handicapped Children :

Any deformity in the health status (nervous instability, neuro-muscular deformity or any sort of communicable diseases) falls under the physically handicapped group once identified, adequate adjustment program needs to be incorporated into the health curriculum by the teacher or by the school.

(vi) Health Condition of School Personnel :

It is advised that the teacher should act as a role model showing adequate vitality, energy and an example of good health with reduced illness. This helps to inculcate the habits of good, healthy attitude and health practices within the children.

■ **Healthful School Living :**

It can be defined as a provision of safe and healthful environment at school and healthful school day together with establishment of interpersonal relationship that are favorable to physical, social and emotional health.

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- Factors Affecting Healthful School Living :

About million of students stay about 5 hours per day approximately within the school premises for 180 days annually and thus, school has a very important role to determine the health of the pupils.

- Administrative Factors :

(a) duration or length of the school day and time of the year.
(b) conveyance to and from the school.
(c) grouping amongst the pupils.
(d) the way by which pupil's behavior is handled.
(e) representation of academic and non-academic progress of the pupils.
(f) personal relationship between pupil and teachers.

- **General Factors Affecting Healthful School Living :**

(a) Emotional Aspects :

A teacher has a great learning on the setting up of the emotional tone in the class. A well adjusted teacher can convey the message of cheerfulness, enthusiasm, friendliness and fairness towards the pupils and motivate them to follow the same.

(b) Adequate Physical Facilities :

The time duration when the pupils are there in the school, it is the responsibility of the school to provide them with safe and conducive physical environment in classrooms, science laboratories as well as in the play ground. Due care should also be taken regarding maintenance of cleanliness of the entire school plant, dustbins should be placed in proper corner of the room. The school building should be daily cleaned and the equipment and should be always kept in order.

(c) Sanitary Arrangements :

A committee can be built up comprising of representative members from middle school and high school classes who will look into the cleanliness of the toilets, classrooms and playground. Clean and hygienic environment helps to promote healthful school living.

(d) Health Instructions :

The students should be made aware of the present status and their health and how they can take up preventive measures in order to avoid occurrences of any illness or accidents. The health instructions can be provided in the form of integrated classes in case of school section while in case of middle and high school health classes can be assigned separately or it can be merged with the study of Biology, Physiology and Nutrition.

Health Education :

Health education is defined as a process of continuous health instruction and adequate preventive measures together with execution of instruction. Health instruction usually followed up throughout all the educational stages in a formal educational system. It has been merged with the study of Biology, Physiology and Nutrition.

- Factors that affect health education are as follows :

(a) Environment :

A child from his infancy is influenced by home environment, parents, siblings and immediate relatives such that they form a notion about health even before they learn to speak. In the later stages of their lives school and teachers act as immediate physical surroundings for the child. So, highest priority should be given for improving the standards of the school environment.

(b) Spoken Words/Lectures :

The lecture or spoken words serves as an important medium for providing factual information that helps to reorient the listener's mind in a positive way.

(c) Teaching Aids Used for Imparting Health Education :

(i) Printed Matter–leaflets, journals, books on health related issues should be given to the students to make them aware about the present health conditions and hence motivate them to take care of their health.

(ii) Mechanical Aids–Models can be prepared and can be demonstrated through seminars or exhibitions that help to explain and justify different health related issues. For example inoculation or vaccination against small pox or diphtheria can be demonstrated with the help of model or quiz.

(iii) Films and Filmstrips–This acts as an important medium and appealing medium for transmission of information regarding different health issues as it portrays both speed and notions.

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It is considered as one of the effective means. Ministry of Health and Human Resource Development have created certain excellent films for HIV transmission and prevention.

(iv) Radio–For rural pupil this media acts as a soul source of information and hence it should be utilized by employing different live broadcast of health related issues with Physicians and Psychologists.

■ **Role of a Teacher in School Health Education Programme :**

- Screening suspected cases through supervision of the students in the classrooms.
- Participation in health education program.
- Supporting mental health promotion.
- Imparts instruction about health and hygiene.
- Inspects the cleanliness of individual children by morning supervision prior or post assembly.
- The teacher helps for arranging regular vaccination and inoculation camp in order to give preventive measures to students from any of the serious diseases.
- The teacher is also responsible for detecting the communicable diseases (cough and cold, conjunctiva, viral fevers etc.) and the students identified with any of these diseases should be excluded from day's session, such that no other child catches that particular diseases.
- The teacher should also give training in first aid.
- Arrangement of mid-day meal especially for the mal-nourished children.
- The teacher is also responsible for the development of good personal habits and healthy relationship.
- Physical education teacher along with other teacher should actively participate for giving training in physical activities.
- The teacher should set up a role model with his/her own health habits, attitudes and practice.

■ **First aid & emergency care :**

- Teachers should be trained during teacher's training programme or "in service" training programme.
- First aid box should be made available.

■ **Mental health :**

- The teachers should help children in attaining a positive mental health among the learners.
- Suitably modify learning strategies, incentive-rest, relaxation between periods of intense work
- Instituting vocational counsellors and psychologists in schools to guide children into their careers.

■ **Role of School Health Physician :**

- Health appraisal, including medical examination, and medical care of the sick.
- First aid and emergency service.
- Participation in prevention and control of communicable diseases.
- General inspection of the school environment.
- Participation in health education program.
- Supervising preparation of statistical indices and health reports.

■ **Role of School in Health Education Programme :**

- The health is considered to be the prime goal of all education because a child can't achieve any other goal without having a good health. Hence , it becomes a prime responsibility of the school to take care of its pupils' health.
- The school is the best place for the children to have correct and accurate information about health rather than having incorrect information from peer group.
- As the scientific knowledge of health is ever increasing , therefore, school is the best place to make students updated about different health related habits and attitude.
- A school has a wide cross section of the society for eleven/twelve years where children irrespective of their caste and creed can be effectively taught about health related habits in different classroom situation.
- The parents can also be informed about healthful living by their children who are getting information from qualified teachers.
- The more a school does for a child in order to train him or her about healthy lifestyle , it is more better for official health agencies to further work on it and make that person a healthy individual.

Therefore , it can be said that health education programs form a major part of school education program and hence due importance should be given in order to achieve health for all.

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4.8. Conducting Talent Search Examination :

Identification and recognition of the students with academic talent and high intellect is one of the most significant issue of the teaching learning process. Thus the school authority as well as the teachers along with the members of the school management and governing body sometimes arrange different types of talent search examinations for providing scholarships to the meritorious students which further helps in the development of the teching-learning and evaluation process of the respective school.

