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B.Ed. DEGREE

SECOND YEAR

<u>Course – 17-</u> Assessment for Learning

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Unit - I

Meaning of Testing:-

- The means by which the presence, quality, or genuineness of anything is determined.

Assessment:-

- Assessment is the systematic collection, review and use of information about educational programs undertaken for the purpose of improving student learning and development.

-T. Marchese.

Measurement:-

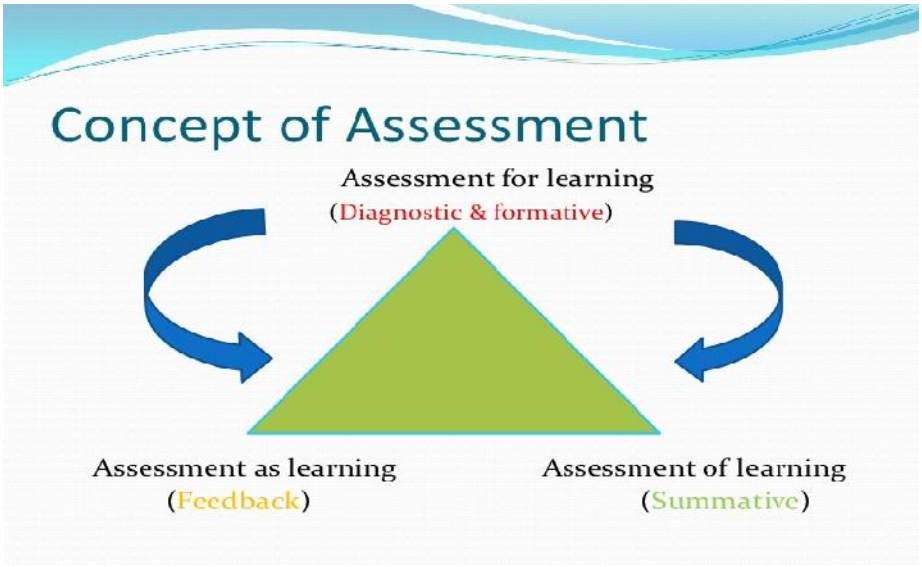
- Measurement is the process by which we ascertain the quantity of something.
- It is merely the assignment of a numerical index to the thing or phenomenon we measure (big, tall, heavy, voluminous, hot and cold etc.,)

Evaluation:-

- **Evaluation** is a systematic determination of a subject's merit, worth and significance, using criteria governed by a set of standards

Concept of Assessment and Evaluation in Education:-

- In education, the term assessment refers to the wide variety of methods or tools that educators use to evaluate, **measure**, and document the academic **readiness**, learning **progress**, skill acquisition, or educational needs of students.



Evaluation in education:-

- Evaluation is an intrinsic and essential part of teaching and learning.
- The results of an evaluation in an educational setting may determine whether e.g.
  - i) A course will continue to be offered
  - ii) A particular textbook will be used
  - iii) A teacher gets promoted
  - iv) A student passes to the next grade

Role of evaluation in education:-

- Teacher:-
  - i) Assessing the effectiveness of teaching
  - ii) Teaching strategies,/methods & techniques
- Curriculum**:-**
  - i) Improvement in courses or curricula
  - ii) Texts & teaching materials is brought about with the help of evaluation

Steps of evaluation process:-

- Develop learning objectives
- Check for alignment between the curriculum and the objectives
- Develop an assessment plan (must use direct measurement)
- Collect assessment data
- Use results to improve the program
- Routinely examine the assessment process and correct, as needed.

Characteristics of the Evaluation:-

- Evaluation is a Continuous process
- Includes academic & non-academic subjects
- Evaluation is a procedure for improving the product
- Discovering the needs of an individual & designing learning experiences
- It is also includes teachers evaluation
- Evaluation is purpose oriented
- Reliability & validity
- It is a diagnostic appraisal

Comprehensive and Continuous Evaluation:-

- Continuous and comprehensive evaluation is a process of assessment
- Evaluate every aspects of the child during their presence at the school
- Reduce the pressure on the child during /before examination
- No test or the syllabus covered will be repeated at the end of the year
- The **CCE** new systems student's marks will be replaced by grades

- The grades based on work experience skills, innovation, teamwork, public speaking, behaviour, steadiness, dexterity etc
- This helps the students who are not good in academics to show their talent in other field, such as arts, humanities, sports, music, athletics, and also helps to motivate the students who have a thirst of knowledge.

Continuous and Comprehensive Evaluation

Continuous and Comprehensive Evaluation (CCE) refers to a system of school based evaluation of a student that covers all aspects of a student development. It is a developmental process of student which emphasizes on two fold objectives. These objectives are continuity in evaluation and assessment of broad based learning and behaviourial outcomes on the other.

The term 'continuous' is meant to emphasise that evaluation of identified aspects of students 'growth and development' is a continuous process rather than an event, built into the total teaching-learning process and spread over the entire span of academic session. It means regularity of assessment, frequency of unit testing, diagnosis of learning gaps, use of corrective measures, retesting and feedback of evidence to teachers and students for their self evaluation.

The second term 'comprehensive' means that the scheme attempts to cover both the scholastic and the co-scholastic aspects of the students' growth and development. Since abilities, attitudes and aptitudes can manifest themselves in forms other than the written word, the term refers to application of variety of tools and techniques (both testing and non-testing) and aims at assessing a learner's development in areas of learning, like:-

- Knowledge
- Understanding
- Applying
- Analyzing
- Evaluating
- Creating

(a) The objectives are:

- To help develop cognitive, psychomotor and affective skills
- To lay emphasis on thought process and de-emphasise memorization
- To make evaluation an integral part of teaching-learning process
- To use evaluation for improvement of students achievement and teaching-learning strategies on the basis of regular diagnosis followed by remedial instructions
- To use evaluation as a quality control device to maintain desired standard of performance
- To determine social utility, desirability or effectiveness of a programme and take appropriate decisions about the learner, the process of learning and the learning environment
- To make the process of teaching and learning a learner-centered Activity

Formative and Summative evaluation:-

Quality	Formative	Summative
Purpose	detect strengths & weakness	Overall achievements
Frequency	During or end of unit	In end – point of certification, promotion
Area covered	One unit/no. of units	Course content
Administrative utility	Advisory, not always for permanent record	Decisive, for permanent record
Feedback to students	Done immediately	Inform regarding pass or fail
Feedback to faculty	If significant no. shows error than weakness in	Overall pass or fail

Probably the most basic distinction is that between formative evaluation and summative evaluation.

Formative Evaluation. This is evaluation that is carried out while a course, curriculum, educational package, etc is actually being developed, its main purpose being to find out whether it **needs to be**, and if so, whether it realistically **can be** improved. The key feature of all such evaluation is that it is designed to bring about improvement of the course, curriculum or educational package **while it is still possible to do so**, i.e. while the material has not yet been put into its operational form. In the case of a major course that is to be run throughout a country or internationally, such evaluation must clearly be carried out before the course design is finalised, the necessary resource materials mass produced, and the course implemented. In the case of an educational package, it must be carried out before the final package is published.

Summative Evaluation. This is evaluation that is carried out once the development phase of a course, curriculum, educational package, etc has been completed, and the course curriculum or package is ready to use in its final form. The object of such evaluation is to determine whether it **meets its design criteria**, i.e. whether it does the job for which it was designed. Summative evaluation may also be carried out in order to **compare** one course, curriculum, educational package, etc with another (or several others), e.g. to

compare the relative effectiveness of two different courses in the same general area, or to determine which of a number of different textbooks is most suitable for use in a particular course. In such evaluation, the object is not to **improve** the courses or textbooks being evaluated; rather, it is to **choose between them**.

Use of evaluation:-

- To gain insight
  - i) Identify barriers to use of the program
  - ii) Learn how to best describe and measure program activities
- To improve how things get done
  - i) Determine the extent to which plans were implemented
  - ii) Make mid-course adjustments / clarify communication
- To determine the effects of the program
  - i) Assess skills development by program participants
  - ii) Compare changes in behavior over time
  - iii) Document level of success in accomplishing objectives
- To affect participants
  - i) Stimulate dialogue and raise awareness
  - ii) Broaden consensus about program goals
  - iii) Support organizational changes and improvement

Unit – II

There are three main domains of learning and all teachers should know about them and use them to construct lessons. These domains are cognitive (thinking), affective (emotion/feeling), and psychomotor (physical/kinesthetic). Each domain on this page has a taxonomy associated with it. Taxonomy is simply a word for a classification. All of the taxonomies below are arranged so that they proceed from the simplest to more complex levels.

The domains of learning were first developed and described between 1956-1972. The ones discussed here are usually attributed to their primary author; even though the actual development may have had more authors in its formal, complete citation (see full citations below). Some web references attribute all of the domains to Benjamin Bloom which is simply not true. While Bloom was involved in describing both the cognitive and the affective domains, he appeared as first author on the cognitive domain. As a result this bore his name for years and was commonly known among educators as *Bloom's Taxonomy* even though his colleague David Krathwohl also a partner on the 1956 publication. When publishing the description of the affective domain in 1964 Krathwohl was named as first author, but Bloom also worked on developing this work. Krathwohl's involvement in the development of the cognitive domain will be become important when you look at the authors of the 2001 revisions to this taxonomy.

- Benjamin Bloom (Cognitive Domain),
- David Krathwohl (Affective Domain), and
- Anita Harrow (Psychomotor Domain).

Many veteran teachers are totally unaware that the cognitive/thinking domain had major revisions in 2000/01. Here I have included both the original cognitive domain, and I have also attached it to the newly revised version so that users can see the differences. The **newer version of Bloom's Taxonomy** of Learning has a number of added features that can be very useful to educators as they try to construct optimal learning experiences.

The Original Cognitive or Thinking Domain –

Based on the 1956 work, *The Handbook I-Cognitive Domain*, behavioral objectives that dealt with cognition could be divided into subsets. These subsets were arranged into a taxonomy and listed according to the cognitive difficulty — simpler to more complex forms. In 2000-01 revisions to the cognitive taxonomy were spearheaded by ***one of Bloom's former students, Lorin Anderson***, and Bloom's original partner in defining and publishing the cognitive domain, ***David Krathwohl.***

Taxonomies of the Cognitive Domain

1D.Taxonomies of the Cognitive Domain

Bloom's Taxonomy 1956	**Anderson and Krathwohl's Taxonomy 2001**
1. Knowledge: Remembering or retrieving previously learned material. Examples of verbs that relate to this function are:	**1. Remembering:** Recognizing or recalling knowledge from memory. Remembering is when memory is used to

know identify relate list	define recall memorize repeat	record name recognize acquire	produce or retrieve definitions, facts, or lists, or to recite previously learned information.

2. Comprehension: The ability to grasp or construct meaning from material. Examples of verbs that relate to this function are:			**2. Understanding:** Constructing meaning from different types of functions be they written or graphic messages, or activities like interpreting, exemplifying, classifying, summarizing, inferring, comparing, or explaining.
restate locate report recognize explain express	identify discuss describe discuss review infer	illustrate interpret draw represent differentiate conclude	

3. Application: The ability to use learned material, or to implement material in new and concrete situations. Examples of verbs that relate to this function are:			**3. Applying:** Carrying out or using a procedure through executing, or implementing. *Applying* relates to or refers to situations where learned material is used through products like models, presentations, interviews or simulations.
apply relate develop translate use operate	organize employ restructure interpret demonstrate illustrate	practice calculate show exhibit dramatize	

4. Analysis: The ability to break down or distinguish the parts of material into its components so that its organizational structure may be better understood. Examples of verbs that relate to this function are:			**4. Analyzing:** Breaking materials or concepts into parts, determining how the parts relate to one another or how they interrelate, or how the parts relate to an overall structure or purpose. Mental actions included in this function are *differentiating, organizing, and attributing*, as well as *being able to distinguish between* the components or parts. When one is analyzing, he/she can illustrate this mental function by creating spreadsheets, surveys, charts, or diagrams, or graphic representations.
analyze compare probe inquire examine contrast categorize	differentiate contrast investigate detect survey classify deduce	experiment scrutinize discover inspect dissect discriminate separate	

5. Synthesis: The ability to put parts together to form a coherent or unique new whole. Examples of verbs that relate to this function are:

compose produce design assemble create prepare predict modify tell	plan invent formulate collect set up generalize document combine relate	propose develop arrange construct organize originate derive write propose

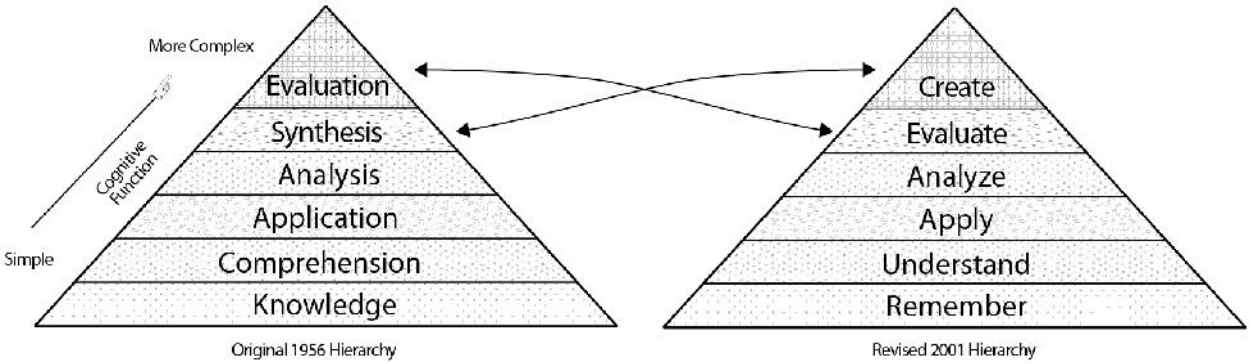
5. Evaluating: Making judgments based on criteria and standards through checking and critiquing. Critiques, recommendations, and reports are some of the products that can be created to demonstrate the processes of evaluation. In the newer taxonomy, *evaluating* comes before creating as it is often a necessary part of the precursory behavior before one creates something.

6. Evaluation: The ability to judge, check, and even critique the value of material for a given purpose. Examples of verbs that relate to this function are:

judge assess compare evaluate conclude measure deduce	argue decide choose rate select estimate	validate consider appraise value criticize infer

6. Creating: Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure through generating, planning, or producing. Creating requires users to put parts together in a new way, or synthesize parts into something new and different thus creating a new form or product. This process is the most difficult mental function in the new taxonomy

(Wilson, L.O. 2001) – Bloom vs. Anderson/Krathwohl revisions



2D. The Affective or Feeling Domain:

Like cognitive objectives, affective objectives can also be divided into a hierarchy (according to Krathwohl). This area is concerned with feelings or emotions. Again, the taxonomy is arranged from simpler feelings to those that are more complex. This domain was first described in 1964 and as noted before is attributed to David Krathwohl as the primary author.

1. **Receiving**

This refers to the learner's sensitivity to the existence of stimuli – awareness, willingness to receive, or selected attention.

feel sense capture experience	pursue attend perceive

2. **Responding**

This refers to the learners' active attention to stimuli and his/her motivation to learn – acquiescence, willing responses, or feelings of satisfaction.

conform allow cooperate	contribute enjoy satisfy

3. **Valuing**

This refers to the learner's beliefs and attitudes of worth – acceptance, preference, or commitment. An acceptance, preference or commitment to value,

believe seek justify	respect search persuade

4. **Organization**

This refers to the learner's internalization of values and beliefs involving (1) the conceptualization of values; and (2) the organization of a value system. As values or beliefs become internalized, the leaner organizes them according to priority.

examine clarify systematize	create integrate

5. **Characterization** – the Internalization of values

This refers to the learner's highest of internalization and relates to behavior that reflects (1) a generalized set of values; and (2) a characterization or a philosophy about life. At this level the learner is capable of practicing and acting on their values or beliefs.

internalize review conclude	resolve judge

Based on:

Krathwohl, D.R., Bloom,B.S. and Masia, B. B. (1964).*Taxonomy of educational objectives, Book II. Affective domain.* New York, NY. David McKay Company, Inc.

D3. The Psychomotor or Kinesthetic Domain

Psychomotor objectives are those specific to discreet physical functions, reflex actions and interpretive movements. Traditionally, these types of objectives are concerned with the physically encoding of information, with movement and/or with activities where the gross and fine muscles are used for expressing or interpreting information or concepts. This area also refers to natural, autonomic responses or reflexes.

It is interesting to note that while the cognitive taxonomy was described in 1956, and the affective in 1964, the psychomotor domain were not fully described until the 1970s. And while I have chosen to use the work of Anita Harrow here, there are actually two other psychomotor taxonomies to choose from — one from E. J. Simpson (1972) and the other from R.H. Dave (1970). See full citations and hyperlink below.

As stated earlier, to avoid confusion, if the activity is simply something that is physical which supports another area — affective or cognitive — term the objective physical rather than psychomotor. Again, this goes to instructional intent. A primary example of something physical which supports specific cognitive development and skills might be looking through a microscope, and then identifying and drawing cells. Here the instructional intent of this common scientific activity is not to develop specific skilled proficiency in microscope viewing or in reproducing cells through drawing. Usually the key intent in this activity is that a physical action supports or is a vehicle for cognitive growth and furthering recognition skills. The learner is using the physical action to achieve the cognitive objectives — identify, recognize, and differentiate varied types of cells.

If you are using a physical activity to support a cognitive or affective function, simply label it as something physical (labeling the objective as kinesthetic, haptic, or tactile is also acceptable) and avoid the term *psychomotor*. Rather labeling something psychomotor means there is a very clear educational intention for growth to occur in the psychomotor/kinesthetic domain.

Certainly more complex learning objectives can be written so that they that meld 2 or 3 domains. For instance, students can gain appreciation (an affective objective) for the culture or country of origin through conducting investigations or listening to stories while learning the dances from other countries. Learning dance steps would fall under “skilled movements” in the psychomotor domain.

(Terms in this area based on Anita Harrow’s taxonomy).

Reflex movements

Objectives at this level include reflexes that involve one segmental or reflexes of the spine and movements that may involve more than one segmented portion of the spine as intersegment reflexes (e.g., involuntary muscle contraction). These movements are involuntary being either present at birth or emerging through maturation.

Fundamental movements

Objectives in this area refer to skills or movements or behaviors related to walking, running, jumping, pushing, pulling and manipulating. They are often components for more complex actions.

Perceptual abilities

Objectives in this area should address skills related to kinesthetic (bodily movements), visual, auditory, tactile (touch), or coordination abilities as they are related to the ability to take in information from the environment and react.

Physical abilities

Objectives in this area should be related to endurance, flexibility, agility, strength, reaction-response time or dexterity.

Skilled movements

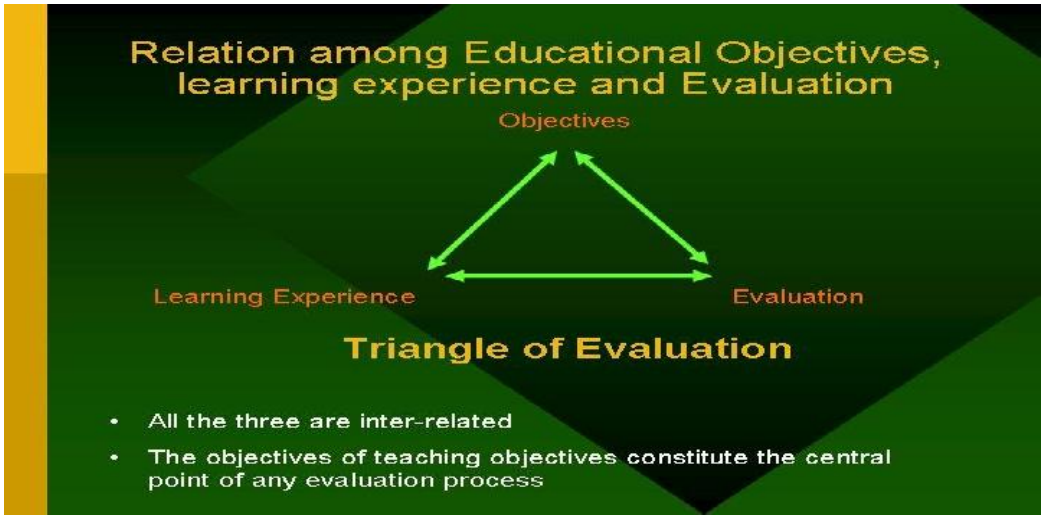
Objectives in this area refer to skills and movements that must be learned for games, sports, dances, performances, or for the arts.

Non-discursive communication

Objectives in this area refer to expressive movements through posture, gestures, facial expressions, and/or creative movements like those in mime or ballet. These movements refer to interpretative movements that communicate meaning without the aid of verbal commands or help.

