ASSESSMENT FOR LEARNING

Unit - I

Basics of Assessment

Meaning and Definition of Measurement

Measurement is involved in every aspect of human life. Measuring is used to evaluate the physical characteristics and external features of a person. They are used to determine students' height, weight, age, intelligence, and abilities in various fields. A numerical value is assigned to the element involved in measurement to express how much a particular quality or attribute is present in an object, person, or event. Examples: Malini height is 155cm.

Measurement is the process of Qualification. Measurement is the assignment of numbers to any variable of an object, thing, or person. J.F. Guilford defines the term "measurement" as "the numerical description of data." Measurement, according to CampWell, is "the assignment of numerals to objects or events in accordance with certain rules." James M. Bradfield defines measurement as "the process of assigning symbols to the dimensions of a phenomenon in order to precisely characterize the status of a phenomenon."

Meaning and Definition of assessment

Assessment is an integral part of the learning process. It has a close relationship with curriculum and instruction. Assessment plays a continuous role in informing instruction, guiding the student's next steps, and evaluating progress and achievement as teachers and students work towards achieving curriculum outcomes. According to Allen (2004), assessment is the utilisation of empirical data on student learning to refine programmes and enhance student learning. Huba and Freed (2000) state, "Assessment is the process of gathering and discussing information from multiple and diverse sources to develop a deep understanding of what students know, understand, and can do with their knowledge as a result of their educational experiences; the process concludes when assessment results are used to improve subsequent learning."

Meaning and Definition of Evaluation:

Evaluation is a more comprehensive and recent scientific concept than measurement. It takes quantitative and qualitative changes in the total being into account. In education, it is the study of instruction in relation to an individual child, a group of children, or the school programme itself, taking subjective opinions and qualitative changes into account along with objectives and quantitative changes. According to NCERT, evaluation is any continuous and systematic determining process. According to Quillen and Hanna, evaluation is the process of gathering and interpreting evidence on the behavioural changes of students as they advance through school. According to Goods, "Evaluation is the process of determining or judging the value or quantity of something through careful evaluation."

Role of Assessment in Learning:

Assessment has a substantial influence on how students learn and how teachers instruct.

Assessment for learning: Assessment helps teachers gain insight into what students understand in order to plan and guide instruction and provide useful feedback to students.

Assessment as learning: Students develop an awareness of how they learn and use that awareness to modify and advance their education, assuming greater responsibility for their education and learning.

Assessment of learning: Assessment informs students, teachers, and parents, as well as the broader educational community, of achievement at a particular point in time in order to celebrate success, plan interventions, and encourage continued progress.

Assessment of learning:

The assessment of learning is the utilisation of a task or activity to measure, record, and report on a student's level of achievement in relation to specific learning expectations. An evaluation that is accompanied by a number or letter grade compares the achievement of an individual student to the standards. Results are communicated to the student and parents at the conclusion of the unit of instruction.

Assessment as learning

Assessment as learning is the utilisation of a task or activity to provide students with the opportunity to use assessment to advance their learning. Students are able to reflect on their learning and identify areas of strength and weakness through self and peer assessments. These assignments provide students with the opportunity to set their own goals and advocate for their own education. It begins when students become aware of the instructional objectives and performance criteria. Throughout the learning process, goal-setting, monitoring progress, and reflecting on outcomes imply student ownership and responsibility for advancing his or her thinking (metacognition).

Assessment for learning

Assessment for Learning is the process of gathering and analysing evidence to help learners and their teachers determine where the learners are in their learning, where they need to go, and how to best get there. In classrooms where assessment for learning is implemented, students are encouraged to take an active role in their learning and assessment. The ultimate goal of assessment for learning is to develop learners who are capable and confident enough to continue learning throughout their lives after leaving school. Students are instructed on what is expected of them and what constitutes quality work.

The instructor will collaborate with the student to identify and comprehend any gaps or misconceptions. Teachers now have the opportunity to modify classroom instruction based on students' needs. The majority of verbal or written feedback to the student is descriptive and emphasizes strengths, identifies challenges, and indicates the next steps. As teachers assess students' comprehension, they modify their instruction to keep students on track. No grades or scores are given - Record-keeping is primarily anecdotal and descriptive, and it occurs throughout the entire learning process, from the beginning of the course of study to the time of summative evaluation.

Formative assessment- Meaning and features

It is an assessment used to monitor students' learning progress during instruction to provide on-going feedback to students and teachers regarding the success and failure of teaching and learning.

- Formative assessment is an integral part of teaching and learning.
- It does not contribute to the final mark given for the module; instead, it helps to learn by providing feedback.
- Focuses on modular analysis of the content and instruction
- Seeks to identify influential variables
- Design is quite flexible
- Monitors teaching-learning strategy during instruction
- Aims at the attainment of specific objectives from different domains of development.
- Feedback to the learner is immediate (or nearly so), to enable the learner to change his/her behavior and understandings right away. Formative Assessment also enables the teacher to rethink instructional strategies, activities, and content based on student understanding and performance. His/her role here is comparable to that of a coach.
- Formative Assessment can be as informal as observing the learner's work or as formal as a written test.
- Formative Assessment is the most powerful type of assessment for improving student understanding and performance.

Summative assessment-Meaning and features

Summative assessment demonstrates the extent to which a learner has met the assessment criteria used to measure the intended learning outcomes of a module or programme, and contributes to the module's final grade. It is typically, but not always, used at the conclusion of a unit of instruction. The purpose of summative evaluation is to quantify achievement, recognise achievement, and provide data for selection (to the next stage in education or employment).

For all these reasons, the validity and reliability of summative assessment are of the greatest importance.

- It is normally, though not always, used at the end of a unit of teaching.
- Summative assessment is used to quantify achievement, to reward achievement, to provide data for selection (to the next stage in education or employment).
- For all these reasons, the validity and reliability of summative assessment are of the greatest importance.
- A summative assessment can provide information that has formative/diagnostic value.
- Concerned with judgments about the merits of an already completed program. Comes at the end of a course or term.
- The final assessment of the learners' performance. Determines the extent to which broad objectives are achieved.

Feedback to the classroom teacher for the success or failure of the program of instruction.

Purposes of Assessment

The purpose of assessment is necessarily to improve the teaching-learning process and materials and to be able to review the objectives for different school stages by measuring the extent to which students' abilities have been developed.

Teaching and Learning

The primary purpose of assessment is to improve the learning of students and the instruction of teachers in response to the information it provides. Assessment for learning is a continuous process that emerges from the interaction of teaching and learning. System improvement. In addition to diagnosing and identifying students' learning needs, assessment can be used to support system-wide improvements in a cycle of continuous improvement. Students and teachers can use assessment results to determine their next

steps in teaching and learning. So that they can play an active role in their children's education, parents and families can be kept abreast of upcoming plans for teaching and learning, as well as their progress. School leaders can use the data for school-wide planning to support their teachers and determine their professional development needs. Communities and boards of trustees can use assessment data to inform their governance responsibilities and decisions regarding staffing and resources. The education review office may utilise assessment data to inform its recommendations for school improvement. The ministry of education can use assessment information to conduct national policy review and development so that government funding and policy interventions are appropriately targeted to support improved student outcomes.

PRINCIPLES OF ASSESSMENT PRACTICES

The primary purpose of assessment is to improve student performance;

Good assessment is based on a vision of the types of instruction we value most for students and how they can best attain these. It seeks to quantify what is most important.

Assessment should be based on an understanding of how students learn;

Assessment is most effective when it reflects the fact that learning is a multidimensional, integrated, and time-dependent process that is revealed in student performance.

Assessment should be an integral component of course design and not something toad afterward

Each program's teaching-learning components should be designed with full knowledge of the types of assessments students will complete, and vice versa, so that students can demonstrate their knowledge and see the results of their efforts.

A good assessment provides useful information to report credibly to parents on student achievement;

Teachers can report to parents on how far their child has progressed over the course of the year, how they compare to the relevant standards, and what students, parents, and teachers must do to improve student performance.

Good assessment requires clarity of purpose, goals, standards, and criteria;

Assessment is most effective when it is based on explicit statements of the course's purpose and goals, the standards students are expected to achieve, and the success criteria. So that students know what is expected of them on each assessment they encounter, assessment criteria must be understandable and explicit.

Good assessment requires a variety of measures;

In general, a single assessment tool will not tell us everything we need to know about student performance and how to improve it.

Assessment methods used should be valid, reliable and consistent;

It is important to select assessment instruments and procedures that measure precisely what they are intended to measure. In order to enhance objectivity and promote a shared understanding of the judgments made, they should incorporate the possibility of moderation between teachers where feasible and appropriate.

Assessment requires attention to outcomes and processes;

It is crucial to know where each student ends up, but it is equally important to understand their journey and, in particular, the effort that led to these outcomes.

Assessment for improved performance involves feedback and reflection;

All assessment methods should provide students with feedback on their learning and performance, so that assessment serves as a formative activity designed to enhance student learning.

Principles Related to Selection of Method for Assessment

Typically, educators employ a variety of assessment strategies. These include rating scales, observations, interviews, tests, peer evaluations, teacher evaluations, and classroom evaluations, among others.

The criteria for selecting assessment methods are as follows.

- Ability, knowledge, and skill of the student must be taken into account. Not all students will respond well to the same approach.
- The method of evaluation should not demotivate students.
- The method of evaluation should enhance the student's creativity.
- The assessment method must be selected based on the educational background of the students.
- After the evaluation, scoring and judging should be straightforward for teachers. It should also be taken into account when selecting assessment methods.

Collection of Assessment Information

One of the most important processes is the collection of assessment data. Assessment includes information collected from a variety of sources and at various times. These sources may include parental knowledge regarding their child.

- Teachers gain knowledge through their daily interactions with students. Results from the classroom and schoolwide assessments designed by the teacher.
- Assessment at points of school entry or transition. National qualification examination results, such as those from NCEA.

Judging and Scoring of Student Performance

Either the answer key or a scanning machine was utilised for judging and scoring. Performance tasks, on the other hand, are typically open-ended, necessitating the use of teachers' discretion when evaluating the final products and performances. There are four types of criteria for evaluating the performance of students.

Summarization and Interpretation of Result

Reporting academic achievement to a student solely through a progress report with marks or grades is an unsatisfactory method of conveying to him the significance of this evidence for his use and the use of others.

1. Student is more concerned with the significance of his record than with the raw grade.
2. For standardised test scores, it is even more important to provide the student with an explanation as opposed to the raw scores.
3. The percentile rank is one of the most popular and easily understood methods for analyzing test performance.
4. A student's percentile score indicates his relative position in a group based on the percentage of students who scored lower than he did; a percentile rank of 70 indicates that his performance exceeds that of 70 percent of the group.
5. Indicating a student's relative position in a group is also possible by displaying whether his raw score is above or below the group mean.

Meaning of reporting

Reporting is the process of communicating assessment-derived information about student achievement and growth. The purpose of reporting is to facilitate learning and instruction by providing students with feedback. Parents are informed of their child's academic achievement and progress. Teachers can use information about students' accomplishments to systematically plan future learning activities.

Types of reporting

- Individual parent/ teacher meeting
- An individual written report sent home Parent group meetings
- Parent newsletters articles

Individual parent/ teacher meeting

It provides teachers with an excellent opportunity to explain assessment results to parents. Teachers can communicate both the individual results of each student and the school's overall performance. Teachers can also describe initiatives implemented to improve student learning. Parents are permitted to inquire about grading and classroom activities.

An individual written report sent home

Educators must ensure that the report describes the assessment procedure thoroughly and explains how to interpret the results with clarity. The report should also include a phone number for parents to call with questions.

Parent group meetings

A method for effectively disseminating assessment information to the entire class. Parents-teacher conferences provide teachers with an excellent opportunity to explain assessment results to parents. Teachers can also describe initiatives that have been implemented to enhance student learning. Parents are permitted to inquire about grading and classroom activities.

Parent newsletters articles

A parent newsletter is another method for communicating assessment information to parents.

Assessment for Learning in Classroom

Unit - II

Student Evaluation in Transmission;

- Teaching is the act of transmitting knowledge. It is a teacher-centered approach.
- The important role of the teacher is to evaluate the students to modify his or her method of teaching is required.
- Teaching is a transaction which means creating a situation whereby students can interact with material for construct knowledge.
- The teacher assists learners in their construction of knowledge by creating an experience where students' old information can transact with new knowledge to develop meaningful knowledge.
- The purpose of teaching is to train students to produce answers according to the problems uncounted.

Behaviorist Model of Education;

According to behaviorism, the basic unit of human behavior is a reflex or stimulus-response connection. This is shaped by conditioning. When an animal interacts with any environmental stimulus, conditioning occurs, resulting in the establishment of a response to that stimulus.

Behaviorism is a learning philosophy that focuses solely on objectively observable behaviour and disregards mental activities. Learning, according to behaviour theorists, is nothing more than the acquisition of new behaviours. Behaviorist experiments demonstrate that conditioning is a universal learning process. There are two distinct types of conditioning, each of which produces a distinct behavioural pattern. Classical conditioning occurs when a natural reflex responds to a stimulus. The most well-known example is Pavlov's observation that dogs salivate when they eat or even when they see food. In essence, animals and humans are biologically "wired" so that a particular stimulus will elicit a particular response. When a response to a stimulus is reinforced, behavioural

or operant conditioning occurs. Operant conditioning is a straightforward feedback mechanism. If a reward or reinforcement follows a response to a stimulus, the likelihood of that response occurring in the future increases. Pigeons were taught to dance and bowl a ball in a mini-alley by B. F. Skinner using reinforcement techniques. In behaviourism, both positive and negative reinforcement techniques can be effective. When educators reward or punish student behaviour, they practise behaviourism.

Drawbacks Changing Assessment Practices

The assessment of student motivation may be detrimental, especially for students performing below grade level. Particularly when the needs of students with special education are disregarded, sloppy administration of assessments may have negative effects.

Demotivate the Individual;

When students have no grades, it demotivates them.

The negative effect on students

The repeated low performance of low-achieving students diminishes their confidence and self-esteem. Anxiety is another cause of the test, and it widens the gap between high-achieving and low-achieving individuals.

Reliability and Validity;

Errors in Reliability and Validity are the factors that must be prioritized when assessing student performance.

Issues with teaching curriculum;

The instructors and teachers may devote more time to evaluation, which may not improve the knowledge of the students. With all of these factors, teachers may adopt a teaching style that is not ideal or comfortable for many students..

Assessment in Constructivist Approach

Constructivism is a theory about how people learn based on observation and scientific research. It asserts that individuals construct their understanding and knowledge of the world through experience and reflection.

The guiding principles of constructivism;

Learning is the pursuit of meaning. Therefore, instruction must begin with the issues around which students are actively constructing meaning. Meaning requires comprehension of both wholes and parts, and parts must be comprehended in the context of wholes. To effectively instruct, we must comprehend mental models. The purpose of learning is to construct one's own meaning, not to simply memorize the correct answer.

How constructivism impacts learning;

Constructivism in education emphasizes hands-on problem-solving. Here, the emphasis is on making connections between facts and fostering new student comprehension. Teachers rely heavily on open-ended questions and encourage extensive student dialogue.

Continuous and Comprehensive Evaluation

Continuous and Comprehensive Evaluation (CCE) refers to a system of school-based student evaluation that encompasses all aspects of students' development. It is a developmental assessment process that emphasizes dual objectives.

- The term continuous is used to emphasize that the evaluation of a particular aspect of students' growth and development is a continuous process that spans the entire academic year.
- Comprehensive implies that the programme attempts to address both the academic and non-academic aspects of student growth and development.
- Evaluation is the assignment of symbols to a phenomenon in order to catechize the worth of value of an event, typically in accordance with social-cultural or scientific standards.

- CCE is a newly introduced system by the Central Board of Secondary Education in India for students in grades six through ten, and in some schools, grade twelve.
- Additionally, it reduces the child's anxiety prior to the examination. It is claimed that the CCE method will significantly alter the traditional chalk-and-talk method of instruction.
- In this system, both academic and cultural performance are measured. The purpose of continuous evaluation is to reduce the student's workload by substituting a single exam at the end of the academic programme with several smaller exams administered throughout the year.
- Only grades are awarded to students based on work experience skill, innovation, consistency, teamwork, public speaking, behaviour, etc., in order to evaluate and present an overall measure of their ability.
- This system helps students who are weak in academics to demonstrate their talent in other areas, such as the arts, sports, and music, while demotivating students with a thirst for knowledge.

PROJECTS.

Definition

"A project is a wholehearted purposeful activity proceeding in a social environment."

Kilpatrick "A project is a problematic act carried to completion in its natural selection."

- Prof. Stevenson

"A project is a bit of real-life that has been imported into school."-Ballard

TYPES OF PROJECT

Individual and Social projects: In individual projects, each student solves their own problem based on their own interests, capacities, attitudes, and needs. answer to them

Group projects: The problem is resolved by the group of students in the classroom. Here, social, citizenship, and synergy skills are developed.

Simple and Complex project: In simple projects, students focus on a single task at a time. It provides detailed information about the project from one perspective. Students acquire a deeper and broader understanding of the issue. In the complex project, students perform multiple tasks simultaneously. They approach the task from a variety of perspectives and subjects. Here, students gain knowledge of the various activities and dimensions of work.

According to Kilpatrick, there are four types of projects:

Constructive project: In this type of project, practical or physical tasks such as building the article, creating a model, digging the well, and acting are performed.

Aesthetic project: In this type of project, students' appreciation skills are developed through musical programmes, the beautification of an object, the appreciation of poetry, etc.

Problematic project: This type of project develops the students' problem-solving skills through their experiences. It utilizes the cognitive domain. The purpose of the drill project is to assess the students' skill and knowledge mastery. It increases the students' work efficiency and capacity.

STEPS OF A PROJECT METHOD

Creating Situation: In the first step, the teacher prepares the classroom environment for the students. He imparts to the students his knowledge of the project's method, procedure, actions, and applications. Never should a project be imposed upon students; rather, it should arise from a need they perceive. It should be meaningful and purposeful.

Selection of the problem:

The instructor guides and assists students with problem selection. Students may choose a topic or issue based on their individual interests and skills. Prior to selecting the topic, one must consider the guiding principles. Such school assignments must be as authentic and purposeful as possible, and they must be of such a nature that the student is eager to complete them in order to achieve a desired and accomplished objective. Teachers should present a scenario to encourage student participation in a particular project, but students should ultimately submit the project proposal.

Planning: The instructor discusses the issue from multiple angles with the students. After allowing students to express their views freely on the issue, the teacher outlines the entire solution on the blackboard. Students are responsible for creating the actual plan; the teacher's role is limited to providing guidance and making suggestions.

1. **Execution:** In this stage, students initiate their work. Initially, they are gathering pertinent information and materials. The instructor should allot time and privileges to students based on their interest, aptitude, and rate of learning. During this step, the instructor must closely supervise the students' manipulation skills to prevent material waste and accidents. Teachers should examine the relationship between the drafted plans and the development of the project on an ongoing basis.

2. **Evaluation:** Both the students and the instructors should evaluate the project. Here, students assess their own academic performance. They determine whether the objectives are achieved or not. Then, they critique and express their feelings about the mission openly. The evaluation of the project must consider the plans, the challenges encountered during execution, and the actual outcomes.

MERITS OF PROJECT METHOD:

a) As the requirements have been met, students are given the freedom to execute the project according to their interests and skills.

b) Through this method, students acquire the habit of critical thinking.

c) This method provides ample opportunities for students to develop coordination

between their body and mind.

d) This method promotes social interaction and cooperation among students because they must work in groups and interact with a variety of individuals to gather information.

e) Due to the fact that most projects are completed in class as classroom assignments, the amount of homework assigned to students is significantly reduced.

DEMERITS OF PROJECT METHOD

a. It takes a great deal of time to plan and execute a single project using this method.

b. It is not possible to design separate projects for each topic, nor is it possible to cover all topics and content in a single project.

c. Such a strategy can only be effective if the instructor is exceptionally knowledgeable, vigilant, and talented.

d. This method does not provide systematic and adequate learning because it is a method of incidental learning. Through this method, students only learn what is necessary for the completion of their projects.

ASSIGNMENT

The Assignment method is the most prevalent method of instruction, particularly for the study of Science. It is a method typically employed in the teaching and learning process. It is an instructional method that includes guided information, self-learning, writing skills, and the preparation of reports by the students. Assignments are an integral part of the teaching and learning process.

OBJECTIVES

- It provides effective instruction in information seeking and retrieval behaviour.
- It instils the self-learning mindset in the students.

- It provides learners with information analysis and research skills.
- It enhances the learning experiences gained from a variety of sources. Assignment Procedures / Phases
- The assignment must relate to the lesson and be consistent with the textbooks and curriculum.
- The topic/unit of the assignment must be elucidated using available resources.
- The subject or unit's essence must be clarified.
- The challenging portions of the assignment must be adequately explained.
- The topics/units that do not pertain to the assignments must be precisely defined.

FEATURES OF GOOD ASSIGNMENT

- The assignment must be relevant to the subject being taught.
- This should reflect affinities with the subject matter of the respective textbook.
- Assignments must be straightforward and allow students to complete them within the allotted time frame.
- Assignments must not contain ambiguous or complicated information or instructional structure.
- The objectives of the assignments must be specific and unambiguous.

Kinds of Assignment

1. **Page-by-page assignment:**

   Sometimes referred to as the textbook assignment. It specifies how many pages will be covered. A page-by-page assignment is unsatisfactory, but according to recent research, it is still widely used in elementary school.

2. **Assignment**

This is an additional form of traditional or textbook homework. Similar to the first type, it continues to be widely employed in secondary schools and colleges. Students are solely responsible for preparing this type of assignment.

3. **Problem assignment:**

This type of assignment departs from the fundamental textbook concept. It promotes the use of references and encourages reflective thought. In this type, the primary consideration is the problem to be solved. In this type of assignment, specific instructions and suggestions are vital.

4. **Topical assignment:**

In this type of assignment, the focus is on the topic to be developed. This is another type of textbook assignment that is frequently assigned in social and natural science courses.

5. **Project assignment:**

This type of assignment is best suited for vocational courses, natural science subjects, and, to a lesser extent, social science subjects and other content areas. In this type of assignment, the project serves as the unit.

6. **Contract assignment:**

This type of assignment is widely used in individualised forms of instruction, with the primary goal of adjusting the task to the individual's abilities and interests.

7. **Unit Assignment:**

The Mastery Plan and the Cycle Plan of instruction are associated with this type. It works best with subjects that are divided into units. Flexible assignment is used in conjunction with the unit assignment plan.

8. **Cooperative or group assignment:**

Cooperative assignments are utilised most frequently in socialised forms of

recitation and project-based methods of instruction. This type of assignment encourages students to think critically and organise their materials. Here, students are also involved in determining desirable goals and determining how to achieve them. Many high school classes can benefit from the use of collaborative assignments.

9. **Syllabus assignment:**

In colleges and universities, syllabus assignments are common. In this type of assignment, students are guided by questions and citations. Again, guide questions and other suggestions are provided to ensure that students pay attention to the lesson's key concepts.

10. **Drill assignment:**

This assignment is intended to strengthen the connections formed during the development of mental motor skills. Examples of this type of assignment include memorising a poem or mastering facts or simple combination facts in mathematics. Like other types of assignments, drill assignments should be motivated.

SEMINAR

The seminar method is the most contemporary and innovative method of instruction. Seminars are an advanced group technique typically employed in higher education. It is an instructional technique involving the creation of a situation in which a group engages in guided interaction on a particular topic. It refers to a structured group discussion that follows a formal lecture or lectures and frequently takes the form of an essay or paper presentation on a theme. According to Francis Bacon, reading makes a complete man, writing makes an exact man, and conferences make a prepared man. Reading, writing, and speaking are crucial for the development of a man's personality.

The seminar method combines reading and writing skills with presentation skills. This seminar method is utilised to achieve the higher goals of the cognitive and affective domains. The process of higher education necessitates interactive and interdisciplinary approaches based on psychological principles. The seminar method incorporates this technique of human interaction/intervention into the learning and teaching experiences.

Aims & Objectives

This seminar method is utilized to realize the higher objectives of cognitive and affective domains.

Cognitive objectives

1. To acquire superior cognitive abilities.
2. Developing the ability to respond in this manner would necessitate more cognitive actions at the highest level.
3. To enhance the capacity for perceptive observation of experience, emotions, and
4. To enhance the ability to effectively seek clarification and defend the ideas of others.

Affective objectives

- To cultivate a sense of tolerance for the unique perspectives of others.
- To foster feelings of cooperation and respect for the thoughts and opinions of others among colleagues.
- To enhance the emotional capacity of the seminar's attendees.
- To acquire the proper etiquette for posing questions and answering the questions of others.

This technique promotes the development of good manners and skills in the participants through human interaction. Offer the participants of the seminar a valuable educational and academic experience.

Advantages and special features of the Seminar Method.

1. This seminar methodology promotes motivation and learning.
2. Aid in evaluating the learnability of students.
3. Regulate the creation and organisation of information and data.
4. Information dissemination and retrieval are managed scientifically.
5. Develop your independence and self-assurance.
6. Additionally, it teaches responsibility and cooperation.
7. This is the best method for socialisation.
8. It is possible for students to interact through participation and production in the teaching-learning process.
9. This technique eliminates traditional monotony.
10. Ensures and improves the students' capacity for comprehension and learning.
11. The seminar is always subject/theme specific so that sufficient knowledge can be gained on the topic at hand.
12. The presenter or reader of the article can obtain additional clarification on the topic.
13. Develop questioning skills. The processing and analysis of data also play an important role in this method. This adds energy to the teaching and learning process.
14. The student receives useful information from his instructor and classmates. After the conclusion of the discussion, a seminar does not conclude on-site. The group meets informally off-campus to continue the discussion in smaller groups.