In this great venture active parental support is very much essential for the successful occurrence of this type of examination schemes. Through this interventions the good students can be motivated towards self study and auto learning in different subjects according to their interest beyond the syllabus of a particular class which ultimately leads to the manifestation of the hidden potentialities of the students

There are a few organizations that work in this education sector of West Bengal as their Head Offices are situated in Kolkata to conduct various talent search examinations for the nurturance of the high achievers i.e. the students with high intellect by arranging scholarships for the development of their further as well as higher education. The name of some organizations are as follows :

(a) All India Science Teacher Association [AISTA]–conducts talent search examination in Science, Social Science and literature for the students of class-3 to class-12 of West Bengal including all boards and the successful candidates are being awarded with prizes and scholarships.

(b) Science Communicators' Forum [SCF]–arranges Children's Science Congress at State Level.

(c) Jagadish Bose National Science Talent Search Scheme (J.B. NSTS)

(d) National Counci of Science and Technology Communication (NCSTC)

(e) NCERT

(f) NCSTC-organizes Children's Science Congress at National Level.

(g) Tata Institute of Fundamental Research (TIFR), Mumbai.–organizes Mathematics Olympiad and Science (Physics) Olympiad at National Level in which the students of class 10 & class 11 can participate.

Out of all the above mentioned organizations the role of AISTA, SCF, NTS have been appreciated a lot in this regard.

■ National Talent Search Examination :

National Talent Search Examination (NTSE) is a national-level scholarship program in the Indian Union to identify and recognize students with high intellect and academic talent. It is one of the most prestigious exams in India. Close to 300,000 students (a largely self selective group of students) appear in this scholarship exam every year, and 2,000 scholarships are awarded, out of which 775 are not reserved. The Union Minister of Human Resource Development Smt. Smriti Irani announced that the number of scholarships under National Talent Search Scheme will be doubled to 2000 from existing 1000 while speaking on the occasion of 55th Foundation Day celebration of the NCERT in New Delhi on 1st September 2015.

The scheme is open to students of Indian nationality. Students studying in Class X are eligible to appear for the selection process. As it is organized by an official body (NCERT), it is widely regarded by the Government of India as the most prestigious and the most difficult examination at secondary level in the country.

■ History/Background of NTSE :

- The states and the union territories in the country are having 350 scholarships for the students of Class XI. Those scholarships were awarded on the basis of a written examination, a project report and an interview. The written examination comprised the Science Aptitude Test and an essay on a given scientific theme. The candidates were to submit the project report at the time of the written examination. A stipulated number of candidates selected on the basis of those three components were then subjected to personal interviews. The performance of the candidates on those four components was eventually employed for the purpose of awarding scholarships. Those scholarships were awarded for pursuing education only in basic sciences up to doctoral level.
- With the introduction of 10+2 and +3 pattern of education, the NSTS scheme also underwent a change in 1976. It was no longer confined to only basic sciences but was extended to Social Sciences, engineering and medicine as well. It was renamed as National Talent Search Scheme (NTSE). Since the education system in India was

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undergoing a change, the scheme was made open to the students of Classes X, XI and XII and separate examinations were conducted for each class.

- The number of scholarships was raised to 500. The selection procedure was also changed. Now the candidates were subjected to two objective type written tests, namely the Mental Ability Test (MAT) and the Scholastic Aptitude Test (SAT). A stipulated number of candidates qualifying these two tests were subjected to a face-to-face interview. The final awards were made on the basis of composite scores obtained in the MAT, the SAT and the interview.
- The number of scholarships was again enhanced from 500 to 550 in 1981. Those 50 scholarships were exclusively meant for Scheduled Castes (SC) and Scheduled Tribes (ST) candidates. The number of scholarships was once again escalated to 750 in 1983 with a provision of 70 scholarships especially for SC and ST candidates. That arrangement continued until the scheme was decentralized in 1985. Yet another change in the scheme was effected from 2000 wherein the number of scholarships was raised from 750 to 1000 with the provision of reservation for SC and ST candidates based on the national norms of 15% and 7.5% respectively.
- The scheme was partially decentralized in 1985 and was confined to only class X. Under the new arrangement, the selection of candidates for the awards became a two-tier process. The states and the union territories have been entrusted with the responsibility of conducting the first tier screening examination known as State Level Talent Search Examination. Each state and union territory selects and recommended a stipulated number (state quota) of candidates for the national level examination to be conducted for about 5000 candidates by the NCERT.
- The states got complete autonomy to design and conduct their written examinations. However, they were advised to follow the national pattern which comprised MAT and SAT. The MAT, which consisted of 100 multiple choice type questions, was to be attempted by all the candidates. The SAT consisted of 25 multiple choice type questions each on eight subject areas namely Mathematics, Physics, Chemistry, Biology, History, Geography, Civics and Economics. The candidates could choose any four out of these eight subjects and had to answer a total of 100 questions in the SAT.

- A stipulated number of candidates who qualified at the national level examination were called for face-to-face interviews. The award of scholarships was finally determined on the basis of the candidates' scores obtained in all three components namely the MAT, the SAT and the Interview. A crucial modification in the scheme was again made in the year 1995 when the provision of choice in the SAT was abolished and all the subjects were made compulsory. These subjects were Science, Social Science and Mathematics with 40, 40 and 20 questions respectively.
- The scholarships under the present scheme are awarded to the candidates for pursuing courses in sciences and social sciences up to doctoral level and in professional courses like medicine and engineering up to second-degree level subject to the fulfillment of the conditions provided. Also, an important decision was taken in the year 2008, when NTSE is open only to the students of class VIII as against class X. In 2012, NTSE was reopened for class X students.

■ **Present Scenario of NTSE Scheme :**

- **National Level Examination :**

Students who qualify first stage are eligible to appear for the national level examination (about top 4000+ students from the entire country). The national level examination has two parts for nominating the required number of candidates. Students studying overseas but are Indian citizens can participate in NTSE second stage directly.

➢ **Part-I :** Mental Ability Test (MAT) + Language (English/Local Language)

➢ **Part-II :** Scholastic Aptitude Test (SAT) (Science, Social Science, Mathematics).

(there will be negative marking in the second part of the examination)

➢ **Declaration of results :**

The results of the first stage of the exam are declared between February to April, varying from state to state. The results of the second stage are declared between July to September. Students are divided into 4 quotas: General, SC, ST, Disabled. Around 1500 students are selected from General quota, 300 from SC, 160 from ST and around 40 from Disabled quota. The finals results of the second stage are displayed on the website www.ncert.nic.in by any time before May next year.they can publish final key/frozen key/revised key/etc., as and when required.