Relationship between educational objectives, learning experiences and evaluation:-

- Learning experience is based on Objectives.
- Learning Experience clarifies objectives.
- Evaluation is based on objectives.
- Evaluation clarifies objectives.
- Evaluation gives evidence on learning experience.
- Learning experience gives hinds to the nature of situation for evaluation



1. Educational Objectives

- Objectives of teaching constitute the pivot of ant teaching procedure.
- Objectives tell the pupil what he or she is expected to do.
- Any statement of objectives must specify observable preferably measurable changes in the learner's behaviour at the end of the course.
- Objectives are specific, immediate and attainable goals. "By educational objectives we mean explicit formulation of the ways in which students are expected to be changed by the educative process that is the ways in which they will change in their thinking, their feeling and their actions"- B.S. Bloom

- **Formulation of Educational Objectives – Factors involved…**
- The need, interest and the present level of pupil's development.
- The result obtained from the study of the conditions and problems of contemporary life.
- The nature and scope of subject matter.
- The opinions of specialist of the subject matter.
- The philosophy of education of the school.
- Psychology of learning

2. Learning Experience

- "Learning experience is pupil activities planned with the specific purpose of producing the desired behaviour changes in them".
- Effective learning depends upon careful planning of learning experiences.
- Learning experience intimately connected with educational objectives.
- In course of instruction, the learning experience changes the behaviour in terms of established goals.
- Pupil participation is a vital factor in planning learning experiences. (The change in behaviour most of the time due to the interaction between the learner and the learning situation)

Criteria for good learning experiences

- Appropriateness to behaviour changes defined under objectives.
- Appropriateness to content is prescribed.
- Adequacy and effectiveness in bringing about the desired changes.
- Practicability

Learning experiences – New approach

- Child centered
- Life centered
- Teacher is facilitator
- Scope for continuous evaluation
- Joyful experience
- Scope for creative thinking, logical thinking, reflective thinking

3. Educational Evaluation

Prof. N.M. Downie lists the following purpose of Educational Evaluation

- To provide information for grading, reporting to parents and promoting students.
- To evaluate the effectiveness of a single teaching method or to apprise the relative worth of several methods.
- To motivate the students.

- To select the students.
- To evaluate the entire educational institution and to show how several of its aspects could be improved.
- To collect information for effective educational vocational counseling.

Broader view of the purpose of educational Evaluation

- ***In respect of the pupil***

  i. In selection, classification, certification of pupils by diagnosing their strength and weakness.
  ii. To determine the current status of the pupil.
  iii. Determining the rate at which the individual student is progressing (Using periodic evaluation).
  iv. To find out the aptitude of a pupil.

  In respect of the teacher

  i. To know how for teaching is successful and methodology is effective.
  ii. To find out the individual differences.

  In respect of Instructional procedures

  i. Evaluation implies objective based instruction and continuous assessment of the progress of pupil.
  ii. This improves teaching and learning.

  In respect of school programmes

  i. Evaluation is important in the overall appraisal of the total school programmes.

  In respect of improvement of public relations

  i. Pupil evaluation may also be used as a basis, through reports to parents and school patrons, for the improvement of public relation and the mobilization of public opinion.

Process of Evaluation

- Formation of the objectives of education.
- Stating objectives in terms of behaviour modification.
- Imparting learning experience in accordance with the objectives.
- Devising tools of evaluation in accordance with the objectives and learning experience.
- Arriving at results by using the above tools.
- Interpretation of results.
- Modification to be suggested.

Evaluation Procedure

- ***Step I:*** Formulating objectives of teaching and translating them in terms of desired changes to be brought about in the child.
- ***Step II:*** Determining and providing learning experience appropriate to the objectives.
- ***Step III:*** Preparing tool of evaluation to measure or assess the extent to which the contemplated learning experience have actually taken place in the child.

Writing Different kinds of educational objectives:-

• Learning objectives are statements that define the expected goal of a curriculum, course, lesson or activity interms of demonstrable skills or knowledge that will be acquired by a student as a result of instruction. Also known as:Instructional objectives, learning outcomes, learning goals.

Characteristics:

- Relevant: confirm to the needs of the learner and institutional objectives.
- logical
- Unequivocal: clear action verbs to be used.
- Feasible: be within the time limit and resources available.
- Observable: able to see the action performed e.g. Writing, spoken, performed.
- Measurable: able to evaluate, check and recheck e.g. rating, grading, marking etc.

Purposes:

Preparing teaching/ learning program:

- Facilitates course planning.
- Communicates desirable emphasis of treatment.
- Provides for selective approach.
- Helps in curriculum design.
- Facilitates evaluation.
- Facilitates learning.

Types of educational objectives:

- Instructional objectives:

B) Basic instructional objective (BIO): A brief, clear statement of basic skill/ competence which is to be demonstrated at the conclusion of a unit instruction.

C) Specific instructional objective (SIO): A brief, clear statement of a single skill, directly related to BIO and stated in terms of observable student behavior.

Elements of specific objectives:

1. Activity- appropriate action verb to be used.
2. Content- what is to be implemented or performed.
3. Condition- with or without help of equipments, books, specimens reports etc.
4. Criteria- minimum level of performance.

Types:

A) According to type of objectives:
   1. Institutional
   2. Departmental (Intermediate).
   3. Specific instructional/ behavioral.

B) According to domain:
   1. Cognitive domain
   2. Affective domain
   3. Psychomotor domain.

C) According to person:
   1. Teacher centered.
   2. Student centered.

Types of educational objectives:

- Institutional/ general objective: A set of statements identifying the major skills that all the graduates of the program should posses at the completion of their studies.
- Departmental objectives: A set of statements identifying the skills to be acquired by all students who are taught within a particular school/ department/division, of a nursing college. These skills must be consistent with the institutional objective.

Types of educational objectives:

- Instructional objectives:

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Observable verbs for the cognitive domain*

Level 1. Knowledge		Level 2. Comprehension		Level 3. Application	
Recall of information		*Interpret information in one's own words*		*Use knowledge or generalization in a new situation*	
arrange	name	classify	recognize	apply	operate
define	order	describe	report	choose	prepare
duplicate	recognize	discuss	restate	demonstrate	practice
label	relate	explain	review	dramatize	schedule
list	recall	express	select	employ	sketch
match	repeat	identify	sort	illustrate	solve
memorize	reproduce	indicate	tell	interpret	use
		locate	translate		

Level . Analysis		Level 5. Synthesis		Level 6. Evaluation	
Break down knowledge into parts and show relationships among parts		*Bring together parts of knowledge to form a whole and build relationships for new situations*		*Make judgments on basis of given criteria*	
analyze	differentiate	arrange	manage	appraise	evaluate
appraise	discriminate	assemble	organize	argue	judge
calculate	distinguish	collect	plan	assess	predict
categorize	examine	compose	prepare	attack	rate
compare	experiment	construct	propose	choose	score
contrast	inventory	create	set up	compare	select
criticize	question	design	synthesize	defend	support
diagram	test	formulate	write	estimate	value

COGNITIVE LEARNING DOMAIN OBJECTIVES

- *Deal with what a student should* know, understand *or* comprehend.
- Emphasize remembering or reproducing something which has presumably been learned.
- Solving some intellective task for which the individual has to determine the essential problem.
- Reorder given material or combine it with ideas, methods, or procedures previously learned.
- Vary from simple recall of material learned to highly original and creative ways of combining and synthesizing new ideas and materials.
- Should encourage higher order thinking using Bloom's Taxonomy as a guide (See section 5 for further information.)

SAMPLE COGNITIVE OBJECTIVE

- Will label clouds as being cirrus, stratus, cumulus, or nimbus, when shown actual clouds or pictures of them with 80 percent accuracy.
- Since being able to identify different kinds of clouds requires the student to understand or comprehend the categories indicated, this is a cognitive objective.

AFFECTIVE LEARNING DOMAIN OBJECTIVES

- Deal with how a student should feel about something
- Emphasize a feeling tone, an emotion, a degree of acceptance or rejection, attitudes, appreciations, or relationships.

- Vary from simple attention to selected phenomena to complex but internally consistent qualities of character and conscience.
- Include examples like listening attentively, enjoying music, or appreciating literature.

SAMPLE AFFECTIVE OBJECTIVE

- Given the opportunity to work in a team with several people of different races, the student will demonstrate a positive increase in attitude towards non-discrimination of race, as measured by a checklist utilized/completed by non-team members.
- The objective suggests that a student will come to feel more positive about working with diverse populations. Because increased interest and attitude and not knowledge of the subject is the behavior involved, this is an affective objective.

PSYCHOMOTOR LEARNING DOMAIN OBJECTIVES

- *Are concerned with how a student* controls *or moves his body.*
- emphasize some muscular or motor skill such as use of precision instruments or tools,
- Encourage actions which evidence gross motor skills such as the use of the body in dance or athletic performance.
- Include examples like typing 25 words per minute, printing letters correctly, painting a picture, or dribbling a basketball.

SAMPLE PSYCHOMOTOR OBJECTIVE

Third grade students, beginning a unit on handwriting, will write the letters d, b, g, and p using cursive style handwriting forming each letter correctly and with a single smooth stroke.

Since being able to write cursive style requires the student to manipulate an object, a pencil or pen, to produce a product, the written letters, this is a psychomotor objective.

- **Cognitive** objectives emphasize **THINKING**,
- **Affective** objectives emphasize **FEELING** and
- **Psychomotor** objectives emphasize **ACTING**.

Be SMART

Instructional objectives should be **SMART**:

Specific - Use the ABCDs to create a clear and concise objective.

Measurable - Write the objective so that anyone can observe the learner perform desired action and objectively assess the performance.

Achievable - Make sure the learner can do what is required. Don't, for example, ask the learner to perform complex actions if they are a beginner in an area.

Relevant - Demonstrate value to the learner. Don't teach material that won't be used or on which you will not assess.
Timely and Time Bound - Ensure the performance will be used soon, not a year from now. Also, include any necessary time constraints, such as completing a task in "10 minutes or less."

Learning outcomes (measurable and non measurable)

Outcomes are more specific, narrow and measurable. They express a benefit or "value added" that a student can demonstrate upon completion of an academic program or course. An outcome contains all three of the following elements:

- What is to be learned (knowledge, skill, attitude),
- What level of learning is to be achieved (criteria, standard), and
- Under what conditions the learning is to be demonstrated (environment, support, etc.).

Measurable outcomes

The value of any project cannot be measured without defining success. It requires focus on **outcomes**. **Outcomes** are the events, occurrences, or changes in conditions, behavior, or attitudes that indicate progress toward a project's goals. **Outcomes** are specific, **measurable**, and meaningful.

Examples of Measurable Outcomes:

Knowledge: The student will analyze output of impaired speech production perceptually or instrumentally.

Skill: The student will assess a child's knowledge of word recognition strategies using an informal reading inventory.

Attitude: The student will demonstrate self awareness through the identification of internal values, strengths and weaknesses, and the initiation of change by utilizing resources for personal and professional growth.

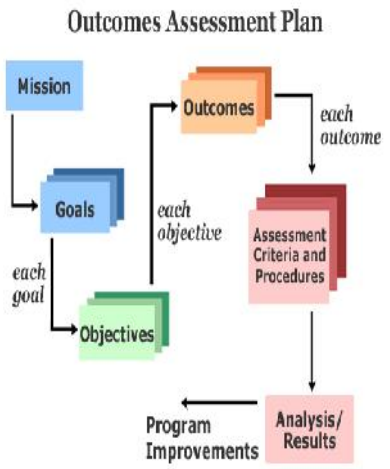
Examples of Non- Measurable Outcomes

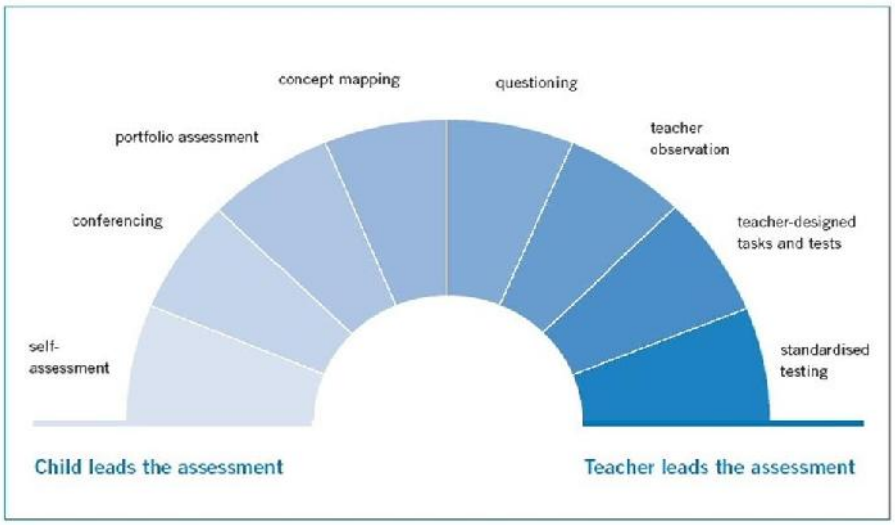
Knowledge: The student will understand the relationship between theory and practice.

Skill: Critical Thinking.

Attitude: The student will enjoy music.

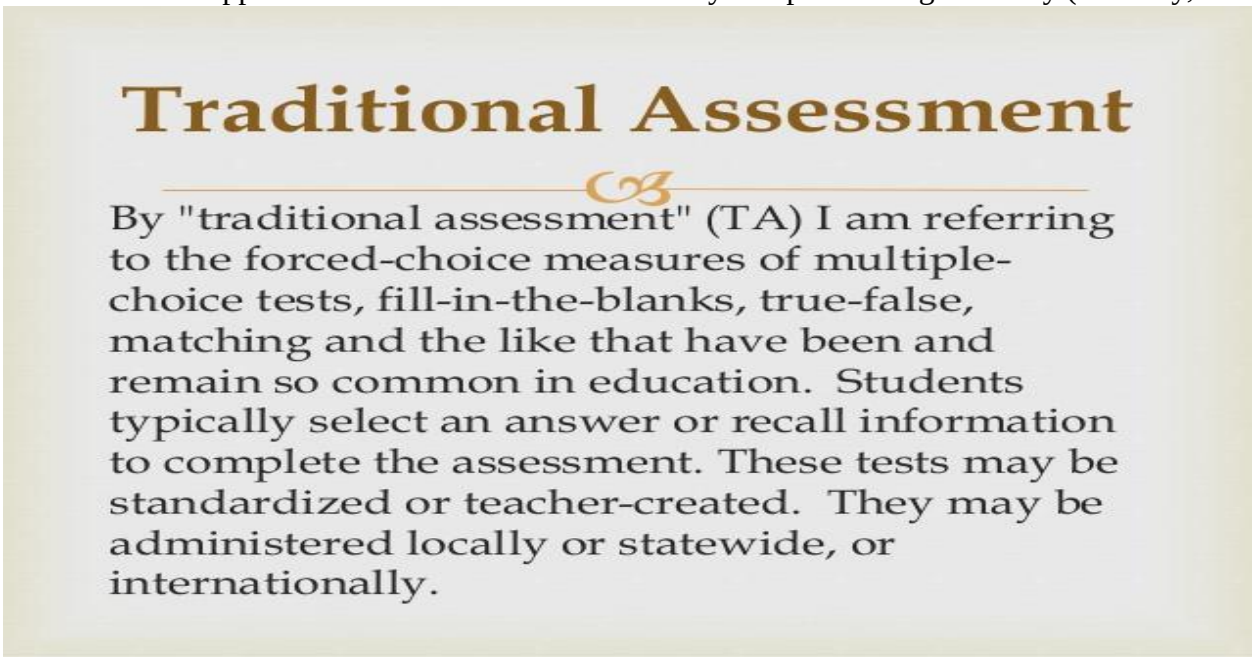
Unit- 3 Traditional and constructivist assessment





Traditional assessment:-

- Until about 1926, most colleges and universities used locally developed essay tests to evaluate the readiness of applicants to undertake and successfully complete collegiate study (Whitney, 1993)



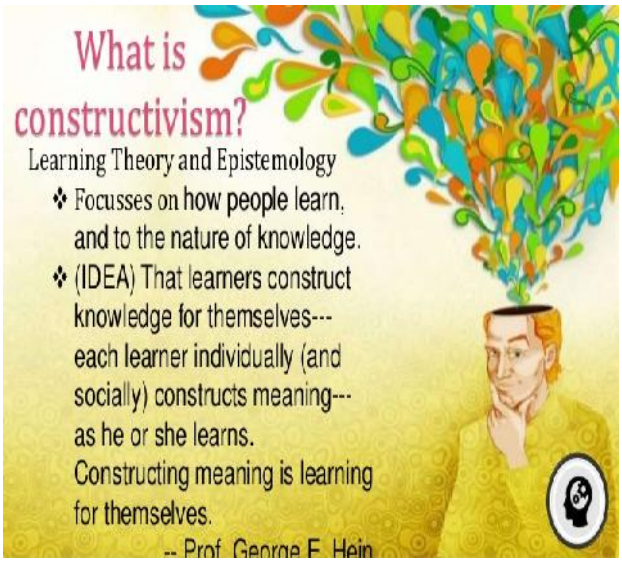
Definition:-

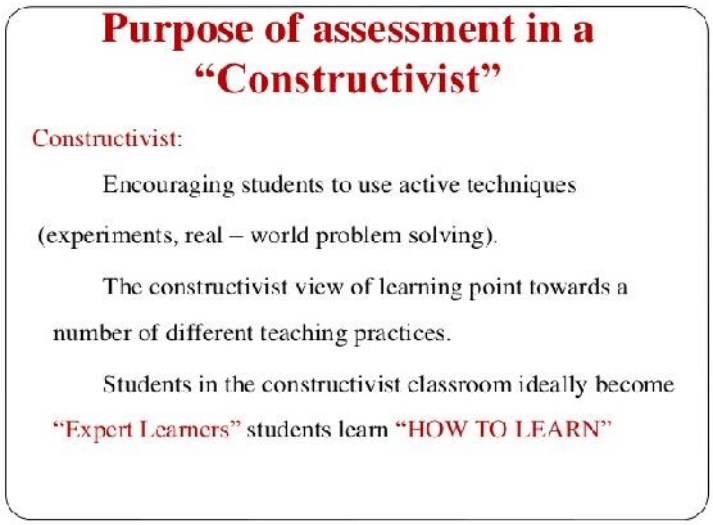
- **Traditional assessment** is the **conventional** methods of testing which usually produce a written document, such as quiz, exam, or paper. Standardized tests, most state achievement test, and high school graduation examination are also examples of **traditional assessment**
- Traditional assessment refers to standardized testing that uses questions with a limited number of answer choices. It includes multiple choice, true or false and some short answer responses

Advantages:-	Disadvantages :-
• More objective • Reliable and valid in some cases • Usually designed by trained experts • Software available	• Validity issues • Not practical to administer • Scores must be transformed into useable to improving learning

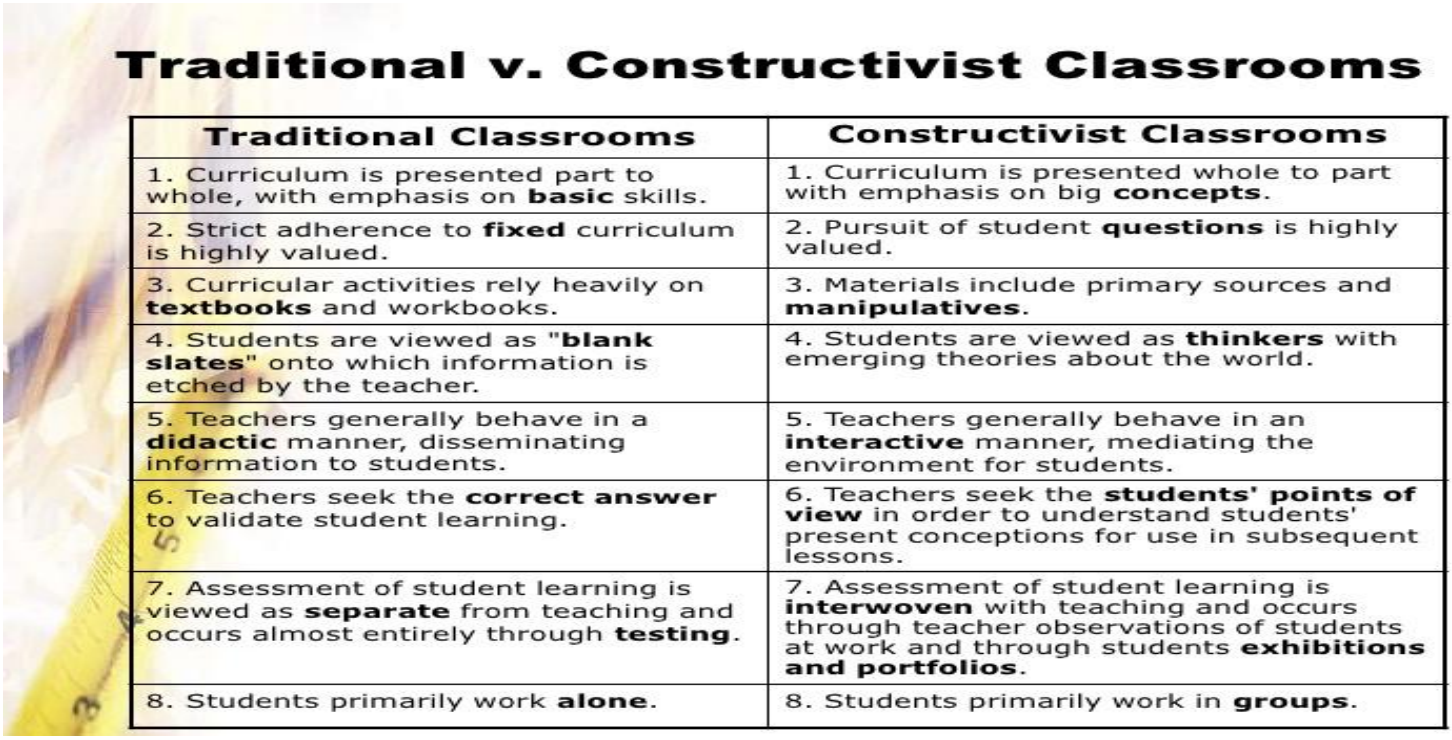
Constructivist assessment:-

- **Constructivist** approach to **assessment** is a formative rather than a summative. Its purpose is to improve the quality of student learning, not to provide evidence for evaluating or grading students. ... **Assessment** is ongoing process. Teachers get feedback from students of their learning.
- In a constructivist, technology-supported learning, the traditional paper – and – pencil tests are not adequate to assess learning.
- To measure the students' communication, analytical, integrative, evaluative and collaborative skills, authentic forms of assessment are more reliable.
- Scoring rubrics are a must in assessment.