Limitations of a Seminar method

- It is not possible to hold a seminar on every topic in the Text.
- The subject to be taught must be pertinent to the seminar's theme.
- The seminar topics must correspond with the student-taught learning experiences.
- This method is only suitable for higher education.
- This method's implementation for lower classes is laborious.
- Only teachers with a mature and balanced mindset can make this method successful. The instructor must be both academically and administratively resourceful.
- Management of time is somewhat difficult.
- The scope and objectives of the seminar could be compromised by unwarranted rumors and technical difficulties.
- Passive observation without interaction renders the seminar tedious and ineffective.

PORTFOLIO

Definition

A student portfolio is a collection of academic assignments, projects, revisions, and work samples that span a specified time period and are the property of a single student. It may also include self-evaluations and reflections of student work.

It is the culmination of academic work and other educational evidence.

I am evaluating the work's calibre, the student's progress, and their accomplishment.

Assisting students in evaluating their academic objectives and progress.

Positive students' involvement.

Increase metacognition, which has a positive effect on students' self-esteem and improves their ability.

Students are encouraged to continue their studies.

Assessment portfolios provide teachers and parents with opportunities to support the language development of their students.

can be compared both within and between groups. In this type of comparison, both a single instructor and multiple instructors compare the grades awarded by a single instructor and by multiple instructors.

Merits of Grading System

- Both teaching and learning become exam-centered as a result of an overemphasis on exams.
- Grading involves classifying students according to their level of achievement.
- It facilitates the categorization of student performance.
- A method that is superior to a numerical marking system.

Types of Assessment

Assessment plays an important role in the teaching-learning process. When the assessment is well planned by the teachers, it will become successful. Some of the important types of assessment are:

- Practice-based assessment
- Evidence-based assessment
- Performance-based assessment
- Examination based assessment

Practice-based assessment

The practice-based assessment has formed an integral part of the assessment process for general practice for many years—practice-based assessment methods, such as videotaped and direct observation.

There are five assessment components in Practice-based assessment are:

- Enrolment
- Professional portfolio
- Videotaped recording
- Examiner assessment
- Viva

Enrolment: It includes detail of the students, which include current curriculum vitae.

Professional portfolio: It is a collection of material that provides information about the students, which include procedural training, community activity, research work, etc.

Videotaped recording: The objective of the videotape recording is to assess the knowledge, reasoning, skill, and attitude of the individual.

Examiner assessment: The objective of this to assess those areas that the more difficult to assess on videotape recording. Examiner looks at the behavior of the individual and assess.

Viva: The objective of this to assess the knowledge and skill of the individuals.

Evidence-based Assessment:

Evidence is obtained through various forms of assessment, which may include teacher observation, test, peer assessment, and functional performance.

Importance of Evidence-based Assessment

- Improve the focus of learning

- Focus students' attention on their strengths and weakness.
- Improve programming and planning
- Communicating students' achievement.

Performance-based assessment:

- It is the direct, systematic observation and evaluation of students' scholarly objectivity performance, which is frequently ongoing.
- It is a test of the student's ability to apply knowledge in real-world situations.
- Included among the essential components of a performance-based evaluation are specific goals or performance indicators.
- People acquire subject-matter knowledge, develop skills and work habits, and then apply these in real-world situations.
- The assessment also allows the instructor to provide feedback on the work's strengths and weaknesses.

Examination based assessment:

- An examination is a formal test that students take to demonstrate their knowledge or skill in a specific subject or to earn a qualification.
- The examination is a formal test; students demonstrate their knowledge or skill in a specific subject.
- The same test serves multiple purposes, including course completion, admission to the next course, employment, scholarship eligibility, etc.
- The examination teaches students various methods of dishonesty.
- They are exerting extreme mental effort.
- They are becoming more frustrated.

- Critical thinking loses its validity in this manner.

Practices of assessment; Dialogue:

The term dialogue is intended to imply a deeper level of analysis or explanation than that which focuses solely on the surface meaning of isolated individual speech. When we speak of dialogue, we are referring to the joint enterprise of speech as a cumulative activity that is directed toward some end. Such dialogue occurs in a variety of classroom settings, including whole-classwork and group discussions during group work.

Developing strategies that promote classroom dialogue

Features of effective dialogue and associated strategy and our assessment and dialogue resources to provide prompts to help the characteristics of effective dialogue that:

- Feature strongly in teachers teaching and the procedures used to achieve them
- Are absent or might be improved

Feedback through marking

As feedback is a fundamental learning and teaching activity that has a substantial impact on student learning and achievement, it is an essential assessment function. Gibbs and Simpson (2004) found that whether or not professors provide students with helpful feedback has the greatest impact on student learning and satisfaction.

The main objectives of feedback are to:

- Explain to students how their grade or mark was determined.
- Identify and reward particular qualities in student work Instruct students on how to improve.
- Inspire them to act on their evaluation
- Enhance their ability to monitor, evaluate, and control their learning

Principles

- Good feedback clarifies what constitutes good performance.
- Good feedback facilitates the development of learning self-reflection.
- Good feedback provides students with high-quality information about their learning.
- Good feedback encourages dialogue about learning between teachers and students.
- Effective feedback motivates students to learn.
- Good feedback affords the opportunity to close the performance gap between current and desired levels.
- Good feedback provides teachers with information that can be used to shape instruction.

Peer and self-assessment;

Self- and peer-assessment are crucial components of assessment for learning. Students can strengthen their understanding of the Intended Learning Outcomes and the Assessment Criteria by evaluating their own or others' work. Research indicates that when students are actively engaged in their learning and assessment, they make greater gains.

Self and Peer Assessment will:

- Increase students' active participation in their studies.
- Increase the amount of feedback students receive to enhance their learning, as peer feedback invariably requires justification.
- Help students comprehend what constitutes quality work and why, thereby enhancing their ability to succeed.

Advantages of Peer Assessment

- Encourages students to critically reflect on one another's work
- Encourages student participation in the assessment procedure.
- When evaluating the work of other group members, it helps students develop their judgement.
- Students are able to generate more feedback than one or two teachers.
- Reduces the time and workload associated with teacher marking
- Discourages the problem of "free rider" because students are motivated to perform better in front of their classmates.
- Maintains assessment fairness because everyone has the opportunity to evaluate one another.
- Throughout the process, students learn to critique, evaluate, and apply other generic skills.
- Students discover more from one another's work.

Disadvantages of Peer Assessment

- Peer pressure and friendship can affect the dependability of students' grades.
- Students may have a tendency to give everyone the same grade (for example, there may be co-operation in return for good grades)
- Students lack experience evaluating each other. Students may cheat on group projects involving collaboration.
- Inequity may not be maintained because extroverted students are typically graded higher than introverted students.

Self-Assessment

Self-Assessment is an evaluation that allows students to evaluate their own performance. Students learn how to be accountable for their own learning. Self-Assessments are more frequently incorporated into formative assessment processes than summative ones.

Advantages of Self Assessment

- Encourages students to critically reflect on their academic progress and performance
- Encourages students to assume greater responsibility for their own education
- Helps students develop their judgmental skills
- When students evaluate themselves, there is no peer pressure, which helps them become independent learners and increases their awareness of their weaknesses and strengths.

Disadvantages of Self Assessment

- Self-evaluation can be subjective due to the fact that students may not be sincere and may even overestimate their performance.
- Inefficient for students
- Students could be unfamiliar with the evaluation criteria.

UNIT - III

TOOLS & TECHNIQUES FOR CLASSROOM ASSESSMENT AND ISSUES

Tools & techniques for classroom assessment- observation, Self reporting, anecdotal records, check lists, rating scale, types of tests - rubrics- meaning and importance - assessment tools for affective domain- attitude scales, motivation scales-interest inventory - Types of test items- Principles for constructing test items-Major issues-commercialization of assessment,poor test quality,domain dependency,measurement issues,system issues-reforms in assessment:Open book and online examinations.

Tools & techniques for classroom Assessment

There are many numbers of creative ways to assess how well the students are learning the material a teacher is teaching. The classroom assessment techniques are as follows

Observation

Observation enables the observer to observe the activities and class behaviour of students, and thus determine their emotional development, mental development, maturity, etc. During observation, care must be taken to ensure that the subject is unaware he is being watched. Therefore, the observation should be unknown to the individual. Further care should be taken to ensure that the behaviour to be observed has been predetermined. Observe one individual and one characteristic at a time. Direct or indirect observation can be controlled or uncontrolled, known or unknown.

Types of Observation

There are two types of observation: controlled and uncontrolled. Laboratory observation is referred to as controlled observation. Controlled observation implies that the observee is aware of the observation. Consequently, controlled observation implies conscious observation. Uncontrolled observation is the act of observing without a person's knowledge. Consequently, uncontrolled observation is conducted in a natural setting or condition.

Steps of observation

- Planning
- Execution
- Recording and interpretation

Planning

In this stage, the characteristic, subject, or object to be observed is determined. Whether it is a group observation or an individual observation, as well as how often and with what tools the observation will be recorded, is determined here. The specific training is beneficial for interpretation. Who will conduct the observation or serve as the observer is also predetermined.

Execution

The arrangements are made for observation. The method required for observation of the natural or artificial arrangement as such. Then, a person is motivated to behave in a certain way by providing him or her with the appropriate environment, and that behaviour is observed.

Recording and interpretation;

If the necessary tools or instruments are available, observation becomes a swift process. The observation or recording is evaluated and interpreted in this section.

Self-reporting

- A self-report study is a form of survey, questionnaire, or poll in which respondents independently read the question and choose a response without researcher intervention. A self-report is any technique that involves questioning a participant about their emotions, attitudes, and beliefs, etc. Examples of self-reports include questionnaires and interviews; self-reports are frequently used to collect responses from participants in observational studies and controlled experiments.
- Questionnaires are a type of self-reporting method consisting of a series of questions that are typically presented in a highly structured written format.

- Both open and closed questions can be included in questionnaires, and respondents record their responses. Interviews are a form of verbal inquiry in which the respondent's responses are recorded.
- Structured interviews consist of a predetermined list of questions, while unstructured interviews have no predetermined questions.
- The primary advantage of self-report methods is that they permit participants to describe their own experiences, as opposed to inferring this from participant observation.
- Using questionnaires and interviews, it is frequently easy and quick to study large samples of people. They are able to examine a large number of variables and can ask participants to disclose real-world behaviour and emotions.
- Participants may not respond honestly, either because they cannot recall or because they wish to present themselves in a socially acceptable manner.
- Self-report measures can be plagued by social desirability bias, as participants frequently respond so as to portray themselves favourably.
- We would not collect valid data if questions were not always clear and we did not know if the respondent understood the problem.
- When questionnaires are distributed via email or tutoring groups, the response rate can be extremely low. Frequently, questions can be leading. That is, they may unwittingly coerce the respondent into providing a specific response.
- Unstructured interviews can be tedious and time-consuming to conduct, whereas structured interviews can limit respondents' responses.
- Therefore, psychologists frequently conduct semi-structured interviews, which consist of some predetermined questions followed by additional questions that allow the respondent to elaborate on his or her answers.

Anecdotal records

Meaning of Anecdotal Record:

It is common knowledge that students spend the majority of their time in school with teachers, peers, etc. Evidently, there will be significant incidents or occurrences in the lives of students, which should be noted because they are based on experiences. Teachers are required to record these occurrences for the purposes of data collection.

Therefore, teachers should instruct students to record this troubling fact on paper or record it using a tape recorder, after inquiring about the incident without the students' knowledge.

Here, students should not be aware that their written or asked responses will not be recorded. However, the teacher must keep in mind that questions and writing assignments must be factual and selective.

This type of data collection is now necessary for guidance services. A record is the technique bearing the process.

Definitions

R. Louis: — "An anecdotal record is a report of a significant episode in the life of a student."

J.D. Willard: — "An anecdotal record is a simple statement of an incident deemed by the observer to be significant concerning a given pupil."

A.J. Jones: —'The anecdotal record may be defined as an "on the spot descriptions of some incident, episode or occurrence that is observed and recorded as being of possible significance when these reports are gathered together, they are known as an anecdotal record."

Characteristics of a Good Anecdotal Record:

a. The anecdotal account specifies the date, location, and circumstances of the incident. The term for this is setting.

b. It describes the individual's (student's/ child's) effects, the reactions of those involved, and the individual's responses to these reactions.

c. It includes dialogue spoken to and by the individual during the action.

d. It describes "mood cues" as postures, gestures, voice qualities, and facial expressions that serve as indicators of how a person felt. It does not provide interpretations of his emotions, but rather the signals a reader can use to determine what they were.

e. The description is inclusive and comprehensive enough to encompass the episode. The action or conversation is not left incomplete and unfinished; rather, it is continued until an aspect of a behavioural moment in the individual's life is provided.

Types of Anecdotal Records:

First type

This type of anecdotal record contains an objective description of a pupil's behaviour recorded from time to time.

Second Type

This type of anecdotal record includes a description of behaviour with some comment or interpretation.

Third Type

This type of anecdotal record takes into account the record of a pupil's behaviour comments by the observer and the treatment offered to the pupil.

Fourth Type

This type of anecdotal record includes description of a pupil's behaviour along with the comments as well as suggestions for future treatment of the student

Values and Uses of Anecdotal Record:

- They are extremely useful for comprehending the child's behaviour in various situations.
- Teachers use the anecdotal record to know and understand the student based on the description of the student's life events.
- The anecdotal record allows instructors and counsellors to comprehend the personality pattern of students.
- The anecdotal record allows teachers and counsellors to examine and comprehend the adjustment patterns of students.
- The anecdotal record aids teachers and guidance counsellors in assisting students to resolve their problems and challenges.
- The anecdotal record is a superior method for collecting data, which is useful for enhancing relationships with teachers, peers, etc.
- The anecdotal account assists students in overcoming mental tensions, anxieties, and so on.
- The anecdote is helpful for parents to gain a clear understanding of their child, and they will attempt to assist their child in various ways.
- The anecdotal is useful for improving teaching standards after obtaining student feedback using anecdotal methods.

Limitations of Anecdotal Record:

- In the context of data collection regarding student behaviour, anecdotal records are of no value if the teacher does not exercise due diligence.
- In the absence of strict adherence to objectivity in data collection and maintenance, anecdotal records are of little use.
- In some instances, anecdotal records are limited to exceptional children, resulting in severe neglect of average students.

- The anecdotal record is a data collection technique for guidance services that provides some information about the students.
- The anecdotal record is useless if incidents and their descriptions are not properly documented.
- In some instances, the anecdotal record invites dissatisfaction and tension among students, which is undesirable on the part of the teacher.
- It is not possible for a teacher to detect an observable incident because an event that is significant and memorable for a student may not be regarded as significant for the teacher.
- Occasionally, students who are more emotional, reactive, and tense do not respond, answer, or write correctly; as a result, the uses and significance of anecdotal records are diminished.
- Preparing anecdotal records is an unnecessary waste of time and resources.

Checklist

Checklists are evaluation instruments that specify evaluation criteria. The checklist is contained in the forms questionnaire. This provides the answers to the questions. A checklist can be used for both self-evaluation and evaluation by others. Checklists outline skills, attitudes, strategies, and behaviours for evaluation and provide methods for organizing information about a student or group of students in a systematic manner.

Characteristics of the checklist

A checklist is used for self- and other-evaluation. It is an instrument used for observation. It consists of question and answer pairs. It requires evaluating the characteristics of a particular subject.

Construction and evaluation of a checklist

On the first horizontal line of the checklist, write the subject being observed's name or number. The characteristics of the subject or object to be evaluated are arranged in the vertical column of the evaluation sheet, with the blank options for placing a check

mark in the adjacent columns. Then, the characteristics present in the subject under observation are determined, and a check mark is placed in the corresponding column if the characteristic is present. After counting the frequency of all tick marks, students are awarded grades based on predetermined norms or standards. Then, the percentage, the mean, the median, or the correlation is employed. A checklist is a simple evaluation tool. It is simple to make, simple to use, and can be constructed to cover multiple facets of a person's behavioural adjustment. When creating a checklist, a teacher must keep in mind which behaviours are essential to document and which objectives are to be assessed. Students must:

No	Traits	1	2	3	4	5	6	7	8
1	Has lesson prepared on the time								
2	Finish each task assigned								
3	Volunteers to perform a task								
4	Possesses a bad temper when challenged								
5	Exercise self- control in critical situations								
6	Is obstinate and stubborn etc								

The Purpose of Checklists

- To provide tools for recording observations systematically; to provide students with tools for self-evaluation.
- To provide students with examples of criteria at the start of a project or learning

activity

- To record the development of the necessary skills, strategies, attitudes, and behaviours for effective learning.
- To identify students' learning needs by reviewing their prior knowledge.

Uses of Checklist

- To provide tools for the systematic recording of observations; to provide students with tools for self-evaluation.
- At the start of a project or learning activity, to provide students with examples of criteria.
- To record the acquisition of the necessary abilities, strategies, attitudes, and behaviours for effective learning.
- To determine the learning needs of students by summarizing their prior knowledge.

Limitations of Checklist

- As the checklist only includes the sign, there are no other options. It is relative and subjective.
- It is difficult to evaluate a student's personality or adaptability using a checklist.

Rating scales

Meaning

Rating scale is an essential assessment technique. A rating is a person's evaluation by another individual. Ruth Strang refers to this as "directed observation." Rating is the expression of an opinion or evaluation regarding a situation, object, or character. Typically, opinions are expressed on a scale or value. Rating techniques are instruments for quantifying such judgments. A rating scale is a method for systematizing the expression of opinion regarding a characteristic. Parents, teachers, a variety of interviewers and judges, as well as the individual, perform the evaluation. These rating

scales provided insight into an individual's personality. Rating scales resemble checklists but are utilised when more nuanced distinctions are necessary. Using either numbers or descriptions, rating scales indicate the degree or quantity of a specific characteristic.

DEFINITION

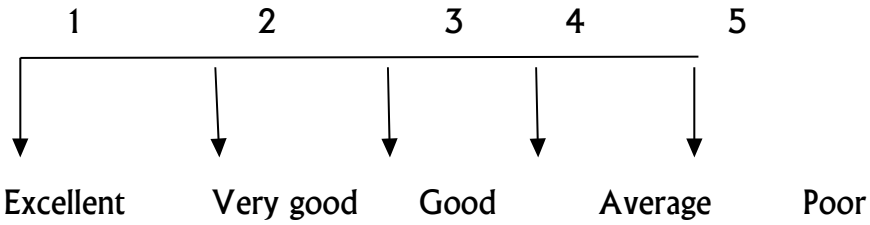
"Rating techniques are instruments for qualifying judgments. A rating scale is a tool for systematising the evaluation of a characteristic.

"Rate scale documents how much or how well something occurred. There will be use of quantitative and qualitative terms. A rating scale is a set of categories intended to elicit information regarding a quantitative or qualitative attribute.

"The rating scale method provides a great deal of structure for evaluations. Each employee trait or quality is rated on a bipolar scale that typically ranges from "poor" to "excellent" (or a similar arrangement).

On these scales, employee characteristics such as cooperation, communication ability, initiative, punctuality, and technical (work skills) competence are evaluated. The nature and scope of the selected characteristics are limited only by the designer's imagination or the organization's need to know.

How effective was the performance?



TYPES OF RATING SCALE NUMERICAL RATING SCALES:

This number is assigned to each characteristic. It is an even-point scale, with seven representing the highest level of that trait in an individual and four representing the mean. The rater simply enters the appropriate number after each person's name to indicate their evaluation.

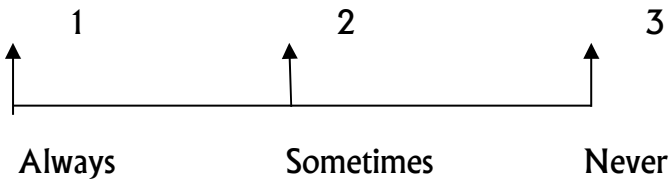
Method of Paired Comparisons:

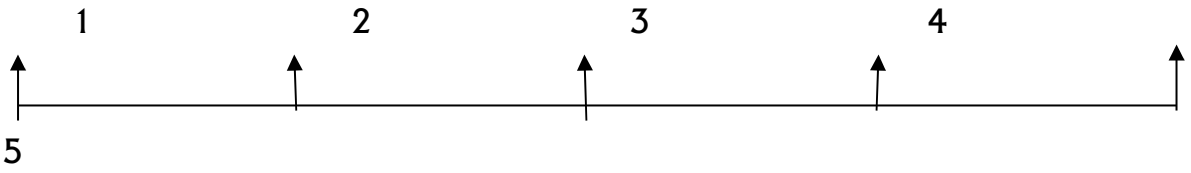
In this, the rater compares each person being rated concerning the trait of every other individual being rated in the general terms of equal, better, or worse.

Graphical rating scales:

It is commonly used Examples are:

He attends to important details





Apathetic Cooperative Highly Cooperative | Rarely | Sometimes Cooperative | Usually Cooperative

Scorecards:

It is a type of scale in with whatever is being rated is analyzed into its parts. An expert assigns each part a maximum score. The rater assigns a value to each item, and he passes judgment, and these values are totaled, and a final score is pronounced.

Man to man Scales:

In this case, an individual is asked to rate the person to be assessed by comparing him to a person already rated and assigned a position on the scale. The rate is assigned to his job.

Errors in Rating:

The following are the common errors in rating:

1. **Generosity Error:** This sometimes means the rater does not want to run down the rate, the latter being his favorite, by giving him low ratings.
2. **The Errors of Hollow Effect:** Sometimes, the rating is done in terms of general impression about the rates formed based on some past performance.
3. **The Errors of Central Tendency:** Sometimes, the ratertends to rate all or any of the rates near the midpoint on the scale.

TYPES OF TESTS

Definition of Test

A test intended to measure learning outcomes, which distinguishes between students who have mastered and have not yet mastered the learning material for each individual student. Therefore, testing is one of the most effective methods for assessing students' abilities and improving their learning attitudes. According to Hughes (2003), a test is a tool for measuring students' language proficiency. According to Brown (2004:3), a test is a method for measuring a person's knowledge or performance in a given domain. According to Anthony J. Nitko (1983:6), a test is a systematic procedure for observing and describing one or more characteristics of a person using a numerical or category system. Azwar (2005) defined a test as a method for systematically observing an individual's behaviour and describing it using a numerical scale or category system.

Types of Tests

Achievement Meaning

An achievement test measures acquired skills or knowledge. The most prevalent type of achievement test is a standardised test designed to evaluate the skills and knowledge acquired at a given grade level, typically through planned instruction, such as training or classroom instruction. Achievement tests are frequently contrasted with aptitude tests, which measure a more stable and stable cognitive trait.

Definition

Robert L. Ebel:

"An achievement test is one designed to measure a student's grasp of somebody of knowledge or his proficiency in certain skills."

Frank S. Freeman:

A test of educational achievement is one "designed to measure knowledge, comprehension, and skills in a particular subject or group of subjects." To summaries, it is understood that this test is an effective method for determining the extent to which the student has achieved a certain level of progress toward the desired goal.

Characteristics of a good Achievement test

Practical use of Achievement test

For Administrator's Use

- The test aids in determining the extent to which educational goals are being met.
- To evaluate, revise, and enhance the curriculum in light of the obtained results.
- Exams aid in classifying school objectives.
- Exams determine the types of learning experiences that will achieve these objectives most effectively.
- To select gifted students for specialised classes and programmes.
- To select students for special merit-based awards or scholarships.
- To identify children who are falling behind and to plan remedial instruction for such students.

To decide for proper classification of students.

- To group students in a classroom so that individual differences are minimized to the greatest extent possible.

- To determine the overall achievement level of a class and, by extension, the teaching effectiveness of the instructor. A class's level of achievement can be determined by comparing its performance at the beginning and end of the school year.
- To compare the effectiveness of one school to those of others.
- To assist parents in recognizing their children's strengths and weaknesses so that they can focus their efforts on appropriate goals and not place excessive pressure on them.
- To gain a deeper comprehension of the needs and skills of students.

The Teacher's Use

- The instructor will become familiar with the wide range of student abilities.
- In light of the aforementioned, he will select instructional materials that will maximize the learning outcomes for all students.
- The instructor will identify and diagnose the students' subject-specific weaknesses.
- The instructor will identify gifted and disadvantaged students.
- Over time, he will evaluate the group's progress in a particular subject.
- The teacher will determine whether or not students are working at their maximum capacity by analyzing the results of achievement and intelligence tests.

Oral Test

Oral examinations are the earliest type of achievement test. These tests are predominantly administered to the lower classes. However, even in upper-level science classes, oral tests and examinations are administered. The viva voice, as utilised in graduate and post-graduate courses, is nothing more than an oral exam.

Written Test

Essay type test, short answer type test and objective type tests are the type of written test.

Essay type test

Exams requiring lengthy essay-style responses have remained the most common form of writer assessment of student achievement. The essay test, as opposed to the objective test, allows for greater freedom of response to a given problem, but requires the student to recall information rather than reorganize it and to organise and express his ideas clearly.

Short answer type tests

This form is becoming increasingly popular. There are numerous legitimate reasons for this. This type of question can be made extremely thought-provoking. Furthermore, questions can be formulated to ask the desired questions. The questions that require a response in a few sentences or words stimulate thought and force students to select the pertinent information or facts that explain a given situation.

Objective type question;

The objective type is so-called because the scoring system is objective, as opposed to subjective, as with an essay test. Generally, multiple responses are provided for each test question, but only one is correct. The test is graded by tallying the number of instances in which the test-taker selected the correct response from among those provided. An objective test typically consists of many more items than an essay test, and each item is typically scored with a single point.

Diagnostic tests; Meaning;

Diagnostic testing in education is a form of evaluation that occurs prior to instruction. The purpose of diagnostic tests is to determine what prior knowledge students have regarding the concepts and skills to be covered in instruction. The examinations are ungraded. Students' preferred learning styles, as well as their strengths, weaknesses, and misconceptions, can be determined by the tests.