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■ **Syllabus :**

Since 2013 NTSE is being arranged only for class 10.

● **First level exam for class X**

SAT: The syllabus for Mathematics, Science and Social Science is broadly based on the prescribed respective State Board Syllabus from Std 9th to 10th class. Few states like Kerala refer both state board and NCERT books while few states like Maharashtra, Andhra Pradesh ask questions primarily from their state board books. MAT: General questions Language: state board books covers a lot. More focus is on vocabulary, grammar and basic understanding. Language in first stage is of qualifying nature only.

● **Second level exam for class X**

NCERT has announced new pattern for stage 2 exam, where each correctly answered question awards the student +1, while an incorrect answer deducts 1/3 marks.

Mental Ability test: 50 questions 50 marks, Language test : 50 questions 50 marks, Scholastic Aptitude test : 100 questions 100 marks (40 q from Science, 20 q from maths, 40 q from SST),

SAT: The mathematics and science questions will be asked from the chapters in the syllabus of class 9 and 10. The social science questions will also be asked from class 9 and 10. Language test is only for qualification, it is not counted in merit list.

■ Some Important Issues Related with the NTSE are As Follows:

- Scholarship : Scholarships are provided to 1000 students from each of the following branches such as Science, Social Science and Language.
- Reservation : SC-15%, ST- 7.5% and Others-3%.
- Selection : at first the State Level Examination has to be qualified to sit in the National Level Examination at the end.
- Eligibility : Any student from class 10 from the State Govt. Affiliated as well as accredited schools of any states of India.
- Last Date of Application : To be notified by NCERT at National Level and to be notified by Education Directorate at State Level.
- All the applications have to be submitted through respective school (Head Master/Head Mistress).

- Examination Fees : to be collected by the entrusted authority of examination of the state ; not by NCERT.
- The students (with Indian Citizenship) who stay in abroad can take participate directly in the second part of the NTSE.

■ **Rewards :**

- The students who qualify second stage are eligible for scholarship. The amount of scholarship has been enhanced to Rs.1250 per month for class XI and XII and Rs.2000 per month for students studying under graduate and above.
- The scholarship is provided immediately after the result. In case students have not received the letter from NCERT after 5 weeks of the declaration of the result, they should contact NCERT for updates. The scholarship is expected to increase up to 4000-5000 in next few years.It was increased to Rs.1250 and Rs.2000 as per the orders in July 2014.
- There are no restrictions like parental income, government school, domicile etc. In case the student moves abroad for studies, the scholarship will no longer be provided.

❂ 4.9 Providing Scholarship :

Schools usually provide the following scholarships :

- The school provides various prizes and scholarships to reinforce and encourage their students in their further studies.
- Receiving Scholarship is an acknowledgement of student's potentialities and achievements on the basis of their result in the school as well as in board examinations.
- To foster this endaevour many school teachers, parents and other academicians and people from the different facets of our society contribute money to arrange and provide scholarships to the meritorious, needy and high achievers.
- Generally the scholarship is being provided on the basis of the result of Annual examination but now a days on the basis of students' achievement in unit tests and achievement in co-curricular activities are also being nurtured through providing scholarships.
- Students can be provided special scholarships for being disciplined and punctual and regular in school to encourage healthy competetion amongst the learners to foster their all round development.

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- The following scholarships are generally provided to the students in schools :
  (a) for obtaining highest marks in Mother language in every class/ grade.
  (b) for obtaining highest marks in English in every class/grade.
  (c) for obtaining highest marks in Mathematics in every class/grade.
  (d) for obtaining highest marks in Science in every class/grade.
  (e) for obtaining highest marks in Geography in every class/grade.
  (f) for obtaining highest marks in History in every class/grade.
  (g) Scholarships are provided for being well disciplined and punctual.
  (h) Scholarships are provided for being an all rounder.
- At present Govt. has arranged some special scholarships that are as follows :
  (a) For the students of class VIII to class XII, who belong to the age group of 13-18 years Rs. 500-750 would be provided as a scholarship.
  Rs. 25,000 is being given to the financially backward students for their study once in a lifetime.
  (b) Prematric scholarship is organized for the students (upto class x).
  (c) Post matric scholarship is organized for the students who had passed class-X Board examination.
  (d) There are some special scholarships that have been arranged for the study of SC, ST & OBC students.
  (e) For the minority students of class IX to class XII a few special scholarships are provided.
  (f) Scholarships can be found on special reason from the fund of Chief Minister to foster the educational development of the learners.
  (g) Central Govt. also gives scholarships through National Talent Search Examination.
- There are several NGOs that provide scholarships to the economically backward students for their study, but to receive these facilities the students have to apply through the Head of the Institution properly and after verifying all the informations and provided by the students the NGO authorities usually sanction the scholarships.

Short Questions & Answers

1. Write two objectives of school health programme.

Ans. Following are the two objectives of school health programme :
(i) Provide an effective guide for school administrators/ educators to assist them in developing health promotion of school children.
(ii) Ensure that the school health programs are based on formally assessed and evidence based practice.

2. What are the importance of Mid-day-meal?

Ans. The following are the major importances of Mid-day-meal :
(i) Promoting school participation
(ii) Preventing classroom hunger
(iii) Facilitating the healthy growth of children
(iv) Intrinsic educational value
(v) Fostering social equality
(vi) Enhancing gender equity
(vii) Psychological Benefits

3. How do you establish a 'Book bank' for the learners?

Ans. The following steps to be undertaken for the establishment of the book bank-
(1) The received free specimen copies of the teachers can be put into the book bank of schools, class and subjectwise.
(2) If the text books and reference books can be bought with the help of the school funds for buying books, those books can also be kept in the book bank for the convenience of the students.
(3) Book bank can be built up by the donation and contribution of the economically sound as well as liberal people of society in terms of both money and books.
(4) The students of different classess, especially those who had passed in their board exams can be encouraged to donate their old books to help the other students and to enrich the book bank as well.
(5) The photocopies (xeroxed copies) of the answer scripts of

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meritorious students as well as of the rank holders and high achievers can be kept in the book bank.

4. What are the objectives of PTA?

Ans. The objectives of Parent Teacher Association are as follows :

(i) **To bring home and the school in close contact :** These days teacher and parents do not come in contact with each other. Parents also do not know the teacher. Both should meet each other on some occasions.

(ii) **To promote the welfare of the children in home and community:** Parents are busy in their professions. They do not find time to visit the school and take interest in child's progress. Once a year, the school invites parents, which helps them to know about the child's performance and the problems of the child. Parents come to know the behaviour of the child. Parents and teacher may cooperate with each other intelligently in the training of a child.