Difference:-



Traditional v. Constructivist Classrooms

Traditional Classrooms	Constructivist Classrooms
1. Curriculum is presented part to whole, with emphasis on **basic** skills.	1. Curriculum is presented whole to part with emphasis on big **concepts**.
2. Strict adherence to **fixed** curriculum is highly valued.	2. Pursuit of student **questions** is highly valued.
3. Curricular activities rely heavily on **textbooks** and workbooks.	3. Materials include primary sources and **manipulatives**.
4. Students are viewed as "**blank slates**" onto which information is etched by the teacher.	4. Students are viewed as **thinkers** with emerging theories about the world.
5. Teachers generally behave in a **didactic** manner, disseminating information to students.	5. Teachers generally behave in an **interactive** manner, mediating the environment for students.
6. Teachers seek the **correct answer** to validate student learning.	6. Teachers seek the **students' points of view** in order to understand students' present conceptions for use in subsequent lessons.
7. Assessment of student learning is viewed as **separate** from teaching and occurs almost entirely through **testing**.	7. Assessment of student learning is **interwoven** with teaching and occurs through teacher observations of students at work and through students **exhibitions and portfolios**.
8. Students primarily work **alone**.	8. Students primarily work in **groups**.

Traditional and constructivist teacher:-

ROLES OF THE INSTRUCTOR	
TRADITIONAL	CONSTRUCTIVIST
Sage-on-the-stage	Coach
Chalk-and-talk	Mentor
Banker	Midwife
Dispenser of knowledge	Facilitator
Teacher	Co-learner / Collaborator
Script reader	Curriculum Developer
Soloist	Team member
Isolationist	Community builder

Adapted from "Constructivism and its implications for educators" by A. A. Christie, Ph.D.

Purposes of assessment in a 'constructivist' paragigm: to engage with learners minds in order to further learning in various dimensions:-

Dimensions of Learning are a comprehensive model that uses what researchers and theorists know about learning to define the learning process. Its premise is that five types of thinking -- what we call the five dimensions of learning -- are essential to successful learning.

The Dimensions framework will help you to

- Maintain a focus on learning;
- Study the learning process; and
- Plan curriculum, instruction, and assessment that takes into account the five critical aspects of learning.

Now let's take a look at the five dimensions of learning.

Dimension 1: Attitudes and Perceptions

Attitudes and perceptions affect students' ability to learn. For example, if students view the classroom as an unsafe and disorderly place, they will likely learn little there. Similarly, if students have negative attitudes about classroom tasks, they will probably put little effort into those tasks. A key element of effective instruction, then, is helping students to establish positive attitudes and perceptions about the classroom and about learning.

Dimension 2: Acquire and Integrate Knowledge

Helping students acquire and integrate new knowledge is another important aspect of learning. When students are learning new information, they must be guided in relating the new knowledge to what they already know, organizing that information, and then making it part of their long-term memory. When students are acquiring new skills and processes, they must learn a model (or set of steps), then shape the skill or process to make it efficient and effective for them, and, finally, internalize or practice the skill or process so they can perform it easily.

Dimension 3: Extend and Refine Knowledge

Learning does not stop with acquiring and integrating knowledge. Learners develop in-depth understanding through the process of extending and refining their knowledge (e.g., by making new distinctions, clearing up misconceptions, and reaching conclusions.) They rigorously analyze what they have learned by applying reasoning processes that will help them extend and refine the information. Some of the common reasoning processes used by ***learners to extend and refine their knowledge are the following:***

- Comparing
- Classifying
- Abstracting
- Inductive reasoning
- Deductive reasoning
- Constructing support
- Analyzing errors
- Analyzing perspectives

Dimension 4: Use Knowledge Meaningfully

The most effective learning occurs when we use knowledge to perform meaningful tasks. For example, we might initially learn about tennis racquets by talking to a friend or reading a magazine article about them. We really learn about them, however, when we are trying to decide what kind of tennis racquet to buy. Making sure that students have the opportunity to use knowledge meaningfully is one of the most important parts of planning a unit of instruction. In the Dimensions of Learning model, there are six reasoning processes around which tasks can be constructed to encourage the meaningful use of knowledge:

- Decision making
- Problem solving
- Invention
- Investigation
- Experimental inquiry
- Systems analysis

Dimension 5: Productive Habits of Mind

The most effective learners have developed powerful habits of mind that enable them to think critically, think creatively, and regulate their behavior. These mental habits are listed below:

Critical Thinking:

- Be accurate and seek accuracy
- Be clear and seek clarity
- Maintain an open mind
- Restrain impulsivity
- Take a position when the situation warrants it
- Respond appropriately to others' feelings and level of knowledge

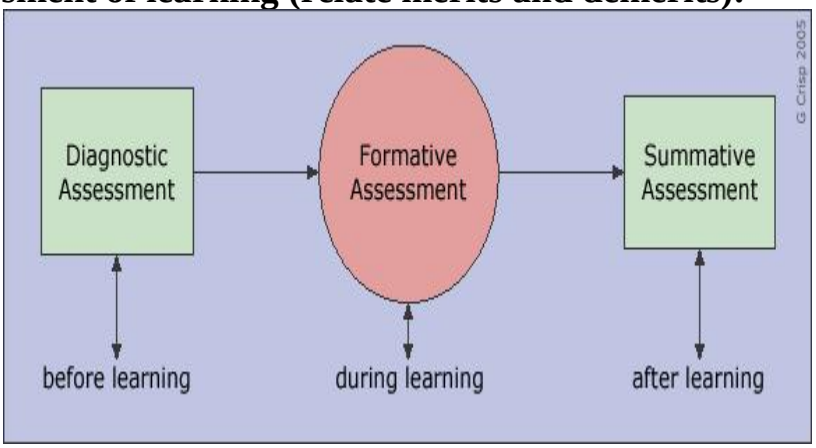
Creative Thinking:

- Persevere
- Push the limits of your knowledge and abilities
- Generate, trust, and maintain your own standards of evaluation
- Generate new ways of viewing a situation that are outside the boundaries of standard conventions

Self-regulated Thinking:

- Monitor your own thinking
- Plan appropriately
- Identify and use necessary resource
- Respond appropriately to feedback
- Evaluate the effectiveness of your actions

Assessment for learning and assessment of learning (relate merits and demerits):-



Assessment for learning:-

- **Assessment FOR learning** embeds assessment processes **throughout the teaching and learning process** to constantly adjust instructional strategy.
- The emphasis shifts from summative to **FORMATIVE** assessment in Assessment for Learning.
- **Assessment for Learning** happens during the learning, often more than once, rather than at the end. Students understand exactly what they are to learn, what is expected of them and are given feedback and advice on how to improve their work

Teachers' Roles in Assessment for Learning:

- "Assessment for learning occurs throughout the learning process. It is interactive, with teachers:
  • aligning instruction • identifying particular learning needs of students or groups • selecting and adapting materials and resources • creating differentiated teaching strategies and learning opportunities for helping individual students move forward in their learning • Providing immediate feedback and direction to students

Assessment of learning:-

- **The purpose of this kind of assessment is usually SUMMATIVE and is mostly done at the end of a task, unit of work etc.**
- **Assessment OF learning** involves looking at assessment information **at the end of the teaching and learning process** to rank students' achievement levels against a standard
- "Assessment of Learning is the assessment that becomes public and results in statements or symbols about how well students are learning. It often contributes to pivotal decisions that will affect students' futures. It is important, then, that the underlying logic and measurement of assessment of learning be credible and defensible."

Teachers' Roles in Assessment of Learning:

"Teachers have the responsibility of reporting student learning accurately and fairly, based on evidence obtained from a variety of contexts and applications. Effective assessment of learning requires that teachers provide.

- Clear descriptions of the intended learning • a range of alternative mechanisms for assessing the same outcomes • public and defensible reference points for making judgements • transparent approaches to interpretation • descriptions of the assessment process • strategies for recourse in the event of disagreement about the decisions."

Assessment as learning:-

- Assessment as learning helps students to take more responsibility for their own learning and monitoring future directions.

Teachers' Roles in Assessment as Learning:-

"The teachers' role in promoting the development of independent learners through assessment as learning is to:

• model and teach the skills of self-assessment • guide students in setting their own goals, and monitoring their progress toward them • provide exemplars and models of good practice and quality work that reflect curriculum outcomes • work with students to develop clear criteria of good practice provide regular and challenging opportunities to practise, so that students can become confident, competent self-assessors

METHOD	ADVANTAGES	DISADVANTAGES
FORMATIVE OR DIAGNOSTIC TEST	Quickly highlights real problems. Verbal protocols valuable source of information. Can be used early in design to support rapid iterative development. Easy to prioritise problems.	Technique requires a test administrator who can keep the user talking. "Thinking aloud" can affect user behaviour and performance levels. Analysis of verbal protocols can be time consuming
SUMMATIVE OR MEASUREMENT TEST	Provides real performance data. Answers the question: "How usable is this web site" Can compare different groups of users and different systems. High reliability and validity.	Technique requires a test administrator who knows how to avoid test bias. Technique requires a usability lab. Tasks can sometimes be artificial and restricted. Statistical analysis of data can be time consuming.

Assessment of Different types of content:-

6 Types Of Assessment Of Learning

1. Diagnostic Assessment (as Pre-Assessment)

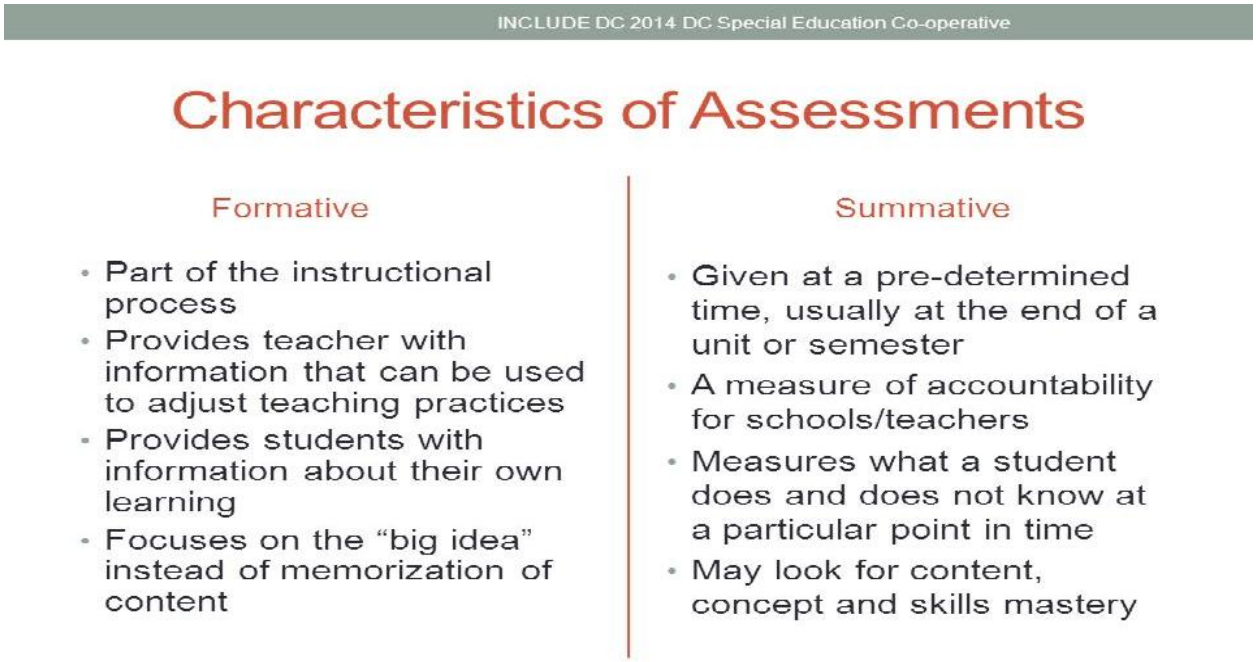
- Diagnostic assessment, which is given at the beginning of the course or the beginning of the unit/topic, is known as *diagnostic assessment*. This assessment is used to collect data on what students already know about the topic.
- Diagnostic assessments are sets of written questions (multiple choice or short answer) that assess a learner's current knowledge base or current views on a topic/issue to be studied in the course.
- The goal is to get a snapshot of where students currently stand - intellectually, emotionally or ideologically - allowing the instructor to make sound instructional choices as to how to teach the new course content and what teaching approach to use.

2. Formative Assessment

***** Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited

Formative assessment serves several purposes:

- to provide feedback for teachers to modify subsequent learning activities and experiences;
- to identify and remediate group or individual deficiencies;
- to move focus away from achieving grades and onto learning processes, in order to increase self efficacy and reduce the negative impact of extrinsic motivation;
- To improve students' meta cognitive awareness of how they learn.
- Frequent, ongoing assessment allows both for fine-tuning of instruction and student focus on progress.



3. Summative Assessment

- **Summative assessment** (or **summative evaluation**) refers to the assessment of participants where the focus is on the outcome of a program
- The goal of summative assessment is to evaluate student learning at the end of an instructional unit by comparing it against some standard or benchmark
- Summative assessment usually involves students receiving a grade that indicates their level of performance, be it a percentage, pass/fail, or some other form of scale grade
- Summative assessment can be used to refer to assessment of educational faculty by their respective supervisor, with the object of measuring all teachers on the same criteria to determine the level of their performance. In this context summative assessment is meant to meet the school or district's needs for teacher accountability. The evaluation usually takes the

shape of a form, and consists of check lists and occasionally narratives. Areas evaluated include classroom climate, instruction, professionalism, and planning and preparation.

Importance of summative assessment:-

1. Summative assessments can serve as a guide to improving teaching methods. We all use different teaching methodology within the classroom. Summative assessments can help us collaborate and improve teaching methods from year to year.

2. Summative assessments help teachers and administrators alike, in improving curriculum and curriculum planning. Standards-driven instruction plays a large role in schools today. When summative assessments show consistent gaps between student knowledge and learning targets, schools may turn to improved curriculum planning or new curriculum to fill those learning gaps.

4. Criterion-Referenced Assessment

* Measures a student's performance based on mastery of a specific set of skills.

Criterion-Referenced Assessment	Norm-Referenced Assessment
Provide information on how the performance of an individual compares with that of others.	Provide information on how the individual preformed on some standard of objective.
Individual's standing is compared with that of a know group.	Allow users to interpret what an individual can do without considering the performance of others.
Percentile rank is obtained to determine the relative standing in a norm group.	Designed to measure the results of instruction.
Emphasize the discrimination among individuals.	An individuals performance on a specific behavioral or instructional objective. Emphasizes description of performance.

There are multiple ways to score a criterion-referenced assessment. These include:

- checklists
- rating scales
- grades
- rubrics
- percent accurate

5. Norm-Referenced Assessment

***** Measures a student's performance in comparison to the performance of same-age students on the same assessment.

* An assessment designed to measure and compares individual students' performances or test results to those of an appropriate peer group (that is, *norm group*) at the classroom, local, or national level.
* Students with the best performance on a given assessment receive the highest grades.

6. Interim/Benchmark Assessment

An **interim assessment** is a form of **assessment** that educators use to

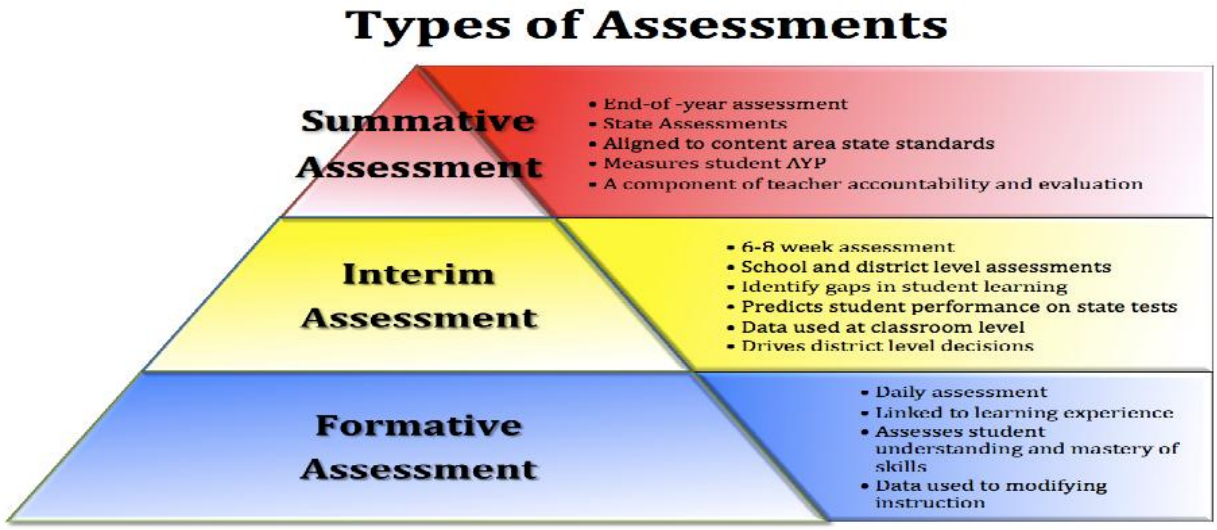
(1) Evaluate where students are in their learning progress

(2) Determine whether they are on track to performing well on future assessments, such as **standardized tests** or end-of-course exams.

Interim assessments are usually administered periodically during a course or school year (for example, every six or eight weeks) and separately from the process of instructing students. (In education, the term *assessment* refers to the wide variety of methods that educators use to evaluate, measure, and document the academic readiness, learning progress, and skill acquisition of students.)

Characteristics of standardized benchmark assessments

- Are given periodically, from three times a year to as often as once a month;
- Focus on reading and mathematics skills, taking about an hour per subject;
- Reflect state or district academic-content standards; and measure students' progress through the curriculum and/or on material in state exams.



Achievement:-

- An **achievement** test is a test of developed skill or knowledge. The most common type of **achievement** test is a standardized test developed to measure skills and knowledge learned in a given grade level, usually through planned instruction, such as training or classroom instruction.

Performance:-

- **Performance assessment**, also known as alternative or authentic **assessment**, is a form of testing that requires students to perform a task rather than select an answer from a ready-made list.

Values:-

- They are a shorthand way of describing your motivations. Together with your beliefs, they are the causal factors that drive your decision-making. The Personal **Values Assessment** is a simple survey that takes just a few minutes of your time and provides a wealth of information about why you do what you do.

Attitude and Aptitude:-

- **Aptitude** is ability to perform a certain task, solve a particular problem and take an important decision. It is considered to be a synonym of talent. It is an innate quality of a person. On the other hand **attitude** is a disposition or tendency to behave towards a certain object, person or circumstance.

Assessment for different purposes:-

Teaching and learning

The primary purpose of assessment is to improve students' learning and teachers' teaching as both respond to the information it provides. Assessment for learning is an ongoing process that arises out of the interaction between teaching and learning.

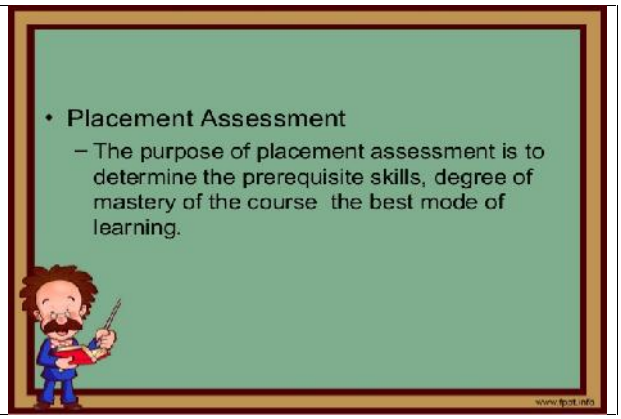
What makes assessment for learning effective is how well the information is used.

System improvement

Assessment can do more than simply diagnose and identify students' learning needs; it can be used to assist improvements across the education system in a cycle of continuous improvement:

- Students and teachers can use the information gained from assessment to determine their next teaching and learning steps.
- Parents, families and whānau can be kept informed of next plans for teaching and learning and the progress being made, so they can play an active role in their children's learning.
- School leaders can use the information for school-wide planning, to support their teachers and determine professional development needs.
- Communities and Boards of Trustees can use assessment information to assist their governance role and their decisions about staffing and resourcing.
- The Education Review Office can use assessment information to inform their advice for school improvement.
- The Ministry of Education can use assessment information to undertake policy review and development at a national level, so that government funding and policy intervention is targeted appropriately to support improved student outcomes.

Placement:-

• **Placement testing** is about the placement tests that colleges universities use to assess college readiness and place students into their initial classes.	

Diagnosis and Grading:-

- **Diagnostic assessment** is a form of pre-**assessment** that allows a teacher to determine students' individual strengths, weaknesses, knowledge, and skills prior to instruction. It is primarily used to **diagnose** student difficulties and to guide lesson and curriculum planning.
- **Grading** in education is the process of applying standardized measurements of varying levels of achievement in a course. Grades can be assigned as letters (generally A through F), as a range (for example 1 to 6), as a percentage of a total number of questions answered correctly, or as a number out of a possible total (for example out of 20 or 100)

Unit – IV - CCE

Definition. Continuous and comprehensive evaluation refers to a student assessment system which covers all facets of education. According to a CBSE Concept Note on Conceptual Framework of CCE, "it is a developmental process of assessment which emphasises on (sic) two fold objectives: continuity in evaluation and assessment of broad based learning and behavioural outcomes".