Educational Diagnosis;

Diagnostic testing in education is a form of evaluation that occurs prior to instruction. The purpose of diagnostic tests is to determine what prior knowledge students have regarding the concepts and skills to be covered in instruction. None of the diagnostic tests are graded.

Pre-assessments, predictive assessments, and diagnostic pre-tests are alternative names for diagnostic tests. Educational diagnostic testing can be used to evaluate students' academic achievement and learning potential, and can sometimes lead to further testing if students' responses warrant it. Standardized tests and instructor-created assessments can be used as diagnostic instruments to determine the prior knowledge level of students. Individual interviews may also be used as diagnostic instruments. Teachers can plan differentiated instruction, lesson plans, teaching strategies, and other classroom techniques to help all students reach their academic potential by utilising diagnostic testing.

The correct diagnosis can be made at the levels listed below.

- Classification
- Finding the nature of difficulties
- Finding the causes of difficulties
- Providing remedial measurement

Classification

It is the practise of sorting students into groups, primarily of underachievers and low achievers. If students have not attained the expected level of performance, it is they who will require remediation. However, if they have exceeded their level, enrichment programmes may be planned to help them improve their future academic performance.

Finding the nature of difficulties

At this level of diagnosis, it is necessary to identify the specific areas of difficulty. Achievement tests, unit tests, etc., which cover as many learning points as possible, can be used for this purpose. If the majority of students perform poorly on a particular

learning objective, it indicates that something is wrong with the instruction for that objective.

Finding the causes of difficulties

This is the most challenging phase of diagnosis. This is problematic due to the fact that tests only evaluate the outcomes of learning and not the learning process itself. They may be able to determine where the breakdown in learning has occurred, but rarely the underlying causes.

The majority of difficulties can be attributed to academic aptitude, basic skill retardation, study habits, physical factors, and emotional factors.

Remediation

After identifying the causes of the problems, the next step is to plan and implement corrective measures. However, there is no set pattern or tried-and-true formula for remediation. In some instances, it may be as simple as reviewing and reteaching the material. In some cases, an intensive effort may be required to improve motivation, address emotional issues, and overcome deficiencies in work and study habits.

Prevention

Prevention is preferable to treatment in other areas of education. A programme of diagnostic testing should aid a creative teacher in gaining insight into the types of errors that are likely to occur in learning, their potential causes, and methods for preventing future errors. Therefore, educational diagnosis is not and should not be limited to remedial measures; it should also be used to enhance instruction, modify the curriculum, and refine instructional materials and strategies.

Uses of Diagnostic Test

The following are the uses of diagnostic tests

- Point out inadequacies in specific skills.
- Identify areas where individual instruction is necessary.

- Provide continuous information so that learning activities can yield the most fruitful results.
- Assist in the improvement of instructional methods, instructional materials, and learning procedures.

Prognostic Test

One of the primary functions of tests is to predict how individuals will behave in specific situations. One group of aptitude tests consists of tests designed to predict readiness to learn or the likelihood of success in a particular subject or educational segment. These are known as diagnostic tests. Prognostic tests are intended for use in forecasting or predicting future achievement in specific school subjects. Prognostic tests are more prevalent in subjects where success can be reasonably well defined in terms of certain fundamental skills, as they typically assess the background skills and abilities deemed to be prerequisites for success in that subject. Additionally, they frequently assess aptitude factors that are not directly dependent on prior training in a particular subject. Therefore, prognostic tests, which are likely most closely related to aptitude tests, but not unrelated to inventory tests, should be categorized as educational tests rather than intelligence tests. Nonetheless, they unquestionably measure specific facets of intelligence.

Aptitude Tests Meaning:

A test of aptitude is an examination used to determine a person's propensity for success in a specific activity. Individuals are assumed to have inherent strengths and weaknesses, as well as a natural tendency toward success or failure in specific areas, based on their innate characteristics. A test of aptitude does not assess knowledge; it is not a test for which one can prepare.

Purpose of Aptitude Tests:

Aptitude tests have the following uses:

A test of aptitude is a test used to determine an individual's propensity for success in a particular activity. The assumption underlying aptitude tests is that individuals have innate

strengths and weaknesses and a natural tendency toward success or failure in specific areas based on their inherent characteristics. A test of aptitude does not assess knowledge, nor is it a test that can be prepared for.

Rubrics

Typically, a rubric is an evaluation tool or set of guidelines used to promote the consistent application of learning expectations, learning objectives, or learning standards in the classroom, or to measure their achievement against consistent criteria. The origin of the word rubric is the Latin word for red. The first definition of rubric in the online Merriam-Webster dictionary is "an authoritative rule," while the fourth definition is "a guide listing specific criteria for grading or scoring academic papers, projects, or tests."

A rubric is a coherent set of criteria for student work that includes descriptions of performance levels based on standards. The definition should make it clear that rubrics have two major components: coherent sets of criteria and descriptions of performance levels for these criteria. Rubrics are brilliant because they are descriptive and not evaluative. Rubrics can be used to evaluate, but the guiding principle is to match the performance to the description rather than "judge" the performance. Thus, rubrics are only as good or bad as the criteria chosen and the descriptions of the performance levels associated with each. Rubrics that are effective have appropriate criteria and well-written performance descriptions.

Importance of Rubrics:

- As with any other evaluation instrument, rubrics are useful for some purposes but not others. The primary function of rubrics is to evaluate performances. During certain performances, you observe the student performing a task, such as using an electric drill or discussing an issue. For other performances, you observe the product of the student's labour, such as a completed bookshelf or a written report. Figure 1.1 provides examples of common school performances that can be evaluated using rubrics. This list does not include all possible school performances. It is only intended to help you consider the types of performances you could evaluate using rubrics.

- In addition, rubrics help teachers focus their attention on the essential concepts

and standards that students must acquire.

- Teachers have the option to utilise the same grading rubric for multiple assignments. By providing a variety of quality levels, rubrics enable teachers to accommodate and differentiate for various classes (they can be used with gifted and learning support students).
- Students have a clear understanding of what is expected of them thanks to rubrics.
- Students are given detailed instructions on what constitutes a good science project, a good persuasive essay, etc.
- They provide students with feedback that identifies their strengths and areas for improvement. Students can use this feedback to further develop their skills with this tool.
- Rubrics encourage students to reflect on their thinking and, potentially, their criteria for what constitutes "good": to compare their work and process to the standard outlined in the rubric.
- Teachers give students experience with higher-level thought processes through the use of rubrics.
- Parents value rubrics because they enable teachers to explain why a particular grade was assigned to their child. Rubrics are intuitive at first glance.
- They provide parents with an assessment that is digestible, concise, and well-structured. Parents value the detailed feedback provided by a rubric.

Assessment Tool for Affective Domain:

The affective domain is a part of Bloom's Taxonomy used for identifying, understanding, and addressing how people learn. This classification of educational objectives includes the cognitive domain, the affective domain, and the psychomotor domain. The affective domain describes objectives for learning that emphasise a feeling, an emotion, or a degree of acceptance or rejection. Affective goals range from simple focus on particular phenomena to complex, internally consistent traits of character and

conscience. As interests, attitudes, appreciations, values, and emotional sets or biases, a large number of such purposes were discovered in the literature. Affective taxonomy is divided into five major classes arranged in a hierarchical order based on the level of involvement.

Receiving is being aware of or sensitive to the existence of certain ideas, material, or phenomena and being willing to tolerate them. Examples include: to differentiate, to accept, to listen (for), to respond to.

Responding is committed in some small measure to the ideas, materials, or phenomena involved by actively responding to them. Examples are: to comply with, to follow, to commend, to volunteer, to spend leisure time in, to acclaim.

Valuing is willing to be perceived by others as evaluating certain ideas, materials, or phenomena. Examples include: to increase measured proficiency in, to relinquish, to subsidize, to support, to debate.

The organization is to relate the value to those already held and bring it into a harmonious and internally consistent philosophy. Examples are: to discuss, to theorize, to formulate, to balance, to examine.

Characterization by value or value set is to act consistently following the benefits he or she has internalized. Examples include: to revise, to require, being rated high in the cost, to avoid, resisting, managing to resolve.

Attitude Scales:

It consists of a person's beliefs and emotions. It influences a person's action choices. It is the tendency to react positively or negatively to a particular concept, object, person, or circumstance. Attitude is a conventional way of thinking or feeling that manifests itself in a person's behaviour toward others. The origin of the word attitude is the Latin word 'Aptus' Which means competence. It is observable in terms of opinion, which can be gleaned from an individual's overt verbal and nonverbal behaviour. Attitude cannot be measured objectively.

Measurement of attitude:

There are a variety of aptitude tests available. The most prevalent is the self-report inventory. Here, a large number of statements are provided, and the respondent is directly questioned about his opinion of each account. They are formally known as an attitude scale. There are two fundamental assumptions that underlie all attitude scales. An individual's behaviour in relation to objects or events will be consistent across situations. Attitude cannot be directly measured. It is inferred from the person's statements or actions, that is, it is derived from the subject's verbal and nonverbal behaviour.

Thurstone Scale and Likert Scale:

Direct statements regarding the objects of attitude are given to the examinees here.

Thurstone Scale:

The Thurstone scale was the first formal method in psychology and sociology to measure an attitude. It was created by Louis Leon Thurstone in 1928 as a method for measuring religious attitudes. It consists of statements about a particular issue, and each statement has a numerical value indicating how positively or negatively it is evaluated. People indicate which statements they agree with, and a mean score is computed to reveal their attitude.

These are the steps involved in creating this type of test:

Step 1

The collection of several hundred statements expressing varying degrees of negative and positive attitude towards the objects or events. These assertions can be obtained from knowledgeable individuals or popular literature on the subject.

Step 2

Each statement is printed on an individual slip of paper or card. Different judges are given these statements in order to rank them on an 11-point scale ranging from favourable to unfavourable.

Step 3

This is the stage of scale construction. These statements are assigned different points on the scale based on the consensus of the judges; disagreements are eliminated.

Step 4

Select the scale's final statement here. The subject is then asked to indicate which statements he fully agrees with, after which he is scored.

Likert Scale:

Definition:

A **Likert Scale** is a scale used to measure the attitude wherein the respondents are asked to indicate the level of agreement or disagreement with the statements related to the stimulus objects.

The Likert Scale was named after its developer, **Rensis Likert.** It is typically a five response category scale ranging from **"strongly disagree"** to **"strongly agree."** The purpose of a Likert scale is to identify the attitude of people towards the given stimulus objects by asking them the extent to which they agree or disagree with them.

Often, the respondents are presented with questionnaires containing the set of statements to rate their attitude towards the objects. **For example,** the respondents might be asked to rate their purchase experience with shoppers stop by assigning the score as **(1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree)** to the series of statements given below:

The data obtained from the Likert Scale are typically treated as the interval. Thus, we can say that the Likert scale possesses **description, order, and distance** characteristics. **Description** means the unique labels or tags designated to each value of the scale; **Order** means the relative position of the descriptor, and **Distance** implies that the absolute differences between the descriptors are known and can be expressed in units.

For analysis, each statement is allotted a numerical score ranging from either 1 to 5 or-2 to +2.The analysis could be done item-wise, or a total score can be computed

by summing up all the items for each respondent. One of the advantages of a Likert scale is that it is easy to construct and administer.

The major limitation of this scaling technique is that it is time-consuming and requires much more time as compared to other itemized scaling techniques. This is because each respondent is required to read every statement given in a questionnaire before assigning a numerical value to it. Another limitation of a Likert scale is that it could be misunderstood at times, especially when the responses are unfavorable.

Motivation Scale

The Motivation Assessment Scale (MAS) is a rating scale that assesses the function of problem behaviour in individuals with developmental disabilities through informant responses. It includes 16quesions and is comprised of four subscales that each represents a possible function of the behaviour: attention, escape, sensory, and tangible. Each question has six options (0 = never, 1 = rarely, 2 = seldom, 3 = half the time, 4 = usually, 5 = almost always, 6 = always) Scores are calculated by summing the item ratings within a particular subscale function and calculating the mean rating for that subscale. High scores for one or more of the subscales suggest that those functions may be maintaining the individual's problem behaviour.

0 = never, 1 = rarely, 2 = seldom, 3 = half the time, 4 = usually, 5 = almost always, 6 = always

1, Would the behaviour occur continuously this person was left alone for long periods, for example, several hours?	0 1 2 3 4 5 6
2, Does the behaviour occur following a request to perform a difficulttask?	0 1 2 3 4 5 6

3. Does the behaviour seem to occur in response to your talking to another person in the room?	0 1 2 3 4 5 6
4, Does the behaviour ever occur to get a toy, food, or activity that this person has been told that he or she can't have? etc	0 1 2 3 4 5 6

Interest Inventory Measurement of interest:

There are various methods and tools for measuring personalities such as observation, interview, checklist questionnaire, and inventories.

The following are the most popular interest inventories

a) Strong Vocational Interest Blank by E.K Strong

b) Kuder Preference Record, and

c) Occupational Interest Inventory.

a. Strong Vocational Interest Blank

E. K. Strong designed this interest blank in 1919. It consists of of420 items concern with various occupations, school subjects, amusements, activities of people, etc. It has been applied to persons in various professions, such as law, medicine, teaching, and engineering, etc. According to Strong, some interests are common to all these professions. It is not concerned with ability. It is applicable to adults. It is available in four forms for men, women, students, and those who have left school long back. About 40, 50 minutes are given for taking the test. The reliability is about 0.80 validations it quite difficult. E. K. Strong validated after 16 years who had taken the test. The norms have been developed for the inventory.

Limitation:

The accuracy of statements made by the subject cannot be tested. There is the problem of stability of interests as it is an acquired trait; the interests change at the different stages of development. It does not indicate success in the occupation.

b. Kuder Preference Record:

The Kuder Preference Record has been developed for high school and college students. Each item of this inventory consists of three preferences, such as (a) Study physics (b) study of musical composition and (c) study public speaking. It consists of 198 items in all; each item has three preferences. Preferences are measured in nine fields mechanical, scientific, computational, artistic, literacy, effective social service and clerical, etc. It has a high-reliability index 90. Reference in this record can be compared with the Strong Vocational Interest Blank. Interest inventory is used in the classification of a selection of an individual for different occupations. It means that individual difference concerning interests is use3ful for vocational guidance as well as educational guidance and counseling purposes. It provides the basis for the selection of individuals for different jobs. It has administrative functions. Information about the interests of students is much more useful for teachers in school. In selecting the study subjects after delta class, the interests of the students are basic for their choices.

c. Occupational Interest Inventory:

The Occupational Interest Inventory is intended for a broad range of career counselling applications. It assists candidates in selecting a profession, planning their careers, and advancing as professionals in the workplace. The assessment, which is based on the RIASEC (Realistic, Investigative, Artistic, Social, Entrepreneurial, and Conventional) model, measures levels of interest in 12 domains and matches the candidate's profile with a list of 80 occupations in a variety of industries and fields. This assists in identifying the most suitable profession for them. The report provides a constructive analysis that enables the evaluator to initiate a meaningful dialogue with the candidate in order to comprehend their professional interests and match their profile to an appropriate career path.

1. Orientation, and mobility:

The Occupational Interest Inventory can serve as a reference point for career guidance processes, allowing candidates to make informed career decisions. For those contemplating a career change, it offers valuable insight into their job preferences. The combined approach of RIASEC profiles allows for a more in-depth exploration of a person's aspirations by identifying occupations that align with their personality.

2. Skills assessment/ training courses:

The Occupational Interest Inventory facilitates communication between the individual and the assessor, making it an indispensable instrument for skill assessments and training. It can help trainers optimize resources for training courses by identifying an individual's learning styles and the environment most conducive to their growth.

3. Recruitment:

When a company has a personality questionnaire, Occupational Interest Inventory can be an integral part of the hiring process. Recruitment can assign the most stimulating and rewarding positions and responsibilities to employees based on an evaluation of their interests and aspirations in the workplace.

TYPES OF TESTS ITEMS

The test is to measure the ability, knowledge, or performance developed during learning.

Multiple-choice test items

The multiple-choice item consists of two parts: (a) the stem, which identifies the question or problem, and (b) the response alternatives. Students are asked to select the one alternative that best completes the statement or answers the question.

True-False Test Items

A true-false statement can be written in simple, complex, or compound form. Answers may include only two options (simple), more than two options (complex), or two options plus a conditional completion response (compound). Following are examples of each type of true-false item:

Matching Test Items

Typically, matching items consist of a column of stimuli presented on the left side of the exam page and a column of responses on the right side of the page. Students are required to match a given stimulus with the appropriate response.

Performance Test Items

The purpose of a performance test item is to evaluate a student's ability to perform correctly in a simulated situation (i.e., a situation in which the student will ultimately be expected to apply his or her learning). The concept of simulation is central to performance testing; a performance test will simulate a real-world situation to some degree in order to complete the evaluation. Theoretically, a performance test could be developed for any skill and real-world scenario. In practise, the vast majority of performance tests have been designed to evaluate vocational, managerial, administrative, leadership, communication, interpersonal, and physical education skills in a variety of simulated situations.

Short Answer.

The student is given a statement with blanks that must be filled in, either within the statement itself or at its conclusion. As implied by the short answer, the expected response is typically a single word or phrase. This is a common format for curriculum-based tests.

Essay.

This item format requires a longer answer that usually requires more creative thought or memory. The student may be asked to describe, discuss, or summarize a given subject. This format requires the most critical thinking skills and is also the most challenging for the examiner to score.

Oral exams:

Oral exams are a great way to assess the conceptual framework and learning of a student. Written tests may not give a closer insight into the student's conceptual

framework and learning. But when a teacher hears the concepts and ideas of students, it gives a more clear result.

Problem Tests:

Typically, problem tests are created for subjects like mathematics and the sciences. On the basis of a student's conceptual framework and knowledge, these examinations require various types of calculations. Give students ten minutes to solve a problem that you can solve in two minutes. This is a very common concept in problem-solving tests.

PRINCIPLES FOR CONSTRUCTING TEST ITEMS

There are fundamental principles for constructing test items.

They are as follows:

Measure All Instructional Objectives

Teachers should construct tests to measure the prescribed learning objectives that have communicated and imparted to the learners. The test is designed as an operational control to guide the learning sequences and experience and should be in harmony with the teacher's instructional objectives.

Cover All Learning Tasks

A quality learning task focuses on and assesses a representative sample of the instructor's learning objectives.

Use Appropriate Test Items

A good test typically includes questions that are most relevant to a particular objective in order to evaluate student achievement. Some types of test questions are better at measuring recall of specific information, while others are better at assessing higher-level cognitive processes and abilities.

Make Test Valid and Reliable

A test is deemed reliable when it generates scores that are dependable, accurate, and consistent, allowing a measuring device to measure what it measures. A test is valid

if it accurately measures what it claims to measure. Typically, written tests that minimize guessing are more reliable than those with ambiguous statements. In general, tests with a relatively large number of items are more reliable than those with a few items. Validity is likely to be ensured by tests that are well-designed, cover a broad range of objectives and topics, and are executed competently. Regardless of the type of assessment employed, it must be valid and reliable.

Use Tests to Improve Learning

This principle reminds teachers that tests can be used as a learning experience, even if their primary purpose is to diagnose or evaluate the achievement of students. Reviewing test results provides teachers with the opportunity to reintroduce information that students may have missed. Observation and discussion of "correct" answers can stimulate further research on a specific topic. Effective teachers integrate testing and evaluation processes in which they place a high value into the entirety of their instructional programmes in order to guide and improve the students' learning.

Norm-Referenced and Criterion-Referenced Tests

The norm-referenced test measures an individual's level of achievement at a given time relative to that of other students. Because no comparisons are made, criterion-referenced test scores do not indicate a relative level of achievement or produce standards. According to researchers, the norm-reference test is useful for measuring the cognitive domain's higher and more abstract levels. In contrast, the criterion-referenced test is useful for measuring more fundamental and concrete learning levels. The norm-referenced test is useful for heterogeneous groups with a wide range of abilities, and tests are designed to measure a broad range of performance. The criterion-referenced test is more useful for inhomogeneous groups with a narrow range of abilities and a limited number of objectives and outcomes to measure.

MAJOR ISSUES

Major issues in the assessment of learning are:

- Commercialization of assessment

- Poor quality of tests
- Domain dependency
- Measurement issues
- System Issues

Commercialization of Assessment

In India, the commercialization of education is a relatively new phenomenon. Its primary objective is to make educated individuals business-minded, maximizing return on investment. As a result of the privatization of education, educational institutions now collect hefty tuition and other fees in the name of providing a quality education. Rather than promoting the all-around development of students, fostering true knowledge, critical thinking, creativity, and social awareness, etc., schools have become commercial enterprises, profiting from the sale of learning materials such as textbooks, notebooks, etc., uniform dress materials, shoes, transportation, food items, etc., and forcing students to purchase these items with a school label. They charge extra for value-added programmes such as 'Yoga,' training in spoken English, martial arts (such as Karate), and job-focused courses such as computer programming, travel, and tourism, fashion design, learning a second language, etc.

Instead of giving importance to 'process-oriented assessment,' which focuses primarily on formative evaluation of learning, more emphasis is placed on obtaining high marks on the school's final examination, which has become the objective of schooling today. Instead of emphasising students' learning with comprehension, schools have devolved into "Knowledge Shops" that provide students with training in memorization and retrieval of subject content.

Teachers assign students projects and homework on a variety of subject matter topics in order to foster problem-solving skills, the ability to gather pertinent information for completing a given assignment, the ability to think creatively and experiment with new ideas, and the ability to prepare simple learning aids and materials that help students comprehend the laws and principles they study. However, rather than engaging in these activities and enhancing their learning, students seek parental assistance to complete their

projects and homework. Numerous businesses have sprung up to produce student-required items and make them readily available for purchase. The current trend among engineering college students is to place an order and purchase their project as a finished product before submitting it for examination. B.Ed. students also purchase improvised apparatus, charts, and diagrams from "ready-made shops" for their practical examinations. These "ready-made shops" have taken the next step by making these teaching-learning materials available for rental for a few days.

With "recorded readings," some publishers have sold printed practical records for laboratory work, micro-teaching records, camp records, practical psychology records, SUPW records, etc. B.Ed. students are tempted to submit these records for evaluation in the practical examination.

Current students, rather than believing in working hard to learn with comprehension by gathering relevant information from various sources by visiting libraries, browsing websites on the internet, etc., focus their attention on spending money to have their work done for them and on scoring well on examinations.

According to an overemphasis on summative evaluation of learning achievement rather than formative evaluation of learning, i.e., without evaluating the 'process of learning,' a heavy emphasis on the product of learning is the real cause of a decline in the assessment of students' learning achievement.

Reasons for Commercialization and Privatization

- Commercialization and privatization are done to generate more revenue.
- It aims to eliminate unprofitable businesses.
- To encourage private individuals to participate.
- It contributes to the enterprise's autonomy.

Advantages of Commercialization and Privatization

- It reduces government expenditures.
- Commercialization and privatization increase the efficiency of public corporations.

- When public corporations are commercialized and privatized, revenue will increase.
- The organizations' innovativeness will increase.

Disadvantages of Commercialization and Privatization

- Low quality of living.
- Decrease in employment.
- The high price of goods.
- Loss of the consumer welfare programme.

POOR TEST QUALITY

Tests are important instruments for assessing the academic achievement of students. Only if the tests employed are of high quality could they assist the teacher in identifying the true strengths and weaknesses of students, allowing him to provide them with appropriate feedback to enhance their learning. The following are the essential characteristics of an effective evaluative instrument, such as a test.

- Validity
- Reliability
- Objectivity

When all test items measure what the test intends to assess, a test is said to have a high level of validity. If the test items do not adequately sample the content elements that assess the to-be-tested attributes, then the test is of poor quality. In a nutshell, the 'Content Validity' of a test could be improved by assigning appropriate weight to all content areas included in the test and developing an adequate number of test items across the entire spectrum of content areas intended for the test.

In addition to using clear and unambiguous language, test times should also indicate the expected size of student responses. As an alternative to training a question such as "What are the causes of a test's poor quality? It is preferable to design the question as "Name any three significant reasons for the poor quality of a test" so that

there will be no variation in scoring student responses, i.e., the scoring will be objective. As the objectiveness of a test increases, so too does its reliability. The reliability of a test is deemed to be high if there are few variations in the marks awarded, regardless of when the evaluation of answer scripts is conducted. If there is no variation in the marks awarded, regardless of who scores the test's answer sheets, the test's objectivity is very high. The majority of achievement tests administered in schools today are of subpar quality.

The following are the reasons for this.

- They do not evaluate the instructional objectives they claim to evaluate.
- Students are permitted to make educated guesses on multiple-choice examination questions.
- There are multiple correct responses for each item on the exam.
- In a few of the multiple-choice questions, none of the provided options corresponds to the correct response.
- There is a lack of clarity in the wording of the questions, such that students are unable to determine the expected length of the response, and more emphasis should be placed on certain aspects of the answer. The assessment of answer scripts for exams with such ambiguously phrased questions will be highly subjective, and the validity of such exams will also suffer.

In addition to assessing students' learning achievements, achievement tests aim to provide feedback so that students can improve their learning. Therefore, low-quality achievement tests not only fail to assess students' true learning achievement, but also do not contribute to student learning improvement. The majority of achievement tests contain test-items based on the instructional objectives 'recall' and 'recognize' the content elements to assess students' ability to remember and retrieve information; they do not assess higher-order mental skills. To improve the quality of achievement tests, teachers should receive in-service training on developing various types of test items and constructing a good achievement test.

DOMAIN DEPENDENCY

Whatever may be the learning, it is based on three domains

- Cognitive domain
- Affective domain
- Cognitive or Psychomotor domain.