Somehow boslj complain about each other. In some cases, parents blame teachers and teachers blame parents for not taking interest. If both of them come together, know each other, understand each other, it helps in growth and development of child's progress.

Parent Teacher Association also b~lps school to inform the community of what it is doing and the problems it is facing. The involvement of parents and the community might help a school to raise resources for its various activities.

5. What do you mean by school health programme?

Ans. School Health program is a program for school health service under National Rural Health Mission, which has been necessitated and launched in fulfilling the vision of NRHM to provide effective health care to population throughout the country It also focuses on effective integration of health concerns through decentralized management at district with determinant of health like sanitation, hygiene, nutrition, safe drinking water, gender and social concern. The School Health Programme intends to cover 12,88,750 Government and private aided schools covering around 22 Crore students all over India. The School health programme is the only public sector programme specifically focused on school age children. Its main focus is to address the health needs of children, both physical and mental, and in addition, it provides for nutrition interventions, yoga facilities and counseling.

It responds to an increased need, increases the efficacy of other investments in child development, ensures good current and future health, better educational outcomes and improves social equity and all the services are provided for in a cost effective manner. The programme at the national level has been developed to provide uniformity/guidance to States who are already implementing or plan to implement their own versions of programme and to give guidance in proposing a coherent strategy for school health programme in next year's NRHM PIP to those States who have not yet started their programme.

6. What is the importance of school health education?

Ans. Following are the importance of school health programe :

(i) Creation of a suitable environment indispensable for healthy development of the children.

(ii) To have a clear picture of the health conditions of students and employees through various types of medical inspection and evaluation.

(iii) The early discovery of deviations from normal, and the application of prompt corrections.

(iv) Training of scholars in healthy habits through efficient programs of health education.

(v) Care for the handicapped, maladjusted or crippled.

(vi) The progress of a nation depends upon its youth, where the physical as well as mental status of the youth is taken into consideration. It is said that if men and women of a country are physically healthy, intellectually creative and morally upright then that nation is sure to have a steady progress because a healthy mind is always living in a healthy body. Thus, school health program is very much essential.

(vii) Development of healthy attitudes and healthy behaviors of the students regarding health and hygiene that would be spread within the family as well as within the society also.

(viii) School health education provides proper knowledge to develop awareness of cleanliness for having a good health.

(ix) Health education imparts sex education to the adolescents for the sublimation of their sexual needs according to their gradual development.

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7. What are the scolarships that are generally provided by the schools?

Ans. Schools usually provide the following scholarships :

- The school provides various prizes and scholarships to reinforce and encourage their students in their further studies.
- Receiving Scholarship is an acknowledgement of student's potentialities and achievements on the basis of their result in the school as well as in board examinations.
- To foster this endaevour many school teachers, parents and other academicians and people from the different facets of our society contribute money to arrange and provide scholarships to the meritorious, needy and high achievers.
- Generally the scholarship is being provided on the basis of the result of Annual examination but now a days on the basis of students' achievement in unit tests and achievement in co-curricular activities are also being nurtured through providing scholarships.
- Students can be provided special scholarships for being disciplined and punctual and regular in school to encourage healthy competetion amongst the learners to foster their all round development.

- The following scholarships are generally provided to the students in schools :
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  (b) for obtaining highest marks in English in every class/grade
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  (f) for obtaining highest marks in History in every class/grade
  (g) Scholarships are provided for being well disciplined and punctual.
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- At present Govt. has arranged some special scholarships that are as follows :
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  Rs. 25,000 is being given to the financially backward students for their study once in a lifetime.

(b) Prematric scholarship is organized for the students (upto class x).
(c) Post matric scholarship is organized for the students who had passed class-X Board examination.
(d) There are some special scholarships that have been arranged for the study of SC, ST & OBC students.
(e) For the minority students of class IX to class XII a few special scholarships are provided.
(f) Scholarships can be found on special reason from the fund of Chief Minister to foster the educational development of the learners.
(g) Central Govt. also gives scholarships through National Talent Search Examination.

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Probable Questions

☛ Objective answer type questions :

Marks : 2

1. What are the differences between mid-day-meal and lunch?
2. What type of books are required for book bank for poor students?
3. What is the difference between tutorial and normal class?
4. What is the difference between remedial teaching and classroom teaching?
5. Mention four staff welfare services.
6. Write two importance of parent-teacher association.
7. Write two objectives of school health programme.
8. Mention four health-issues of a health programme.
9. What is talent?
10. Give four characteristics of a talented students.
11. Give a list of different agencies conducting talent search examinations in WB and India.

☛ Short answer type questions :

Marks : 5

1. Find the reasons for launching the mid-day-meal programme.
2. Find the relation among mid-day-meal, nutrition and achievement of the students.
3. Find the connection between SSA and mid-day-meal.
4. What are the advantages/objectives of Parent-Teacher Association?
5. Find the different ways of searching talents among school students?

☛ Essay answer type questions :

Marks : 10

1. What are the objectives of health programme in a school? Mention different issues of health programme and show how you would organize a programme on any one of them.
2. Estimate the effect of mid-day-meal on enrolment, retention, nutrition and achievement of the students.
3. Give the details of conducting talent search examination by any state or national organization in India.
4. Describe the different forms of staff welfare services. Find the effect of Staff Welfare Service on the academic performance of a school.

Unit 5

School Community Relationship

☐ Structure / Content Outline :

5.0 Introduction

5.1 Decision Making–Concept and Definition

- 5.1.1 Definition of Decision Making
- 5.1.2 Purpose of Decision Making
- 5.1.3 Characteristics of Decision Making
- 5.1.4 Decision Making in Educational Institution
- 5.1.5 Participants in Decision Making
- 5.1.6 Stake holders and Involvement in Decision Making

5.2 Community Involvement in Decision Making

5.3 Community Contribution to School

5.4 Meeting with Community Members

5.5 School Responses to Parents

❂ 5.0 Introduction :

School is the miniature of the society and the children of our socity are the learners of these schools. Thus it can be assumed that there lies a strong relationship between the school and the community or society to which it belongs to.

This school community relationship has many facts; such as :

(i) Community involvement in decision making
(ii) Community contribution to school.
(iii) Meeting with community members.
(iv) School response to Parents.

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5.1 Decision Making-Concept and Definition :

5.1.1 Decision Making :

Decision making is the process of recognizing a problem or opportunuty and finding a solution to it. Decision making is to choose between available options/alternatives.