CCE objectives. According to the CBSE concept note, implementation of this student assessment and evaluation system will:

• Help develop cognitive, psychomotor and affective skills

• Develop students' thinking processes while de-emphasizing memorization

• Make continuous evaluation an integral part of the teaching-learning process

• Use evaluation data for improving teaching-learning strategies

• Utilize assessment data as a quality control device to raise academic outcomes

• Enable teachers to make student-centric decisions about learners' processes of learning and learning environments

• Transform teaching and learning into a student-centric activity

What are the characteristics of continuous assessment?

- Continuous assessment is **regular assessment of the learning performance** related to a course module and that is separate from examinations, and accompanied by regular feedback.
- Continuous assessment can take **various forms**, depending on the final objectives and competencies. A few examples:
- Regular observation of practical skills or attitudes, e.g. nursing skills, your team's collaboration skills, collaboration during tutorials, etc.
- Regular feedback on your portfolio, paper, etc.
- Regular assessment of your verbal language skills.
- Regular testing of your insight into theoretical concepts.
- Continuous assessment can take place within various types of **contact moments,** e.g. practicals, workshops, lectures, placements, projects, cases, etc.
- Continuous assessment is the result of the **continuous assessment of the learning performance** on a course module. The assessment task can verify which developmental process you are going through. The continuous assessment (partially) counts towards the final mark for the course module.

- Continuous assessment often goes hand in hand **with information** about: the assessment criteria, how you performed, what went smoothly, what went less smoothly, and the things you still have to work on.

Continuous and comprehensive evaluation:

Continuous and Comprehensive Evaluation (CCE) system was introduced by the Central Board of Secondary Education (CBSE) in India to assess all aspects of a student's development on a continuous basis throughout the year. The assessment covers both scholastic subjects as well as co-scholastic areas such as performance in sports, art, music, dance, drama, and other cultural activities and social qualities.

Scholastic Areas & Co-Socialistic Areas:

Scholastic and Co-scholastic domain in RGS means the desirable behaviour related to the learner's knowledge, understanding, application, evaluation, analysis, and creating in subjects and the ability to apply it in an unfamiliar situation are some of the objectives in scholastic domain.

The desirable behaviour related to learner's Life Skills, attitudes, interests, values, co-curricular activities and physical health are described as skills to be acquired in co-scholastic domain.

The process of assessing the students' progress in achieving objectives related to scholastic and co-scholastic domain is called comprehensive evaluation. It has been observed that usually the scholastic areas such as knowledge and understanding of the facts, concepts, principles etc. of a subject are assessed.

The co-scholastic elements are either altogether excluded from the evaluation process or they are not given adequate attention. For making the evaluation comprehensive, the scholastic and co-scholastic both should be given importance. Simple and manageable means of assessment of co-scholastic aspects of growth must be included in a comprehensive evaluation scheme.

In National Policy on Education (NPE) document, 1986 and as modified in 1992 also it is mentioned that the scheme of evaluation should cover all learning experiences of scholastic subjects and non-scholastic areas. Would necessitate the use of a variety of techniques and tools. This will be so because different specific areas of learner's growth can be evaluated through certain special techniques.

Scholastic and Co-Scholastic Assessment: In order to implement Continuous and comprehensive Evaluation, both Scholastic and Co-Scholastic aspects need to be given due recognition. Holistic assessment requires maintaining an ongoing and comprehensive profile for each learner that is honest, encouraging and discreet. While teachers frequently reflect, plan and

implement remedial strategies, the child's ability and articulate what has been learned over a period of time also requires periodic assessment. Scholastic: Improve the teaching learning process; Assessment should be both Formative and Summative. Scholastic Area Formative assessment (Flexible Timing) Summative Assessment (Written, End of term) Question Examination Objective Type Observation Schedule Assignment Short answer Interview Schedule Quizzes and Competitions Long answers Checklist Projects Rating Scale Debates Anecdotal Records Elocution Document analysis Group Discussion Tests and inventories Club activities Portfolio analysis Experiments Research Co-Scholastic Assessment: The desirable behaviour related to learner's life skills, attitude, interest, values, co-curricular activities and physical health are described as skills to be acquired in co-scholastic domain. The process of assessing the students progress in achieving objectives related to Scholastic and Co-Scholastic domain is called comprehensive evaluation. It has been observed that usually under the scholastic domain such as knowledge and understanding of the facts, concepts, principles etc of a subject are assessed.

Functions of CCE

CCE

- It helps the teacher to organize effective teaching strategies.
- Continuous evaluation helps in regular assessment to the extent and degree of learner's progress (ability and achievement with reference to specific scholastic and co-scholastic areas).
- Continuous evaluation serves to diagnose weaknesses and permits the teacher to ascertain an individual learner's strengths and weaknesses and her needs. It provides immediate feedback to the teacher, who can then decide whether a particular unit or concept needs re-teaching in the whole class or whether a few individuals are in need of remedial instruction.
- By continuous evaluation, children can know their strengths and weaknesses. It provides the child a realistic self assessment of how he/she studies. It can motivate children to develop good study habits, to correct errors, and to direct their activities towards the achievement of desired goals. It helps a learner to determine the areas of instruction in which more emphasis is required.
- Continuous and comprehensive evaluation identifies areas of aptitude and interest. It helps in identifying changes in attitudes, and value systems.
- It helps in making decisions for the future, regarding choice of subjects, courses and careers.
- It provides information/reports on the progress of students in scholastic and co-scholastic areas and thus helps in predicting the future successes of the learner.

Recording and Reporting:

REPORTING STUDENT PERFORMANCE

Requirements for formal and informal reporting are based on ministerial orders and regulations authorized under the School Act. Schools must follow the specific requirements for reporting student progress as outlined in the policy.

Formal Reports

Formal reports communicate to parents and students significant aspects of the students' progress in the areas of intellectual, social, human and career development.

Performance Scale

The performance scale for Primary students indicates, in words or as a graph, the student‘s level of performance in relation to the expected learning outcomes set out in the provincial curriculum for each subject and grade.

For Kindergarten, performance is described as one of the following:

Approaching Expectations

• Meeting Expectations

• Exceeding Expectations

• For Grades 1 to 3, performance is described as one of the following: Not Yet Meeting Expectations

Use of the performance scale to show progress in language arts (including reading, writing, and speaking/listening), mathematics, social studies and science is mandatory. The performance scale may also be used to report progress in other areas, such as fine arts, personal planning, physical education, social responsibility and work habits.

Informal Reports

Each school year, teachers must provide parents with a minimum of two informal reports. In relation to curriculum, informal reports may describe:

- what the student is able to do
- The areas of learning that require further attention or development
- Ways the teacher is supporting the student‘s learning needs

(and where appropriate, ways the student or the parents might support the learning)

Informal reports are an important link between home and school and can take a variety of forms,

such as:

- telephone calls
- interim reports (written or oral)
- Conferences (parent-teacher, three-way, student-led, etc.)

Concept of Grading System

Evaluation is a powerful and potential process to know the direction in which the children are developing. Evaluation is considered to be one the most important components of education process that helps in assessing the performance of children in a teaching- learning context. The usual practice of assessment in schools is through conducting examinations. One of the major drawbacks of our examination system is reporting students‘ performance in terms of marks. In order to minimize the limitations of present day examinations system, a major reform concerns transforming the marking system into a grading system.

Grading is a process of classifying students based on their performance into groups with the help of predetermined standards, expressed in a symbolic form i.e., letters of English alphabet. As these grade and corresponding symbols are pre-determined and well defined, all the stakeholder would understand them uniformly and consistently.

Types of Grading System

Grades are classified as **Direct** and **Indirect,** it is also divided into two as **Absolute** and **Relative.** Absolute and relative grading come under indirect grading.

Direct Grading

The process of assessing students' performance qualitatively and expressing it in terms of letter grades directly is called direct grading. This type of grading can be used for assessment of students' performance in both scholastic and co- scholastic areas. However, direct grading is mostly preferred in the assessment of co-scholastic learning outcomes. While evaluation co-scholastic learning outcomes, the important factors are listed first and then a student's performance is expressed in a letter grade. This type of grading minimizes inter- examiner variability and is easy to use when compared to indirect grading. Direct grading has a limitation that it does not have transparency and diagnostic value and does not encourage competition to the extent required.

Indirect Grading

In indirect grading, student performance is first assessed in terms of marks and then they are transformed into letter grades. Different modes may be followed while transforming the marks into grades. On the basis of the mode of transformation of marks into grades, there are two types of grading, viz. absolute grading and relative grading. The meaning and relevance of these two types of indirect grading are explained below.

Absolute Grading

In absolute grading, the marks are directly converted into grade on the grades on the basis of a pre-determined standard. Absolute grading can be on a three- point, five- point or nine – point scale for primary, upper primary and secondary stages respectively.

i. Three-Point Scale

Students are classified into three groups as above average, average and below average on the basis of pre-determined range of score as shown in below table.

Three- tier classification and their meaning

Range of marks	Grade	Description
60% and above	A	Above Average
30%- Less than 60%	B	Average
Below 30%	C	Below Average

ii. Five Point Scale

Students are classified into five groups, distinction, first division, second division, third division and unsatisfactory on the basis of pre-determined range of score as shown in below table.

Five- tier classification and their meaning

Range of marks	Grade	Description
75% and Above	A	Distinction/ Excellent
60% - Less than 75%	B	First Division/Good
45% - Less than 60%	C	Second Division/ Average
33% - Less than 45%	D	Third Division/ Below Average
Below 33%	E	Unsatisfactory/ Poor.

iii. Nine Point Scale

In absolute grading the range of absolute marks or percentage of marks need not necessarily be of equal size. The range of marks as a pre-determined standard for classifying students into different groups may be taken as arbitrary. In a nine- point grading scale, the students may be classified into nine groups, namely, outstanding, excellent, very good, good, above average, below average, marginal and unsatisfactory. An example of nine-point absolute grading is provided in below table.

Nine- tier classification and their meaning

Range of marks	Grade	Description
90% and Above	A	Outstanding
80% - Less than 90%	B	Excellent
70% - Less than 80%	C	Very Good
60% - Less than 70%	D	Good
50% - Less than 60%	E	Above Average
40% - Less than 50%	F	Average
30% - Less than 40%	G	Below Average
20% - Less than 30%	H	Marginal
Below 20%	I	Unsatisfactory

Merits of Absolute Grading

- Negative effects of pass/ fail eliminated.
- No grade signifies failure of students.
- Simple and straight forward.
- Meaning of each grade is distinctively understandable.
- Students have the freedom to strive for highest possible grade.

Demerits of Absolute Grading

- Grade may not be comparable.
- Distribution of marks varies from one subject to another and from one year to another.
- Number of students placed in different categories will differ from subject to subject and year to year.
- Distribution of marks is taken on its face value.
- Errors in measurement due to subjectivity are ignored.

Merits of Grading System

- As grading involves grouping the students according to their attainment levels, it help in Categorizing the students as per their attainments of instructional objectives also.
- One of the significant arguments in favour of the grading system is that it creates faviourables conditions for classification of students‘ performance on a more convincing and justifiable scale.
- In order to understand why grading is a better proposition than the marking system, it is necessary to look closely into the various procedures of scaling.
- Grading is a far more satisfactory method than the numerical marking system.
- The justification for the superiority of grading system over marking system is that it signifies individual learner‘s performance in the form of a certain level of achievement in relation to the whole group.

Limitation of Grading System

There is a possibility of different examiners interpreting the standard differently resulting in inter-examiner variability.

- Grading stipulates strict adherence to pre-defined criteria.
- In absolute grading, the students are put into different categories on the basis of predetermined range of scores.
- Relative grading, though scientific is considered somewhat complicated for teachers, especially when they are not equipped to implement it in their classes.
- Grades are often awarded without employing both multiple criteria and multiple sources of information.

- The percentage of students belonging to different grades is pre-determined and the grades are not awarded on the basis of individual student‘s performance but are decided on the basis of performance of students in a larger group.
- Lack of uniform policy on grading across different State Boards of Education creates a problem of compatibility of grade awarded on different criteria in different board examination.

Progress Report

A critical element of any student's learning experience is the need for informed and meaningful feedback to those invested in the student's progress. Reporting on student progress must have a well-defined purpose for it to be meaningful. It must clearly identify the information needing to be communicated, the audience it is intended for and how that information will be used to improve future or related learning.

Three primary purposes for reporting student progress:
1. To communicate student growth to parents and the broader community.
2. To provide feedback to students for self-evaluation.
3. To document student progress and the effectiveness of instructional programs.

Because reporting student progress serves a variety of purposes, we believe no one method of reporting is capable of serving all purposes well. A multi-faceted comprehensive reporting system is essential. Multiple means of reporting progress is divided into two subsets, individual and whole school reports. Within these subsets, the means for reporting may include but are not limited to:

Individual Subset - report cards, progress reports, standardized testing, evaluated projects and assignments, portfolios and exhibitions of student work, homework, individual web pages, parent-teacher conferences, student-teacher conferences and student led conferences.

Whole School Subset- Standardized testing, open houses, classroom and school-wide newsletters, each means of reporting on student progress will include a statement of purpose. The statement of purpose may vary according to the specific type of reporting taking place and the audience it is directed toward.

Meaning and definition of Feedback

Dictionary of Education (C.V .Good 1939) defines feedback as “a process whereby an observer reports to a group on how well it is functioning.”

Feedback refers to a device, process or mechanism with the help of which an individual or a system receives information about its working in terms of its strength and weakness in order to bring desirable improvement in its working.

Feedback as an essential component of assessment

Feedback is an essential part of the assessment process. For feedback to be successful it needs to be timely, meaningful and with opportunities for students to use feedback to maximize their performance.

Feedback is an essential part of effective learning. It helps students understand the subject being studied and gives them clear guidance on how to improve their learning.

Academic feedback is more strongly and consistently related to achievement than any other teaching behavior this relationship is consistent regardless of grade, socioeconomic status, race, or school setting.

Feedback can improve a student's confidence, self-awareness and enthusiasm for learning. Providing students engage with feedback, it should enhance learning and improve assessment performance.

Unit V: Major Tools Of Evaluation And Their Uses

Oral Test

The oral exam (also oral test or viva voce) is a practice in many schools and disciplines in which an examiner poses questions to the student in spoken form. The student has to answer the question in such a way as to demonstrate sufficient knowledge of the subject to pass the exam. The oral exam also helps to reduce (although it does not eliminate) the risk of granting a degree to a candidate who has had the thesis or dissertation ghostwritten by an expert.

Sometimes, the oral exam is offered in schools as an alternative to a written exam for students with a learning disability, like dysgraphia, developmental coordination disorder or non-verbal learning disorder.

Written Test /Paper Pencil Test

Assessment (either summative or formative) is often categorized as either objective or subjective. Objective assessment is a form of questioning which has a single correct answer. Subjective assessment is a form of questioning which may have more than one correct answer (or more than one way of expressing the correct answer). There are various types of objective and subjective questions. Objective question types include true/false answers, multiple choice, and multiple-response and matching questions. Subjective questions include extended-response questions and essays. Objective assessment is well suited to the increasingly popular computerized or online assessment format.

PERFORMANCE TEST

Achievement Test:

In educational system, focus is laid upon child's performance and achievements, learning outcomes, behavioral change and mental development of student are the main aim to be measured, the test that does so is called Achievement test. Through this test, how much and what a child has learnt, can be determined.

Definition:

Lindquist & Munn

"A general achievement test is one designed to express in terms of a single score pupil's relative achievement in a given field of achievement."

According to **Super: "**An achievement or performance test is used to ascertain what and how much has been learnt or how much has the task been performed."

Characteristics of Achievement Test:

- A good achievement test consists of a measured amount of behavior.
- It consists of a sufficient number of test items for each measured behavior.
- In a good achievement test administrated procedure, scoring key etc. everything is decided in advance.
- A good achievement test is always accompanied by norms.
- A good achievement test is always accompanied by test-manual.

Major steps involved in the construction of achievement test

- Planning of test
- Preparation of a design for the test
- Preparation of the blue print
- Writing of items
- Preparation of the scoring key and marking scheme
- Preparation of question-wise analysis

Uses of Achievement Test

- Achievement test are used to assign grades on the basis of performance scores.
- Achievement test are used to promote students to higher classes on the basis of test scores.
- Achievement test are used to measure the effectiveness of different kinds of instruction and also the effectiveness of teachers.
- Achievement test are useful in organizing school curriculum.
- Achievement test are used prominently in the selection of candidates for specific jobs and professions.

Limitations:

- It is difficult to frame pin –pointed questions in view of certain objectives.
- Problem of validity is the main concern of such type of test.
- It is very difficult to eliminate personal bias of the test constructor affecting its reliability.
- It pertains to excessive standardization of instructions which ignores individual differences.
- Lack of due weightage to various content matter components and instructional objectives.

Functions of Achievement Test:

- To develop various skills in the child.
- To detect how much and what knowledge has the child received.
- To classify the student according to course.
- To assign course grades in special programme.
- To promote a child to next class on the basis of achievements.
- To bring the necessary changes in the syllabus.

Types or forms of Achievement Test:

(i) Standardized test

(ii) Teacher made test

Standardized test:

C.V.Good: "A standardized test is one for which content has been selected and checked empirically , for which norms have been established for which uniform methods of administration and scoring have been developed and which may be scored with relatively high degree of objectivity."

Teacher made test:

These are tests prepared by the teachers themselves. Reorganized general objectives are the main things that help in the preparation of these tests. These tests are quite refined and objectives. Procedure of these tests is similar to standardized test to a great limit.

Standardized Tests and Teacher –Made Tests: A comparison

Standardized Tests	**Teacher-made Tests**
Content validity of such tests is lower	Content validity of these tests is higher
Quality of items of such tests is superior	Quality of items of such tests is superior
Reliability and validity of these tests is of higher degree	Reliability and validity of such tests is of lower degree
These tests are accompanied by standard norms	No such norms are established
Standardized tests have published manuals	Here, no such manual is published
Here, items are selected through item analysis technique	Item analysis technique is not needed here
These tests are standardized for a well defined population or standardized sample	These tests are developed by particular teacher to evaluate his teaching learning process
These tests are mainly used in research guidance, counseling and administrative fields	These test are used by the teacher to know about the progress of his pupils
Construction of such tests is a costly affair	These tests are economical from construction point of view

Diagnostic Tests

Diagnostic assessment can help you identify your students‘ current knowledge of a subject, their skill sets and capabilities, and to clarify misconceptions before teaching takes place. Knowing students‘ strengths and weaknesses can help you better plan what to teach and how to teach it.

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Types of Diagnostic tests:

- Pre-tests (on content and abilities)
- Self-assessments (identifying skills and competencies)
- Discussion board responses (on content-specific prompts)
- Interviews (brief, private, 10-minute interview of each student)

Characteristics of Diagnostic test:

- It finds out weakness or deficiency of a child in learning of a contents.
- It is an effective tool for a teacher that helps in planning and organizing remedial teaching.
- It adopts objective type tests only.
- In diagnostic test no scores are made for correct answers, only wrong responses are taken into view in the sequence of contents.

Intelligence test

Definition:

“Intelligence is the ability to adjust oneself to new situation”-Stern

“Intelligence is a capacity to think well, to judge well and to be self critical”.

- Stanford –Binet Performance Test of Intelligence
- Wechsler Adult Intelligence Scale
- Verbal Group test
- Non-verbal group test

Aptitude Tests

Psychological tests measure specific abilities, such as mechanical or clerical skills. Sometimes these tests must be specially designed for a particular job, but there are also tests available that measure general clerical and mechanical aptitudes.

General Aptitude Test battery

- Motor and Manual tests
- Tests of Mechanical ability
- Tests of clerical Aptitude
- Tests of Vision and Hearing

Special Aptitude tests

These tests include those tests which are based on special profession or field as law, music, art, medicine, teaching etc.

RATING SCALE

By observing the various school and college activities we find change in behavior of students. Over and above that various personal characteristics are also observed. These characteristics separate the human behavior. The teacher observes such type of behavior of students by his insight and intelligence and hence evaluates the personality of the student. If this behavior of the students is evaluated through rating scale then it becomes more reliable. The technique of observation or the tool with the help of which the researcher or observer observes externally the amount of the various characteristics developed in a person and takes a note of it methodologically is called rating scale. Here the evaluation is done in relation to their opinion. Such a tool or instrument which converts the opinion into numbers is called rating scale. It can be used to evaluate the personality traits, creative skills, individual or social adjustment etc.'

Types of Rating Scales

The following are the main scales-

- Numerical Scales,
- Graphic Scale,
- Standard Scales,
- Check Lists

i. **Numerical Scales**

One of the simplest scales to construct and easiest to use, is the numerical rating scale. This type of tool usually consists of several items each of which names or describes the behavior to be rated, and then offers as alternative responses a series of numbers representing points along the scale. This simple numerical scale does have face validity and therefore seems to be widely accepted. It is more subjective or bias tool.

ii. Graphic Scale

If the format of the rating scale in such that the characteristics to be rated is represented as a straight line along which are placed some verbal guides, the tool is referred to as a graphic rating scale. It is easy to construct and easy to administer therefore it is widely used of all the specific types of rating scales, but it is less reliable measure.

iii. Standard Scale

In the standard scale approach an attempt is made to provide the rater with more than verbal cues in describe various scale points. Ideally, several samples of the objects to be rated are included each with a given scale value which have been determined in experimental studies prior to the use of the scale.

iv. Check Lists

An approach which is widely popular because it is simple to administer and still permits wide coverage in short time is the behavior check list. It contains a long list of specific behaviors which supposedly represented individual differences, and rater simply checks whether the item applies. The behavior index of individual is obtained by summing up the items, which have been checked. The modified check list or for reliable result, it is essential for each item as applicable or not applicable or not known.