The cognitive domain includes mental activities that contribute to the development of content knowledge and intellectual skills. Emotional development is associated with appreciation, attitude, and values, among other factors. The affective domain concerned with encouraging the growth of factors such as student learning material. This domain extends beyond merely listening to others. It is acknowledged that the affective domain in the curriculum is an important aspect of learning. In the psychomotor domain are included abilities based on neuromuscular acts or bodily organs. The cognitive domain is considered the most important of these three in the instructional process. The level of development attained in the cognitive domain makes it possible to attain the expected learning outcomes in the other two domains, namely the effective and psychomotor domains. Consequently, the cognitive domain is accorded greater weight than the other two in the teaching-learning process.

According to Benjamin Bloom, there are six levels within the Cognitive domain.

a) knowing
b) understanding,
c) applying,
d) analyzing,
e) synthesizing, and
f) evaluating.

These abilities starting from 'knowing' are hierarchically arranged in the ascending order, based on their development and difficulty level. These from the six aspects of

knowledge development and guide the assessment of the knowledge attainment of learners at the end of an instructional period. These six aspects helping to assess learning outcomes should be kept in mind while planning to construct an achievement test.

'Knowing' is related to retention in memory of what is learned. Retrieving those recorded in memory is of types –

(i) 'Recalling' and

(ii) 'Recognizing.'

The cognitive skill of 'understanding' involves making use of the knowledge and skills one has acquired in a new situation. Behavioral elements like 'Giving a reason for,' 'Establishing relationship,' 'Infer,' 'problem-solving' etc. are included in the cognitive skill of 'Application.' The cognitive skills 'Analysis', 'Synthesis,' and 'Evaluation' are successive higher-order mental skills, following the skills of 'Application.'

The major problem involved in the assessment of learning achievement is that most of the tests contain test-items that test 'knowledge' and 'understanding' of students; they do not attempt to test higher-order mental skills like 'application.' Hence, the validity of such tests is usually low; these tests lack the ability to assess the true learning proficiency of students. Achievement tests should be so constructed that they contain at least 20% of the total test-items that test higher-order mental skills.

Instructional objectives in the affective domain beginning with developing 'appreciation' gradually reaches the highest level of 'character formation,' through the intermediate levels of developing 'interest,' 'attitude,' and 'value' in the learners. Learning achievement in the affective domain is to be measured by using aptitude tests, attitude scales, interest inventories, etc. Achievement tests are not appropriate for assessing the affective domain instructional objectives.

Skills learned by students are to be assessed using the behavioral elements like 'Perception,' 'Imitation,' 'Manipulation,' 'Precision,' 'Articulation,' and 'Naturalization.' Practical tests that evaluate students' skills of drawing, marking the particular point or parts in a given diagram, organizing a laboratory experiment efficiently, recording the

measurements accurately and expressing them in proper units, etc. should also be given importance in the assessment of learning proficiency achieved by students.

As the three domains of learning are different, for assessing students' learning proficiency, employing different methods of assessment becomes indispensable. In assessing student learning, in addition to written tests employing oral tests, observation of performance, assessing the ability to work with others as a team, etc. to become necessary. Briefly stated, formative and summative tests should form integral parts of Continuous and Comprehensive evaluation of student learning.

MEASUREMENT ISSUES

Measurement in education involves determining the cognitive, affective, and psychomotor learning achievements of students. It involves four activities –

- Designing opportunities to collect evidence,
- collecting evidence,
- interpreting the collected evidence,
- and acting based on the interpretations are all components of evidence-based decision making.

In the assessment of learning, there are two aspects

i) Formative evaluation and

ii) Summative evaluation.

Issues in Measuring the Affective and Psychomotor Domains Objectives

In addition to the written tests used to measure the cognitive domain objectives such as 'knowledge,' the formative assessment of students' learning also requires the measurement of affective domain objectives such as attitude, involvement/interest, etc. and different psychomotor skills. The teacher's observations play a significant role in evaluating the affective and psychomotor domain objectives. When there is insufficient teacher observation of student learning, the obtained measurements are misinterpreted.

Problems in using observation as an assessment technique

- Personal preferences and limitations of the observer will impact the quality of observation.
- Only outward behaviour can be observed; inner emotions cannot be determined.
- Observers could only gather information regarding a single aspect of student behaviour.
- It may not be possible to record on the spot, and the data recorded may not be accurate.
- The presence of the observing teacher may prevent students from expressing their natural behaviour.
- Observation requires additional time, perseverance, and keen perception.

Principal issues in the formative assessment of student-motor domains are the provision of appropriate opportunities for observing student behaviour and the interpretation of the data derived from such observations. The tact and experience of teachers may be of great assistance in managing these issues.

Issues in Measuring the Achievement of Cognitive Domain Objectives

Written examinations play an important role in measuring the objectives of the cognitive domain. The items on written examinations should be arranged sequentially and related to the various facets of learning. Most frequently observed limitations in written examination test items are:

- Test items are not dispersed across the test's content areas, but rather grouped into one or two content areas.
- Questions are not composed of straightforward and unambiguous terms.
- Including more questions that assess the 'knowledge' objective and giving less weight to questions that assess higher-order cognitive abilities, such as 'application.'
- Not providing adequate instructions regarding the length and nature of the

expected responses for "Essay" and "Short Answer" questions.

- Start evaluating the answer scripts before creating the grading criteria.
- Short-answer questions are framed as "essay type" questions.
- Scoring answer scripts, evaluators account for "generosity error," "halo effect," "average error," etc.

Awarding Marks in the Measurement of Students' Learning Achievement

Students' academic performance cannot be measured as precisely and directly as their physical attributes, such as height and weight. Consequently, it may not be appropriate to use a measuring scale to evaluate the learning achievement of students. Understanding a student's academic performance requires comparing it to that of his or her peers (or peers). Therefore, it is more appropriate to grade students' learning achievement on a five- or seven-point scale, such as 'Very Good,' 'Good,' 'Fair/Average,' 'Below Average,' and 'Poor' The development of 'rubrics' rather than a 'scoring key' is necessary for such an evaluation of students' responses.

Use of Standardized Tests in Measuring Proficiency Achieved in Learning

When using standardised tests to measure the academic achievement of students, we must ensure that 'standardization' is carried out correctly; otherwise, the accuracy and dependability of the resulting measurements may be compromised.

Issues Related to Other Factors in Measuring Learning Achievement

- If data related to all aspects of learning are not available when measuring learning achievement, the obtained measurements and their interpretations are affected.
- Our assessment of students' learning achievement may be erroneous if we use the data obtained from assessing students' learning achievement without giving the appropriate weight to various aspects of learning.
- Some extraneous factors may have positive or negative effects on our measurements when evaluating student learning.

- In situations where we are compelled to use particular measures of learning achievement, they may have a significant impact on our evaluation.

Problems Related to Evaluation System

If "Education Process" is considered a system, then "Learning Assessment" is a subsystem. A system can only function efficiently if all of its subsystems operate properly. According to Gitomer and Dusche (2007), there are two subsystems named Formative assessment and Summative assessment within the Learning Assessment System. The formative assessment consists of oral examinations, short-answer assignments, and evaluations of student participation in classroom learning activities, among other components. In the summative evaluation, written tests play a significant role. If these two types of assessments do not function independently and cooperatively, then the 'Learning assessment' system will be plagued with problems.

The main issues that may arise in an evaluation system are:

(i) A system of evaluation that relies solely on written examinations and related problems.

(ii) Problems associated with rubric usage.

(iii) Problems associated with student performance evaluation.

Written Examination based Evaluation System

A formative assessment system that relies solely on paper-and-pencil tests cannot be implemented effectively. If oral tests and teacher observation, which could evaluate students' participation in the day-to-day classroom teaching-learning process, are not given a high priority, formative assessment will continue to be largely ineffective. Written examinations administered at the end of the instructional period or at the end of each semester/term may provide certification of learning proficiency but are less effective in enhancing student learning. In addition, written examination question papers that lack validity and reliability, have test-items that are not evenly distributed across all content areas, and contain a greater number of items that test primarily 'Knowledge objective,' will not be of much assistance in accurately assessing student learning.

Problems Related to Preparing Rubrics

It is simple to create rubrics for observational assessments of students, such as evaluations of their physical skill development, completed assignments, etc. However, preparing rubrics for written exams is difficult, particularly for essay-style questions. If a teacher does not develop rubrics through a detailed discussion with students, they will lack transparency, leading to difficulties in assessing students' achievement in learning.

Problems Related to Students' Performance

Unless rubrics are created and utilised in the assessment of physical skills and experimental skills involved in conducting laboratory experiments, such as fixing and handling apparatus properly, observing and recording the readings accurately, etc., problems will arise in evaluating students' performance. The internal components of the evaluation system are impacted by problems associated with formative and summative assessments. Problems associated with the external components of the evaluation system include those associated with the method of administering assessment tests (e.g., adherence to the allotted time limit, plagiarism, impersonation of candidates in the examination room, etc.).

REFORMS IN ASSESSMENT

The current examination system encourages students to memorise material to be learned, store it in memory, and retrieve it efficiently, rather than assessing their comprehension of the subject matter. The classroom teaching-learning process has been reduced to teachers imparting subject-content-related information and students absorbing and memorising it. Through classroom instruction, teachers focus on covering the content areas, while students are more concerned with passing the exams. The majority of exam questions lack validity, reliability, and objectivity. Noncognitive learning outcomes are neither continuously nor exhaustively assessed. However, educational research supports the assessment of student performance and a comprehensive evaluation of learning outcomes using a variety of assessment techniques. Reforms in assessment refer to the introduction of inappropriate changes to the evaluation system that facilitate a comprehensive assessment of students' learning achievement through the adoption of a multidimensional assessment of learning.

From the Mudaliar Education Commission (1952-54) to the National Policy on Education (1986), numerous Committees and Commissions have proposed various examination reforms, the most significant of which are listed below. A semester-based examination system will replace the current annual examination system. In the annual examination system, students pay less attention to their studies and begin putting in extra effort at the end of the year to pass the exam.

EXAMINATION REFORM REPORTS

Exams play a central role in our educational system. Educationists, teachers, and parents have argued for a long time that our current examination system is inadequate and should be drastically revised. There are numerous reasons to reform the current examination system.

1. Reforming and enhancing examinations.
2. Evaluation is a fundamental component of command instruction.
3. Testing should not give importance to memorization.
4. Conducting ranked examinations.
5. Identification of learning disabilities.
6. Bringing about exam reform.

Examination and Evaluation in Mudaliar Commissions Report(1952-53)\

- There should be fewer external examinations administered. There should be one and only one public exam.
- Reduce the number of essay-style questions and increase the number of objective-style questions.
- It is necessary to create and maintain a "cumulative record" for each student.
- A system of compartmental examinations should replace the final public examination.

Kothari Commission's Report (1964-66)

- To enhance written examinations so that they serve as a valid and dependable indicator of educational achievement.
- Important aspects of a student's development that cannot be measured by standardised tests.
- Lesser Primary Level
- Upper Primary Level Secondary Primary Level

Recommendations of National Policy on Education(1986)

- Performance based evaluation
- Subjectivity
- The de-emphasis of memorization
- Continuous and Comprehensive Evaluation of instructional time
- Effective evaluation process
- Improvement in the conduct of examination
- Semester pattern
- Use of grades

Yaspal Committee Report(1992-1993)

- National Counseling Center
- Team Report

1. Size of school bag
2. Examination system
3. Joyless learning

4. Syllabus and textbooks
5. Language problem

National Curriculam Frame Work(NCF2005)

- Perspective of NCF
- Learning without burden
- Joyful learning
- Education with experience
- Preventing a child from becoming depressed
- Text book omission
- Fostering trust and integrity
- Child-centered approach
- Free compulsory education
- Language
- Work experience

Sachar Committee(2005-2006)

- Exposing the backward of the Indian muslim community
- Employment in the reservation system
- Relaxation in entrance examination
- Low tuition fees.

National Knowledge Commission(2006)

- Citizen acquiring knowledgeable skills

- It faced with challenges
- Success in versatile knowledge
- Realizing the need for science and technology
- Promoting agriculture only industrial knowledge base.

OPEN BOOK METHOD

Open book system of assessment permits students to bring texts or resource materials, reference books, their own notes, etc. into the examination hall, use them to identify the appropriate answers to the questions posed in the written examination, reflect on them, and then present their final answers. This type of assessment system seeks to evaluate students' ability to locate and apply information and knowledge, statistical data, precedents, citing, quotes, etc. from multiple sources within the allotted time limit.

Two Forms of Open Book Examinations

Open Book examination could be implemented in the following two forms.

a) Traditional Method

Students are required to write answers to the question paper in the presence of the invigilators in the examination hall and submit their answer scripts within the allotted time for the examinations. The only difference is that students are permitted to prepare answers using texts and other resources they have brought into the examination room before the exam begins. The essence of this method is that students must take their seats in the examination room and finish answering the question paper within the allotted time by referring to texts and other resources.

b) Answering the test from home

Students could take the question paper home, compose their response, and return the answer script the following day.

Kinds of Materials Used in Open Book Examinations

In open book examinations, students are typically permitted to consult and prepare answers using textbooks, reference books, and student-created notes, among other sources. However, market-available guides are not permitted. In general, there are no limits on the number of reference materials that may be used during open book examinations; the only restriction is that students must prepare their own answers without seeking assistance from others.

Kinds of Questions Finding Place in Open Book Examinations

The examination items on open book exams do not assess students' memory, i.e. their ability to remember and recall. They assess the ability to locate and utilise information for problem-solving and to present logically sound arguments and solutions. In open-book examinations, neither topic nor unit-specific direct questions are asked. As they require students to compare, contrast, differentiate, and explain the contradictions among the laws, the ability to refer to certain books or resource materials, identify pertinent information, and apply it appropriately is crucial. Since the time limit for answering the question paper is fixed, unless students have already read the textbooks or reference materials multiple times, it is extremely difficult to locate the pertinent information among the books available. Generally, essay-style questions, problem-solving, or presenting arguments for and against the suggested solution to a problem may be asked in open-book examinations. The format of questions depends on the instructor or educational institution administering the examinations.

Misconception about Open Book Examinations

1. Very easy to succeed

Since there are no direct questions, the information from the books cannot be presented as such when responding to the questions. The questions assess a student's ability to identify the correct book among those allowed to be viewed that contains the required information, locate the pertinent information within it, and intelligently apply it when presenting the answer.

2. No previous reading of books is required

It is a common misconception that students can immediately take written exams without any prior preparation. Only if books have already been read will it be possible to quickly locate the necessary information and prepare answers within the allotted time frame.

3. Using the Information from books as such is possible

In open book examinations, information from books cannot be used directly to answer questions because the questions require critical thinking and application of the information from books.

4. More the number of books taken to the examination hall more will be the marks obtained

Likewise, this notion is false. Due to the limited time available for detailed book study in the examination room, examining/consulting a large number of books is a distraction and a waste of time. In order to quickly select the appropriate book, conduct a search, and collect the necessary information, only a few essential books are permitted in the examination room. This alone is sufficient to pass the examination.

Advantages of Open Book Examination System

1. As this type of examination does not test students' memories, they do not need to cram a great deal of information.
2. Provides an opportunity for students to acquire knowledge during the process of gathering appropriate learning materials to bring to the examination.
3. Develops students' ability to locate the information they need in books and other sources.
4. As students are required to summarize the content of the books cited, their comprehension and synthesis skills are improved.

Disadvantages of Open-book Examinations

- All students are not equally equipped regarding the books they bring to the examination since only a limited number of books will be available in the library on any topic. Further, even if students want to buy them for themselves, some books are costly.
- During examinations, more desk space is needed for each student to keep their books and refer them.
- Some students may spend too much time searching for the relevant information for answering a question, which results in that they could not answer most of the other items.
- For most of the students, the open-book examination is quite unfamiliar, and hence they develop stress and anxiety.
- It could not be expected that all students would have taken notes regarding the important concepts or ideas contained in the books they have read and carried to the examination hall.
- In open-book examinations, most of the students do not score high marks.

ONLINE EXAMINATION

Online Examination refers to the method of assessing a remote candidate (s) that utilizes an internet connection and information technology to determine the extent to which a participant has knowledge regarding a given topic or syllabus. In other words, "online examination" refers to an electronic assessment method in which a student, using a computer with an internet connection, can view the test-items contained in the question paper on the computer screen and record his/her answer for each. The majority of the questions on the online examination will be multiple-choice questions. Online tests are only used to assess cognitive abilities. The responses of the students are electronically graded on the spot, and the exam results are typically displayed on the computer screen as soon as the student completes the exam. Exam results could be received in printed form as well. Online examinations include the 'GMAT' (Graduate Management Admission Test), 'GRE' (Graduate Record Examination), and 'SAT' (Scholastic Assessment Test).

Some examples for online examination

1. **TOEFL-** Test of English as a Foreign Language
2. **GMAT-**Graduate Management Admission Test
3. **GRE-**Graduate Record Examination
4. **SAT-**Scholastic Assessment Test
5. **NET-**National Eligibility Test

Advantages of Online Examinations

1. Students are not required to take the examination at a specific location and time.
2. Online examinations are administered twenty-four hours a day, seven days a week.
3. The time required to answer the questions is minimal. The only time required is for thinking and selecting the best answer from the options provided; clicking the selected answer requires only a second or two. Online examinations are intuitive.
4. There is no room for unethical behaviour such as "copying" the answers of others.
5. Students can take the exam at a reduced fee.

Disadvantages of Online Examinations

1. Online examinations rely heavily on Internet connectivity; issues with obtaining uninterrupted Internet connectivity may arise.
2. Answers in online assessments are either correct or incorrect. There is no opportunity for explanation or partial credit.
3. It is undeniable that one can pass an online examination and earn high marks by merely guessing and not by possessing solid knowledge.
4. This examination format is inappropriate for essay questions.
5. Students are ineligible to participate in online examinations if they lack fundamental

computer operation knowledge.

UNIT IV

ASSESSMENT PRACTICES IN INCLUSIVE SCHOOL

Differentiated Assessment- Culturally Responsive Assessment - Use of tests for learner appraisal- Achievement test, Diagnostic test- Construction of Scoring key- Marking Scheme - Question wise analysis - Quality of a good test -Ensuring fairness in assessment -Assessment for enhancing confidence in learning-Assessing the disabled and performance outcomes of diverse learners-Assessment and feedback-Process of feedback.

Introduction

"Inclusive Assessment Practices" refers to the adoption of policies and practices that facilitate employing differential assessment methods and techniques to suit normal, gifted, slow learners, and disabled students who learn together as much as possible in the classroom and enable each of them to improve their learning.

Concept of Inclusive Practices

Inclusive school practices have the following characteristics:

- All students (including those with different kinds of disabilities) are valued as equal members of the school community.
- General education curriculum
- Academic and nonacademic activities
- State education standard
- Supplementary aids and services
- Instructional methods and strategies

Concept of Inclusive Assessment Practices

- Evaluation strategy

- Different ethnicities
- Different cultural groups
- Specific cultural understanding
- Individualized or small-group instruction or peer tutoring.
- previous academic experience of students
- Planning the learning activities of categories of disability

Benefits of inclusive assessment practices

- Help each student improve their knowledge and skills.
- Teacher will coordinate classroom instructional activities
- Authenticity and dependability
- Assessment for learning motivates all students to contribute

Differentiated Assessment

Students are unique individuals who learn at varying rates and in various ways. When designing differentiated assessment experiences, each student's characteristics should be taken into account.

Meaning and Definition of Differentiated Assessment

Differentiated assessment is the process by which teachers adjust and modify assessment activities for individual or groups of students in order to accommodate a variety of learning needs and learning styles and preferences. Differentiated assessment may take into account individual student differences, such as their

- Different learning needs
- A variety of learning styles and inclinations
- Current level of comprehension of a subject or skill Prior learning experiences

- Learning preferences and styles
- Engagement and motivation in relation to learning interests and abilities

Principles of Differentiated Assessment

Differentiated assessment can result in enhanced student learning when students use their existing knowledge to discover, construct, and incorporate new information and skills. It requires teachers to consider a variety of assessment opportunities suited to the needs, interests, and abilities of each student.

Differentiated assessment involves the following:

- Before teaching a topic or content unit, the teacher collects data on each student's prior knowledge, learning ability, learning needs, and preferences, etc.
- Teacher conducting differentiated assessment based on data collected about individual students, i.e., the teacher divides the students into multiple groups based on their learning needs and preferences, learning ability, etc., and arranges a suitable instructional method for each.
- Taking into account which resources and stimuli will be most beneficial to specific groups and utilising them accordingly during instruction.
- Conducting formative assessment, which includes a variety of techniques, such as asking questions intermittently during instruction, holding a brief class on the same day, and utilising oral tests during and at the conclusion of instruction, etc.
- Students are provided with individualized feedback based on the results of the summative evaluation of learning attainment administered at the conclusion of the instructional period in order for them to understand their respective strengths and weaknesses in the content areas assessed.

Briefly, differentiated assessment entails I the teacher collecting data regarding, (ii) then, based on the collected data, employing appropriate instructional methods and techniques that cater to the learning needs of various groups of students in the classroom, and (iii) utilising various assessment tools and techniques, such as teacher-made written

tests, checklists of traits and characteristics that suit the individual needs of students, to evaluate the learning achievement of each student.

Characteristics of Differentiated Assessment

Presented below are the characteristics of differentiated assessment:

- The decision is essential to the process. Choice of learning activity as well as assessment options (how the student will demonstrate understanding).
- The learning tasks always take the student's strengths and weaknesses into account. There will be visual cues for visual learners, auditory cues for auditory learners, etc.
- Multiple intelligence is considered, as are the learning and thinking styles of the students.
- Authentic lessons ensure that all students can make connections.
- Project- and problem-based learning are also essential components of differentiated instruction and evaluation.

Examples of Differentiated Assessments

- Quizzes
- Tests
- Essays
- Debates
- Portfolios
- Projects
- Reports
- Models

- Demonstrations
- Observations
- Journals
- Books
- Self-Evaluations
- Peer-Evaluations etc.

Culturally Responsive Assessment

Increasingly, schools in India are comprised of students from diverse cultural backgrounds, i.e., the students in our classrooms differ in terms of their race, religion, language, socioeconomic status, etc. In Tamilnadu schools, for instance, there are also students whose native language is Malayalam, Telugu, or Kannada, in addition to Tamil. Likewise, students from Anglo-Indian and French cultural backgrounds can be found in our schools. In our city's colleges, we can also find black students from various African nations. Studies indicate that the cultural background of students has a substantial effect on their learning.

A good learning environment provides students from diverse cultural and linguistic backgrounds with equal learning and development opportunities. Consequently, assessment practises used to evaluate the academic achievement of students from diverse cultural backgrounds should be adaptable enough to meet their needs. 'Culturally Responsive Assessment' refers to an assessment procedure that ensures that none of the cultural groups among the students in the class feel negatively impacted.

Culturally responsive teaching is a pedagogy that acknowledges the significance of incorporating students' cultural references into all facets of learning. Some of the characteristics of culturally responsive teaching are:

1. Positive perspectives on parents and families.
2. Communication of high expectations.

3. Learning within the context of culture.
4. Student-centered instruction.
5. Culturally mediated instruction.
6. Reshaping the curriculum.
7. Teacher as a facilitator.

Ways and Means of Creating Culturally Responsive Assessment

Social, economic status, native language, and learning styles of students should be taken into account in creating culturally responsive assessments.

1. Socio-economic Status

Students from high socioeconomic status families in which one or both parents have a college degree tend to have more advanced linguistic abilities and find it easier to complete schoolwork than students from low socioeconomic strata. As a result, it is necessary to provide special training to students from low socioeconomic strata in preparation for examinations.

2. Native Language

If the language spoken at home and in the place of residence (Native language) are identical, then there is no difficulty in educating the child through the native language. In contrast, if the child is educated in a language other than its mother tongue, i.e., its native language or any foreign language, the child finds it difficult to learn that language, particularly when it comes to pronouncing the language in its traditional style. Therefore, as far as possible, arrangements should be made for children to take exams in their mother tongue; otherwise, while evaluating the answer scripts, marks should be awarded only for pupils' comprehension of the subject content, and no weight should be given to the style of language and spelling of words used in their answers.

3. Learning Style

Each student has a unique learning style; some prefer to learn through visuals, others find it simple to learn by doing, and a select few may be able to learn through abstract thought. If the assessment of students' learning achievement attempts to take each student's learning style into account, it is referred to as "culturally responsive" assessment. For instance, a student who performs well on written tests may not perform as well on oral tests or tests involving physical skills. It is only appropriate to have culturally responsive assessments to evaluate students' learning achievements using a variety of methods and techniques, and in the language in which the students feel most comfortable. Currently, it may appear impossible to tailor assessment techniques to the needs of specific students. Nonetheless, as technology advances, the necessary tools may become available to make this at least partially a reality.

Use of tests for Learner Appraisal

Tests serve as benchmarks for evaluating the achievement and quality of students. Integrated assessment of learners' – learning processes. There are three types of tests that are directly related to the teaching-learning process.

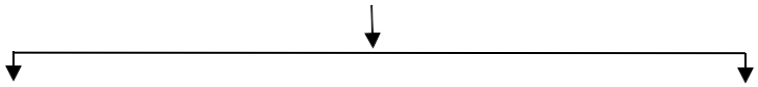
They are:

- Formative assessment tests
- Achievement tests
- Diagnostic tests

Formative tests are those that evaluate students' learning as it develops over the course of instruction. The term'summative test' refers to evaluations of a student's learning accomplishments after instruction has concluded. Summative assessments are also referred to as "achievement tests" or "examinations." On the basis of the results of achievement tests, diagnostic tests are administered to determine the specific nature of difficulties encountered by students in certain areas of the subject matter being taught, and "remedial instruction" is arranged accordingly. Two types of achievement tests exist: I Teacher-made tests applicable to a particular school and (ii) Standardized tests

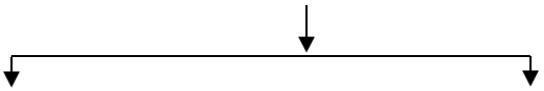
applicable to all schools that follow a particular curriculum; their validity and reliability are well-established, and they are frequently of a high standard.