5.1.2 Purpose of Decision Making :

• Decision making is to achieve desired objectivities and avoid negative unintended consequences. In reality, through, there are very few decisions which can provide all the desired objectives and no unintended consequences. Still the power of decision making gives us a feeling of being in control over what is hapening around us and what we are supposed or required to undertake. The impact of decisions made will vary depending on the context in which it is being made.

• We all take decisions in one or the other time in our lives. Decision making is an inseparable part of any organization and educational organizations are no exception. Be it a creche, anganwadi centre in a small hamlet, a primary school, a college, a polytechnic, university, a teacher training institute, a technical institute or any other educational institution, decision making takes place at all levels and at all times.

5.1.3 Characteristics of Decision-Making :

The major characteristics of decision making are given below :

(a) Decision making is a continuous human process involving both individuals and social contexts.

(b) When there are alternative solutions, then the need for decision making emerges.

(c) The main aim of decision making is to achieve some purpose.

(d) Decision making is a logical process, emphasized on sound reasoning and judgement.

(e) The impact and scope of decisions made by a manager depend on the situation.

(f) It is goal oriented/directed towards a solution.

(g) Decisions may be accepted in a decision making process either by a group of people or a single person in an organization.

5.1.4 Decision Making in Educational Institutions :

• Institutions of learning at different levels are created for educating people. Educational institutions also have the responsibility of including desirable values among its clients and therefore expectations from these institutions are immense and diversified. Main function of education management is to make educational institution more effective and efficient. Effectiveness of any institution is conceived in terms of achievement of goals, development of its people, expansion/growth of institution, self renewal and impact on community.

• Managing any educational organizations, whether it in an Early Childhood Care an Education (ECCE) centre, primary/middle/secondary school or institutions of higher learning, is a very challenging task since it influences many lives in the present as well as in the future in different walks of life. The process of decision making in this arena requires more rigorous caution. The course of action planned to achieve the desired goal has paramount significance, where as **'Planning is a series of decision made to create a road map for future. As a result a good plan requires good decision making** (Seye djavadein, 2001).'

5.1.5 Participants in Decision Making :

• The size of decision making groups is an important element. It should be sufficiently small to be able to give chance to everyone to be heard. In small groups, say a primary school, all teachers can participate easily in decision making as in larger institutions meeting of the whole staff may be suitable for information exchange only. To overcome this problem of numbers, formal representation of teachers is made who in turn will participate in decision making. We all are familiar with the Parent-Teacher Associations, Teachers Associations, etc. At higher level and in complex situations number of pepole involved in decision making would vary along with variety in expertise of people involved in the process of decision making. Greater the complexity of decisions, bigger the ambit of its impact higher will be the need to include people specialised in alalysing the effect of each alternative management action on objectives in the case. Decisions may also be taken to emphasize some objective more than others.

• In case of strategic decisions, people involved in the decision making group generally include *Analysts* whose basic role is advisory in nature;

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Stakeholder-who are the people with interest in some possible objectives;
Process managers–Who are specialist in decision making process. They direct the decision making process and ensure that it is followed correctly. Their input during scoping and other steps is helpful and their understanding of the nuances of discussion during decision making process will help the management in arriving at a decision.

• In large scale decisions, educational management is concerned with the operational practices of the educational organization involved in imparting education. The goals of educations are central to the functioning of these organizations.

❑ 5.1.6 Stakeholders and Involvement in Decision Making :

When the decisions are made, there are more possibilities liities of their being effective, if all the stakeholders are involved. Traditionally decisions are made at the top and then they are passed on to the subordinates who are supposed to implement them. This type of decision making and action taking has its own limitations. When decisions made by higher authorities are given to subordinates for execution, they are not likely to implement them with all the seriousness required. On the other hand, if subordinates are made participants in the decision -making process, they are likely to see decisions as their own and do all what is within their capacity to see them through. In domains such as education, therefore, it is necessary to involve all the stakeholders in the decision-making process. To be successful, cooperation from everyone involved is a welcome note particularly in complex domains such as education. 'Success in education in the literal sense is possible only when all the stakeholders namely students, school, teachers and community are involved in the decision-making process.

- **Involvement of the Students :**

✦ Students are the direct beneficiaries of education. It is for them that the schools are built, infrastructure is set up, teachers are appointed and curriculum is developed and transacted. It is for them that teachers present various learning experiences both inside and outside the classroom so that they might construct their own knowledge. However, it may be noted that students especially those at the primary and the secondary level, at times may not be in a position to decide as to what they should learn, how it should be learned and what the

outcome of their learning ought to be. Students at these levels by their inadequate exposure, experience and knowledge of the world need supervision or guidance. This, however, does not mean that no decisions should be made with respect to their education. We are left with no choice but making decisions on their behalf as they need to be educated despite their inability to make appropriate decisions at times.

✦ Several scholars have made attempts to study the development of children. Piaget, for instance, has devoted his entire life in studying their development. He has come out with stages in the intellectual development of children, namely (i) the sensory motor stage, (ii) the intuitive stage, (iii) the concrete operational stage and (iv) the formal operational stage. He demarcated not only the various stages but also explained what children are capable of understanding at each stage and what they can perform. Similarly, scholars have laid down their findings and observations with respect to how children learn, how they forget, what factors facilitate their learning and what hinder it, etc. Similarly, they have made note of what children are generally interested in learning. We have, thus a rich fund of knowledge and information with regard to their learning and education. On the basis of these, we can decide what they should be taught, how they should be taught and what ought to be the outcome of their learning. As a result of their education at the primary and the secondary levels, children pick up a general awareness about the world in general and the environment they live in.

✦ Apart from making personal decisions pertaining to the outcome of their education as well as the content and method of education, learners also have to play the role of participants incollectiye decision making. There are issues in education where all the stakeholders should join in making decisions. For instance, when it comes to setting up infrastructure, collecting funds, making optimum use of the resources available etc, all the stakeholders can join hands in making collective decisions. Students should have their due share in making decision in all these areas.

- **Involvement of Institutions :**

An institution has several decisions to make with respect to the functioning of the organization. It has to decide in fairly specific terms what the school / college intends to achieve. Institution should take into account the needs of all the stakeholders namely the students, the parents,

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the staff, the community and the nation. In the case of students, the institution has to decide how it can promote students who are creative, independent and self -assertive. How can it equip the mind of the students with correct values and attitudes required for peaceful co-existence and harmony? How can the students be made both willing and competent to serve the society? How can a constructive attitude be inculcated in them for civic responsibility? How can an environment be created that encourages development of leadership qualities and independent skills within a culture of tolerance ? Thus, there are decisions that school has to make with respect to the education of the students.