Importance of Rating Scale

- Any characteristic can be measured through rating scale.
- It is helpful to evaluate the behaviour which other tools can hardly deal with.
- Abstract characteristics can be evaluated by rating scales.
- It is helpful to personality or the social development of person.
- The level of each characteristic of each student of the class can be known.
- It is helpful to deliver all the necessary information related to the progress of students.
- Within less time more opinions can be obtained.

Limitations of Rating Scale

- The evaluation being totally based on observation, the bias, liking, disliking, beliefs
- and assumptions etc.,
- The unawareness about the characteristics leads to the wrong observation.
- If large number of behavioral evaluation is to be done then the evaluator being bored of the tick mark generalizes the results.

CHECKLIST

It is one of the specific instruments for evaluation. Checklist is in the forms questionnaire. In this the answers of the questions are given checklist can be used for selfevaluation or for other‘s evaluation. It exhibits if the student has any particular characteristics or not and thus helps in the evaluation of the students.

Characteristics of Checklist

Checklist is used for evaluation of self and others. It is used as an instrument of observation. It involves questions and its answers. It involves signs by the respondent. It involves the characteristics about a particular subject to be evaluated.

Construction and Application of Checklist

The first horizontal line of the check list is used to write the name or number of the subject under observation. The characteristics of the subject or thing to be evaluated are arranged in vertical column of the evaluation sheet with the corresponding blank options to place the tick mark in the adjacent columns. Then the characteristics present in the subjects under observation are decided and if that characteristic is present in the subject then the tick mark is placed in that column. Then after the frequency of all tick mark is counted and marks are given to students on the bass of predefined norms or standards. Then the percentage, mean, median or correlation is used.

Uses of Checklist

1. It is useful for survey and research.
2. The amount of characteristics or traits of subjects can be known.
3. It is helpful to give the appropriate guideline to the subjects.
4. To know the developmental direction of the specific behavior pattern check list is used.
5.It is useful for self-evaluation and other‘s evaluation.

Limitations of Checklist

1. As only sign is used in checklist therefore no other options are found.
2. It is subjective and biased.
3. It is difficult to evaluate the personality of student or adjustment capacity through checklist.

Suggestions for the Effective Use of Checklist

1. The suggestions and characteristics should be short and clear.
2. The appropriate space should be given to place the tick mark in front of every characteristic.
3. The evaluation should be done without partiality or bias.

Anecdotal record:

A fundamental purpose of assessment is to communicate what the child knows and is able to do. Teacher-generated, anecdotal records provide an insider's perspective of the child's educational experience. This perspective is vital to communication with the child and the child's family about academic progress. Anecdotal records also facilitate assessment conversations as educational professionals describe their observations of student learning and consider ways to develop appropriate strategies to build on strengths and address academic needs. The more focused the observational records, the more helpful they can be in making daily decisions about instructional approaches.

Anecdotal Records are collections of narratives involving first-hand **observations** of interesting, illuminating incidents in children's literacy development. Anecdotal records are reports about the teacher informal observations about students. It will helps the teacher to collect details regarding student's behaviours at different situations. It will be a good tool to bring positive behavioral patterns through daily observation and correction.

It involves the following informations ;

Social interactions and literacy exchanges that teacher have observed

Children's everyday routines, such as what they choose to do in center workshops; a particular writing topic in a journal or on a sheet of paper during independent writing time; the book they choose during independent reading time; and when they spend time with blocks, sand, painting, or other forms of creative expression.

Children's learning styles.

Recurring patterns in children's ways of understanding.

Changes in children's behaviors

Milestones in children's development.

Steps Involved In Preparation Of Anecdotal Records

Teachers basically use the following steps for the preparation of Anecdotal records ;

1. **Observing children in instructional settings :**
   Formal and information is the starting point in the preparation of anecdotal records.
2. **Maintaining a standards-based focus :**
   Follow some criteria's as standards at the time ofobservation.
3. **Making anecdotal records :**
   Writing quality anecdotal records is facilitated by keeping in mind the following considerations: Write observable data, use significant abbreviations, write records in the past tense.
4. **Managing anecdotal records :**
   Once the records are coded for strengths, needs, or information, simply list an abbreviated summary of the strengths and the needs in the space provided below the records. Separating the records into strengths and needs allows the teacher to summarize what patterns are being exhibited by the student. The summary also helps clarify and generate appropriate instructional recommendations.
5. **Analysis of anecdotal records:**
   Anecdotal records assessment is informed by comparing the standards to the child's performance. The standards also inform the selection of strategies and activities for instructional recommendations. Periodically, analyze the compiled records for each student. The time between analyses may vary according to your own academic calendar.

QUESTIONNAIRE

Questionnaire is the structured set of questions. It is described as a "A document that contains a set of questions, the answers to which are to be provided personally by the respondents."It is a device for securing answer to questions by using from which the respondent fill by himself .It is the most flexible tool in collecting both quantitative and qualitative information.

A questionnaire cannot be judged as good or bad, efficient or inefficient unless the job it was intended to accomplish is known. Developing a questionnaire requires a certain amount of technical knowledge. The researcher must decide the points like method of data collection , procedure to be followed in approaching the respondent order of sequence of questions structured vs unstructured questions while framing a questionnaire.

Scope of Questionnaire.

1. When very large samples are desired .2. Cost have to be kept low.3. The target groups who are likely to have high response rates are specialized.4. Ease of administration is necessary.5.Moderate response rate is considered satisfactory. It has been used for wide range of problems like; 1.The problem of teacher training .2. Administrative difficulties 3. Suitability of the curriculum. 4. Method of teaching. 5. Study habits 6.Testing of achievements.7.Duties difficulties of teachers.8.Rating of school textbooks, etc.

Characteristics of A Good Questionnaire.

- It deals with an important or significant topic so that it enthuses respondent to give response. Its significance is carefully stated on the questionnaireitself.
- It seeks only that data which cannot be obtained from the resources like books reports and records .
- It is as short as possible because long questionnaire are frequently thrown away into the waste paper basket.
- It is at the same time as much comprehensive as necessary so that it does not leave out any relevant and crucial information.
- It is attractive in appearance, neatly arranged and clearly duplicated or printed .
- Directions are clear and complete, important terms are clarified each question deals with single idea and is worded in simple and clear manner as possible and provide an opportunity for easy accurate unambiguous response.
- The questions are objective with no clues, hints or suggestions as to the responses desired .Leading questions are carefully avoided .
- Questions are presented in good psychological order proceeding from general to more specificresponses.
- The offending annoying or embarrassing questions have to be avoided as far as possible.
- Items are arranged in categories to ensure easy and accurate responses.
- Descriptive adjectives and adverbs that have no agreed up on meaning are avoided .
- Double negatives are also avoided.
- The questions carry adequate number of alternatives .
- Double barreled questions or putting two questions in one questions or putting two questions in one question are also avoided.
- It is easy to tabulate summarize and interpret.

Various Forms of questionnaire

Questions in the questionnaire may vary with respect to a number of criteria.

1.Primary, Secondary and Tertiary Questions: On the basis of the nature of information elicited questions may be classified as primary ,secondary, and tertiary . Primary questions elicit information directly related to the research topic. Secondary questions elicit information which do not relate directly to the topic , ie the information is of secondary importance. Tertiary questions only establish a framework that allows convenient data collection and sufficient information without exhausting or biasing the respondent.

2. Closed – ended and open – ended questions: The closed- ended are the fixed choice questions. They require the respondent to choose a response from those provided by the researcher. It is easy to fill out, takes less time keeps the respondent on the subject is relatively more objective , more acceptable and convenient to respondent and is fairly easy to tabulate and analyze. The open-ended type questions which respondents to answer in their own words. The subject reveals his mind gives his responses .This type of item is sometimes difficult to interpret, tabulate and summarize in the research report.

3. Structured and non- structured questions: The structured questions contains definite concrete and direct questions where as non – structured mayconsist of partially compleated questions orstatements . A nonstructured questionnaire is often used as the interview guide which is non– directive. The interviewer posses only a blue print of the enquires and he is largely free to arrange the from or statements of the questions.

Steps In Questionnaire Construction

Questionnaires are constructed in a systematic manner .The process goes through a number of interrelated steps. They are;

- Preparation; The researcher thinks of various items to be covered in the questionnaire and arrangement of these items in relation to another
- Constructing the first draft; The researcher formulates a number of questions including all types of questions
- Self evaluation; The researcher thinks about relevance systematically, clarity in language, etc.
- External evaluation; The first draft is given to one or two experts/ colleges for scrutiny and suggestions for changes.
- Revision; After receiving suggestions some questions are eliminated some changed and some questions are added

- Pre– test or pilot study; A pre test is under taken to check the suitability of the questionnaire as a whole .
- Revision; The minor and major change may be made on the basis of experience gained in pre-testing.
- Second pre– testing ; The revised questionnaires then subjected to a second test and amended ifnecessary.
- Preparing final draft; After editing, checking, spelling, space for response, pre coding, the final– draft is prepared.

Advantages of Questionnaire

It has greater potentialities when it is properly used otherwise progress in many areas of education would be greatly handicapped. It is economical ay of collecting information toeducaters.3.It permits a nationwide or even international coverge. t can cover a large group at the same time .It is easy to plan construct and administer .Once it has een constructed skillfully the investigator may ask anybody to administer it on his behalf. Confidential informations often may be obtained more readily by means of questionnaire. It places less pressure on the subject for immediate response .It helps in focusing the respondent's attention on all the significant items.10.It may be used as a preliminary tool for conducting a depth study later on by any other method.

Limitations of Questionnaire

- The mailed questionnaires can be used only for educated people also restricts the number of respondents .
- The return rate of questionnaire is low.
- The mailing address may not correct which may omit some eligible respondents .
- Sometimes different respondents interpret questions differently .
- The researcher is not present to explain the meaning of certain concepts the respondent may leave the question blank.
- It does not provide an opportunity for collecting additional information.
- The respondent can consult others before filling in the questionnaire this response cannot be considered as his own views.
- There is a lack of depth or probing for a more specific answer.

Unit VI: Characteristics of Instruments of Evaluation

Characteristics of Good measuring instruments

Any measuring instruments must fulfill certain conditions. This is true in all spheres ,including educational evaluation. A test is judged for its adequacy, efficiency and consistency as measuring instrument on the basis of its validity, reliability ,adequacy, practicability ,objectivity and discrimination .All these qualities are interdependent they affect each other.

Validity

Validity refers to the degree of consistency or truthfulness. validity of a test may be defined as "The accuracy with which a test actually measures , what it claims to measure".

Types of validity/ different methods of validity

The six categories of validity are content validity, construct validity, criterion-related validity, concurrent validity, predictive validity and face validity.

1.Face validity: refers to what the test seems or appears to measure but it does not refer what the test actually measures.

2.content validity: It refers to the extent to which the test measures the subject matter content and the behavioral changes under consideration. For example , it can be said that a test constructed to measure knowledge of chemistry is valid only when it measures both the objectives and the subject matter content of chemistry. Test items should be well chosen so that the question paper is a good example of all the questions that can be asked in the subject.No one area of the subject matter should be unduly over stressed at the expense of others ,unless it is relatively more important.

3.construct validity: It refers to the extent to which the test measures a specific characteristic of the individual. It is used in such tests as those of study habits, skill appreciations, understanding or interpretation of data. A concept in a new theory is called construct. Test of personality ,verbal ability, mechanical aptitude, critical thinking and so on, are validated in terms of their construct.

4.Concurrent validity: Test are said to have concurrent validity when they can distinguish between two or more groups of individuals whose status at the time of testing is different. For example Minnesotta Multiphasic personality Inventory distinguishes between persons with personality disorder and the normal ones.

5.Predictive Validity: It refers to the accuracy with which a test indicates future outcomes in a particular area, as evidenced by correlations between scores on the test and future criterion measures.

Factors Affecting the Validity

The factors which influences the validity are

- Factors in the test itself
- Factors in test administration and scoring
- Factors of pupil response
- Nature of group

i. Factors in the Test Itself

Each test consists of number of items with close scrutiny. Tests the subject matter content only. Some factors lower the validity. The unclear direction, complicated vocabulary, inappropriate level of difficulty, poorly constructed test items, misinterpretation, test is too short and improper arrangement of items.

ii. Factors in Test Administration and Scoring

The test administration and scoring procedures may affect the interpretation of the results. Teacher made test or standardized test are conducted during the adverse physical and psychological conditions, it may affect the validity.

iii. Factors of Pupil Response

The economically disturbed students, lack of student‘s motivation and student‘s fear of test situation may ultimately affect the validity.

iv. Nature of Group

Validity is always specific to a particular group to be measured. The nature of criterion used is age, sex, ability level, educational and cultural background influences the validity

Reliability

A test can be reliable but not valid, whereas a test cannot be valid yet unreliable. Reliability, in simple terms, describes the repeatability and consistency of a test. Validity defines the strength of the final results and whether they can be regarded as accurately describing the real world.

Different Methods of Reliability

The various methods of estimating reliability are explained as follows

i. Test-Retest Method

In this test, the same tool or instrument is administered to the same sample on two different occasions. The resulting test scores are correlated and the correlation coefficient provides a measure of stability over a given period of time. If the results are highly stable, those respondents who are high on one administration of test will also be high on the other administration and the other respondents tend to remain in their same relative positions on both administrations. An important factor to be kept in mind is the time interval between tests when interpreting measures of stability. If the time interval is short (say 1-2 days), the consistency of results will be inflated because respondents will remember some of their answers from the first test. If the time interval is quite long (say 1 year), the results will be influenced by the actual changes in the respondent over that period of time. Therefore, the best time interval between test administrations will mainly depend on the use to be made of results.

ii. Equivalent-Forms Method

This method uses two versions of an instrument given to the same sample of respondents. The two forms of the instrument are administered to the same group of respondents in close succession, and the resulting scores are correlated. The correlated coefficient provides a measure of equivalence. It indicates the degree to which both forms of the test are measuring the same aspects of behaviour. The equivalent forms method reflects short term constancy of respondents' performance and the extent to which the test represents an adequate sample of the characteristics being measured.

iii. Split-Half Method

Reliability is also estimated from a single administration of a single form of a test. The test is administered to a group of respondents in the usual manner and then is divided in halves for scoring purposes. To split the test into halves that are most equivalent, the usual procedure is to score the even numbered and the odd numbered items separately. This produces two scores for each respondent, which, when correlated, provide a measure of internal consistency. A reliability coefficient is determined by correlating the scores of two half-tests. The split half method is similar to the equivalent forms method in that it indicates the extent to which the sample of test items is a dependable sample of the content being measured. A high correlation between the scores on the two-halves of a test denotes the equivalence of the two-halves and consequently the adequacy of the sampling. The advantage of this method is that all data for calculation of the reliability coefficient can be collected in one sitting thereby avoiding variations due to two sessions.

iv. Kuder-Richardson Method

Another method of estimating the reliability of test scores from a single administration of a single form of a test is by means of formulas developed by Kuder and Richardson. These formulas provide a measure of internal consistency as with the split-half method but do not require splitting the test in halves for scoring purposes. Kuder-Richardson estimates of reliability provide information about the degree to which the items in the test measure similar characteristics. For a test with relatively homogeneous content, the reliability estimate generally will be similar to that provided by the split half method. In fact, Kuder-Richardson estimate can be thought of as an average of all of the possible split half coefficients for the group tested. It is an advantage when considering tests with relatively homogenous content since the estimate does not depend on the way in which the items are confined to the two half test as in the split-half method. However, for tests designed to measure more heterogeneous learning outcomes, the Kuder-Richardson estimate will be smaller as compared to split half method and the later method is to be preferred

Factors Affecting Reliability:

- Length of the test
- Objectivity in scoring
- Difficulty of the test
- Ambiquous wording of questions
- Testing conditions
- Optional questions

Relationship between Validity and Reliability

Validity and reliability are closely related. A test cannot be considered valid unless the measurements resulting from it are reliable. Likewise, results from a test can be reliable and not necessarily valid. Test validity is requisite to test reliability. If a test is not valid, then reliability is moot. In other words, if a test is not valid there is no point in discussing reliability because test validity is required before reliability can be considered in any meaningful way. Likewise, if as test is not reliable it is also not valid. Therefore, the two studies do not examine reliability.

At the same time, the evaluation results cannot be perfectly consistent. There are many factors that influence the results. If a single test is administered to the same group twice in a close succession, some variations in the scores can be expected because of temporary fluctuations in memory, attention, effort, fatigue and guessing etc. Variation in scores can occur due to intervening learning experiences if long time gap exists between two tests. Such extraneous factors introduce certain amount of measurement error in all types of evaluation. The method of determining reliability is, in fact, the means of determining the measurement error under different conditions. Methods of estimating reliability involve comparing at least two

applications of the same instruments or equivalent instruments and determining the extent to which they agree. The closer the agreement, the greater is the reliability.

OBJECTIVITY

Objectivity is a central philosophical concept, related to reality and truth, which has been variously defined by sources. Generally, objectivity means the state or quality of being true even outside of a subject's individual biases, interpretations, feelings and imaginings. A proposition is generally considered objectively true (to have objective truth) when its truth conditions are met and are "bias-free"; that is, existing without biases caused by, feelings, ideas, etc. of a sentient subject. A second, broader meaning of the term refers to the ability in any context to judge fairly, without bias or external influence; this second meaning of objectivity is sometimes used synonymously with neutrality.

a. High objectivity tests

Standardized group tests have high objectivity because they are provided with scoring keys. For example intelligence, achievement, attitude and aptitude tests. These tests have certain standard answers.

b. Moderate objectivity

Binet and Wechsler Bellevue intelligence test administered individually have moderate objectivity. The evaluation techniques Rorschach and Thematic Appreciation test also have moderate objectivity. The results obtained from test or other evaluative techniques require interpretation. The raw scores on a standardized test becomes much more meaningful when compared with average score obtained by reference groups arranged according to age, grade, years of study and type of person.

USABILITY

While selecting evaluation tool / instrument, practical considerations need to be kept in mind. Generally, the tests are administered by teachers having very limited training. The time available for testing is also limited. The cost of testing is also taken into consideration. All these factors must be taken into account when selecting evaluation tools.

a. Ease of Administration

Ease of administration is an important aspect if the evaluation instrument or test is to be administered by persons with limited training. For this, it is to be kept in mind that the questions asked are few in numbers. The time provided should be sufficient and the directions should be simple and clear, otherwise, persons who are not properly trained in administering tests may err

in giving directions as to how to fill the test. This can have an adverse effect on the validity and reliability of test score.

b. Appropriate Time for Administration

The time provided for administering a test should be appropriate. If an attempt is made to cut down too much on the time allotted to testing, the reliability of the test score may reduce drastically. A safe procedure is to allot as much time as is necessary to obtain valid and reliable results.

c. Ease of Interpretation of Results

The success of an evaluation is determined by the use made of the evaluation results. If they are interpreted correctly, they will contribute effectively in decision-making process. If the results are misinterpreted, they will be of little value. Therefore, ease of interpretation of evaluation results is important, when the results are to be presented.

d. Cost of Administering Tests

The cost of administering test should not be a major consideration as it is comparatively inexpensive. However, in large-scale testing programs, use of separate answer sheets, machine scoring and reusable booklets can reduce the cost appreciably.

NORMS

It is a preliminary test for comparing achievement of an examinee to a large group of examinees at the same grade. The representative group is known as Norm group. Normreferenced test is a test design to provide a measure of performance that is interpretable in terms of an individual‘s relative standing in some known group. Norm group may be made up of examinees at the local level, district level, state level or national level. Since the development of norm-referenced tests is expensive and time consuming.

Bormuth (1970) writes that Norms is to measure the growth in a student‘s attainment and to compare his level of attainment with the levels reached by other students and norm group.

a. Characteristics of a Norm

- Its basic purpose is to measure student‘s achievement in curriculum based skills.
- It is prepared for a particular grade level.
- It is administered after instruction.
- It is used for forming homogeneous or heterogeneous class groups.
- It classifies achievement as above average, average or below average for given grade.
- It is generally reported in the form of Percentile Rank, Linear Standard Score,
- Normalized Standard Score and grade equivalent.

b. Merits of Norms

- To make differential predictions in aptitude testing.
- To get a reliable rank ordering of the pupils with respect to the achievement
- To identify the pupils who have mastered the essentials of the course more than others.
- To select the best of the applicants for a particular programme.
- To find out how effective a programme is in comparison to other possible programmes.

c. Demerits of Norms

- Test items answered by the students are not included in these test items because of their inadequate contribution to response variance.
- There is lack of congruence between what the test measures and what is stressed in a local curriculum.
- This promotes unhealthy competition and injurious to self-concepts of low scoring students.

Norm-referenced measurement is the traditional class based assignment. The measurement act relates to some norm, group or a typical performance. It is an attempt to interpret the test results in terms of performance of a certain group of students. So, this group is a norm group test scores. Thus norm-referenced test typically attempts to measure more general category of competencies.

Unit VII: Teacher made Achievement Tests

Objective Type Tests

To mitigate some of the evils of the essay type examinations, objective tests seem to be very useful. Modern educationists lay much stress on this type of tests to supplement the traditional type of tests. Objective tests are of a large variety. An objective type of test item is one which the response will be objective.

Objective type test item broadly classified into two:

Supply type (Recall Type - The respondent has to supply the responses) and Selection type (Recognition Type - The respondent has to select the responses from among the given responses).

Objective Type – 4 Types

- True – False Items (Alternate Response Type)
- Multiple Choice Items
- Matching Type Items and
- Completion Type Test Items

Advantages of Objective Type Test

- A large amount of study material can be tested in a very short period time
- Economy of time.
- Objectivity of scoring.
- No bluffing
- It reduces the subjective element of the examiner to the minimum and
- If carefully planned, it can measure the higher mental process of understanding, application, analysis, prediction and interpretation.