Tests that assess student learning



Formative Tests (Undertaken during the process of teaching)

Summative Tests (Undertaken after a Period of teaching)



Teacher – made Tests (Applicable for all particular School)

Standardized Tests (Applicable for a same syllabus)

Important Features of Using Tests for Learner Appraisal

- The process of assessing the quality of student learning is based on evaluating the students' responses to the various test items, which reflect their subject-matter comprehension.
- Students' learning is evaluated by comparing their learning accomplishments to the expected learning outcomes.
- The rate of student learning reveals the extent to which the classroom instruction of the teacher has met the students' learning needs.
- It is the teacher's duty and responsibility to periodically assess student learning and report the results to the student's parents and other education stakeholders.
- To evaluate student learning, a teacher must utilise a variety of assessment tools and

methods.

- Assessment of student learning is not an annual event, but rather an integral part of the teaching process.
- Evaluation of students is a process that must be conducted with care and efficiency.

ACHIEVEMENT TEST

Introduction

A test of student achievement is a crucial component of school evaluation and has great significance for measuring instructional and subject-area progress. Achievement refers to a person's learning achievements, accomplishments, and so on. It is directly related to the growth and development of the student in educational settings.

DEFINITION

"Any test that measures the attainments and accomplishments of an individual after a period of training or learning"-**NM.Downie**. "The type of ability test that describes what a person has learned to do."-**Thorndike and Hagen**. "The achievement test focuses upon an examinee's attainments at a given point in time."-**Popham**

Construction of an Achievement Test

The development of a test to determine the extent to which students have mastered the course material in a subject, i.e., the development of an achievement test in a subject of study, plays an important role in educational evaluation. These are the primary steps involved in the development of an achievement test.

1. Planning for the exam
2. determining the test's design
3. Developing the "Blueprint" for the examination
4. Creating examination questions and preparing the question paper

Let us discuss the above steps in the construction of an achievements test in detail in the following sections.

Planning the test

The important tasks involved in this step are:

- Choosing the subject matter of the examination
- determining the time limit for taking the exam
- Setting the total number of test points
- Determining the types of test items (e.g., Essay-type questions, Paragraph-type questions, Short-answer questions, and Objective-type questions) that will be included on the examination.
- Choosing the number of items for each question type.
- Choosing which answer options to offer students in response questions.

Determining the Design of the Test

Tasks involved in this step are:

- Identification of testable instructional objectives and weighting of each objective.
- Assigning weights to the testable content areas.
- Assigning weights to various test item formats.
- Assigning weights to levels of difficulty.

Assigning weights to Instructional Objectives

Typically, instructional objectives such as 'Knowledge,' 'Understanding,' 'Application,' and 'Skills' will be assessed on achievement tests. "Assigning weightages to Instructional objectives" refers to the process of determining the weight to be given to these objectives in terms of the percentage of marks to be awarded. In a good achievement test, the two instructional objectives 'knowledge' (consisting of the

components 'recall' and 'recognition') and 'Understanding' will receive no more than 60 percent of the test's total marks; the objective 'application' will receive 30 percent of the test's marks, and 'skills' will receive the remaining 10 percent.

(E.g.) In the Model 'Blueprint' given, weightages assigned to the various instructional objectives are as follows:

S.No	Instructional Objectives	Marks Allotted	% of Marks Assigned
1.	Knowledge	10	20
2.	Understanding	20	40
3.	Application	15	30
4.	Skill	5	10
	Total	50	100

Assigning Weightages to content Areas Tested

'Giving weightages to Contents' refers to the practise of assigning varying percentages of marks to the various topics or lessons in the test's content (or content units) based on their relative significance.

(E.g.) In the model 'Blueprint' given, weightages assigned to the six content units taken up for the test are as follows:

S.No.	Content Units	Marks Allotted	% of Marks Assigned
1.	Unit I	5	10

2.	Unit II	6	12
3.	Unit III	18	36
4.	Unit IV	5	10
5.	Unit V	10	20
6.	Unit VI	6	12
	Total	50	100

Assigning Weightages to Different Forms of Test-Items

The number of test-items to be included in a test depends on I the time limit set for the test, (ii) the types of test-items to be included, (iii) the age level of the students, (iv) the level of difficulty of the contents, and (v) the breadth of the subject content. After determining the number of test-items to be included in the exam, the next step is to determine the different types of test-items that should be included. There could be three or four types of questions on a one-hour test, and five or six types of questions on a two-hour test. For a 45-minute exam, it is preferable to use only three types of questions: I essay questions, (ii) very short answer questions, and (iii) objective questions. Multiple-choice questions are preferable to fill-in-the-blank questions when it comes to objectives-based examination questions. Any one or two forms of 'True or False,' 'Matching,' etc. may be included in the exam. It is important to remember that students should be able to answer all questions within the allotted time. Commonly, one point is assigned to each item of the objective type, two points to each item of the very short answer type, four or five points to each paragraph question (short answer type), and eight or ten points to each essay type question. (E.g.) In the Model 'Blue – Print' given for a test of one-hour duration, weightages gave to different forms of the test – items are as follows

S.No	Form of Test – Item	No. of Test Items	Allotted Marks	% of Weightage given	The time required to answer (in minutes)
1.	Essay Type Question	1	10	20	20
2.	Paragraph Question	2	10	20	10
3.	Very short Questions	5	5	10	5
4.	Objection Type Question				
	a) Multiple Choice	10	10	20	10
	b) Matching	5 (Premises)	5	10	5
	c) True/False	5	5	10	5
	d) Fill up the blank	5	5	10	5
	Total	33	50	100	60

Assigning Weightages to Difficulty Levels

Generally, most of the items in an achievement test (covering about 60% of total marks) will be of 'average difficulty level'; those covering 20% of total marks will be difficult to answer, serving as a challenge for the gifted and the rest of the test-items (i.e., those covering 20% of marks) will be 'easy' to answer for all.

(E.g) In the model 'Blueprint' given, weights assigned to the different levels of test- items are as follows:

S.No	The difficulty level of Test-items	Marks Allotted	% of MarksAssigned
1.	Difficult Questions	10	20

2.	Questions with 'average difficulty level.'	30	60
3.	Easy Questions	10	20
	Total	50	100

Preparing the 'Blueprint' of the Question-Paper

'Blueprint' is a three-dimensional chart showing (i) instructional objectives tested (ii) content areas included and (iii) type of test-items finding a place in the test along with the number of test items and marks assigned for each of the three dimensions. The 'blueprint' reveals the structure of the question paper that is to be prepared.

Model Blue Print

Instructional Objectives → / Content Units ↓	Knowledge				Understanding				Application				Skills				Total
	E	S.A	V.S.A	O	E	S.A	V.S.A	O	E	S.A	V.S.A	O	E	S.A	V.S.A	O	
Unit – I						5(1)											5(1)
Unit – II				1(1) T/F				5(5) (Mat.)									6(6)
Unit – III				2(2) (F.B)	7(1)		1(1) (M.C)				1(1)	3(3) (M.C)	3(1)*				18(9)
Unit – IV										3(1)				2(1)*			5(1)

Unit – V				2(2) (T/F)							2(2)	6(6) (M.C)					10(10)
Unit –VI				5(5) (F.B-3 T/F.2)			1(1)										6(6)
Total	10(10)				7(1)	5(1)	2(2)	6(6)	3(1)	3(3)	9(9)		3(1)*	2(1)			50(33)
	10(10)				20(10)				15(13)								

Note: 1. E denotes Essay Type; S.A Short Answer Type (paragraph); V.S.A Very Short Answer O Objective type

2. Mat → matching;

M.C → multiple-choice;

T/F → True / False;

FB → Fill up the Blank

The number inside the bracket → number of test items;

number outside the bracket marks allotted

* denotes part of a question.

Use of Blue – Print of the Question – Paper

i. The use of blueprints in the development of examination questions increases their content validity.

ii. It indicates the scope of the examination and the weight given to its various

components.

iii. It ensures that the learning outcomes and subject content are given proper weight.

iv. It guarantees that each test item evaluates a learning outcome.

v. It guarantees that each test item is distinct and free of overlap.

Writing the Test – items and Assembling the Question Paper

Each type of question must be grouped separately when assembling the test-items and giving the question paper its final form, following the writing of test-items based on different topics or units of the subject's content, as per the blueprint. Brief instructions should be provided on how to respond to the questions in a given group.

(Note: The level of difficulty of a test item is determined through item analysis. This technique is used to develop a standardised achievement test. In contrast, the difficulty of items on a teacher-made achievement test is determined solely by the teacher's professional experience. Moreover, if the majority of students can correctly answer a question, it is considered to be simple. If a test question could only be answered by a small number of students, it is assumed that the question is difficult.

Scoring Key and Marking Scheme

Immediate following the preparation of a question paper is the development of the scoring key and marking scheme, which provide the guidelines for awarding marks to students' responses to each test item on the question paper.

Scoring Key

The list containing the correct answers for the objective type test-items of the question – the paper is known as 'Scoring – Key.' Students' answers for the test-items are to be compared with the correct answers given in the scoring key in awarding marks for their responses accordingly.

Example of a Scoring Key

Question No.	Correct Answer	Marks to be awarded
1.	(a)	1
2.	(c)	1
3.	(d)	1
4.	(b)	1
5.	True	1
6.	False	1
7.	False	1

Marking Scheme

It indicates the points or steps expected in the answer for each question and the distribution of the total marks for that question based on the expected points/steps. In addition, the marketing scheme will indicate, for language test papers, how many marks are to be deducted for misspellings and grammatical errors; for science test – papers, how many marks are to be deducted for not expressing measurements in the correct units, such as kilogrammes, metres, seconds, watts, volts, etc.

Example of a marking scheme

Test No	Type of the test –item	Expected Answer	Marking scheme
8.	Very Short – Answer type	Two reasons that are expected (i)	One mark is to be given for each correct reason.

		(ii)	
9.	Short – Answer type	Answers which fall in a paragraph or half a page ▪ Full marks can be given if all the expected points (four or five) are provided correctly ▪ Out of the 5 points, if three are stated correctly ▪ If, only one point is correctly stated in the ▪ answer	▪ Full Marks of 5 could be awarded ▪ Only three marks to be awarded. ▪ One mark is to be awarded
10	Essay	The expected answer will be in two or three pages. In it. appropriate points will be indicated as (i), (iii), etc. ▪ If all the points are correct ▪ The expected answer has eight points out of which only 4 to 6 ▪ points stated in the student's answer are correct. ▪ If less than 4 points stated in the student's answer are correct.	▪ Full arks ten can be given ▪ 5 to 7 marks can be given Three marks can be given

The evolution of answer scripts using the scoring key and marking scheme ensures, to a large extent, objectivity and transparency in the scoring.

Important features of a standardized test

It contains a set of specified procedures for preparing the test for a particular syllabus and implementing it.

- On the basis of a pilot study and item analysis, the finalised test items are determined.
- It has a well-described scoring system.
- A large group is selected from those for whom the test is designed, and the test is administered to them in order to obtain test scores upon which the 'Table of Norms' is based.
- With the aid of specialists, test scores are analysed to determine the test's validity and realism, and this information is then included in the test manual.
- In the testing situation, the only independent variable is the individual being tested, while all other variables, such as response time, motivation, and environmental conditions, are held constant.

Developing a standardized test demands huge efforts hard work and cooperation of many people big sample use of sophisticated statistical techniques experts' advice etc..,

Differences Between Teacher – made and Standardized Achievement Tests

Sl No	Teacher-made Achievement Tests	Standardized Achievement Tests
1.	Could be administered for students of a particular class or school	Could be administered for all students to different educational institutions, provided they have been taught the specified content units meant for the test.
2.	Tests only those concepts/ topics in a content area that are taught to the students in a class.	All concepts/sections in a specified content area are tested.
3.	Validity and reliability are not established.	Have a high level of validity and reliability; the procedures used for establishing validity and reliability are also mentioned.

4.	Generally contains 'Essay Type' 'Short Answer Type' and 'Very Short Answer Type' questions.	Generally contains 'Very Short Answer Type' requiring a word or two as a response; different forms of 'Objective Type' questions find a place in the test.
5.	Lacks objectivity in scoring responses.	Scoring is highly objective as the 'Scoring Key' is also provided along with the test to the examiners.
6.	General norms are not available; at best, a student's performance can be compared with the marks obtained by other students in the class.	As age norms/ grade norms are made available, a student's performance could be evaluated in terms of the general performance of similar students or peers.
7.	The administrative and scoring procedures are not well defined.	Administrative and scoring procedures are well defined and uniform for all.
8.	Without the assistance of experts, a subject teacher could prepare this test.	Developed with the guidance of subject experts.
9.	A single test is used for the entire class.	Available as individual and group tests.

Construction of a Diagnostic Test

Before constructing and utilising a diagnostic test, a teacher must identify students who struggle to learn the subject material. Generally, a teacher could easily identify students who were significantly behind in their learning achievement by analysing their test scores. After arranging student achievement test scores in descending order, the bottom 10 percent of students could be identified as being behind in their learning. It is obvious that they are experiencing learning difficulties. The following are the five steps in constructing a diagnostic test that identifies students with learning difficulties and the content areas in which they struggle:to learn and the nature of their learning difficulties.

1. Planning
2. Writing the test items
3. Assembling the test items to form the question paper
4. Providing clear instructions for answering the test
5. Providing the scoring key and marking scheme.

Different Steps in the Construction of a Diagnostic Test

The five steps involved in the construction of a diagnostic test are explained below:

Planning the Diagnostic test

By undertaking a question-by-question analysis of students' marks on an achievement test, the teacher can easily identify the questions for which more than fifty percent of students in the class have provided incorrect responses. The content areas in which these questions appear are deemed to be the students' areas of learning difficulty. Each topic should be broken down into discrete learning points. No learning point should be deemed unimportant. The discovered learning points must then be arranged in a logical sequence. At least one test item must be created for each learning point.

Writing the Test Items of the Diagnostic Test

Typically, diagnostic test items take the form of 'Very Short Answer type' or 'Objective type' inquiries. Questions should be phrased in brief, simple sentences that highlight the key learning points. There should be only one correct answer to each question. For each learning point, appropriate questions must be formulated. Questions should guide the learner from familiar to unfamiliar learning points.

Question wise – Analysis Item – Analysis

The quality of a test is determined by the items it contains. Therefore, test-items must be carefully selected, particularly during the development of a standardised test, by determining the discriminative index and difficulty level of each test-item being considered for inclusion in the test's final form. Thus, 'Item-analysis' is concerned with the problem of identifying the best items to be included in the test's final form so that the test will have certain specified characteristics, such as validity and reliability.

Indices of Difficulty Level and Discriminative Index of Test-Items

After scoring the test answer sheets for the pilot study, individuals are ranked from highest to lowest based on their total score (i.e., descending order). The top 27% comprise the 'high achieving group,' while the bottom 27% comprise the 'low achieving group.'

Then, we must determine, for each test item, how many students in each of the two types of groups answered correctly and calculate the test items' difficulty level and discriminative index.

Difficulty rating

Total number of students in both groups who have answered the test question correctly (DL) = Total number of students in both groups added together.

Using the value of the difficulty level.

50 as the dividing line, those items having value more than .50 are considered as 'easy items.'

Discriminative (D.I) of a test-item refers to the ability of the test-item to discriminate a high achiever from a low achiever. For a test-item having high discriminating power, the number of students answering it correctly will be more in number in the high achieving group and less in low achieving group. Discriminative index (D.I) for a test-item is calculated using the following formula.

No. of students who answered the test-item correctly in the high achieving group − No. of students who answered the test-item in the low achieving group

DI = ——————————————————————

No. of students in the high or low achieving group

(E.g.) Suppose among 50 students who participated in a pilot study, 9 of the high achieving and 5 of the low achieving group have answered correctly for a particular test-item. In that case,

No. of students in the High-Achieving group = 27 X 50 = 13.5 14

100

Similar No. of students in Low-Achieving group = 14

/ D.I = 9-5 = 4 = .285 .29

DL = 9+5 = 14 = .50

14+14 28

[Note: The above method of calculation is appropriate for objective type questions only.

For essay type questions the following method should be used]

Difficulty = Total marks obtained for a particular test item (like essay type)

Level (DL) Maximum Marks for X No. of those who attempted

that test-item to answer that test-item

X1 + X2 + X3 + ...

Doll = Maximum Marks for X No. of those who attempted that test-item to answer that test-item

Here X_1, X_2, X_3, refer to the marks obtained by different students

for a particular test-item.

Preparing the Final Form of the Question Paper

First, appropriate test items are to be chosen based on the test item's discriminative index; then, those with appropriate difficulty levels are to be chosen for the final test form. 50 percent of the test items selected for a question paper should be of "average difficulty level"; 25 percent should be "easy," 20 percent should be "difficult," and the remaining 5 percent should be "very difficult." Thus selected items should be arranged in order of increasing difficulty. The following table could be used to determine which test items should be included on a question paper.

Discriminating Power		Difficulty Level	
0.4 & above	Excellent Item	Between 0.4 & 0.6	Average Difficulty
Between 0.4 & 0.3	Good	Between 0.2 & 0.4	Difficult Item
Between 0.2 & 0.3	Average Item	Between 0.6 & 0.8	Easy Item
Between 0.2 & 0.1	Requires Improvement	Between 0.8 & 1.0	Very Easy Item
Less than 0.1	Item to be dropped or condemned.	Between 0 & 0.2	Very Difficult Item

Qualities of a Good Test

The qualities mentionedas characteristics of a good test are :

- Validity
- Reliability
- Objectivity
- Practicability
- Comprehensiveness
- Clarity.

Validity

The extent to which a test measures what it claims to measure is its validity. It describes the inferences that can be made from test scores. It is specific to the test's intended use and intended population. A science achievement test, for instance, should only measure students' science achievement; there is no place for testing language skills

in this context. Likewise, a general intelligence test that has been validated with rural students cannot be used to determine the general intelligence of the urban population, and vice versa. Therefore, prior to administering the test, we must determine "for whom" and "why" it was created.

Reliability

The reliability of a test is the consistency of scores obtained by the same individual when retested using the same/most identical or an equivalent version of the test. Reliable tests, regardless of what they measure, yield comparable results when administered multiple times. Thus, a test's reliability is dependent on its ability to accurately measure whatever it claims to measure.

Objectivity

Administration of the test, grading of responses, and interpretation of obtained scores should be independent of the examiner's subjective judgement. That is, an individual's score should be identical regardless of who administers the examination.

Practicability

This pertains to the examination administration. The practicability of a test is high if it is simple to administer, takes little time and money, and is straightforward to interpret the results.

Comprehensiveness

A test should cover all aspects of the subject being evaluated. On a test of academic achievement, questions should cover all of the test's content areas. The option for students to select and respond to a test item should be severely limited. Test items should assess all instructional objectives, including knowledge, comprehension, application, etc.

Clarity

The instructions should be concise and unambiguous so that students can respond without confusion. Similarly, questions should be formulated using straightforward,

unambiguous language. For instance, it is preferable to ask, "Draw the cross-sectional view of the human heart and label the part." Validity, reliability, and objectivity are the three characteristics that must be present in a good test at a minimum. Other desirable qualities are less important.

Ensuring Fairness in Assessment

Fair assessment entails providing all students with equivalent opportunities to demonstrate their learning. It does not necessitate treating each student identically. All students are evaluated using the methods and procedures that are most appropriate for them. Depending on the prior knowledge, cultural experience, and cognitive style of the student, this type of evaluation may vary from student to student. Therefore, the assessment system should include a variety of evaluation techniques, such as oral examination, performance/practical examination, observation, student assignments and learning portfolio, submitted project work, etc.

Assessment for Enhancing Confidence in Learning

Self-belief and confidence determine whether a person will persevere with challenging tasks or give up easily. Individuals with a high level of self-confidence believe they are capable of accomplishing anything, always strive for success, and can learn nearly anything. No matter how good a teacher's instructions are, the learning of those who lack self-confidence will never be good or improve. Therefore, the primary responsibility of a teacher is to build and maintain his students' confidence, which is greatly aided by formative assessment. When the teaching-learning process is ongoing in every unit of subject content, the primary objective of formative assessment is to enhance student learning.

The Goodwood assessment helps both the teacher and the students understand the outcomes of their teaching and the status of their learning, i.e., assessment for learning helps students understand what they have learned and how they have learned it. A student who discovers through formative assessment that his learning progress is inadequate could, in addition to becoming aware of the gaps in his learning, also become aware of the flaws in his learning style. This allows students to develop the ability to take charge of their own education. After completing the formative assessment, students

could meet with their teachers, peers, and parents to determine how to enhance their learning. This allows students to acquire new knowledge and skills based on their individual objectives and requirements.

Relationship of Assessment with Student's Self- confidence

The term 'Self-Confidence' refers to one's self-assurance and belief in his or her own ability and strength. Self-confidence is exemplified by an individual's positive thoughts and beliefs, such as the belief that he or she can complete any task successfully and attain the desired outcomes.

The assessment of learning should enhance the student's self-confidence rather than diminish it. Lea, learning, assessment as a process should not end with testing and grading student performance; it should also psychologically strengthen the learner. Nonetheless, it should also provide appropriate feedback to students, guiding them to improve their learning and act with self-assurance. The teacher's feedback following the assessment of learning should instil confidence in the students that they are capable of achieving their objective through learning. Students' self-confidence is bolstered by feedback on their performance.

As students who perform well receive more positive assessment reports from their teachers, their confidence grows. This enables them to diligently pursue their objective. Those who perform poorly on the assessment of learning achievement have diminished self-confidence. However, positive feedback from the teacher motivates students to improve their learning, restoring their confidence to that of their peers. Consequently, assessment with appropriate feedback increases the self-confidence of both high and low achieving students.

Relationship of Assessment with Self- Esteem of Students

Self-esteem is "the overall worth that a person attributes to himself." It is an individual's subjective emotional assessment of the self. It is comprised of two parts. They are self-evaluation and attitude toward one's self. A person with high self-esteem, for example, holds beliefs such as "I am competent," "I am proficient and powerful," etc. A person with negative beliefs and emotions, such as "I am useless," "I am inefficient," "I cannot compete and beat others," etc., will have low self-esteem. High self-esteem

causes a person to be proud of himself, whereas low self-esteem causes a person to feel insecure and resort to self-pity. However, an inflated sense of self-worth can lead to egotism. Evidently, self-esteem consists of two components: a personal evaluation of oneself and an attitude toward oneself. For instance, the statement "I am a good writer and I am proud of it" reveals a person's self-esteem.

What others say about a person, his interactions with others, competing with others to know his position, participation in social activities, expressing one's individuality, etc., all play a significant role in determining a person's self-esteem. Self-esteem influences our interpersonal relationships, interpersonal skills, and outlook on life. When the learning achievement of students is evaluated and the results are communicated, the self-confidence and self-esteem of students who demonstrated a high level of learning proficiency increase, whereas the self-confidence and self-esteem of low achievers decrease.

When a common assessment technique is used to evaluate the learning achievement of all students, there is a high probability that some students' self-confidence and self-esteem will increase while others' will decrease. However, if the teacher is aware of how each of his students learns and uses assessment techniques that correspond to each student's learning style, then all students have equal opportunity to fully express their learning potential. This practise of assessment, which is fair to all, boosts the self-esteem of all students. Regardless of the assessment procedure the teacher employs, it must be followed by appropriate feedback, which enables all students to understand how to improve their learning. This assessment strategy fosters and maintains students' self-confidence and self-esteem.

In conclusion, assessment of learning helps each student understand his or her self-worth. Being aware of one's self-respect serves as a motivator to improve one's educational abilities. The relationship between students' academic achievement and self-esteem is positive.

Relationship of Assessment with Motivation

Motivation is the process of stimulating an individual's desire to achieve a personal objective. Assessment of learning achievement plays a significant role in fostering in each

student the desire to demonstrate his or her learning proficiency effectively and obtain high scores to outperform others in the class, i.e., assessment of learning achievement can foster in students the desire to improve their learning. If this is to become a practical possibility, students must receive appropriate feedback following the assessment of their learning.

Assessment of learning, in addition to assisting students in identifying the gap between their expected level of learning achievement as a result of instruction and their actual level of learning achievement, serves as the foundation for providing students with feedback on how to close this gap. We can therefore assert with certainty that assessment for learning increases student motivation to learn.

The relationship between assessment of learning and students' self-confidence, self-esteem, and learning motivation is positive. The crucial condition for this to be articulated is the provision of appropriate feedback, followed by each evaluation of learning.

Assessing the disabled and Performance outcomes of diverse learners Meaning of disability

A disability is an impairment that can be cognitive-developmental, mental, physical, or sensory, or a combination of these. It has a significant impact on a person's life activities and may be present at birth or develop later in life.

Assessing the disabled

When designing assessment methods, it is crucial to consider the needs of students with disabilities for a number of reasons. Many disabled students are unable to perform to the best of their abilities due to barriers in their course's assessment methods. This is likely the most important reason. If these obstacles are not eliminated, there is a risk that these students will fail or, at the very least, not earn the degree pass that they are capable of. Researchers in education have emphasized the significance of the assessment process in higher education. Students are highly motivated by assessment [Gibbs, 1999] and may devote the majority of their time outside of class to completing it. In the hands of a skilled academic who aligns the assessment methods with the teaching and learning outcomes of the course, assessment can be an effective teaching tool.

Biggs [1999] outlined such an approach to curriculum design in which he asserts that teaching is effective and results in good learning if the methods employed are aligned with the learning objectives. In order to determine whether or not this learning has occurred, appropriate assessment methods are also required. Currently, universities alter the assessment process on an individual basis. These modifications can be divided into three categories.

Alternate assessments, such as providing an essay in lieu of an examination; Additional accommodations, such as providing a PC to a candidate during an examination. Adjustments / accommodations / adaptations - such as providing a viva - are examples. Each of these approaches has its own challenges and is responsible for the existence of numerous departments in higher education.