- **Involvement of Teachers :**

✦ In general, an educational organization say a school plays significant role in setting the immediate conditions within which teachers make decision. What type of learning experiences should be provided to the learners to construct their knowledge and skills? Is developing a positive self concept more important than mastery of content matter? How much and what kind of subject matter be emphasized? There is no end to the decisions that teachers are called upon to make in their day-to-day functioning as teachers. Although other stakeholders may be in the decision making process, the ones who are mostly responsible for the implementation are the teachers. This is so because they are the ones who are trained for this purpose. Even when decisions regarding the outcome of education are made, teachers' role is most important. They begin by studying their society, its present status with respect to various aspects of its culture. They study the pace with which it accepts changes and gets itself modernized. Looking at the rate at which the society progresses, they will decide what sort of life the society will have in five, ten or fifteen years' time and what would be the characteristics of the people then. In general what teachers do is to examine the society as it is and then consider what it ought to be. Then on the basis of the strongest evidence of which they are currently aware, they identity those characteristics that currently have to be preserved, modified or eliminated. They may find that there are some characteristics that the society ought to have. They also examine from time to time the decision they made about the outcome of education by reassessing their decision in the light of additional evidence from reading, discussion and continued study.

✦ Hand in hand with others, teachers have to decide not only the outcome of education, but also the content of education as well as method

of education. The outcome of education will generally point out what the content of education should be. It will show what knowledge, skills and dispositions learners need to build up for realizing the specified educational outcome. A skill has to do with the ability to do something. If someone has a skill s/he should be able to demonstrate it. Just like knowledge and skills, building up disposition is another important aspect of education. A disposition is a tendency to do something. Dispositions may generally be classified into three major categories, namely (i) dispositions of thought, (ii) disposition of behaviour and (iii) dispositions of emotional attachment. Like knowledge and skills, dispositions are something that can be improved.

✦ Apart from making decisions pertaining to outcome and content of education, teachers have to make decisions about method of education, the ways in which any content could be taught. While making decisions regarding method of education, teachers must have some good reasons for believing that the same is an effective one. The effectiveness of methodology used depends upon the degree to which it is capable of achieving the intended outcome. Determining effectiveness of a certain strategy requires a demonstration of the outcome it is capable of producing. If a number of students, for example, is taught spelling through phonetics and it ensures good spellers. This method is known as the Method of Agreement and it is based on the identification of a particular outcome that has occurred in several instances.

✦ Whatever the decision teachers take with respect to the content of education may be subjected to review regularly. This is true not only for the new decisions they make but also old ones which may still influence effectiveness. In addition to focusing on decisions they personally make, teachers also need to engage in rational dialogue among themselves and with others concerning the broad decisions which tend to limit the range of possibilities open to them. There are quite a number of alternatives concerning the methodology of education. When decisions are taken with respect to a particular method, it does not necessarily imply that it is the best decision made. And even if it was good when the decision was made, changes in the society may have now made it obsolete. What is important is that we should not let our past decisions unreasonably restrict us in our examination of the alternatives concerning the present and the future.

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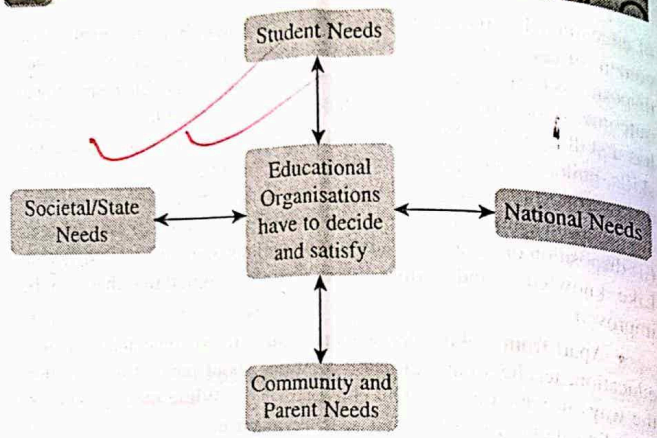

Fig : Needs and Decision -making in Educational Organisations

- **Involvement of Community :**

✦ Educational institutions are no islands in themselves. They exist in an established social system. They cannot exist apart from society. Consequently their personnel must work with people, agencies and organizations in the community so that the institution is sustained. The students for whom educational institutions exist are the community's primary interest and responsibility. They have a moral right and obligation to understand what the institution or school is doing for their children. The community's veiy survival is dependent upon what happens to its children. These institutions exist to foster the development of children. When education personnel and community agencies work in collaboration, chances of development of students are much brighter. Parents and the community need to understand the changing world and how schools are working for providing students with the skills needed for success in 21st century. Progressive schools co-operatively plan their educational programmes with parents and the community whether at the school site or as support to their children at home. Parents know their children better than anyone else. Children spend more time at home than in school. Parents get more to be with their children, watch and interact with them. This gives them ample opportunity for knowing their aptitudes, talents,

dispositions, their dreams and even their fears. Knowing what they are and what they are capable of, parents can provide children with necessary scope for their development. Parents may interact with teachers so that they know more details about children. This would enable teachers to provide children with appropriate learning experiences that suit them best. This would engender self-esteem, confidence and love for learning, which, in turn, can lead children to success.

✦ In the community we find several agencies and forces such as the family, recreational activities, mass media of communication, religious centers, etc. which act to develop the child. The school is simply just one of many educative influences in the child's life. Effective education of the child is thus a cooperative endeavour in which the school plays a selective role. This role should be enacted in cooperation with other agencies, which influence the child's education. Unless this cooperative atmosphere prevails, the influences of the various agencies may be at variance and even counteract one another. If all the stakeholders join hands in providing quality education, schools can improve society. They will also help children understand, maintain and perpetuate culture. The community would then realize that changes brought about by schools not only affect children but also the community at large.

✦ Community is very rich in educative resources that can vitalize and enrich the instructional processes in the schools. Several informal agencies can provide wide range of contexts for le;irning to take place. There are several areas in the community that can serve as spots for trips. Apart from these, the community has several educative agencies like museums, zoos, arts galleries, community centers, village panchayats, others self-government bodies and cooperative organisations which all have tremendous educational potential that often go unacknowledged and unrecognized. Quality education depends on how well decisions are taken to utilize these resources for providing children rich exposure to the environment in which they live.

✦ Educational institutions are complex organizations to manage. We now recognize the difficulties of providing for a wide range of abilities and interests among students and the challenge of providing them with relevant usable skills to succeed in an increasingly complex society. A good number of studies suggest that learning activities embedded in social interaction engender more comprehensive understanding. Structures and meaning that did not exist in isolated or disconnected activity emerges

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via the social system. Hence, making optimum use of community resources for enhancing excellence is an important aspect of education today. Administrators and teachers need to decide and plan adequate strategies for exploiting the community resources for enriching students in every possible way. A committed partnership among parents, industries and the community is a need of the day. Continuous improvement depends on teamwork.