Limitations of Objective type Test

- Difficulty in preparing good items.
- Problem of guessing.
- Problem of cheating.
- Inefficiency in testing complicated skills
- High printing cost and
- Emphasis on testing superficial knowledge.

Short Answer Tests

- A question requiring three value points at most may be defined as a short answer question.
- Value points diminish the subjectivity.
- Help in ensuring wide coverage of content.

Characteristics

Instead of selecting from one or more alternatives, the student is asked to supply a brief answer consisting of a name, word, phrase, or symbol. Like selected-response tests, short-answer tests can be scored quickly, accurately and consistently, thereby giving them an aura of objectivity. They are primarily used for measuring foundational knowledge.

Advantages of Short answer Type Items

- Large portion of the content can be covered in a test.
- No opportunity for guessing.
- Easy to construct, because it measures a relatively simple outcomes.
- It can be made quit objective by carefully fixing the value points.
- Useful in evaluating the ability to interpret diagrams, charts, graphs, etc.
- If carefully prepared, deep level objectives understanding, application and problem solving skill can be evaluated.

Limitations of Short answer Type Items

- It is more subjective than the objective type of items.
- It may encourage student to memories fact and develop poor study habits.
- Mechanical scoring is not possible

Essay Type tests

- It is free response test item.
- Help in ensuring a wide coverage of content and variety of objectives.
- Help in evaluating complex skills.

Characteristics

The student is given a somewhat general directive to discuss one or more related ideas according to certain criteria. One example of an essay question is "Compare operant conditioning theory and information-processing theory in terms of basic assumptions, typical research findings, and classroom applications".

Advantages Essay Type Items

- Easy to prepare.
- Useful in measuring certain abilities and skills.
- Permit the examinee to write down comprehensively what he knows about something.
- Promote originality and creative thinking.
- Possibility of guess work can be eliminated.
- Reduce chance on the spot copying.
- Low printing cost.

Limitations of Essay Type Items

- Minimum validity.
- Lack of reliability.
- No objectivity.
- Rote memory is encouraged.
- It is a time consuming test item.

Preparation of the blue print

Weightage to objectives

This indicates what objectives are to be tested and what weightage has to be given to each objective.

Sl. No	Objectives	Marks	Percentage
1	Knowledge	3	12
2	Understanding	2	8
3	Application	6	24
4	Analysis	8	32
5	Synthesis	4	16
6	Evaluation	2	8
Total		25	100

Weightage to content

This indicates the various aspects of the content to be tested and the weightage to be given to these different aspects.

Sl. No	Content	Marks	Percentage
1	Sub topic - 1	15	60
2	Sub topic - 2	10	40
Total		**25**	**100**

Weightage to form of questions

This indicates the form of the questions to be included in the test and the weightage to be given for each form of questions.

Sl.No	Form of questions	No. of Questions	Marks	Percentage
1	Objective type	14	7	28
2	Short answer type	7	14	56
3	Essay type	1	4	16
Total		22	25	100

Objectives / **Form of Qtn** / **Content**	**Knowledge**			**Understanding**			**Application**			**Analysis**			**Synthesis**			**Evaluation**			**Grant Total**
	O	**SA**	**E**	**O**	**SA**	**E**	**O**	**SA**	**E**	**O**	**SA**	**E**	**O**	**SA**	**SA**	**O**	**SA**	**SA**	
Sub Topic- 1	2 (4)			1 (2)			2 (4)	2 (1)				4 (1)		2 (1)			2 (1)		**15**
Sub Topic -2	1 (2)			1 (2)				2 (1)			4 (2)			2 (1)					**10**
Total Marks	3	**0**	**0**	2	**0**	**0**	2	4	**0**		**4**	4	**0**	4	**0**	**0**	2	**0**	**25**
Grand Total	**3**			**2**			**6**			8			**4**			**2**			

Characteristics of a Good Test

- Validity
- Reliability
- Practicality
- Administrability
- Objectivity
- Simplicity
- Scorability
- comprehensiveness

Validity

Validity refers to the degree of consistency or truthfulness. validity of a test may be defined as “The accuracy with which a test actually measures , what it claims to measure”.

Reliability

A test can be reliable but not valid, whereas a test cannot be valid yet unreliable. Reliability, in simple terms, describes the repeatability and consistency of a test. Validity defines the strength of the final results and whether they can be regarded as accurately describing the real world.

Objectivity

Generally, objectivity means the state or quality of being true even outside of a subject's individual biases, interpretations, feelings and imaginings. A proposition is generally considered objectively true (to have objective truth) when its truth conditions are met and are "bias-free"; that is, existing without biases caused by, feelings, ideas, etc. of a sentient subject. A second, broader meaning of the term refers to the ability in any context to judge fairly, without bias or external influence; this second meaning of objectivity is sometimes used synonymously with neutrality.

Usability

While conducting test , practical considerations need to be kept in mind. Generally, the tests are administered by teachers having very limited training. The time available for testing is also limited. The cost of testing is also taken into consideration. All these factors must be taken into account when selecting evaluation tools.

Unit VIII: Standardized tests

Standardized test

Test may be classified into two categories: teacher-made and standardized. Teacher-made tests are constructed by an individual teacher or a group of teachers in order to measure the outcome of classroom instruction. Standardized test, on the other hand, are commercially prepared and have uniform procedures for administration and scoring. They are meant for gathering information on large groups of students in multiple settings.

Characteristics of a Standardized Test

- Standardized tests are based on the content and objectives of teaching common to many
- schools.
- Not just one, but a team of experts are involved in the writing of test items.
- Items analysis is done on the basis of a pilot study, unlike in the case of a class room test.
- Norms are calculated for the purpose of comparison between grades, schools, age levels
- and sexes.
- They cover large segments of knowledge and skills.
- Test manuals are prepared.
- Fairly a large same, not just one class is involved in the standardization of a test.

Role of Standardized Test

- Information becomes easier to convince the guardians of students
- Information in much less time than provided by other devices.
- Information for all guidance workers.
- Aspects of the behaviour which otherwise could not be obtained.
- Objectives and impartial informative about an individual.

Steps Involved in Standardized Test

A standardized test is tried out and administered on a number of subjects for the expressed purpose of refining the items by subjecting the performances of the standard decision to pertinent statistical analysis. The steps for the standardized test is constructed by test specialists or experts they are

- Proper planning
- Adequate preparations
- Try-out of the test
- Preparation of proper, norms
- Preparation of a manual containing instruction of administering a tool or test.
- Item analysis

Teacher made Test vs. Standardized Tests

The standardized test is based on the general content and objectives common to many schools all over the country whereas the teacher made test can be adapted to content and objectives specific to his own situation**.** The standardized test deals with large segments of knowledge or skill whereas the teacher made test can be prepared in relation to any specific limited topic. The standardized test is developed with the help of professional writers, reviewers and editors of tests items whereas the teacher made test usually relies upon the skill of one or two teachers. The standardized test provides norms for various groups that are broadly representative of performance throughout the country whereas the teacher made test lack this external point of reference.

Similarities

- They are both means of performance assessment.
- They both use the same type of test items.
- They both require validity, reliability, objectivity and efficiency.

Differences

- The classroom test may have more content validity than standardized tests.
- The quality of the test items on the standardized test is usually superior because they are prepared by test specialists and are revised on the basis of actual try out and item analysis.
- The procedures used in administering and scoring standardized tests are carefully described and they are standardized for each administration of the test.

Standardized tests for measuring intelligence , attitude , aptitudes, interest, values, personality and achievement

Intelligence test

- Stanford –Binet Performance Test of Intelligence
- Wechsler Adult Intelligence Scale
- Verbal Group test
- Non-verbal group test

Attitude Tests

An attitude is defined as a tendency to react in certain way toward a designated class of stimuli or an object.

Attitude test assess an individual's feelings about an event, person, or object. Attitude scales are used in marketing to determine individual (and group) preferences for brands, or items. Typically attitude tests use either a **Thurstone scale, or Likert scale** to measure specific items.

Aptitude Tests

Psychological tests measure specific abilities, such as mechanical or clerical skills. Sometimes these tests must be specially designed for a particular job, but there are also tests available that measure general clerical and mechanical aptitudes

General Aptitude Test battery

- Motor and Manual tests
- Tests of Mechanical ability
- Tests of clerical Aptitude
- Tests of Vision and Hearing

Special Aptitude tests

These test include those tests which are based on special profession or field as law, music, art, medicine, teaching etc.

Interest

Interest is the integral part of one‘s personality. It is an acquired trait from the environment. Personality is a wider term including all the psycho-physical dispositions, behaviours, views, Interests and attitudes of an individual. Adjustment has some relevance with interests. According to Kelly, interests of an individual really important information about the make-up of his personality. Interests are one of the determinants of the individual differences.

Definition of Interest

The following are some important definitions of the term interest.

—An interest is a tendency to become absorbed in an experience and to continue it.

- Bingham, W.V.

Measurement of Interest

The following are most popular interest inventories-

1. Strong Vocational Interest Blank by E.K. Strong
2. Kuder Preference Record, and
3. Occupational Interest Inventory.

Values

Meaning and Definition of Values

The term value‘ is more sociological concept. The values fall in the realm of ethics, economics, aesthetics and religion. They exist as they are experienced in human minds and translated into human actions. The value determines the direction of human actions. Thus values are the significant determinant for individual differences. The values are related to feelings and beliefs of an individual which are deep rooted.

The value is defined in terms of sentiments and emotions likes and dislikes etc. Values seem to reside in the objects just as truly as do colour, smell temperature size and shape‖.

– C.E.M. Joad (1942)

Test of Values

A test of values, in contrast to one of attitudes, claims to measure generalized and dominant interests. The study of values (Allport and others), is based upon six categories of values, as classified by spranger (type of men). The items are intended to measure the relative prominence of the subject‘s interests, for the purpose of classifying his values. The six categories of values are-

1. Theoretical values
2. Economic values
3. Aesthetic values
4. Social values
5. Political values and
6. Religions values

According to this classification-

1. The dominant interest of the theoretical man is discovery of truth.
2. The economic is interested in what is useful for him.
3. The aesthetic values form and harmonize most.
4. The highest value the social type is love of people.
5. The political man is interested primarily in power, and
6. The religious man places the highest value on unity.

Personality Test

Objective Tests (Rating scale or self-report measure*)*

Objective tests have a restricted response format, such as allowing for true or false answers or rating using an ordinal scale. Prominent examples of objective personality tests

include the Minnesota Multiphasic Personality Inventory, Millon Clinical Multiaxial Inventory, Child Behavior Checklist, Symptom Checklist and the Beack Depression Inventory.

Projective Techniques

- The Rorschack Test
- Thematic Apperception Test
- Children's Apperception Test
- Picture completion test
- Sentence completion test
- Free Association or word Association Test

IQ/Achievement Tests

IQ tests purport to be measures of intelligence, while achievement tests are measures of the use and level of development of use of the ability. IQ (or cognitive) tests and Achievement tests are common norm-referenced tests. In these types of tests, a series of tasks is presented to the person being evaluated, and the person's responses are graded according to carefully prescribed guidelines. After the test is completed, the results can be compiled and compared to the responses of a norm group, usually composed of people at the same age or grade level as the person being evaluated. IQ tests which contain a series of tasks typically divide the tasks into Verbal (relying on the use of language) and performance, or non-verbal (relying on eye–hand types of tasks, or use of symbols or objects). Examples of verbal IQ test tasks are vocabulary and information (answering general knowledge questions). Non-verbal examples are timed completion of puzzles (object assembly) and identifying images which fit a pattern (matrix reasoning).

Unit IX - Teaching Effectiveness

What is teaching effectiveness?

Teaching effectiveness is important because effective teaching helps student learning. It has become even more important as the emphasis on quality in higher education has increased. Effective teaching does not occur by chance. Effective teachers have become good at what they do because they evaluate their practice. James (n/d) suggests that “educational evaluation is a professional responsibility for academic staff, arising from a commitment to understanding the effects of teaching on students and to enhance student learning.” There are numerous ways of evaluating teaching or monitoring its effectiveness.

Beck (2005) identifies "twelve potential sources of evidence of teaching effectiveness." These include:

- Student ratings (such as Student Evaluations of Teaching);
- Peer reviews;
- Self-reviews;
- Videos of practice;
- Interviews with student;
- Alumni, employer and administrator ratings;
- Teaching awards and scholarship;
- Learning outcome measures; and
- Maintenance of teaching portfolios.

The sources identified above provide a diverse range of measures of teaching effectiveness. Institutions, departments and schools encourage a broad range of sources to evidence good teaching practice. The source that is used depends on why teaching effectiveness is being measured. For example, if the intention is promotion then a review may be performed by a supervisor using a specific set of criteria which aids in making a summative decision on the academic's effectiveness. If the objective is to improve teaching practice and to modify the teaching plan or structure then a different set of criteria is applied. For example, a number of student evaluations may be used to determine which aspects of teaching are effective.

Evaluations to improve teaching practice and design are referred to as formative evaluation, while evaluations used in making decisions (for example, for purposes of promotion) are referred to as summative evaluations of teaching effectiveness.

A number of evaluation and assessment tools are available to measure teaching effectiveness. At Flinders University these are outlined in the Policy on Course and Topic Evaluation, Monitoring and Review. The evaluation tools in use at Flinders include the Student Evaluation of Teaching, peer evaluations and supervisor assessment.

Observation schedule is a highly systematic approach to the collection of data. It provides:

1. A number of categories that the researcher uses to record their observations

2. A set of instructions describing the manner in which the schedule should be used.

Observation Schedule Focused on Teacher

1) Is there a science corner?
2) Does the lesson plan acknowledge children's alternative ideas?
3) Do any alternative ideas arise during the lesson?

The teacher is:	0-5 minutes	5-10 minutes	10-15 minutes
Initiating Discussion			
Telling something (Story)			
Questioning: 1)Open 2)Close			
Answering: 1)Pupil's Question 2)Her own question			
Explaining a concept			
Giving Instructions			
Commenting on Activity			
Demonstrating- Experiment: 1) Herself 2) Pupils			
Making a table/graph	/	/	/
Using models/ video/ pictures	/ /	/ /	/ /
Offer Analogy			
Introducing Vocabulary			
Using Role Play/ Drama			

Giving Example(s)			
Summarizing/Reviewing: 1)Herself 2)Pupils			
Introducing Alternative Ideas			
Dealing with Alternative Ideas: 1) Acknowledge but ignore 2) Acknowledge and works on individual level 3) Acknowledge and works in group 4) Does not acknowledge	1) 2) 3) 4)	1) 2) 3) 4)	1) 2) 3) 4)
Classroom Organization: Circle/Groups/Couples/Lone working	/ / /	/ / /	/ / /
General Comments			
The teacher is:	**15-20 minutes**	**20-25 minutes**	**25-30 minutes**
Initiating Discussion			
Telling something (Story)			
Questioning: 1)Open 2)Close			
Answering: 1)Pupil's Question 2)Her own question			
Explaining a concept			
Giving Instructions			
Commenting on Activity			
Demonstrating- Experiment: 1) Herself			

2) Pupils			
Making a table/graph	/	/	/
Using models/ video/ pictures	/ /	/ /	/ /
Offer Analogy			
Introducing Vocabulary			
Using Role Play/ Drama			
Giving Example(s)			
Summarizing/Reviewing: 1)Herself 2)Pupils			
Introducing Alternative Ideas			
Dealing with Alternative Ideas: 1) Acknowledge but ignore 2) Acknowledge and works on individual level 3) Acknowledge and works in group 4) Does not acknowledge	1) 2) 3) 4)	1) 2) 3) 4)	1) 2) 3) 4)
Classroom Organization: Circle/Groups/Couples/Lone working	/ / /	/ / /	/ / /
General Comments			
The teacher is:	**30-35 minutes**	**35-40 minutes**	**40-45 minutes**
Initiating Discussion			
Telling something (Story)			

Questioning: 1)Open 2)Close			
Answering: 1)Pupil's Question 2)Her own question			
Explaining a concept			
Giving Instructions			
Commenting on Activity			
Demonstrating- Experiment: 1) Herself 2) Pupils			
Making a table/graph	/	/	/
Using models/ video/ pictures	/ /	/ /	/ /
Offer Analogy			
Introducing Vocabulary			
Using Role Play/ Drama			
Giving Example(s)			
Summarizing/Reviewing: 1)Herself 2)Pupils			
Introducing Alternative Ideas			

Dealing with Alternative Ideas: 1) Acknowledge but ignore 2) Acknowledge and works on individual level 3) Acknowledge and works in group 4) Does not acknowledge	1) 2) 3) 4)	1) 2) 3) 4)	1) 2) 3) 4)
Classroom Organization: Circle/Groups/Couples/Lone working	/ / /	/ / /	/ / /
General Comments			

Student Evaluations of Teaching

Talking with Students about Evaluations

To motivate students to complete end-of-course evaluations and to provide useful feedback through those evaluations, the Vanderbilt Center for Teaching recommends instructors talk with their students about the importance of course evaluations and how those evaluations are used.

- Tell your students that you value their honest and constructive feedback, and that you use student feedback to make improvements to your courses. If possible, share examples of how you have changed your courses as a result of student feedback.

- Let your students know that you are interested in both positive and negative feedback on the course. What aspects of the course and/or instruction helped them learn? What aspects might be changed to help future students learn more effectively?

- Describe the kind of feedback you find most useful. In most cases, specific feedback with examples is more useful than general statements. See the handout "Providing Helpful Feedback to Your Instructions" from the Center for Research on Learning and Teaching at the University of Michigan for examples of specific, constructive feedback.

- Remind students that evaluations are designed to be completely anonymous and that you will not be able to see any of their evaluations until after final grades have been submitted.

- Let students know that you are the primary audience for their feedback, but that others will potentially read their evaluations, including department and school administrators. Course evaluations play a role in personnel evaluations and in curriculum planning.

Making Sense of Student Evaluation Feedback

Adapted from "Some Guidelines and Principles to Consider In Making Sense of Evaluation Feedback" by Kathleen Hoover-Dempsey, Professor of Psychology, ,Emeritus, Vanderbilt University.

Along with the fresh start of the new year, many instructors will receive an opportunity to assess their teaching skills when they receive student evaluations of their Fall courses. Making sense of student feedback can be challenging so we offer the following tips for examining evaluations.

When considering student evaluations:

- Pick a good time to do so, when you will have enough time to digest at least some of the information, have privacy, and can give yourself some mental 'space' to analyze the information.
- Track quantitative results. Consider how the summary rating received for each item fits with your own teaching goals and your department's expectations for teaching.
- Look for patterns in students' comments—identify trends, note what you have done well and what needs improvement.
- Take your experience into account. If you are new to teaching, the school, or even the course, you may still be learning about various aspects of being a professor, such as course design, teaching skills, student interaction, and departmental expectations.
- Take the context and characteristics of your course into account. Research shows that student evaluations often are more positive in courses that are smaller rather than larger, and elective rather than required. Also, evaluations are usually more positive in courses in which students tend to do well.

When dealing with negative student feedback:

- Know that almost *all* faculty members receive negative feedback at some point in their careers, including those who are senior and highly successful.
- Allow yourself to acknowledge that it can feel hurtful or make you angry, but also provides a pointer toward important areas for your continued development.

When deciding how to further your development as a teacher:

- Bear in mind the most frequently mentioned areas for teaching improvement in analysis of student evaluations within and across universities: 1) clearer, more specific in-class communication; and 2) clearer, more explicit organization of course content.
- Consider scheduling an appointment at the Center for Teaching for a consultation to help you interpret your evaluations. Research suggests that teachers who consult with someone about their evaluations are more likely to score higher on the next set of evaluations than others who do not discuss them with anyone. To schedule a consultation on student evaluations, call the Center for Teaching at 322-7290.

When planning steps to improve the feedback you receive in evaluations, consider the following options:

- Use one minute evaluations at the end of selected class sessions, asking students to note the main idea they learned that class, or two ideas about a major construct considered, or a question about content, and so forth.
- Give a "midterm evaluation" of the course, using the official university form or one you have created, to check how the class is progressing while you can use the information to make changes.
- Talk with the class about their interim feedback, and explicitly put into practice one of their suggestions.
- Before the final course evaluation, explain to the class the importance you place on their input.

Resources on Interpreting Student Evaluations

"Student Rating Forms", a chapter from the book Tools for Teaching by Barbara Gross Davis.

Interpreting and Working with Your Course Evaluations [PDF], a resource from the Center for Teaching and Learning at Stanford University, featuring suggestions for improving one's scores on particular student evaluation questions

Evaluating and Improving Undergraduate Teaching in Science, Technology, Engineering, and Mathematics, an on-line book published by the National Research Council (2003).]

The following articles can be found in the journal, New Directions for Teaching and Learning, Volume 2001, Issue 87, Special Issue: Techniques and Strategies for Interpreting Student Evaluations . Issue Edited by Karron G. Lewis.

Faculty Thoughts and Concerns about Student Ratings, by John C. Ory, Office of Instructional Resources at the University of Illinois at Urbana-Champaign. "Although student ratings of instruction are used to determine whether a person is teaching effectively, many people

who use them are not aware of the extensive research base for them."

- **Encouraging Your Students to Give Feedback**, by Marilla D. Svinicki, Center for Teaching Effectiveness at the University of Texas at Austin. "Giving feedback is a skill that can be learned. What are the conditions that foster that learning and the later use of that skill for feedback to instructors?"