Identifying the disabled

- It is more crucial to identify those with disabilities. The following methods can identify disabled individuals.
- Learning disabilities are characterized by difficulties in processing information, particularly language-based information. Before testing for potential learning disabilities, it is essential to rule out other factors that may be interfering with learning.
- The impairments consist of visual, auditory, or motor impairments, environmental or cultural factors, and acquired brain injury.
- One strategy is to demonstrate a disparity between a student's academic performance and her potential for success. This method of evaluation is frequently referred to as the discrepancy formula. Standardized tests administered and interpreted by a qualified professional, typically a registered psychologist or psycho-educational consultant, are utilised to identify this discrepancy.

Test administration

A standardised test must adhere to stringent validity and reliability criteria. Initial administration of standardised tests to a large number of children of all ages and

backgrounds. The resulting scores are then used to develop a range of age- and grade-based norms or standard scores. The test-score taker's can then be compared to these scores to determine whether she is at, above, or below the age or grade average. In addition, strict procedures must be followed when administering and interpreting tests. These tests provide estimates of the student's general intelligence (intelligence quotient or IQ), academic achievement relative to established norms, and additional information about skills such as memory and the ability to focus attention. The psychologist can then determine the magnitude of the gap between the potential to achieve, as measured by an IQ score, and actual achievement, as measured by test performance.

Although measuring this discrepancy is central to the discrepancy approach for assessing learning disabilities, it is important to note that many other factors, such as the student's cognitive profile, academic, and personal history, should also be considered when diagnosing learning disabilities and recommending remediation.

There is controversy surrounding the use of standardised tests and a discrepancy formula for diagnosing learning disabilities. One objection is that the norms of various standardised tests were developed by administering the tests to distinct groups of children and adolescents. Opponents of the use of standardised tests therefore argue that test scores based on norms derived from different groups cannot be compared accurately.

The Appropriate test

A second criticism is that, due to linguistic and cultural biases, these tests do not accurately reflect the competencies and skills of recently immigrated students. The psychologist is responsible for determining whether certain tests are appropriate for the students. It has also been suggested that using the discrepancy formula delays younger students' access to special education services. Frequently, school boards require a two- or three-grade difference. Consequently, students are not identified for special education support until the third grade. Supporters of the discrepancy formula argue that school administrators should use non-standardized screening tools and teacher observations in the early grades to identify struggling students.

Strategy of test

Lastly, some researchers have argued that IQ testing is irrelevant to the evaluation of learning disabilities. According to them, the fundamental deficits associated with disabilities, such as the inability to process certain types of speech sounds associated with reading disability, are independent of IQ. Under a discrepancy formula, a child with this deficit and an IQ score in the lower normal range would be denied special education services. These researchers propose eliminating the discrepancy formula and evaluating learning disabilities in relation to particular tasks. For instance, a student may have a reading or math-specific learning disability. The evaluation would then concentrate on the specific difficulty the student is experiencing. For instance, a reading-based learning disability would be evaluated based on reading's components. The same strategy would be applied to problems with math or writing. In general, an assessment should reflect curriculum-based expectations.

Evidence-based intervention

Response to intervention (RTI) or multi-tiered instruction is another approach to the treatment and remediation of learning disabilities that is gaining widespread acceptance. Using this model, at-risk students are identified prior to beginning reading instruction. Frequent testing is administered to all students to ensure that they are progressing at an appropriate rate. Those who are falling behind are assigned to the initial level of evidence-based intervention immediately. If the student responds, regular instruction is resumed. Those who do not respond are provided with a second-tier intervention that is more intensive. Frequently in a special, low-student-to-teacher ratio classroom. Those who respond are returned to the standard instructional programme; those who do not respond may be placed in a third-tier intervention if the student's school board offers one. Often, it is at this level that a psychoeducational evaluation is conducted and a learning disability is diagnosed, if appropriate.

Performance outcome of diverse learners

With the implementation of the 'education for all' policy, which allows all children of school-age to attend, the range of abilities of students in a classroom has expanded significantly. The emphasis of the "no-detention policy" was for all students to succeed

in school. CCE provides ways for students to succeed in school. CCE provides means to accommodate learners with diverse learning levels and abilities. Continuous assessment enables the instructor to adapt her/his teaching strategies to the needs of the students so that everyone has the opportunity to learn and succeed.

Compare and contrast the experience

Assessing students should be based on their ability to draw conclusions from the text by comparing and contrasting concrete situations across time periods, cultures, and worldviews. Should be able to apply what they've learned in class to understanding a variety of materials outside of textbooks and interpret this in light of their own experiences.

Infer and extrapolate from situations

Students should be able to comprehend narratives, draw inferences, and extrapolate from given situations. They should be able to summarize the supporting evidence and ideas for an argument.

Interpreting visual material

Students are given the opportunity to read and interpret visual content. Activities based on images, tables, graphs, flowcharts, newspaper clippings, etc. will aid in evaluating their interpretive and deductive abilities.

Explanation and logical reasoning

Learners will be evaluated based on their capacity to effectively communicate their arguments to the audience by employing sufficient evidence and sound reasoning. The assessment tasks should teach them how to make logical connections between the various event categories.

Critical thinking

The activities should assess the learner's ability to integrate and evaluate information presented in a variety of texts and media formats, including television and

the Internet. They should be able to evaluate the reasoning, use of evidence, and conceptual understanding of others' arguments.

What is the feedback?

It has been demonstrated that providing students with feedback during the learning process increases learning and improves student outcomes. When given appropriately, feedback guides the student through the learning process and provides them with the direction they need to reach the lesson's objective or objective. Feedback conveys to the student that the instructor is invested in his or her learning. Additionally, it allows the student to become more engaged and involved in class..

Assessment and feedback

Occasionally, the feedback is provided verbally, as in a tutoring session, and sometimes it is provided in writing alongside the grading of students' work. The most obvious types of feedback that immediately come to mind are grades and annotations or comments on written assignments. It is also useful to consider that how students respond to feedback can serve as feedback to us, informing us of the quality of our feedback to them and the overall progress of the course.

Types of feedback

Feedback is sometimes distinguished from feed-forward

- The purpose of feedback is to explain how a final grade was determined.
- Sometimes feedback is distinguished from feed-forward.
- Feedback is provided earlier in the process and is meant to steer students in the right direction for completion.

Similarly, feedback can also be distinguished as either formative or summative

- Formative feedback is diagnostic information provided prior to the completion of the work. Like feedforward, it aims to assist the student in revising and improving their work.

- The final grade is based on the summative assessment of the student's work. It may also contain suggestions for enhancing future work of the same type.

Intrinsic Feedback: Internal; prop receptors and kinesthesia, pertaining to the sensation of movement, such as the sensation of balance during a handstand. This type of feedback is essential for learners who have reached a level where they know what needs to be corrected based solely on the feel of the skill.

Extrinsic Feedback: Originates from an external source, such as a teacher or coach. Beginners/cognitive learners who have yet to develop a feel for the movement require extrinsic feedback. Positive or negative feedback is possible.

Positive Feedback: Received when a movement is performed correctly; used to reinforce the action. Positive feedback can be intrinsic or extrinsic and is used to motivate performers; if their coach tells them they are performing a skill correctly, they will initially experience an intrinsic reward for being praised and then continue to perform the skill at a high level. Positive feedback is even more important for motivating novices to continue the learning process.

Negative Feedback: Received when a movement is incorrect to prevent repetition of the incorrect action. It is possible for negative feedback to be either intrinsic or extrinsic. If provided to cognitive and associative learners, extrinsic feedback reduces the likelihood of bad habits forming. Intrinsic negative feedback is primarily used for more experienced/autonomous performers who can begin to detect and correct their errors; they should be making small, specific adjustments.

Importance of feedback in assessment

- It is more likely that students will pay attention to, comprehend, and act upon feedback that is derived from their most recent work.
- Feedback can fuel the learner's constructive reflection.
- Feedback promotes learning when it is observed.
- Feedback contributes to learning even more when the learner considers the lessons for the future.

Process of feedback

Education and training programmes require feedback for their success. It enables students to maximize their potential at various stages of training, increase their awareness of their strengths and areas for improvement, and identify actions to enhance performance. Feedback can be informal or official.

Informal feedback: maximizing opportunities

There are numerous opportunities to provide learners with informal feedback on a daily basis. Spencer's book described a variety of aspects and activities that help teachers maximize teaching and learning opportunities that arise in daily practise, such as planning, utilising appropriate questioning techniques, and teaching in a variety of clinical settings. Such techniques frequently involve providing learners with feedback on their performance or comprehension; however, feedback is an integral part of all common practices. Hesketh and Laidlaw (2003) note that providing feedback on the join can be accomplished in a few minutes. To be most effective, feedback should occur during or as soon as possible after the activity, so that the learner (and teacher) can accurately recall the events. The feedback should be constructive and specific, highlighting the trainee's strengths and serving to reinforce the desired behaviour.

Giving formal feedback

- Observations over a period of time or for specific purposes (e.g., Appraisal, end of attachment interview) are typical clinical settings in which formal feedback occurs. Teachers may also be required to participate in formal assessments, which should ideally include learner feedback. If regular informal feedback has been given, formal feedback sessions should not contain any surprises for the learners. Feedback can be provided individually or in small groups. The structure for providing feedback will be agreed upon by the instructor and students. It is also essential that both the teacher and the student receiving feedback are well-prepared for the session.

- Before providing formal feedback, session instructors must

- Make sure the student is aware they will receive feedback (so clearly define the

purpose of the feedback session before or at the outset of the session)

- Collect from other students any information required by the teachers.
- Summarize the feedback and ensure the instructor is aware of the positive aspects and improvement areas
- Ensure you understand how feedback relates to the learning programme and outcomes Creating the setting
- Create an appropriate environment
- Clarify the ground rules with the students, including what portion of the history or exam the student is to focus on, when the instructor must interrupt, what the other students are to do, and how the student can seek assistance during the consultation, etc.
- Determine a teaching emphasis with the students.
- Make notations of specific details
- Throughout the formal feedback session, the instructor must:
- Clarify the intent and duration of the feedback session.
- Clarify the session's structure
- Encourage the learner to conduct a self-evaluation of their performance before providing feedback.
- Encourage conversation and rapport with the trainee
- Reinforce sound procedures with specific illustrations
- Identify, analyse, and investigate potential remedies for poor performance or practise deficiencies.
- After class, the instructor should: Complete any outstanding paperwork and ensure the student has copies

- Perform any agreed-upon follow-up actions or activities
- Ensure that opportunities for remedial work and supplementary instruction are arranged.
- If necessary, schedule the next feedback session.

Receiving feedback

Teachers may refrain from providing regular face-to-face feedback out of apprehension that it will not be positively received by the students. People's responses to constructive criticism, however phrased, can vary. Learners frequently undervalue their capacity to assume responsibility for their own learning, and their responses may include anger, denial, blaming, or rationalization. To assist the learner in assuming responsibility for development and improvement, it is helpful to maintain an empathic yet consistent tone when providing feedback. This module has primarily focused on providing effective feedback to learners, but it is also useful to consider how feedback is likely to be received.

Guideline for receiving constructive feedback

- Listen (rather than preparing a response or defense).
- Request a repetition if you did not hear it the first time.
- Assume it is constructive until proven otherwise, and then consider and utilise the constructive elements.
- Considering carefully before responding.
- Request clarification and examples if a statement is ambiguous or unsupported.
- Accept it positively (for consideration) instead of dismissing it (for self-preservation).
- Request suggestions on how you could modify or alter your behaviour.
- Respect and thank the individual for feedback.

UNIT - V

PREVALENT PRACTICES OF ASSESSMENT

AND REPORTING OF QUANTITATIVE DATA

Drawbacks of Present Assessment System - Assessment for Better Learning - Confident learning and creative learners-Reflective journal-Students Portfolio-Interpreting and reporting quantitative data-Measures of central tendency-Measures of dispersion and correlation-Graphs and Diagrams.

PROBLEM IN PRESENT SYSTEM

The biggest issue is that there are far too many questions of chance involved here; anything could occur, which could unnerve even the best students. In order to combat this issue, new systems such as midterm or semester examinations and unit tests are currently being implemented. The major issue with this scenario, however, is that it encourages students to study for grades and remember things for the short term, only to forget them by the time the next examination rolls around. The primary purpose of education is to educate students and help them recognise the value of the knowledge they are receiving. The system must enable students to internalize what they are being taught, as opposed to simply memorizing it for a few weeks or months. It must be more long-term than the current state of affairs. In addition, it must be practical so that the students' abilities can be accurately assessed.

Assessment

Assessment is organized around the primary purpose of improving student learning.

Present system

1. Assessment by means of the method
2. Assessment by means of the process

Assessment by means of the method Oral Assessment

Word-of-mouth assessment of a student's learning. Now taught in small classes at Oxford and Cambridge. This is compatible with other contemporary modes of communication.

Written Assessment

Here are provided printed materials such as test papers and answer sheets. A fixed amount of time exists. The examinations have already been created and standardised.

Performance Task

Students are required to demonstrate their ability to perform specific actions through hands-on activities. This includes experiments, data collection, tabulation, data analysis, interpretation, and report writing. Performance tasks allow for the demonstration of presentation skills. This is more open-ended, and students' performance is evaluated directly.

Assessment systems by mean of the process

CBSE introduced CCE in 2009 (Continuous and Comprehensive Evaluation scheme). This includes all pertinent aspects of a student's personality development. Continuous means they are assessed throughout the entire year. Comprehensive includes both academic and extracurricular activities.

Formative Evaluation

The learner is evaluated then and their daily.

Summative Evaluation

Year end exams.

Drawbacks of Present Assessment System Written Examination / Assessments

Exams

- Just measures

- only memory recall
- No feedback given to pupils
- Only surface flight
- Not a comprehensive representation of a student's performance.

Open Book Exams

- Perhaps not everyone has access to books.
- Move spaceis required (disk)
- Students are unfamiliar with
- Students are unfamiliar with it.
- A poor method can discourage memory use.

Multiple Choice Questions (MCQS)

- Speculation is required
- Need careful deliberation over options.
- Not always accessible for students with particular disabilities.

Essay

- Students cannot demonstrate their abilities.
- Time limit
- Students may be rewarded for writing alone.
- Grades may differ
- Plagiarism is challenging to detect.

Standardized Exams

- Quantifies superficial understanding
- Does not capture the particular goals or objectives.
- May be expensive
- Less formative than conclusive
- Impossible to obtain results on time

Oral Assessment

Viva

- Not all achieve success.
- Same questions are repeated
- Questions become harder as the day progresses.
- Can only handle a limited range of abilities.

Presentations

- Costly method
- Time-consuming
- Must be meticulously planned
- Requires meticulous instruction

Continuous and Comprehensive Evaluation

- Time-consuming
- The teachers' heavy workload is unfinished without external examination.
- Increase in the frequency and intensity of evaluations
- shirkers in the workplace

Assessment for promoting better learning

The instructor must assess and comprehend the students in the classroom.

Classroom assessment can help teachers to:

- Determine the strengths and weaknesses of students
- Monitor students' progress and learning
- Plan and deliver training
- Develop a relationship between students and teachers.
- Examine teaching efficiency
- Motivate and shape instruction and learning
- Mastery of necessary abilities
- Determine whether students are test-ready.
- Aid students in enhancing their performance.
- Spend sufficient time and energy
- Engages students in the effort of learning
- Provide feedback Pay close attention to feedback Next steps
- Teachers can also provide feedback on students' learning.
- Help students receive proper guidance

Assessment for Confidence Building

Confidence is an attitude that enables individuals to have positive, realistic perspectives of themselves and the situation in which they find themselves.

Factors influencing Confidence Building

Positive self- image

Create a positive image of yourself. This is essential for a fully developed individual and provides the capacity to develop confidence.

One's view of the world

- A positive outlook inspires confidence in a variety of situations.
- We should be able to rely on our own ideas and convictions rather than those of others.
- The key to feeling good about oneself is learning to think independently and being able to articulate those thoughts.

Deal your mistake by yourself

- One must be capable of dealing with his or her own errors.
- We must gain insight from our error.
- For the development of self-confidence, it is necessary to eliminate the fear of making errors.

Depression

- Depression comes from a lack of confidence
- Building self - confidence is a process that takes and commitment.

Confidence building measures

Henry L. Stimson outlined four main types of confidence-building measures.

1) **Communication:** This prevents crisis through diverting tension.

2) **Constraint:** This measure control levels and types of powers.

3) **Transparency:** This means to generate openness between persons.

4) **Verification:** This reduces vulnerability and mistrust of goodwill.

Assessment for Creative Learners

Meaning of Creativity

The act of bringing new and imaginative ideas to life is creativity. Two processes are required for creativity: thinking and producing. Creativity is the propensity to generate or recognise ideas, alternatives, or possibilities that may be useful for problem-solving, communicating with others, and entertaining ourselves and others.

Reasons for Creativity

There are three reasons why people are motivated to be creative. They are:

- Need for novel, complex, and varied stimulation.
- Must effectively communicate ideas and values.
- Need to resolve issues.

Characteristics of a creative personality or creative individuals

- Have a lot of energy, but be calm and at rest.
- Generally intelligent Possess a balance of playfulness and discipline.
- Alternate between fantasy and imagination
- Are both modest and grounded; they are also independent and rebellious.
- Very devoted to their work
- Transparent and secretive

Assessment indicators for Creative Learning Ideas

Field-specific ideas, sketches, drawings, concepts, outlines, etc..

Knowledge

Theoretical understanding of a declarative type, specific to a given programming language.

Process observed

The sequence of stages perceived during a given situation or task.

Proposed process

The procedure proposed prior to the start of production.

Research

Documentation of a person's intentions and ideas.

Search for ideas

Traces of creative thinking.

Skills

Intellectual skills associated with creative thinking.

Fluidity

Many relevant ideas and flexibility of ideas.

Originality

The ideas are original.

Complexity

There is a formulation of ideas deepening of ideas and carefully chosen.

Techniques

This includes the procedures, techniques, and abilities. The following are methods for measuring creativity in the classroom:

Four different ways to assess creativity

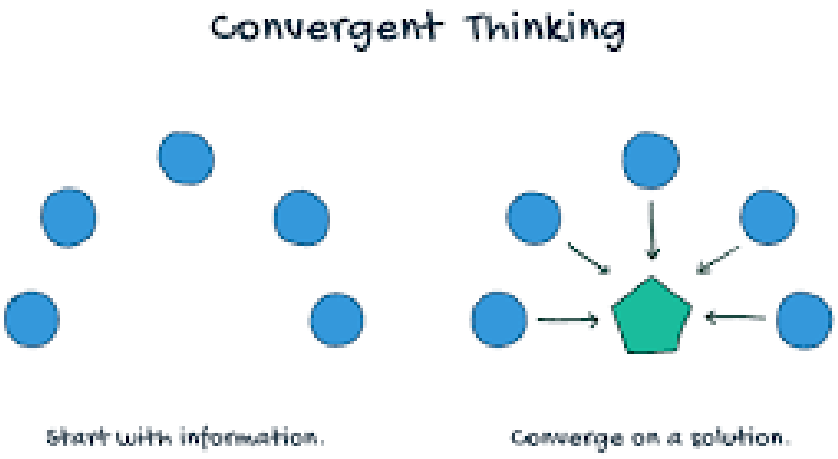
- The Guilford model measures an individual's creativity.
- The Taxonomy creative design measures the level of creativity of a piece.
- Comparing inventive work to a programme.

- (Model of Requirements)
- Csikszentmihalyi's model for measuring the social worth of creative work.

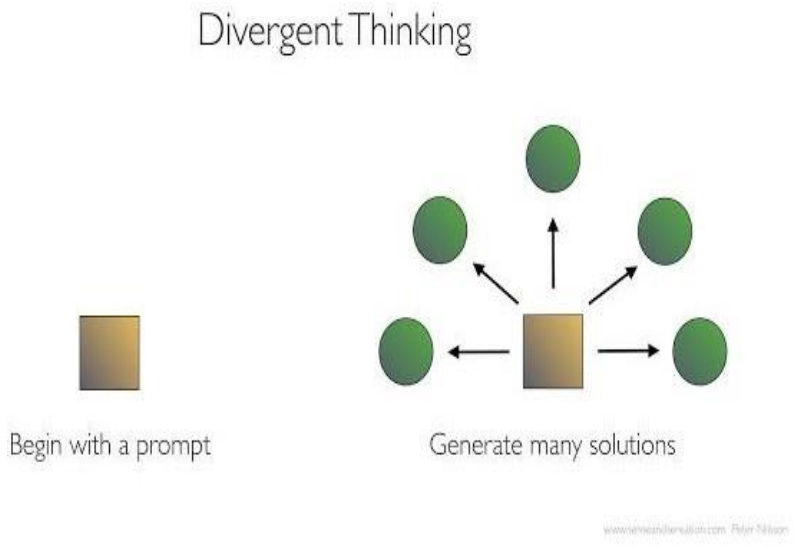
Guilford Model

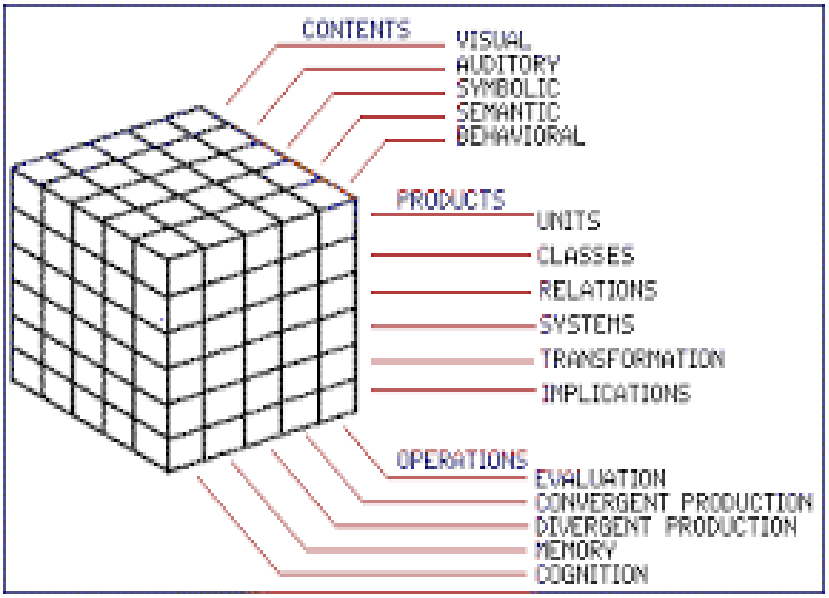
Psychologist J.P. Guilford devised four measures of a person's production

Convergent Thinking



Divergent Thinking

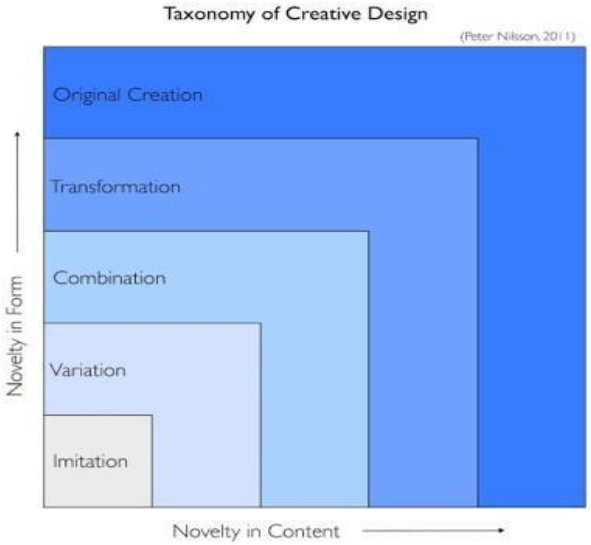




Each of the measures can be practiced and improved, and each focuses on creative output within the context of a task that assesses the number of responses. This model is a psychometric assessment of a person.

The Taxonomy of Creative Design

The Taxonomy of Creative Design refers to changes in form and contents. It looks creative work as a product. The following



- **Imitation-** Is the creation the same as already exists?
- **Variation-** Is it a slight change to an existing object?
- **Combination-**Is it a mixture of one or two?
- **Transformation-**Is it the recreation of something?
- **Original creation-** Is it an original creation?

The Requirement Model

In the Requirement Model, creative work is assessed based on criteria established before the work is done. The criteria for the assessment of the Requirement Model are given below.

Techniques of development of creativity

It has been realized that creative thinking abilities can be developed to carrying degrees among different individuals and it can be assessed.

1) Attribute listing
2) Morphological analysis
3) Brain Storming
4) Inquiry training
5) Synectics

	Very creative	Creative	Ordinary/ Routine	Imitative

Combining Ideas	Ideas are combined in original and surprising ways to solve a problem, address an issue, or make something new.	Ideas are combined in original ways to solve a problem, address an issue, or make something new.	Ideas are combined in ways that are derived from the thinking of others (For example, of the authors in sources consulted)	Ideas are copied or restarted from the Sources consulted.
Communicating something new	Created product is interesting,new, or helpful, making an original contribution that includes identifying a previously unknown problem, issue or purpose.	Created product is interesting, new, or helpful, making an original contribution for its intended purpose. (For example, solving a problem or addressing an issue).	The created product serves its intended purpose (for example, solving a problem or addressing an issue).	The created product does not serve its intended purpose (For example, solving a Problem or addressing an issue).
Variety of ideas and contexts	Ideas represent a startling variety of important concepts from different	Ideas represent important concepts from different contexts or disciplines.	Ideas represent important concepts from similar	Ideas do not represent important concepts.

	Contexts or disciplines.		contexts or disciplines.	
Variety of Sources	Created product sources draw on a wide variety of sources, including different texts,media, resource person or Experiences.	The created product draws on a variety of sources including different texts, media, resource person or experiences.	The created product draws on a limited set of sources and media.	The created product draws on only one and source or on sources that are not trustworthy or appropriate.