5.2 Community Involvement in Decision Making :

The people of our society want to educate themselves in modern education and therefore it can be said that, due to the needs and aspirations of the local people towards receiving education, basically all the Government as well as Government aided schools are being built up. Sometimes it can also be seen that the community members come forward to contribute both their lands and funds for the establishment of the schools near by their locality for the convenience of their children along with further development of education.

Thus, it can be said that community as well as the members of the community actively take part in different facets regarding the development and formulation of working strategies of a school which are as follows :

(1) Construction and development of infrastructural facilities of the school building.

(2) Formulation and implementation of admission related rules and regulations in the schools and there should be provision to modify the rules according to the student ratio as per their admission in the schools.

(3) Determination of number of students to be enrolled in a school for a particular class in each academic session.

(4) Decision has to be made regarding the requirement of number of rooms/ units to be built up in the school building for classes and other activities.

(5) Hostel facility should be there in every school for accmodating the lerners who usually come from long distance.

(6) Staff quarter, commmunity hall have to be built up.

(7) Initiative should be made to get and even increase the amount of/ value of grant in aid.

(8) Organisation of schoold health education and programmes for the betterment of the student's health. (mental & physical health) and for conducting these programmes efficient doctors have to be appointed.

(9) There should be the facility of electricity in the entire school building and premises.

(10) There should be proper communication system for both the teachers and students who come from long distance, everyday.

(11) Collection of fees.

(12) Care should be taken to foster the over all safety as well as security of the students.

(13) The school should provide necessary books and other articles related to education to the financially bacward students along with SC and ST students also.

(14) Proper steps to be taken regarding the selection and initiation of new elective subjects in Madhyamik as well as in Higher Secondary level of examination.

(15) Care should be taken to develop the infrastructural facilities of the school to create the proper school environment congenial to study i.e. development of library, arranging drinking water facilities, sanitation., play ground, bicycle stand and arrangement of chairs and tables, lights, fans etc.

■ **Apart from the above mentioned decisions, the active involvement of the community members can also be observed in the following aspects :**

- Mid-Day Meal Scheme.
- To resolve the drop out and wastage problem of the school children.

■ It can be seen that the estemed educational institutions (schools) involve efficient people from other fields / profession in the various activities run by the school to ensure the development as well as security of the school along with its student. The people who have been involved in various activities of the schools are as follows :

(a) Reknowned efficient Doctors.

(b) Reknowned efficient Lawyers/Advocates.

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(c) Reknowned efficient Faculties, Teachers as well as Academicians.
(d) Liberal as well as rich personalities of our scociety.
(e) Retired teachers.
(f) Well established Government employee etc.

Thus, it can be said that the involvement, valuable and suggestions mutual ineraction of all the above mentioned people would always be helpful in further upliftment of the schools and its learners as well.

5.3 Community Contribution to School :

- Whenever a school is being built up in a particular area or locality of a village or city, the local people or the community members from different strata usually come forward and extend their helping hands in all the facets so that an over all development in terms of education through establishment of schools can be taken place within their locality as well as in the society in wider sense.
- The sectors or facets where community members' contributions can be observed are mentioned below :

(a) Contribution of lands as well as funds.
(b) Contribution of funds along with required labour or service for the construction and development of school building and its other infrastructural facilities.
(c) Collection and donation of various books in school library.
(d) Establishment and organization of library and laboratary.
(e) To come forward as and when required for helping students in their learning process.
(f) Providing scholarship to the poor needy but meritorious students.
(g) There should be a provision for arranging health care programmes to foster the sound physical as well as mental health of the learners.
(h) Workshops should be organised in view of vocational training of the learners.
(i) Necessary measures should be undertaken to build up hostel building for both the teacher as well as students who generally come from long distance.

(j) There should be frequent discussions amongst the different stake holders for the beneficial upgradation of the schools.
(k) The form of contribution is a bit different in case of rural and urban society. In urbanized areas people mostly contribute in terms of money where as in rural areas provide labour and other ingredients (viz. rice food, bricks, soil) etc. instead of money.
(l) The businessman and industrialists may supply different materials and articles in low cost (sometimes with no cost) for the development of education in school.
(m) The colleges goers as well as the young boys and girls along with their parents may come forward spontaneously, during their leisure to take some special classes on different subjects and issues for the teaching-learning process to prosper.

5.4 Meeting with Community Members :

The following issues have to be discussed in the meeting with different community members for the benefit of both the school and scociety that leads to the all round development of the system of education ultimately :

(a) Diagnosis of various problems related to different dimensions of school and its activities.
(b) To find out the nature and probable solution of the problems that are associated with the school and its activities.
(c) Special care should be taken to upgrade the quality of edudcation to be provided to the students.
(d) Special attention should be paid to arrange and provide basic health care prgrammers and facilities in the schools to solve the problems related to the physical and mental health of the learners.
(e) There should be proper arrangement and facility of drinking water and sanitation for the learners in the school environment.
(f) Renovation and alteration of classrooms.
(g) Reconstruction or repairing of school building as and when required shoud be done.
(h) Extension of school building as per the requirement of new rooms etc.

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(i) Discussion should be done if there is any requirement of new chairs, tables and benches for the learners in the classroom.

(j) Whether the electric facility and equipments like fans, lights etc, provided are being able to suffice the need of the institutions to run properly to be supervised.

(k) The issue of providing scholarships to the meritorious as well as needy student has to be enlightened.

(l) Development of communication system.

(m) Providing hostel facility to the students and the cost of getting this facility has to be discussed.

(n) Involvement of community members in the co-curricular as well as cultural activities organized by the school.

(o) Creation of an environment that is congenial to the study and other academic activities of the school.

(p) Entire safety and security related issues of both the teachers and students should be given utmost care and attention.

(q) The activities of the schools should always be out of the influence of the political views.

(r) The N.S.S/N.C.C or the students from scouts should always come forward to extend their helping hands in any kind of disaster or calamity of the society.

(s) The following issues are also being discussed viz.–implantation, gardening, helping poor and downtrodden children, arranging various activities for joyful learning and edutainment etc.

(t) Eradications of local hindranees, unethical interfarence in regular on going activities of the school through the implementation of lawful regulations etc.

5.5 School Response to parents :

The teacher will try to enlighthen the following issues and facts with the parents of the children :

(1) The performance of a child has to be discussed ; special emphasis should be given on the learning of the child.