- **Making Sense of Student Written Comments**, by Karron G. Lewis, Center for Teaching Effectiveness at the University of Texas at Austin. "Most student evaluation instruments include a place for student comments, yet the comments are often difficult to interpret. This article illustrates these comments and uses the information for improving teaching and students' learning."

- **Using Midsemester Student Feedback and Responding to It**, by Karron G. Lewis, Center for Teaching Effectiveness at the University of Texas at Austin. "Getting midsemester feedback from your students can help you make changes before it's too late."

- **Interpreting the Numbers: Using a Narrative to Help Others Read Student Evaluations of Your Teaching Accurately**, by Jennifer Franklin, Center for Teaching and Learning at California State University, Dominguez Hills. "Student ratings are one of the most widely used measures in teaching today. All users should understand what the numbers mean and how they should and should not be used."

The following articles are from the former newsletter of the Center for Teaching: Teaching Forum 6:1,Fall 2003 Newsletter, "Evaluating Teaching: Student Ratings and Beyond."

- **Student Course Evaluations**, by AnupamaBalasubramanian, CFT fellow. In this article from the Center for Teaching newsletter, a Vanderbilt faculty member and teaching assistant discuss their perceptions of student course evaluations, and how to effectively use them.

- **From the Student's View**, by AnupamaBalasubramanian, CFT fellow. In this article from the Center for Teaching newsletter, eight Vanderbilt undergraduates share their experiences with student rating forms.

- **Interview on CFT Consultation on Student Evaluations**, by AnupamaBalasubramanian, CFT fellow. In this article from the Center for Teaching newsletter, former CFT Associate Director Peter Felten describes his work with student evaluation consultations.

Summaries of Research on Student Evaluations

Student Ratings of Teaching: A Summary of Research and Literature (IDEA Paper 50) by Stephen L. Benton and William E. Cashin, IDEA Center. This white paper "summarize[s] the conclusions of the major reviews of the student ratings research and literature from the 1970s to 2010. That literature is extensive and complex; a paper this brief can offer only broad, general summaries and limited citations."

Student Ratings: Myths vs Research Evidence, by Michael Theall, Center for Teaching and Learning at the University of Illinois at Springfield. Theall, a research expert in instructional design, development and evaluation, explores the myths and truths behind Student Ratings (reprinted with the permission of the Brigham Young University Faculty Center).

How To Evaluate Teaching, by Richard Felder, from *Chemical Engineering Education*, 38(3), 200-202 (2004). "A key to effective teaching evaluation is to collect data from multiple sources [peers, students, instructors, administrators]...making sure that all education-related activities are rated by the people best qualified to rate them."

Looking for Bias in All the Wrong Places: A Search for Truth or a Witch Hunt in Student Ratings of Instruction?by Michael Theall, Center for Teaching and Learning at the University of Illinois at Springfield, and Jennifer Franklin, Center for Teaching and Learning at California State University, Dominguez Hills. "Through a half-century of research on student ratings, the constant quest has been to prove or disprove the existence of biasing factors. What have we learned, and what has happened as a result?"

Questions Frequently Asked about Student Rating Forms: Summary of Research Findings," by Matthew Kaplan, Lisa A. Mets and Constance E. Cook, University of Michigan Center for Research on Learning and Teaching. This article answers questions such as, "What do we know about the relationship between grades and student ratings? What do student ratings tell us about teaching effectiveness?"

Flunking the Test: The Dismal Record of Student Evaluations, by Paul Trout, Montana State University. "Though most schools use them, numerical evaluations of faculty members get bad grades. They aren't accurate and they're dumbing down undergraduate education."

Student Ratings of Professors are not Gender Blind, by Susan Basow, Lafayette College. This article was originally published in the *Association for Women in Mathematics Newsletter*. "The ratings of male professors are unaffected by student gender, but female professors frequently receive lower ratings from their male students and higher ratings from their female students. Female professors also appear to be evaluated according to a heavier set of expectations than are male professors, and these expectations affect student ratings."

Student Ratings of Women Faculty, by Michael Theall, Center for Teaching and Learning at the University of Illinois at Springfield, and Jennifer Franklin, Center for Teaching and Learning at California State University, Dominguez Hills. This article provides research findings on interactions between instructor gender and student ratings of teaching.

Student Evaluations and Gendered Expectations: What We Can't Count Can Hurt Us, by Kelley Massoni, University of Kansas, and distributed by the Sociologists for Women in Society. "How does gender enter into students' evaluations of their teachers. Scholars who have attempted to answer this question are divided in their findings. ...This fact sheet is designed to make sense of the research on gender and teaching evaluations."

Are Student Ratings Unfair to Women?by Neal Koblitz, University of Washington, reprinted from the *Association for Women in Mathematics Newsletter*, Vol. 20, No. 5, September-October, 1990. "If an instructor feels compelled to put students under pressure (assigning a lot of homework, giving challenging exams), then only the most serious and mature students are at all likely to respond with high ratings at the end of the course. Most students are inclined to "punish" the instructor. There is considerable evidence that the "punishment" is more severe if the instructor is female."

Gender and Student Evaluations: An Annotated Bibliography, at the Center for Research on Learning and Teaching at the University of Michigan.

Student Evaluations: Gender Bias and Teaching Styles by Lynn H. Collings, Joan C. Chrisler, and Kathryn Quina, excerpted from *Career Strategies for Women in Academe: Arming Athena* (Sage Publications, 1998). "The authors discuss factors impacting student evaluations of faculty performance and steps women faculty in particular can take to ameliorate negative biases."

Vanderbilt Library Resources

Techniques and Strategies for Interpreting Student Evaluations.Karron G. Lewis, editor. San Francisco: Jossey-Bass, c2001.

The Student Ratings Debate: Are They Valid? How Can We Best Use Them? Michael Theall, Philip C. Abrami, Lisa A. Mets, editors. San Francisco, Calif.: Jossey-Bass Publishers, c2001.

Book Review, by AnupamaBalasubramanian, CFT fellow. A review of ***Changing Practices in Evaluating Teaching***, Peter Seldin and Associates.Anker, 1999. 275 pp. This book is available for checkout from the Center for Teaching Library, call number: LB2333 .S435 1999.

Center for Teaching Services

Consultation on Interpreting Student Evaluations: To schedule a consultation on student evaluations, call the Center for Teaching at 322-7290.

Flanders Interaction Analysis Categories (FIAC)

The development of the original system of interaction analysis was primarily the work of Ned Flanders. Indeed, the system is often referred to as the Flanders System of Interaction Analysis (FIA) – an innovation which made possible significant insights into the analysis and improvement of instruction. Flanders' interaction analysis system is an observational tool used to classify the verbal behaviour of teachers and pupils as they interact in the classroom. Flanders' instrument was designed for observing only the verbal communication in the classroom and non-verbal gestures are not taken into account.

Flanders Interaction Analysis is a system of classroom interaction analysis which is concerned with verbal behaviour only, primarily because it can be observed with higher reliability than can non-verbal behaviour and more also, the assumption made that the verbal behaviour of an individual is an adequate sample of his total behaviour. Flanders Interaction Analysis Categories (FIAC) is a Ten Category System of communication which are said to be inclusive of all communication possibilities. There are seven categories used when the teacher is talking (Teacher talk) and two when the pupil is talking (Pupil talk) and tenth category is that of silence or confusion.

Table 1. Flanders Interaction Analysis Categories (FIAC).

Teacher talk	Indirect influence (Response)	Accepts Feeling: Accepts and clarifies an attitude or feeling tone of a pupil in a non-threatening manner. Feeling may be positive or negative. Predicting and recalling feelings are included.
		Praises or encourages: Praises or encourages action or behavior. Jokes that release tension, but not at the expense of another individual; nodding head saying um, hmm or go on are included.
		Accepts or uses ideas of pupils. Clarifying, building or developing ideas suggested by a pupil. Teachers' extensions of pupil ideas are included but as teacher brings more of his own ideas into play, shift to category five.
	Direct Influence (Initiation)	Asks questions: Asking a question about content or procedures; based on teacher ideas, with the intent that the pupil will answer.
		Lecturing: Giving facts of opinions about content or procedures; expressing his own ideas, giving his own explanation or citing an authority other than a pupil.
		Giving direction: Directions, commands or orders to which a student is expected to comply.
		Criticizing or justifying authority: statements intended to change

		pupil behaviour from non-acceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-references.
Pupil Talk	Response	Pupil-talk - response: Talk by pupils in response to teacher. Teacher initiates the contact or solicits pupil statement or structures the situation. Freedom to express own ideas is limited.
	Initiation	Pupils-talk – initiation: Talk by pupils that they initiate. Expressing own ideas; initiating a new topic; freedom to develop opinions and a line of thought, like asking thought, like asking thoughtful questions; going beyond the existing structure.
Silence		Silence or confusion: Pauses, short periods of silence and periods of confusion in which communication cannot be understood by the observer.

In this system, all teachers' statements are either indirect or direct. This classification gives central attention to the amount of freedom the teacher grants to the student. In a given situation therefore, a teacher has a choice. He can be direct, that is minimizing the freedom of the student to respond. His choice, consciously or unconsciously depends upon many factors among which are his perceptions of the situations and the goals of the particular learning situation. In order to make the total behaviour or total interaction in the classroom meaningful, the Flanders system also provides for the categorizing of students talk. A third major section, that of silence or confusion is included in order to account for the time spend in behaviour other than that which can be classified as neither teacher nor student talk. A summary of these categories with brief definitions is given in table 1.

Reviewing FIAC, a simplified example of a classroom interaction analysis in a teaching/learning process was explored.

UNIT-10

Definition of Qualitative Data

Qualitative Data refers to the data that provides insights and understanding about a particular problem. It can be approximated but cannot be computed. Hence, the researcher should possess complete knowledge about the type of characteristic, prior to the collection of data.

The nature of data is descriptive and so it is a bit difficult to analyze it. This type of data can be classified into categories, on the basis of physical attributes and properties of the object. The data is interpreted as spoken or written narratives rather than numbers. It is concerned with the data that is observable in terms of smell, appearance, taste, feel, texture, gender, nationality and so on. The methods of collecting qualitative data are:

- Focus Group
- Observation
- Interviews
- Archival Materials like newspapers.

Definition of Quantitative Data

Quantitative Data, as the name suggests is one which deals with quantity or numbers. It refers to the data which computes the values and counts and can be expressed in numerical terms is called quantitative data. In statistics, most of the analysis are conducted using this data.

Quantitative data may be used in computation and statistical test. It is concerned with measurements like height, weight, volume, length, size, humidity, speed, age etc. The tabular and diagrammatic presentation of data is also possible, in the form of charts, graphs, tables, etc. Further, the quantitative data can be classified as discrete or continuous data. The methods used for the collection of data are:

- Surveys
- Experiments
- Observations and Interviews

Key Differences Between Qualitative and Quantitative Data

The fundamental points of difference between qualitative and quantitative data are discussed below:

1. The data type, in which the classification of objects is based on attributes (quality) is called qualitative data. The type of data which can be counted and expressed in numbers and values is called quantitative data.
2. The research methodology is exploratory in qualitative data, i.e. to provide insights and understanding. On the other hand, quantitative data is conclusive in nature which aims at testing a specific hypothesis and examine the relationships.

3. The approach to inquiry in the case of qualitative data is subjective and holistic whereas quantitative data has an objective and focused approach.
4. When the data type is qualitative the analysis is non-statistical. As opposed to quantitative data which uses statistical analysis.
5. In qualitative data, there is an unstructured gathering of data. As against this, data collection is structured in quantitative data.
6. While qualitative data determines the depth of understanding, quantitative data ascertains the level of occurrence.
7. Quantitative data is all about 'How much or how many'. On the contrary, qualitative data asks 'Why?'
8. In qualitative data the sample size is small and that too is drawn from non-representative samples. Conversely, the sample size is large in quantitative data drawn from the representative sample.
9. Qualitative data develops initial understanding, i.e. it defines the problem. Unlike quantitative data, which recommends the final course of action.

Tabulation of Data

The process of placing classified data into tabular form is known as tabulation. A table is a symmetric arrangement of statistical data in rows and columns. Rows are horizontal arrangements whereas columns are vertical arrangements. It may be simple, double or complex depending upon the type of classification.

Types of Tabulation

I. Simple Tabulation or One-way Tabulation

When the data are tabulated to one characteristic, it is said to be a simple tabulation or one-way tabulation.

For example: Tabulation of data on the population of the world classified by one characteristic like religion is an example of a simple tabulation.

II. Double Tabulation or Two-way Tabulation

When the data are tabulated according to two characteristics at a time, it is said to be a double tabulation or two-way tabulation.

For example: Tabulation of data on the population of the world classified by two characteristics like religion and sex is an example of a double tabulation.

III. Complex Tabulation

When the data are tabulated according to many characteristics, it is said to be a complex tabulation.

For example: Tabulation of data on the population of the world classified by three or more characteristics like religion, sex and literacy, etc. is an example of a complex tabulation.

Measures of Central Tendency

Introduction

A measure of central tendency is a single value that attempts to describe a set of data by identifying the central position within that set of data. As such, measures of central tendency are sometimes called measures of central location. They are also classed as summary statistics. The mean (often called the average) is most likely the measure of central tendency that you are most familiar with, but there are others, such as the median and the mode.

The mean, median and mode are all valid measures of central tendency, but under different conditions, some measures of central tendency become more appropriate to use than others. In the following sections, we will look at the mean, mode and median, and learn how to calculate them and under what conditions they are most appropriate to be used.

Arithmetic Mean or Simply Mean: The sum of all measurements divided by the number of observations in the data set.

Median: The middle value that separates the higher half from the lower half of the data set. The median and the mode are the only measures of central tendency that can be used for ordinal data, in which values are ranked relative to each other but are not measured absolutely.

Mode: The most frequent value in the data set. This is the only central tendency measure that can be used with nominal data, which have purely qualitative category assignments.

Measures of Dispersion:

By now, you must have come across or learnt different measures of central tendency. Measures of central tendency facilitate the representation of the entire mass of the data with a single value. Can the central tendency describe the data wholly and accurately? No, and that is precisely why we need measures of dispersion. For instance, the hourly incomes of professionals in two offices are:

Office A	30	50	50	65	70	90	100
Office B	60	60	70	65	65	65	70

Here, evidently, the mean of both the sections is the same, that is, 65

- In office A, the observations are much more away from the mean.
- In office B, almost all the observations are close to the mean. Certainly, both the offices differ even though their mean is the same.

Therefore it is required to differentiate between the groups. We need some other measures with regards to the measure of scattered-ness (or spread). For this purpose, we study this topic known as measures of dispersion.

In simple words, 'dispersion' is a lack of uniformity in the sizes or quantities of the items of a group or series. According to Reiglemen, "Dispersion is the extent to which the magnitudes or quantities of the items differ, the degree of diversity." The word may also be used to address the spread of the data.

Types of Dispersion

The measures of dispersion can be 'absolute' or 'relative'. In the case of absolute measures of dispersion, they are stated in the same units in which the original data is expressed. For instance, if a group of data expresses the number of shoes a group of people own; the absolute dispersion will provide the values in numbers.

Relative dispersion, on the other hand, is the ratio of a measure of absolute dispersion to an appropriate average. The main benefit of this measure is that two or more series can be compared with each other even if they are expressed in different units.

Methods of Dispersion

Methods of studying dispersion are divided into two types:

(i) Mathematical Methods: We can study the 'degree' and 'extent' of variation with the use of these methods. The measures of dispersion included in this category are:
   (a) Range
   (b) Quartile Deviation
   (c) Average Deviation
   (d) Standard deviation and coefficient of variation.

(ii) Graphic Methods: If only the extent of variation is studied, whether it is higher or lower, a Lorenz-curve is put to use.

Mathematical Methods

- *Range*

Two sections of 10 students each in class XII in a school were given a common test in Economics (40 maximum marks). The scores of the students are given below:

Section A	6	9	11	13	15	21	23	28	29	35
Section B	15	16	16	17	18	19	20	21	23	25

- The average score in section A is 19. The average score in section B is 19.
- In the above cited example, we observe that:
- The scores of all the students in section A are ranging from 6 to 35;
- The scores of the students in section B are ranging from 15 to 25.
- The difference between the largest and the smallest scores in section A is 29 (35-6)
- The difference between the largest and smallest scores in section B is 10 (25-15)
- Thus, the difference between the largest and the smallest value of a data, is termed as the range of the distribution. Range does not consider all the values of a series, i.e. it takes only the extreme items and middle items are not considered significant. Therefore, Range is not sufficient to explain about the character of the distribution. The concept of range is useful in the field of quality control and to study the variations in the prices of the shares etc.

Quartile Deviation

The quartile deviation is a slightly better measure of absolute dispersion than the range, although it ignores the observations on the ends (tails). It helps in knowing the range within which certain proportion of the items fall lay. It only considers the values of the 'Upper quartile' (Q3) and the 'Lower quartile' (Q1).

Inter Quartile Range = Q3 – Q1 .

The Inter-Quartile Range is based upon the 50% of the values in a distribution which lay in the middle; and hence is unaffected by extreme values. Half of the Inter-Quartile Range is called Quartile Deviation (Q.D.).

Thus: Q .D . = (Q3 – Q1)/2

Q.D. is therefore also called Semi Inter Quartile Range.

In individual and discrete series, Q1 is the size of $[(n+1)/4]^{th}$ value, but in a continuous distribution, it is the size of $n/4^{th}$ value. Similarly, for Q3 and median also, n is used in place of n+1.

A relative measure of dispersion based on the quartile deviation is called the coefficient of quartile deviation. It is just a number without any units of measurement. It can be used for comparing the dispersion of two or more sets of data.

$$Coefficient\ of\ Quartile\ Deviation = \frac{\frac{Q_3-Q_1}{2}}{\frac{Q_3+Q_1}{2}} = \frac{Q_3-Q_1}{Q_3+Q_1}$$

- *Average Deviation*

Average deviation can be defined as the arithmetic mean of the absolute deviations (ignoring the negative signs) of various items from Mean, Mode or Median.

Calculation of Mean Deviation:

Individual Series

$$M.D. = \frac{\Sigma|D|}{N}$$

Discrete Series

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

Continuous Series

$$\frac{\Sigma f|D|}{N}$$

Where,
MD = Mean deviation
| D | = Deviations from mean or median ignoring + Signs
N = Number of item (Individual Series)
N = Total number of Frequencies (Discrete and continuous series)
F = Number of frequencies.

- *Standard Deviation*

Standard deviation is one of the best and popularly used measures of dispersion. Standard deviation is the square root of the arithmetic mean of the squares of deviation of its items from their arithmetic mean. The concept of standard deviation, which was introduced by Karl Pearson is useful in assessing the representativeness of the mean. It has a practical significance because it does not come with the problems associated with a range, quartile deviation or average deviation. Calculations for the same, are as under:
Individual Series:

1. Actual Mean Method	2. Assumed Mean Method
$\sigma = \sqrt{\frac{\Sigma x^2}{N}}$ $x = X - \bar{X}$	$\sigma = \sqrt{\frac{\Sigma d^2}{N} - \left(\frac{\Sigma d}{N}\right)^2}$

Discrete/Continuous Series:

1. Actual Mean Method	2. Assumed Mean Method	3. Step Deviation Method
$\sigma = \sqrt{\frac{\Sigma f x^2}{\Sigma f}}$ $x = X - \bar{X}$	$\sigma = \sqrt{\frac{\Sigma f d^2}{\Sigma f} - \left(\frac{\Sigma f d}{\Sigma f}\right)^2}$	$\sigma = \sqrt{\frac{\Sigma f d'^2}{\Sigma f} - \left(\frac{\Sigma f d'}{\Sigma f}\right)^2}$ x C

Coefficient of variation:

This is the most apt measure when two or more groups of similar data are to be compared with respect to stability (or uniformly or consistency or homogeneity). It is the ratio of the standard deviation to the mean.

$$CV = \frac{\sigma}{\bar{X}} \times 100$$

Where ,

C.V = Coefficient of variation

σ = Standard deviation

X = Arithmetic mean

Graphical Methods

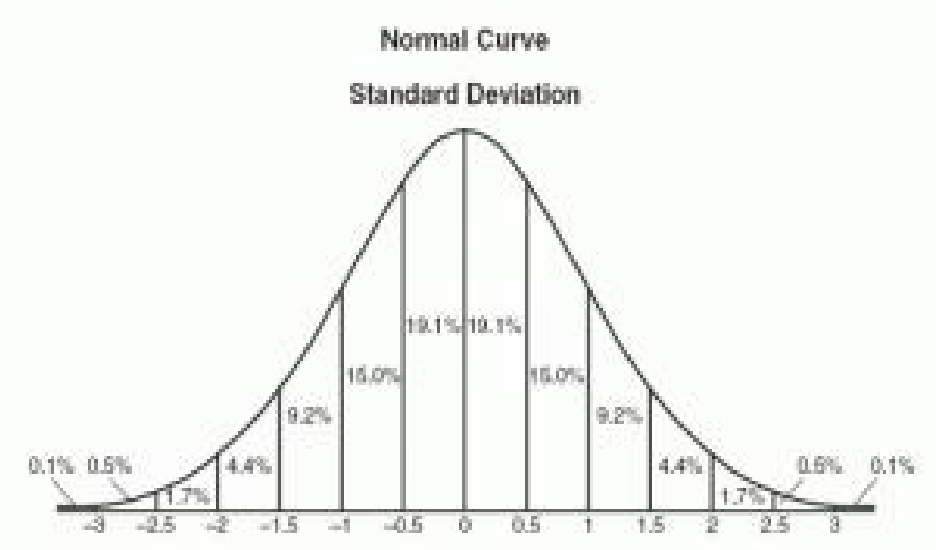
Lorenz Curve: A Lorenz Curve can be defined as a graph on which the cumulative percentage of total national income (or some other variable) is plotted against the cumulative percentage of the corresponding population (ranked in increasing size of share). The extent to which the curve sags below a straight diagonal line indicates the degree of inequality of distribution.