REFLECTIVE JOURNAL

Meaning

A reflective journal is a way for students to record their ideas, personal thoughts and experiences, as well as their reflections and insights during the course learning process. The benefits of reflective learning are typically accrued over time, with students exhibiting a series of developmental changes, personal growth, and perspective shifts throughout the process.

Definition

A reflective journal is a student's personal account of their educational experiences. It is a place for learners to record and reflect on their observations and responses to situations, which can then be used to explore and analyse their ways of thinking. Although journals are typically written, they may also include images, drawings, and other types of reference materials.

Purpose of Reflective Journals

A reflective journal is a means for learners to reflect in various ways on their learning and learning experiences. They're utilised to:

- Record the development of learners' and/or a group's ideas and insights in a given context, including concepts, ideas, and key points from experience and theory.
- As a means of enhancing comprehension, learners should reflect on subject matter and personal experiences.
- Analyze the learning process for personal growth.

Method of using reflective journal

- Students should use reflection during a unit, topic, or project.
- As a quick and straightforward instrument for student self-evaluation at the end of the class
- To enable students to identify their accomplishments and reflect on their experiences
- As a means of communication between students and instructors
- As a method for refocusing a student's education.
- Students may have time to write in their journals at the conclusion of each lesson.
- They should write about their thoughts and feelings regarding the class material they have been studying. They can discuss their accomplishments, raise concerns, and ask questions.
- The teacher can respond to a student's question, offer suggestions and praise, or pose their own questions in the student's journal, creating a written dialogue between the student and teacher.
- The reflective journal is especially useful for learning when the subject matter is not traditionally considered literacy-based, such as mathematics, science, arts science, information and communication technology, and interpersonal development.

Reasons to use reflective journal

- It is an easy procedure
- It encourages higher order thought
- It helps students self-evaluate and establish learning objectives for the future.
- It gives many students a sense of ownership and control over their learning.

Advantages of Reflective Journal

- Active learning
- Understanding students' academic progress
- Enhancing writing abilities
- Enhance critical thinking and originality through unrestrained self-expression and self-criticism.

Disadvantages of Reflective Journal

- challenging for objective marking
- Grading is a time-consuming undertaking.
- Confidentiality
- Clear guidelines needed

PORTFOLIO

Definition

A student portfolio is a collection of academic assignments, projects, revisions, and work samples that span a specified time period and are the property of a single student. It may also include self-evaluations and reflections of student work.

- It is the culmination of academic work and other educational evidence.

- Assessing work quality, learning progression, and accomplishment.
- Assisting students in evaluating their academic objectives and progress.
- Positive students' involvement.
- Increase metacognition, which has a positive effect on students' self-esteem and improves their ability.
- Students are encouraged to continue their studies.
- Assessment portfolios provide teachers and parents with opportunities to support the language development of their students.

It can be compared both within and between groups. In this type of comparison, not only a single instructor but also multiple instructors compare grades awarded by a single instructor and multiple instructors.

Advantages of portfolio assessment for students

- Superior self-evaluation
- Individualized feedback
- fostering positive student-teacher relationships
- Artist responsibility

Disadvantages of portfolio

- The analysis is based on the analyst's subjective evaluation.
- This may make precision difficult

INTERPRETING AND REPORTING QUANTITATIVE DATA

Measures of central tendency

The central tendency is that representative score of a whole group around which most of the scores in the group are centered

STATISTICS AND ITS FORMULAE

Introduction

Statistics is a body of mathematical technique for gathering, organizing, analyzing and interpreting numerical data. In the field of education, it helps the teacher to understand and interpret the scores awarded in a test. Here the statistical techniques used are, Arithmetic mean, Median, Mode, Range, Mean deviation, Standard deviation, Quartile deviation and Rank correlation.

Arithmetic mean (A.M)

It is defined as the sum of all value of item in this series divided by the total number of items. It is denoted by $\bar{x}$

$\bar{x} = A + (\frac{\sum fd}{N}) \times C$

Where,

A = Assumed mean

C = Class interval

f = Frequency

N = Total frequency

d = $\frac{x-A}{c}$, deviation

ii) **Ungrouped data**

Mean $\bar{x} = \frac{\sum X}{N}$

Median

Median is the middle item by the given set when they arranged in ascending or descending order.

The formula to determine the value of median from a grouped distribution is,

$$\text{Median} = L + \left(\frac{\frac{N}{2} - m}{f}\right) \times c$$

Where,

L– Lower limit of the median class

c – Class interval

N – Total frequency

m – Cumulative frequency just above the median class.

f – Frequency of the median class.

ii) **Ungrouped Data**

$$\text{Median} = \frac{Sum\ of\ the\ middle\ two\ values}{2}, \text{ if n is even}$$

$$= \left(\frac{n+1}{2}\right)^{th} \text{ term , if n is odd}$$

Mode

The score that has the maximum frequency in a distribution is said to be the modal score or the mode.

For grouped data mode is calculated using the formula

Mode = 3median – 2mean

Range

It is the difference between the largest and smallest scores in the distribution.

Range = Highest score – Lowest score

Average deviation

The average deviation (Mean deviation) is the average distance between the mean and scores in the distribution. The deviation is defined as the distance of the score from the mean of the distribution.

$$A.D = \frac{\sum f|D|}{N}$$

Where,

f = Frequency

$D = x - \bar{x}$

$\bar{x}$ = Mean

N = Sum of frequencies

$\bar{x} = \frac{\sum fx}{N}$

Standard deviation

Standard deviation is the set of score which is defined as the square root of average of the sequence of the deviation of each square taken from the mean. It is denoted by σ

$$\sigma = c \times \sqrt{\frac{\sum fd^2}{N} - \left(\frac{\sum fd}{N}\right)^2}$$

Where,

C = Class interval

N = Total frequency

f = frequency

d $= \frac{x-A}{c}$, deviation.

Quartile deviation

It is defined as the semi quartile range.

Quartile deviation Q $= \frac{Q_3-Q_1}{2}$

Where,

$Q_1 = L_1 + \left(\frac{\frac{N}{4}-m}{f}\right)_= \times$ cand

$Q_3 = L_3 + \left(\frac{\frac{3N}{4}-m}{f}\right) \times$ c

Here,

L_1, L_3 = Lower limits of the first and third quartile classes

m_1, m_3 = Cumulative frequency just above the first and third quartile classes

f_1, f_3 = Frequencies of the first and third quartile classes

C = Class interval of these classes

N = Total frequency

Rank Correlation

Correlation is an important concept in education. The term correlation is used to indicate the relationship between two variables. This method was introduced by Edward Spearman in 1904. It is denoted by Rho (ρ). If any of the score is repeated

$$\rho = 1 - \left(\frac{6\,(\sum D^2 + C\,)}{N(N^2-1)}\right)$$

Where,

ρ = Co-efficient of rank correlation

D = Difference in ranks

N = Sum of frequencies

C = Correlation factor, C = $\frac{m^3-m}{12}$

M = Number of repetitions of a score

Types of Central Tendencies

The Central Tendencies are of three types

1) **Mean**
2) **Median**
3) **Mode**

Mean of ungrouped data

Let x_1, x_2, x3,,x_n be n observations then mean is obtained by dividing the sum of observations by n. It is denoted by

$\bar{x} = \frac{\sum X}{N}$

Example:

Find the mean for the following values: 4, 6, 7, 8

Solution:

Mean $\bar{x} = \frac{\sum X}{N}$

where

x = 4, 6, 7, 8

$\sum x$ = 4 + 6 + 7 + 6 + 8 + 8

N = number of items

N = 6

Mean x = $\frac{\sum X}{N}$ = 39/6 = 6.5

Finding the mean using the Direct Method Question:

Value of Items (x)	20	25	30	35	40
Frequency (f)	2	1	3	2	2

Find the mean value Solution:

x	**F**	fx
20	2	40
25	1	25
30	3	90
35	2	70
40	2	80
	N = 10	fx = 305

The formula for mean using direct method:

Mean X = $-\frac{\sum X}{N}$

= 305/10

30.5

Median of ungrouped data:

If the observations of an ungrouped data are arranged in increasing to decreasing order of their magnitude, a value which divides these ordered observations into two equal parts is called the median of the data. It is denoted by M.

Finding the median of ungrouped data:

Median = value of $[^{N+1/2}]^{th}$ item

Example: 1

Find the median of the following values: 30, 45, 25, 32, 90

Solution:

Arrange the values in ascending order, to begin with: 25, 30, 32, 45, 90

Here N = 5

= (N + 1)/2

= (5 + 1)/2

= 3

Thus, the median lies in the 3^{rd} item.

Example:2

30, 25, 45, 32, 82, 90

Solution:

Arrange the values in either ascending or descending order. 25, 30 , 32 , 45 , 82, 90

Here N = 6

Median = $[N + 1/2]^{th}$ item

= 6 + 1/2 = 3.5

$= 3.5^{th}$ item

Value of 3.5^{th} item $= (3^{rd}$ item $+ 4^{th}$ item$)/2$

$= (32 + 45)/2 = 77/2 = 38.5$

Mode of ungrouped data

An observation occurring most frequently in the data is called mode of the data. It is denoted by Z.

For Example:

Find the median of the following observation

4, 2, 8, 6, 7, 8, 6, 8, 6

Solution:

Here the observers 6 and 8 are the two modes as both occur an equal number of times.

Such mode is called bimodal.

When more than two modes are present in the series the following formula can be used to find the mode:

Mode = 3 median - 2 mode

Grouped Data

Grouped data are data formed by aggregating individual observations of a variable into groups so that a frequency distribution of these groups serves as a convenient means of summarizing or analyzing the data.

For grouped data, we use the midpoint of each interval. The following table shows the number of hours per day watching TV in a sample of 500 people.

Hours	0-1	2-3	4-5	6-7	8-9	10-11	12-13
Frequency	55	87	145	90	73	35	15

Construct a frequency table:

Interval Midpoint (x)	Midpoint (x)	Frequency (f)	fx(i.e.f.x) fx
0-9	0.5	55	55(0.5) = 27.5
10-19	2.5	87	87(2.5) = 217.5
20-29	4.5	145	145(4.5) = 652.5
30-39	6.5	90	6.5(90) = 585
40-49	8.5	73	8.5(73) = 620.5
50-59	10.5	35	10.5(35) = 367.5
60-69	12.5	15	12.5(15) = 187.5
		Total	∑fx = 2658

n = 500

To set the mean, use the following formula:

Mean = ∑fx

n

- Where f is the frequency
- X is the midpoint of each interval
- N is the total number of data values

Mean

$\sum (fx/n) = 2658/50 = 5.316$

Median for a grouped data

Now in a grouped data, we may not be able to find the middle observation by looking at the cumulative frequencies as the middle observation will be some value in a class interval. It is, therefore, necessary to find the value inside a class that divides the whole distribution into two halves

Formula:

Median = l + ((n/2-cf)/f)*i

Where

l = lower limit of the median class n = number of observations

cf = cumulative frequency of class preceding the median class

f = frequency of the median class

i = class size (assuming class size to be equal).

Median for a grouped data: Example:

Interval (x)	Frequency (f)	Cumulative Frequency (c. f)
0-1	55	55

2-3	87	142(c.f)
3-4	145(f)	287
5-6	90	377
7-8	73	450
9-10	35	485
11-12	15	500

N = ∑f = 500

Median = l + ((n/2-cf)/f)*i

Here $\bar{n}/2 = 500/2 = 250$ i.e One-half of the cases in the distribution using the above value in the formula.

Median = 3.5 + 250-142/145*2

= 3.5 + 108/145*2

= 3.5 + 0.74*2

= 4.98

Mode

Looking at the frequency column, we can see that the "4-5" interval occurs most often. So, the mode is the midpoint of that interval, which is 4.5. we could also say that the modal interval is "4-5".The mode is the midpoint or the interval that occurs most frequently.

The following summary table helps one to know what the best measure of central tendency is with respect to the different types of variable.

Type of variable	Best measure of central tendency
Nominal	Mode
Ordinal	Median
Interval/ ratio (not skewed)	Mean
Interval/ ratio (skewed)	Median

Measures of Dispersion

The 'scatteredness' or variation of observations from the average of the given set of data is called the dispersion. A measure of statistical dispersion is a non-negative real number that is zero if all the data are the same and increase as the data become more diverse.

Most measures of dispersion have the same units as the quantity being measured. In other words, if the measurements are in meters or seconds, so is the measure of dispersion.

There are different measures of dispersion like

1) Range
2) Quartile Deviation
3) Average Deviation
4) Mean Deviation
5) Standard Deviation

Range

The simplest measure of dispersion is the range. The range is the differences between the minimum and maximum values in a group of observations.

Range = Highest value – Lowest value (or) Xmax–Xmin

Example

Yield of eucalyptus from different plots is as follows (tonne/ plot) = 10 12 619 20 25 22 29 5 11

Range for the above series is = X_{max}–X_{min}or Highest value –Lowest value Range = Highest value – Lowest value

X_{max} = 29

X_{min} = 5

Therefore Range = 29 – 5

Range = 24 tonne/ plot

Range coefficient

Range coefficient = 29-5/5 = 0.70

Quartile Deviation

Quartile deviation is based on the lower quartile Q_1 and the upper quartile Q_3. The differences Q_3– Q_1, is called the interquartile range. The difference Q_3–Q_1 divided by two is called semi-inter-quartile range or the quartile deviation.

Q.D = (Q3-Q1)/2

Q1 = (l + (n/2-cf)/f)*i

Where,

L_1 = lower limit of the first quartile class

C_1 = cumulative frequency of 1 quartile

F_1 = frequency of 1 quartile

N = total number of frequency

I = class size

Q3 = l + ((n/4-cf)/f*i)

Where

L_3 = lower of the 3rd quartile class

C_3 = cumulative frequency o3rd quartile

F_1 = frequency of 3rd quartile

N = total number of frequency

For Example

(Q1) I Quartile → class (Q3) III Quartile → class

Interval(x)	**Frequency (f)**	**Cumulative Frequency (c.f)**
0-9	2	2
10-19	5	7(C_1)
20-29	12(f_1)	197
30-39	17	36(C_3)
40-49	14(f_3)	50

50-59	6	56
60-69	3	59
70-79	1	60
	N = 60	

Step 1

Find N/4 and 3N/4

= N/4 = 60/4 = 15→ I Quartile

3N/4 = (3*60)/4 = 45→ II quartile

Step II

Find $Q1 = l_1 + ((n/4-c1)/f1)*i$

$= l_1 + ((n/4-c1)/f1)*i$

= 19.5 + (15-7/12)*0.5

= 19.5 + (0.666)*0.5

= 19.5 + 0.333

Q1 = 19.833

Step III

Find $Q3 = l_3 + ((3n/4-c3)/f3))*i$

Q3 = (39.5 + (45-36)/14)*0.5

= 39.5 + (0.64)*0.5

= 39.5 + 0.32

= 39.82

Step IV

Find Q.D = (Q3-Q1)/2

= 39.82-19.833/2

= 9.993

Average Deviation

Average deviation also called as "average absolute deviation" helps us to know the value that deviates from its average value among the given group of data.

The Average deviation is calculated in three simple steps:

1) Determine the mean by adding all the numbers and dividing by the number of observation.
2) Now find the deviation of each value by subtracting it with the mean value.
3) To get the average deviation, add the deviation of all the values and divide it by the number of observations.

The formula is given by:

$$\text{Average deviation} = \frac{\sum_{ni=1} |x - \bar{x}|}{N}$$

Here

x = represents the observation

$\bar{x}$ = represents the mean

N = represents the number of observation

Below are the problems based on Average absolute deviation: Solved Examples?

Question I: Calculate the average deviation for the given data: 2, 4, 6, 8, 10?

Solution:

Given n = 5

First, let's find the mean by using the formula

$\overline{X} = \frac{\sum X}{N}$

$\overline{X} = \frac{2+4+6+8+10}{5}$

$\overline{X} = \frac{30}{5} = 6$

Meen = 6

Now lets calculate the deviation of each value

For x1 = 2, |xi-x||xi-x| = |2-6||2-6| = 4

For x1 = 4, |xi-x||xi-x| = |4-6||4-6| = 2

For x1 = 6, |xi-x||xi-x| = |6-6||6-6| = 0

For x1 = 8, |xi-x||xi-x| = |8-6||8-6| = 2

For x1 = 10, |xi-x||xi-x| = |10-6||10-6| = 4

Average deviation = $\sum i = \frac{lnx-x}{n} = \frac{12}{5} = 2.4$

Average deviation for a grouped data

No of hours	158	159	160	161	162	163	164	165	166

No of days	15	20	32	35	33	22	20	10	8

X	f	D = x-A	Fd	|D| = x	F|D|
158	15	-4	-60	3.51	52.65
159	20	-3	-60	2.51	50.20
160	32	-2	-64	1.51	48.32
161	35	-1	-35	0	17.85
162	33	0	0	0.51	16.17
163	22	1	22	0.49	32.78
164	20	2	40	1.49	49.80
165	10	3	30	2.49	34.19
166	8	4	32	3.49	35.92
	∑f = N = 95		∑fd = -95	4.49	∑f|D| = 338.59

$X = A + \frac{\sum fd}{n}$

Where

A→ Assumed mean

n→ total frequency observed

$\overline{x} = 162 + \frac{-95}{195} = 162\text{-}0.49 = 161.51$

$$\frac{\sum|D|}{N} = \frac{338.595}{195} = 1.74$$

$$M.\frac{D}{x} = \frac{1.74}{195161.51} = 0.0108$$

In order to find the Mean Deviation

$$M.D = \frac{\sum f|D|}{N}$$

$$\frac{\sum f|D|}{N} = \frac{1042.68}{60} = 17.37$$

Standard Deviation

The standard deviation is a measure of the spread of scores within a set of data. Usually, one is interested in the standard deviation of a population. However, as we are often presented with data from a sample only, we can estimate the population standard deviation from a sample standard deviation. These two standard deviations sample and population standard deviations are calculated differently.

When to use the sample or population Standard Deviation

One would normally calculate the population standard deviation if:

1) The entire population is at hand or
2) If one has a sample of a larger population, but is only interested in this sample and does not wish to generalize the findings to the population.

What type of data is to be used while calculating a Standard Deviation

The standard deviation is used in conjuction with the mean to summarise continuous data, not categorical data. In addition, the standard deviation, like the mean, is normally only appropriated when the continuous data is not significantly.

Calculating the Standard Deviation

$$\sigma = \sum \frac{x2}{n}$$

This formula above can be used only for standard deviation. When the frequency is higher, the following formula can be used.

$$\sigma = \sqrt{\sqrt{\frac{\sum fd2}{n} - \frac{\sum fd2}{\sum f} * c}}$$

Class Interval	Mid point	Frequency	D = $m - \frac{A}{c}$	fd	d2	fd^2
x	m	F	A = 54. 5; c = 10			
10-19	14.5	3	-4	-12	16	48
20-29	24.5	4	-3	-12	9	36
30-39	34.5	5	-2	-10	4	20
40-49	44.5	6	-1	-6	1	6
50-59	54.5	10	0	0	0	0
60-69	64.5	13	1	13	1	13

70-79	74.5	9	2	18	4	36
80-89	84.5	5	3	15	9	45
90-99	94.5	5	4	20	16	80
		∑f = 60		∑fd = 26	∑d^2 = 60	∑fd^2 = 284

$$\sigma = \sqrt{\sqrt{\frac{\sum fd2}{n} - \frac{\sum fd2}{\sum f}} * c}$$

standard deviation or

$$\sigma = \sqrt{\frac{284}{60} - \left(\frac{26}{60}\right)2} * 10$$

$= \sqrt{(4.73) - (0.18) * 10}$

$= 21.3 * 10$

$= 21.3$

Standard deviation $\sigma = 21.3$

The high standard deviation shows that the marks obtained by the students are scattered from the average of the class and vice versa.

What is a Bell Curve or Normal Curve?

A bell curve is another name for a normal distribution curve (sometimes just shortened to "normal curve") or Gaussian distribution. The name comes from the fact it looks bell-shaped.

The term "bell curve" is usually used in the social sciences; in statistics, it's called a normal distribution, and in physics, it's called a Gaussian distribution. However, they all refer to the same thing: a probability distribution that has certain characteristics, including the fact it's shaped like a bell.

Characteristics of Bell Curves or Normal Curves

- The mean (average) is always in the centre of a hell curve or normal curve.
- A bell curve/ normal curve has only one mode or peak. The mode here means "peak"; a curve with one peak is unimodal; two peaks is bimodal land so on.
- A bell curve/ normal curve has predictable standard deviations that follow the 68 95 99.7 rule (see below).
- A bell curve/ normal curve is symmetric. Exactly half of the data points are to the left of the mean and exactly half are to the right of the mean.

Some other distributions are bell-shaped as well including the T Distribution and the Cauchy distributions, but they have different characteristics (including different measures for standard deviations)

Many phenomena have probability distributions that are bell curves, including:

- Heights
- Weights
- IQ scores
- Grown rates
- Exam scores
- Temperatures connected to Global warming

Bell Curve Standard Deviations

A standard deviation is a unit of measurement that can help you with figuring out where data items are likely to fall.

For example, 68% of all measurements fall within one standard deviation either side of the mean. In other words, the bulk of your data will fall between -1 and +1 standard deviations from the mean. If you go out to two standard deviations, that percentage rises to 95; almost all (99.75) of your data will fall within three standard deviations.

Skewness

Some distributions of data, such as the bell curve are symmetric. This means that the right and the left of the distribution are perfect mirror images of one another. Not every distribution of data is symmetric. Sets of data that are not symmetric distribution can be are called skewness.

The mean, median and mode are all measures of the centre of data.

The skewness of the data can be determined by how these quantities are related to one another.

Skewed to the Right

Data that are skewed to the right have a long tail that extends to the right. An alternate way of talking about a data set skewed to the right is to say that it is positively skewed. In this situation the mean and the median are both greater than the mode. As a general rule, most of the time for data skewed to the right, the mean will be greater than the median. In summary, for a data set skewed to the right:

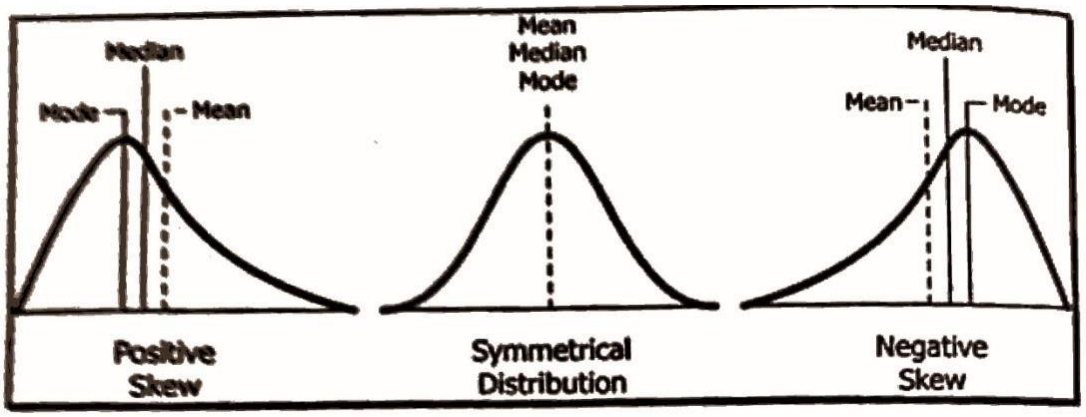
- Always: mean greater than mode
- Always: median greater than mode
- Most of the time: mean greater than median

Skewed to the Left

The situation reverses itself when we deal with data skewed to the left. Data that are skewed to the left have a long tail that extends to the left. An alternate way of talking about a data sat skewed to the loll is to say that it is negatively skewed.

In this situation the mean and the median arc both less than the mode. As a general rule, most of the time for data skewed to the left, the mean will be less than the median. In summary, for a data set skewed to the left:

- Always: mean less than mode
- Always: median less than mode
- Most of the time: mean less than median



Kurtosis

The degree of flatness or peakedness is measured by kurtosis. It tells us about the extent to which the distribution is flat or peak vis-a-vis the normal curve. Diagrammatically, shows the shape of three different types of curves.

The normal curve is called Mesokurtic curve. If the curve of a distribution is more packed than a normal or mesokurtic curve then it is referred to as a Lepokurtic curve. If a curve is less peaked than a normal curve, it is called as a platykurtic curve.

CORRELATION

Correlation is a statistical technique that can show whether and how strongly pairs of variables are related. For example, height and weight are related; taller people tend to be heavier than shorter people.

Positive Correlation

A correlation in the same direction is called a positive correlation. If one variable increases the other also increases and when one variable decreases the other also decreases. For example, the length of an iron bar will increase as the temperature increases.

Negative Correlation

Correlation in the opposite direction is called a negative correlation. Here if one variable increases the other decreases and vice versa. For example, the volume of gas will decrease as the pressure increases, or the demand for a particular commodity increases as the price of such commodity decreases.

Karl Pearson's correlation method:

Pearson's correlation is the most widely used correlation statistic to measure the degree of the relationship between linearly related variables. The following formula is used to calculate the Pearson r correlation:

$$r = \frac{N\sum xy - \sum(x)(y)}{\sqrt{[N\sum x2 - \sum(x2)][N\sum y2 - \sum(y2)]}}$$

r = Pearson r correlation coefficient N = number of value in each data set

Problem: Find the correlation between the two sets of variables suing Karl Pearson's method.

x	y
24	13
20	9
8	12
17	20
15	11
12	16
10	5
8	2
6	7
4	1

Solution

x	y	$x2$	$y2$	xy
24	13	576	169	312
20	9	400	81	180
8	12	324	144	216
17	20	289	400	340

15	11	225	121	165
12	16	144	256	192
10	5	100	25	50
8	2	64	4	16
6	7	36	49	42
4	1	16	1	4
Σ = 134	Σy = 96	Σx^2 = 2174	Σy^2 = 1250	Σxy = 1517

Spearman's Rank Correlation

The presence of outliers gives a distorted picture of the association between two random variables, the Spearman's rank correlation is a non-parametric test that can be used instead of the Pearson's correlation coefficient.