(2) The behavioral as well as physical problems of the learners (observed if any) to be told to their parents.

(3) Whether the children have an urge for reading and learning spontaneously has to be discussed.

(4) Special attention to be paid on peer relation, concentation on study, inquisitive nature, creatively, motivation, aesthetics and participation in co-curricular activities of the learners.

(5) Whether the child is doing his homework regularly or not, that has to be brought into the notice of the parents.

(6) If a child is showing deviated behaviour, indiscipline constantly that should be discussed with the parents of that child, so that necesary measures can be undertaken to rectify it.

■ The following suggestions can be given by the teachers to the parents regarding the monitoring of their children at home :

(i) Parents should give equal stress both on academic / curricular and co-curricular activities to foster the all round development of their children.

(ii) The parents should help their children in their learning whole heartedly.

(iii) The children should be allowed to see T.V and to use mobiles and computers at home only for solving their academic purpose under the supervision of their parents.

(iv) The children should be encouraged, to take part in gardening, implantation and cleanliness programmes of our schools, home environment and of society.

(v) The parents can take their children to the place of educational values such as Science-Museum, Zoo, Planeterium and so on.

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Short Questions & Answers

1. What is decision making?

Ans. Decision making is the process of recognizing a problem or opportunuty and finding a solution to it. Decision making is to choose between available options/alternatives.

2. Mention two contributions that are generally made by the community of the school.

Ans. Whenever a school is being built up in a particular area or locality of a village or city, the local people or the community members from different strata usually come forward and extend their helping hands in all the facets so that an over all development in terms of education through establishment of schools can be taken place within their locality as well as in the society in wider sense.

The sectors or facets where community members' contributions can be observed are mentioned below :

(i) Contribution of lands as well as funds.

(ii) Contribution of funds along with required labour or service for the construction and development of school building and its other infrastructural facilities.

3. Mention four utilities of community-involvement in decision making by a school.

Ans. The sectors or facets where community members' contributions can be observed are mentioned below :

(a) Contribution of lands as well as funds.

(b) Contribution of funds along with required labour or service for the construction and development of school building and its other infrastructural facilities.

(c) Collection and donation of various books in school library.

(d) Establishment and organization of library and laboratary.

(e) To come forward as and when required for helping students in their learning process.

(f) Providing scholarship to the poor needy but meritorious students.

(g) There should be a provision for arranging health care programmes to foster the sound physical as well as mental health of the learners.

(h) Workshops should be organised in view of vocational training of the learners.

(i) Necessary measures should be undertaken to build up hostel building for both the teacher as well as students who generally come from long distance.

(j) There should be frequent discussions amongst the different stake holders for the beneficial upgradation of the schools.

(k) The form of contribution is a bit different in case of rural and urban society. In urbanized areas people mostly contribute in terms of money where as in rural areas provide labour and other ingredients (viz. rice food, bricks, soil) etc. instead of money.

(l) The businessman and industrialists may supply different materials and articles in low cost (sometimes with no cost) for the development of education in school.

(m) The colleges goers as well as the young boys and girls along with their parents may come forward spontaneously, during their leisure to take some special classes on different subjects and issues for the teaching-learning process to prosper.

4. Show how rapport can be developed between school and community though frequent meetings.

Ans. The following issues have to be discussed in the meeting with different community members for the benefit of both the school and scociety that leads to the all round development of the system of education ultimately :

(a) Diagnosis of various problems related to different dimensions of school and its activities.

(b) To find out the nature and probable solution of the problems that are associated with the school and its activities.

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(c) Special care should be taken to upgrade the quality of eduдcation to be provided to the students.

(d) Special attention should be paid to arrange and provide basic health care prgrammers and facilities in the schools to solve the problems related to the physical and mental health of the learners.

(e) There should be proper arrangement and facility of drinking water and sanitation for the learners in the school environment.

(f) Renovation and alteration of classrooms.

(g) Reconstruction or repairing of school building as and when required shoud be done.

(h) Extension of school building as per the requirement of new rooms etc.

(i) Discussion should be done if there is any requirement of new chairs, tables and benches for the learners in the classroom.

(j) Whether the electric facility and equipments like fans, lights etc, provided are being able to suffice the need of the institutions to run properly to be supervised.

(k) The issue of providing scholarships to the meritorious as well as needy student has to be enlightened.

(l) Development of communication system.

(m) Providing hostel facility to the students and the cost of getting this facility has to be discussed.

(n) Involvement of community members in the co-curricular as well as cultural activities organized by the school.

(o) Creation of an environment that is congenial to the study and other academic activities of the schoøl.

(p) Entire safety and security related issues of both the teachers and students should be given utmost care and attention.

(q) The activities of the schools should always be out of the influence of the political views.

(r) The N.S.S/N.C.C or the students from scouts should always come forward to extend their helping hands in any kind of disaster or calamity of the society.

(s) The following issues are also being discussed viz.–implantation, gardening, helping poor and downtrodden children, arranging various activities for joyful learning and edutainment etc.

(t) Eradications of local hindranees, unethical interfarence in regular on going activities of the school through the implementation of lawful regulations etc.

Through the above mentioned discussions good raport can be developed between the school and the community.

5. What type of co-operations can be done by the school to the parents.

Ans. The teacher will try to enlighthen the following issues and facts with the parents of the children :

(1) The performance of a child has to be discussed ; special emphasis should be given on the learning of the child.

(2) The behavioral as well as physical problems of the learners (observed if any) to be told to their parents.

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(iv) The children should be encouraged, to take part in gardening, implantation and cleanliness programmes of our schools, home environment and of society.

(v) The parents can take their children to the place of educational values such as Science-Museum, Zoo, Planeterium and so on.

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Probable Questions

☛ Objective answer type questions :

Marks : 2

1. Mention two areas where school can seek advice/opinion from the community.
2. Mention two utilities of community-involvement in decision making by a school.
3. Mention two contributions that are generally made by the community of the school.
4. State the contributions that can be made by poor illiterate young men of the community.

☛ Short answer type questions :

Marks : 5

1. Mention the different areas where community may be involved in the decision making.
2. Give a list of contributions that can be done by the members of the community to the school.
3. Show how rapport can be developed between school and community though frequent meetings.
4. How does a school organize a meeting with community? Explain.
5. What are the expectations of the parents from a school?
6. What type of co-operations can be done by the school to the parents.

☛ Essay answer type questions :

Marks : 10

1. Mention different issues on which meeting may be organized with community members. How can the school involve the members in giving necessary decision? Do you think that school should abide by all the decisions given by the community? Give reasons in favour of your answere.

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