The data used must be ordinal, interval or ratio

+ 1 = a perfect positive correlation between ranks

- 1 = a perfect negative correlation between ranks 0 = no correlation between ranks

The following formula can be used to calculate this coefficient,

Ed^2 is the sum of the squared differences between the pairs of ranks and n is the number of pairs.

Problem: Find the relationship between the two sets of variables given below using Spearman's rank correlation method.

x	y

24	13
20	9
8	12
17	20
15	11
12	16
10	5
8	2
6	7
4	1

iii)It is used in regression equations and factor analysis

Solution

x	y	R_1	R_2	$D(R_1-R_2)$	D2
24	13	1	3	-2	4
20	9	2	6	-4	16
8	12	7.5	4	3.5	12.25
17	20	3	1	2	4

15	11	4	5	-1	1
12	16	5	2	3	9
10	5	6	8	-2	4
8	2	7.5	9	-1.5	2.25
6	7	9	7	2	4
4	1	10	10	0	0
					ΣD^2 = 56.5

$$\mathbf{r = 1 - \frac{6(56.5)}{10(10^2 - 1)}}$$

$$= \frac{339}{990}$$

$$= 0.342$$

Graphs and Diagrams

The most important function of statistics is to present the complex data in an easy to understand manner. For this purpose, data are classified and tabulated; to present easy comparisons, diagrams and graphs are also used. Some of the important graphic representations used in statistics are:

i) Bar Diagram.

ii) Pie Diagram,

iii) Histogram,

iv) Frequency Polygon,

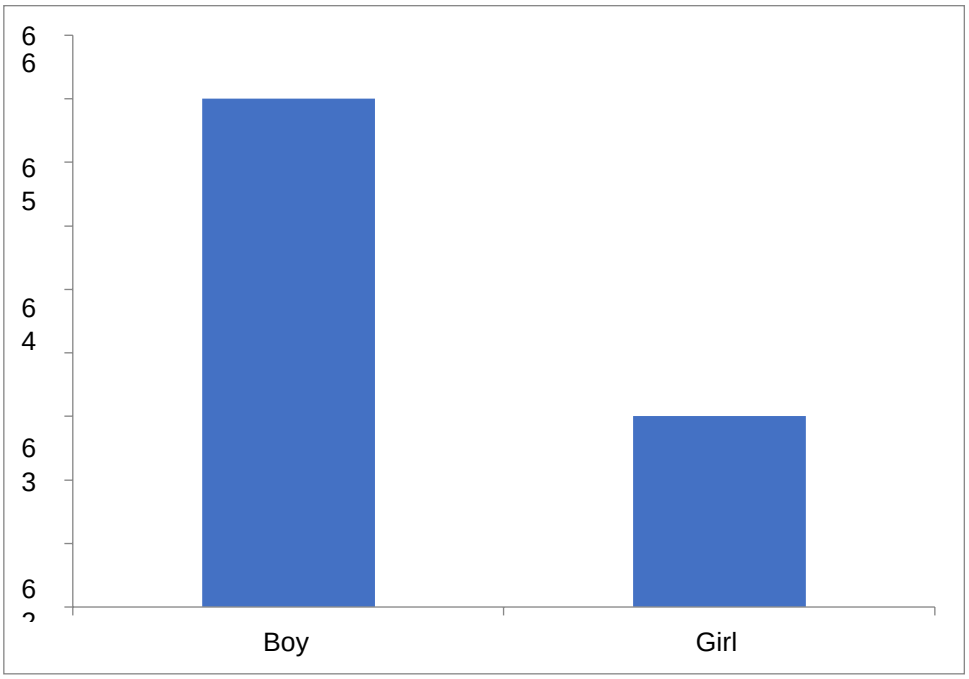
v) Cumulative Frequency Curve and Ogive (Percentage Cumulative Curve).

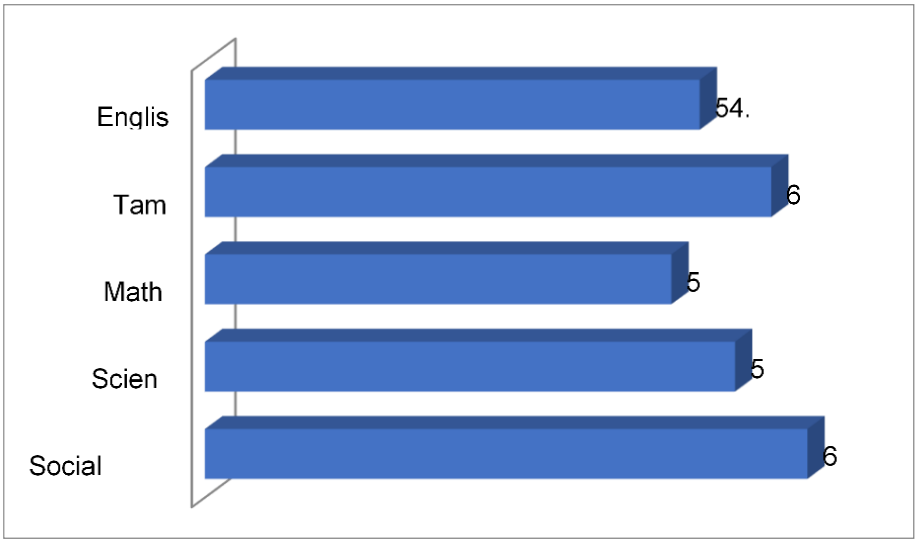
Diagram

Bar Diagram

In statistics, bar diagrams are extensively used as they are easy to draw and help for easy comparisons. Bar Diagrams are used (i) to compare the different persons or groups on a single variable and (ii) to compare a person or group on many variables.

For Example, if we want to compare by and girls with respect to their performance in the +2 Maths examination.



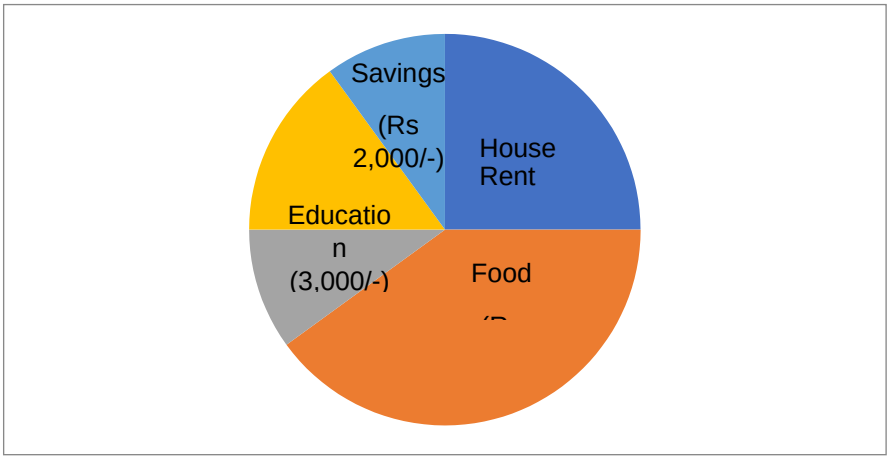


Pie Diagram

Pie Diagram helps to understand the comparison of statistical data in the visual form. Total angle at the centre is 360°. Hence according to the size of the frequencies of the different categories in the distribution, angle at the centre is apportioned and accordingly the sectors are drawn.

Calculating the angle of sector in the circle for different categories of expenses

Pie Diagram



Graphs

There are diagrams drawn on graph sheets. A frequency distribution can be presented graphically in any one of the following ways.

i) Histogram

ii) Frequency Polygon

iii) Cumulative Frequency Curve

iv) Ogive Curve (or Cumulative Frequency Percentage Curve)

Let us see each one in detail in the following sections.

Histogram

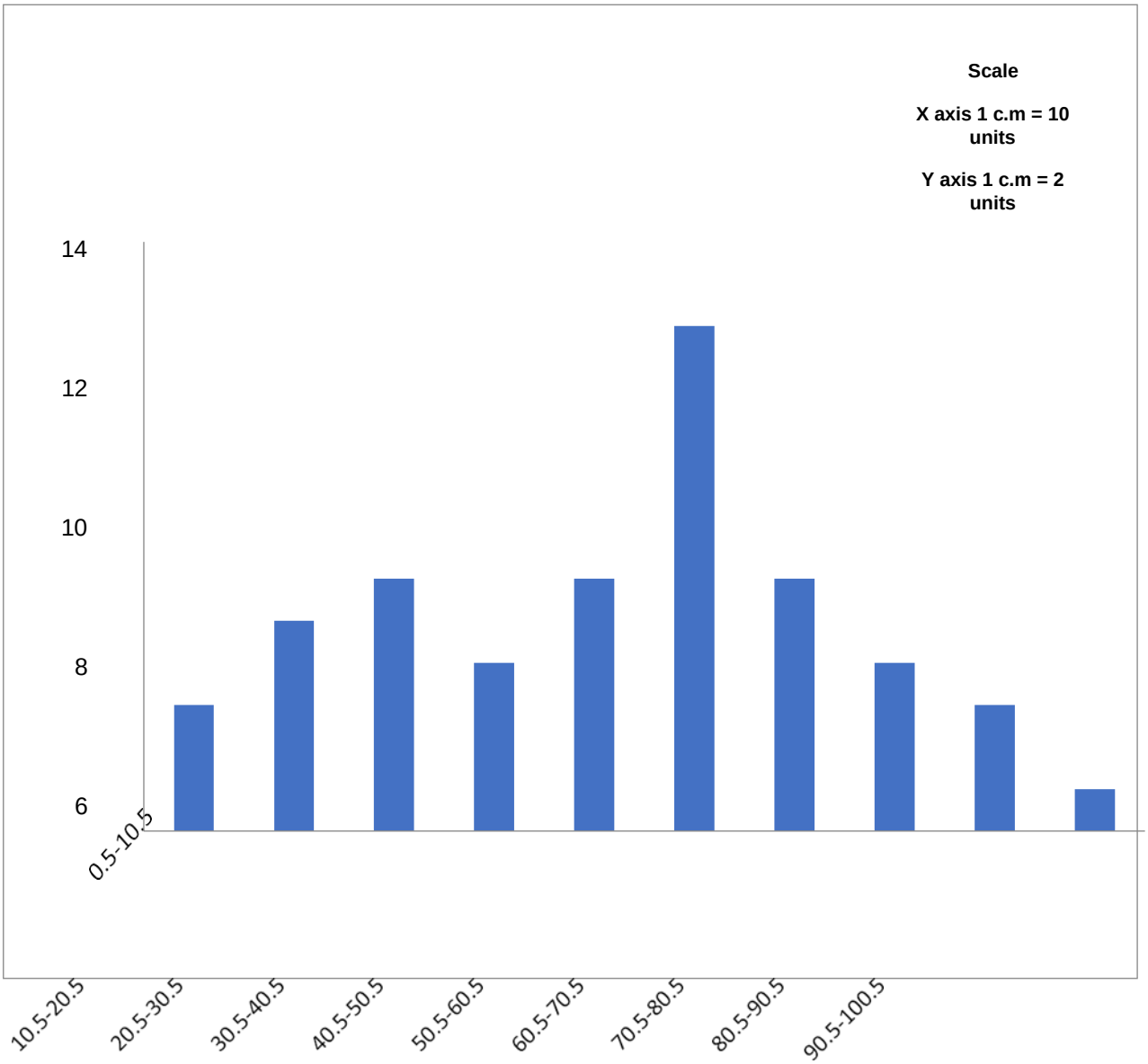
Histogram is the most popular and widely used graph for presenting the given data in the form of a frequency distribution. In this kind of graphical presentation, the exact limits of class intervals are represented on the X - axis and frequencies on the Y axis respectively on suitable scales. The base of each rectangle represents the width of the class interval and the height represents the frequency in that class interval. The area of each rectangle is proportionate to the frequency of the corresponding class. The frequency is supposed to spread uniformly over the entire area of the rectangle. The adjacent rectangles thus formed represents Histogram.

Illustration

Draw a 'Histogram' for the frequency distribution given.

C. Is	1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100
Frequencies	3	5	6	4	6	12	6	4	3	1

Solution



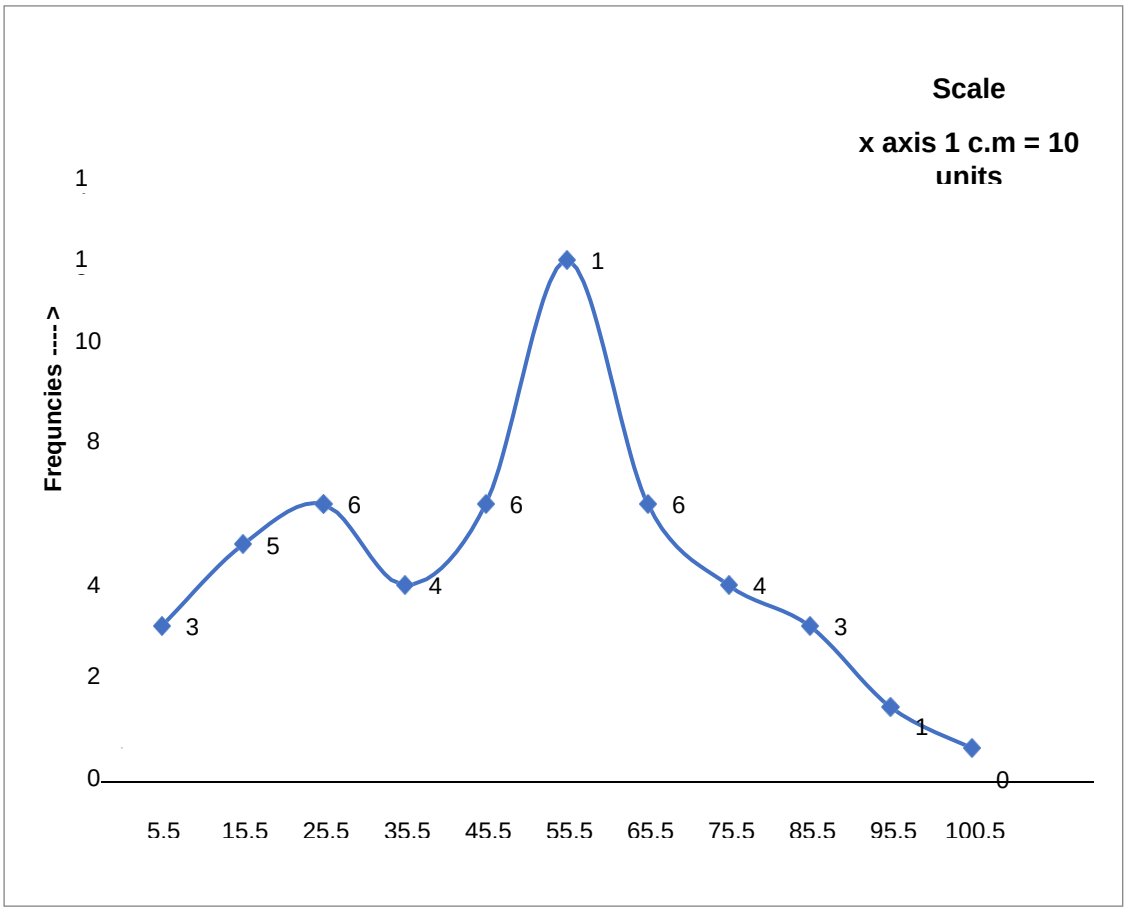
Frequency Polygon

In frequency polygon, the frequency of each class interval is supposed to concentrated at the midpoint of the respective class interval. Hence to draw the frequency polygon,

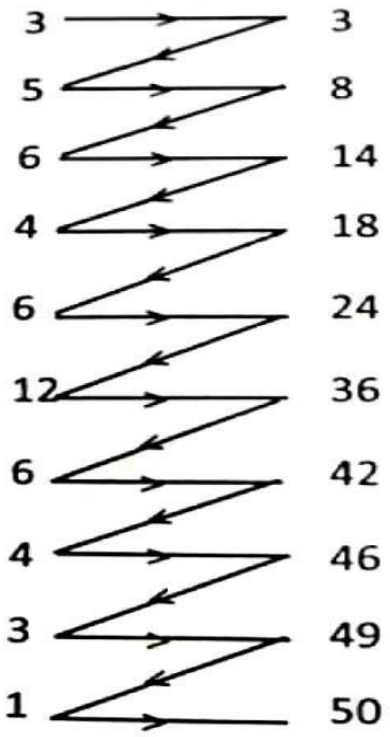
Frequency Polygon for the frequency distribution given as follows :

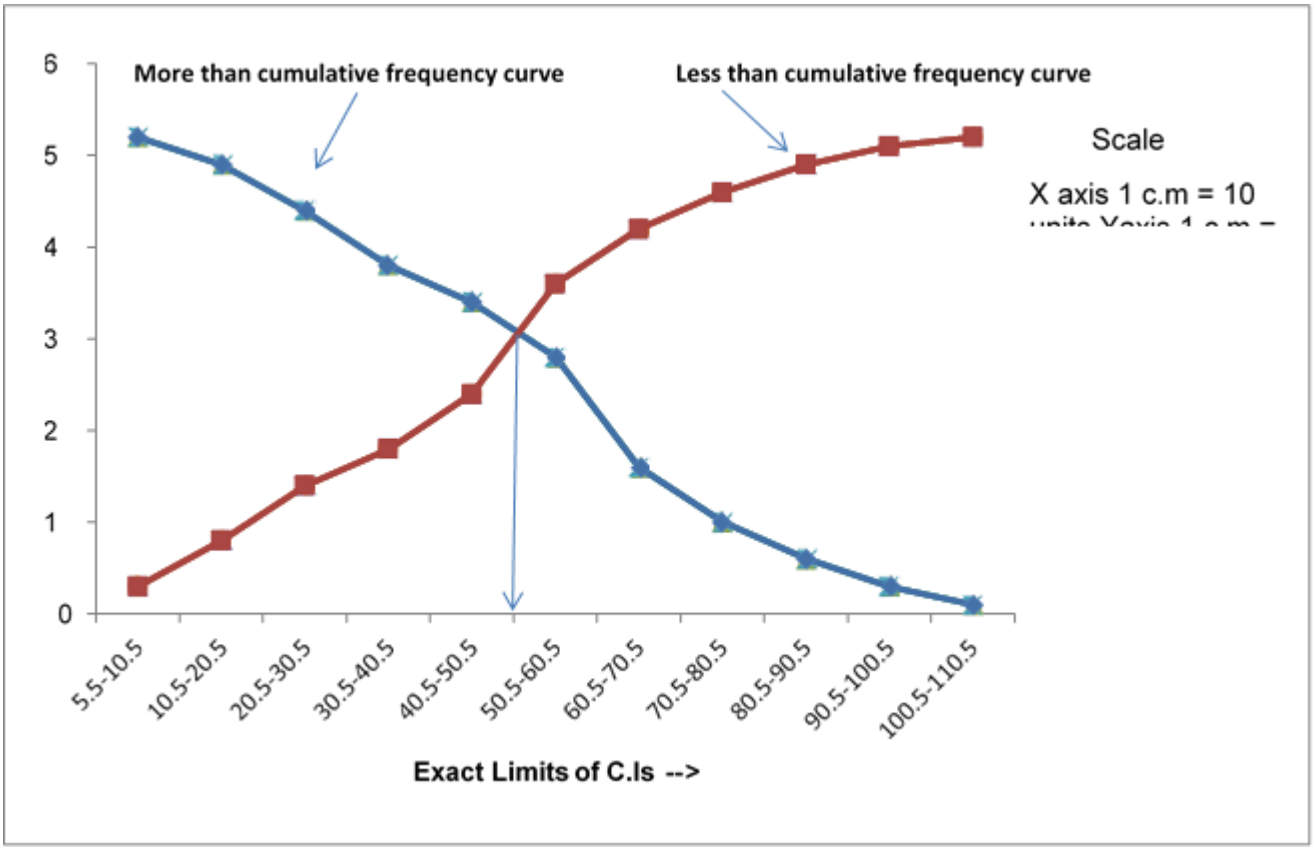
Cumulative Frequency Curve

Cumulative frequency (c.f.) for a particular class interval (C.I.) is the sum of the frequency of the CA. and the frequencies of all class intervals below it, hayingi.e. lesser values as their lower and upper limits cumulative frequency is obtained by starting with the CA. having the lowest marks and then adding the frequencies of successive C.Is. In our example, for the frequency distribution given below, the method of obtaining the cumulative frequencies is indicated with arrow marks.



Class Interval	Cumulative Frequency(cf)	
	'Less than' CumulativeFrequency	'More than'Cumulative Frequency

1 – 10		50 (47 + 3)
11 – 20		47 (42 + 5)
21 – 30		42(36 + 6)
31 – 40		36(32 + 4)
41 – 50		32(26 + 6)
51 – 60		26(14 + 12)
61 – 70		14(8 + 6)
71 – 80		8(4 + 4)
81 – 90		4(1 + 3)
91 – 100		1(0 + 1)



Ogive Curve (or Cumulative Percentage Frequency Curve)

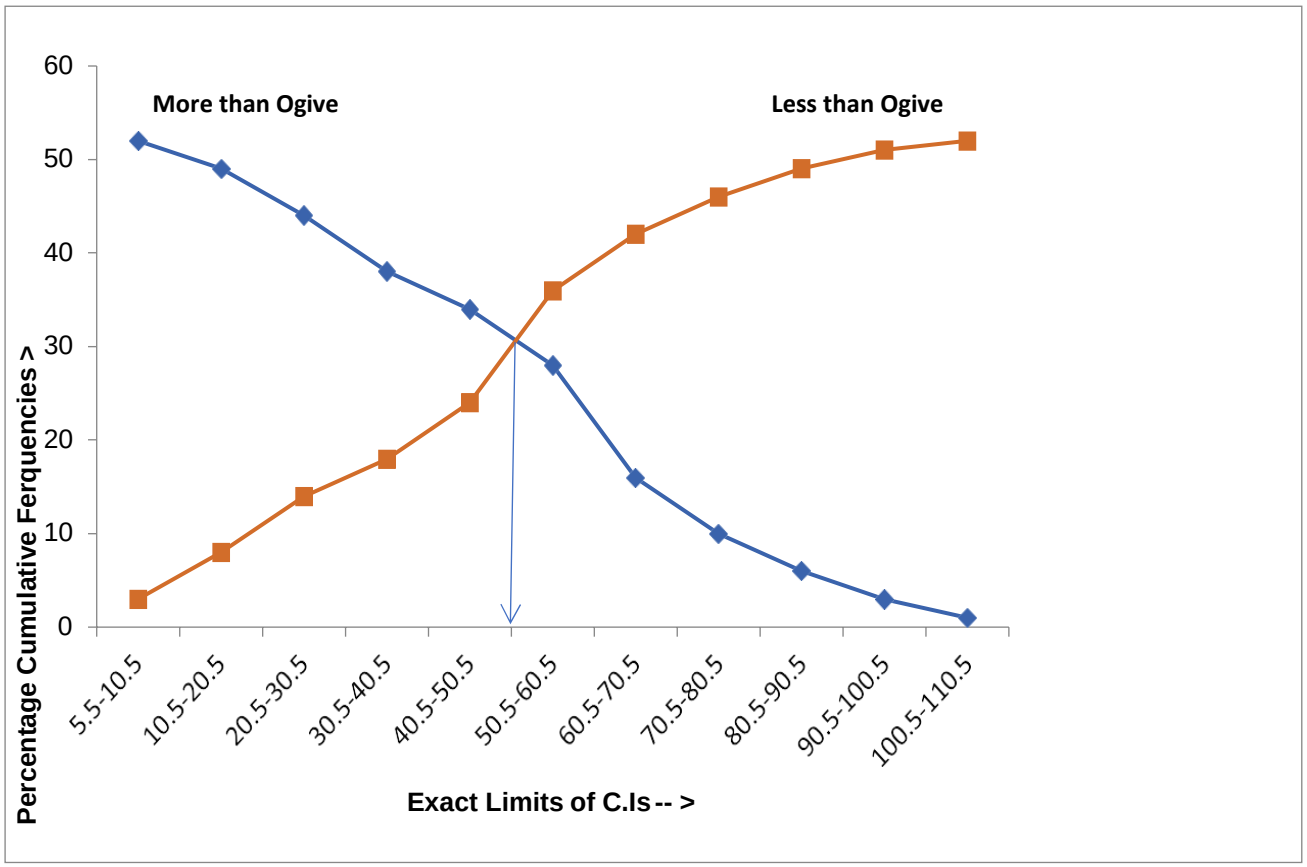
If percentage cumulative frequencies are taken on the Y-axis and the exact limits of class intervals on the X-axis, the frequency curve thus drawn is called 'ogive'.

Percentage cumulative frequency $= \left[\frac{100}{N}\right] \times$ cumulative frequency

Above the exact upper limit of each class interval, the point representing the 'Less than' percentage cumulative frequency corresponding to the class interval is to be marked. If the points thus marked are joined smoothly by free hand, it results in "Less than Ogive". Using this the values of quartiles, percentiles and percentile ranks could be found.

Ogive Curves

Exact limits of class intervals	Frequency 'f'	Less than Cumulative Frequency	% Less than Cumulative Frequency	More than Cumulative Frequency	% More than Cumulative Frequency
0.5-10.5	3	3	6	50	100
10.5-20.5	5	8	16	47	94
20.5-30.5	6	14	28	42	84
30.5-40.5	4	18	36	36	72
40.5-50.5	6	24	48	32	64
50.5-60.5	12	36	72	26	52
60.5-70.5	6	42	84	14	28
70.5-80.5	4	46	92	8	16
80.5-90.5	3	49	98	4	8
90.5-100.5	1	50	100	1	2
	N = 50				



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Ogive Curves are useful in finding the percentiles and percentile ran