Normal Distribution

A normal distribution is an arrangement of a data set in which most values cluster in the middle of the range and the rest taper off symmetrically toward either extreme.

Height is one simple example of something that follows a normal distribution pattern: Most people are of average height, the numbers of people that are taller and shorter than average are fairly equal and a very small (and still roughly equivalent) number of people are either extremely tall or extremely short.

Here's an example of a normal distribution curve:



A graphical representation of a normal distribution is sometimes called a bell curve because of its flared shape. The precise shape can vary according to the distribution of the population but the peak is always in the middle and the curve is always symmetrical. In a normal distribution, the mean, mode and median are all the same.

Normal distribution curves are sometimes designed with a histogram inside the curve. The graphs are commonly used in mathematics, statistics and corporate data analytics.

Interpretation of Correlation

Correlation refers to a technique used to measure the relationship between two or more variables. When two things are correlated, it means that they vary together. Positive correlation means that high scores on one are associated with high scores on the other, and that low scores on one are associated with low scores on the other. Negative correlation, on the other hand, means that high scores on the first thing are associated with low scores on the second. Negative correlation also means that low scores on the first are associated with high scores on the second. An example is the correlation between body weight and the time spent on a weight-

loss program. If the program is effective, the higher the amount of time spent on the program, the lower the body weight. Also, the lower the amount of time spent on the program, the higher the body weight.
Pearson r is a statistic that is commonly used to calculate bivariate correlations.

For an Example Pearson r = -0.80, p < .01. What does this mean?
To interpret correlations, four pieces of information are necessary.

1. The numerical value of the correlation coefficient.

Correlation coefficients can vary numerically between 0.0 and 1.0. The closer the correlation is to 1.0, the stronger the relationship between the two variables. A correlation of 0.0 indicates the absence of a relationship. If the correlation coefficient is –0.80, which indicates the presence of a strong relationship.

2. The sign of the correlation coefficient.

A positive correlation coefficient means that as variable 1 increases, variable 2 increases, and conversely, as variable 1 decreases, variable 2 decreases. In other words, the variables move in the same direction when there is a positive correlation. A negative correlation means that as variable 1 increases, variable 2 decreases and vice versa. In other words, the variables move in opposite directions when there is a negative correlation. The negative sign indicates that as class size increases, mean reading scores decrease.

3. The statistical significance of the correlation.

A statistically significant correlation is indicated by a probability value of less than 0.05. This means that the probability of obtaining such a correlation coefficient by chance is less than five times out of 100, so the result indicates the presence of a relationship. For -0.80 there is a statistically significant negative relationship between class size and reading score ($p < .001$), such that the probability of this correlation occurring by chance is less than one time out of 1000.

4. The effect size of the correlation.

For correlations, the effect size is called the coefficient of determination and is defined as r^2. The coefficient of determination can vary from 0 to 1.00 and indicates that the proportion of variation in the scores can be predicted from the relationship between the two variables. For r = -0.80 the coefficient of determination is 0.65, which means that 65% of the variation in mean reading scores among the different classes can be predicted from the relationship between class size and reading scores. (Conversely, 35% of the variation in mean reading scores cannot be explained.)

A correlation can only indicate the presence or absence of a relationship, not the nature of the relationship. Correlation is not causation. There is always the possibility that a third variable influenced the results. For example, perhaps the students in the small classes were higher in verbal ability than the students in the large classes or were from higher income families or had higher quality teachers.

Graphic Representation of Data: Meaning, Principles and Methods

Meaning of Graphic Representation of Data:

Graphic representation is another way of analysing numerical data. A graph is a sort of chart through which statistical data are represented in the form of lines or curves drawn across the coordinated points plotted on its surface.

Graphs enable us in studying the cause and effect relationship between two variables. Graphs help to measure the extent of change in one variable when another variable changes by a certain amount.

Graphs also enable us in studying both time series and frequency distribution as they give clear account and precise picture of problem. Graphs are also easy to understand and eye catching.

General Principles of Graphic Representation:

There are some algebraic principles which apply to all types of graphic representation of data. In a graph there are two lines called coordinate axes. One is vertical known as Y axis and the other is horizontal called X axis. These two lines are perpendicular to each other. Where these two lines intersect each other is called '0' or the Origin. On the X axis the distances right to the origin have positive value (see fig. 7.1) and distances left to the origin have negative value. On the Y axis distances above the origin have a positive value and below the origin have a negative value.

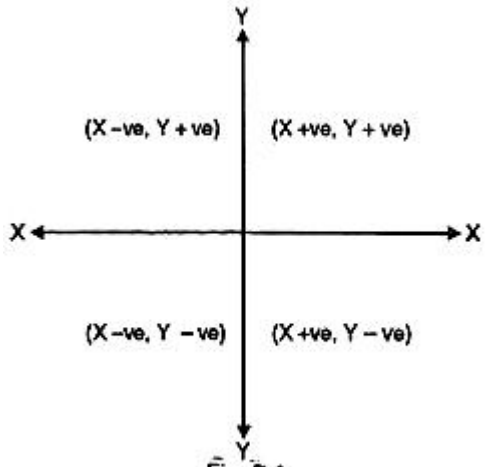


Fig. 7.1

Methods to Represent a Frequency Distribution:

Generally four methods are used to represent a frequency distribution graphically. These are Histogram, Smoothed frequency graph and Ogive or Cumulative frequency graph and pie diagram.

1. Histogram:

Histogram is a non-cumulative frequency graph, it is drawn on a natural scale in which the representative frequencies of the different class of values are represented through vertical rectangles drawn closed to each other. Measure of central tendency, mode can be easily determined with the help of this graph.

How to draw a Histogram:

Step—1:

Represent the class intervals of the variables along the X axis and their frequencies along the Y-axis on natural scale.

Step—2:

Start X axis with the lower limit of the lowest class interval. When the lower limit happens to be a distant score from the origin give a break in the X-axis n to indicate that the vertical axis has been moved in for convenience.

Step—3:

Now draw rectangular bars in parallel to Y axis above each of the class intervals with class units as base: The areas of rectangles must be proportional to the frequencies of the corresponding classes.

Illustration No. 7.2

Plot the following data by a histogram.

c.i.	f
20—24	2
25—29	2
30—34	5
35—39	10
40—44	6
45—49	2
50—54	3

Solution:

In this graph we shall take class intervals in the X axis and frequencies in the Y axis. Before plotting the graph we have to convert the class into their exact limits.

c.i.	f
19.5—24.5	2
24.5—29.5	2
29.5—34.5	5
34.5—39.5	10
39.5—44.5	6
44.5—49.5	2
49.5—54.5	3

Histogram plotted from the data.

c.i.	f
19.5—24.5	2
24.5—29.5	2
29.5—34.5	5
34.5—39.5	10
39.5—44.5	6
44.5—49.5	2
49.5—54.5	3

Histogram plotted from the data.

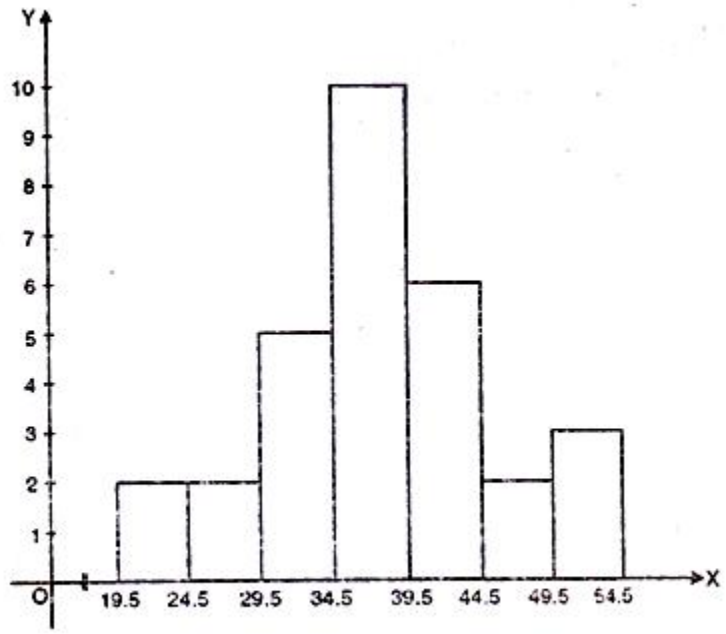


Fig. 7.2

Advantages of histogram:

1. It is easy to draw and simple to understand.
2. It helps us to understand the distribution easily and quickly.
3. It is more precise than the polygene.

Limitations of histogram:

1. It is not possible to plot more than one distribution on same axes as histogram.
2. Comparison of more than one frequency distribution on the same axes is not possible.
3. It is not possible to make it smooth.

Uses of histogram:

1. Represents the data in graphic form.
2. Provides the knowledge of how the scores in the group are distributed. Whether the scores are piled up at the lower or higher end of the distribution or are evenly and regularly distributed throughout the scale.
3. Frequency Polygon. The frequency polygon is a frequen¬cy graph which is drawn by joining the coordinating points of the mid-values of the class intervals and their corresponding fre¬quencies.

Let us discuss how to draw a frequency polygon:

Step-1:

Draw a horizontal line at the bottom of graph paper named 'OX' axis. Mark off the exact limits of the class intervals along this axis. It is better to start with c.i. of lowest value. When the lowest score in the distribution is a large number we cannot show it graphically if we start with the origin. Therefore put a break in the X axis () to indicate that the vertical axis has been moved in for convenience. Two additional points may be added to the two extreme ends.

Step-2:

Draw a vertical line through the extreme end of the horizontal axis known as OY axis. Along this line mark off the units to represent the frequencies of the class intervals. The scale should be chosen in such a way that it will make the largest frequency (height) of the polygon approximately 75 percent of the width of the figure.

Step-3:

Plot the points at a height proportional to the frequencies directly above the point on the horizontal axis representing the mid-point of each class interval.

Step-4:

After plotting all the points on the graph join these points by a series of short straight lines to form the frequency polygon. In order to complete the figure two additional intervals at the high end and low end of the distribution should be included. The frequency of these two intervals will be zero.

Illustration: No. 7.3:

Draw a frequency polygon from the following data:

Marks in Mathematics	40–45	45–49	50–54	55–59	60–64	65–69	70–74	75–79	80–84	85–89	90–95	95–99
No. of students	1	3	2	4	5	6	10	8	5	6	2	1

Solution:

In this graph we shall take the class intervals (marks in mathematics) in X axis, and frequencies (Number of students) in the Y axis. Before plotting the graph we have to convert the c.i. into their exact limits and extend one c.i. in each end with a frequency of O. Class intervals with exact limits:

c.i.	f.
34.5—39.5	0
39.5—44.5	1
44.5—49.5	3
49.5—54.5	2
54.5—59.5	4
59.5—64.5	5
64.5—69.5	6
69.5—74.5	10
74.5—79.5	8
79.5—84.5	5
84.5—89.5	6
89.5—94.5	2
94.5—99.5	1
99.5—104.5	0

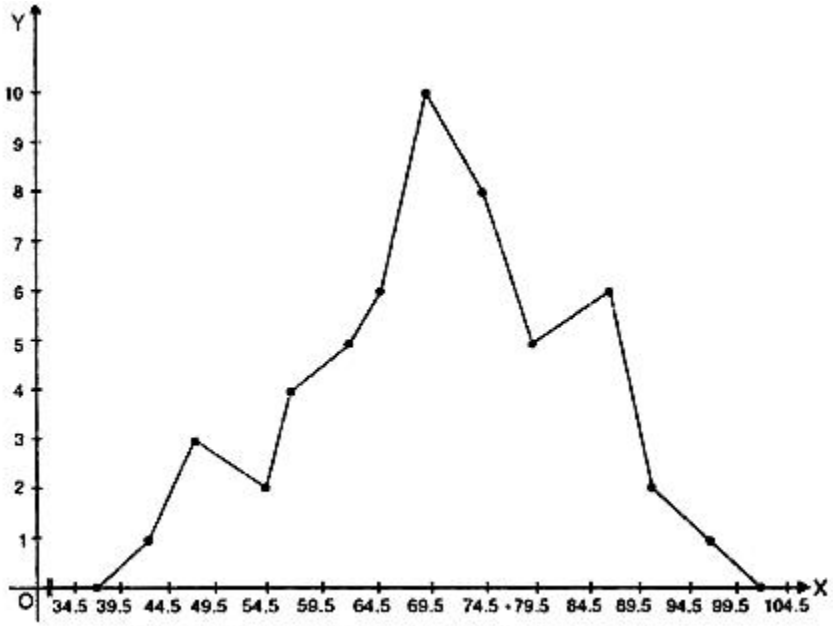


Fig. 7.3 Frequency polygon plotted from the data.

Advantages of frequency polygon:

1. It is easy to draw and simple to understand.
2. It is possible to plot two distributions at a time on same axes.
3. Comparison of two distributions can be made through frequency polygon.
4. It is possible to make it smooth.

Limitations of frequency polygon:

1. It is less precise.
2. It is not accurate in terms of area the frequency upon each interval.

Uses of frequency polygon:

1. When two or more distributions are to be compared the frequency polygon is used.
2. It represents the data in graphic form.

3. It provides knowledge of how the scores in one or more group are distributed. Whether the scores are piled up at the lower or higher end of the distribution or are evenly and regularly distributed throughout the scale.

3. *Ogive or Cumulative Frequency Polygon:*

Ogive is a cumulative frequency graphs drawn on natural scale to determine the values of certain factors like median, Quartile, Percentile etc. In these graphs the exact limits of the class intervals are shown along the X-axis and the cumulative frequen¬cies are shown along the Y-axis. Below are given the steps to draw an ogive.

Step—1:

Get the cumulative frequency by adding the frequencies cumulatively, from the lower end (to get a less than ogive) or from the upper end (to get a more than ogive).

Step—2:

Mark off the class intervals in the X-axis.

Step—3:

Represent the cumulative frequencies along the Y-axis begin¬ning with zero at the base.

Step—4:

Put dots at each of the coordinating points of the upper limit and the corresponding frequencies.

Step—5:

Join all the dots with a line drawing smoothly. This will result in curve called ogive.

Illustration No. 7.5:
Draw an ogive from the data given below:

Marks in History	0—9	10—19	20—29	30—39	40—49	50—59	60—69	70—79	80—89	90—99
No. of Students	3	5	9	12	18	17	10	3	2	1

Solution:
To plot this graph first we have to convert, the class intervals into their exact limits. Then we have to calculate the cumulative frequencies of the distribution.

c.i.	f	c.f. (cumulative frequencies)
0—9.5	3	3
9.5—19.5	5	8
19.5—29.5	9	17
29.5—39.5	12	29
39.5—49.5	18	47
49.5—59.5	17	64
59.5—69.5	10	74
69.5—79.5	3	77
79.5—89.5	2	79
89.5—99.5	1	80

Now we have to plot the cumulative frequencies in respect to their corresponding class-intervals. Ogive plotted from the data given above:

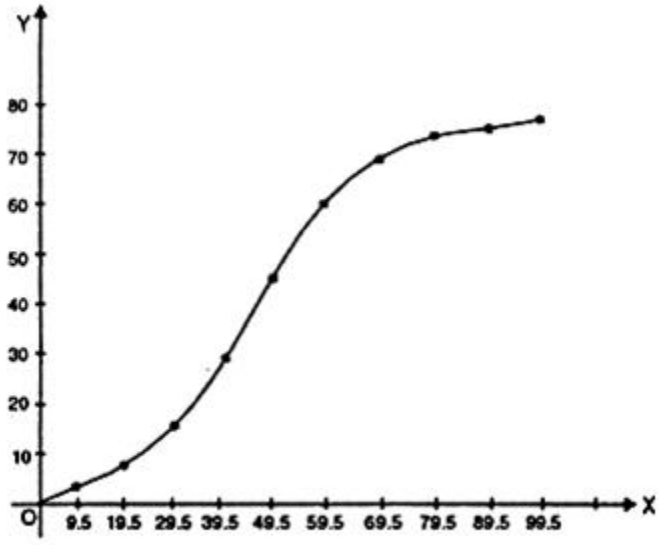


Fig. 7.5.

Uses of Ogive:

1. Ogive is useful to determine the number of students below and above a particular score.

2. When the median as a measure of central tendency is wanted.

3. When the quartiles, deciles and percentiles are wanted.

4. By plotting the scores of two groups on a same scale we can compare both the groups.

4. *The Pie Diagram:*

Figure given below shows the distribution of elementary pupils by their academic achievement in a school. Of the total, 60% are high achievers, 25% middle achievers and 15% low achievers. The construction of this pie diagram is quite simple. There are 360 degree in the circle. Hence, 60% of 360′ or 216° are counted off as shown in the diagram; this sector represents the proportion of high achievers students.
Ninety degrees counted off for the middle achiever students (25%) and 54 degrees for low achiever students (15%). The pie-diagram is useful when one wishes to picture proportions of the total in a striking way. Numbers of degrees may be measured off "by eye" or more accurately with a protractor.

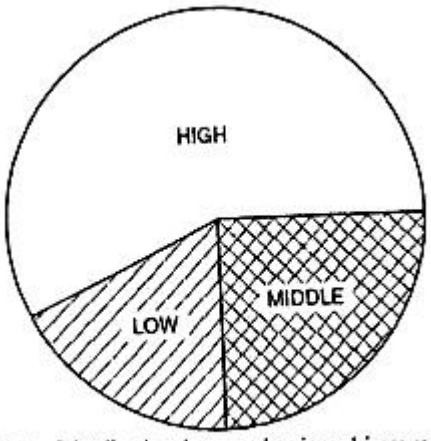


Fig. 7.6. Distribution by academic achievement of pupils in Class VI of a school.

Uses of Pie diagram:

1. Pie diagram is useful when one wants to picture proportions of the total in a striking way.
2. When a population is stratified and each strata is to be presented as a percentage at that time pie diagram is used.

Exploration of software for assessment of CCE:

Report Card (Continuous and Comprehensive Evaluation
Certificate of School – Based Assessment)
Can be customized with School LOGO on School Stationary
PART – I A: ACADEMIC PERFORMANCE : SCHOLASTIC AREAS

- If Generating Report Card for Class X, the no need to re-enter back year data of class 9^{th}. It will automatically club with the back year Data and will display at specified place.
- Option to Increase/decrease no of subjects and their sorting order.
- Only relevant Optional Subjects will be displayed on each student Report card.

PART – I B: ACADEMIC PERFORMANCE : SCHOLASTIC AREAS

- This Area has been kept Dynamic.

- If in future CBSE changes something else from WORK EXPERIENCE, ART EDUCATION, PHYSICAL AND HEALTH EDUCATION/GAMES, then no need to change the software, there is option to control changes asked by CBSE.
- Easy Attendance option is there to make attendance of all students in one go (Specially designed for CBSE- CCE report Card).

PART 2: CO – SCHOLASTIC AREA

(A): LIFE SKILLS

- This Area has been kept Dynamic.
- Option to create different LIFE SKILLS Head for different classes. e.g. for class 5-8 and for Class 9 & 10.
- If in future CBSE changes something else from current LIFE SKILLS Head then no need to change the software, there is option to control changes asked by CBSE.

(B): ATTITUDES & VALUES

- This Area has been kept Dynamic.
- Option to create different ATTITUDES & VALUES Head for different classes. e.g. for class 5-8 and for Class 9 & 10.
- If in future CBSE changes something else from current ATTITUDES & VALUES Head then no need to change the software, there is option to control changes asked by CBSE.

PART 3: CO-SCHOLASTIC ACTIVITIES

3(A): Literary & Creative Skills, Scientific Skills, Aesthetic Skills &Performing Art and Clubs (Any two to be assessed)

- Although the CBSE has provided 4 rows, but since CBSE has asked to assess any two on the base of child interest, we have made it dynamic. Only two CO-SCHOLASTIC ACTIVITIES will display which student has chosen.
- Option to create different CO-SCHOLASTIC ACTIVITIES for different classes. e.g. for class 5-8 and for Class 9 & 10.
- If in future CBSE changes something else from current CO-SCHOLASTIC ACTIVITIES then no need to change the software, there is option to control changes asked by CBSE.

3(B): Health and Physical Education

- Since the software is multiuser, Health entry can be done directly from School Hospital

2.2 Result & Analysis Report

- Result Card for students Term wise
- Annual Performance Card
- Merit List
- Consolidated Sheet
- Mark Register (Class Wise)
- Governor Awards/Honors/Distinction/Rank Achievers List And Certificate According To School Criteria Mark Listing (Subject Wise)

2.3 Analysis with Chart

- Class Result Analysis : Percentage wise
- Class Result Analysis : Pass /Fail
- Class Result Analysis : Against Each Subject (e.g. Highest, Lowest, Average Marks)
- Class Result Analysis : for Achievers, Distinction etc. against each subject

- Student Performance Analysis: Term Wise, against each subject, along with Position in class, %age, Attainment

2.4 Additional Feature: Student List & Searching

- Searching By
- Roll No. Computer No.
- Student Name
- Sur-Name
- Father Name
- Mother Name
- Student List (during the desired period) on
- Present Student /Withdrawn Student /New Admission
- Student List: on Class/ Section/House /Hostel/Boys/Girls
- Student List: Boarder/Day Scholar/Civilian/Defense/NRI/Staff-Child
- Student List: on Location e.g. City/State/Country
- Student List of whom Parents is/are Doctor /Engineer /Judge /Advocate /DIG, etc.
- Sibling (Brother/Sister) /Child of Alumni
- Address Label printing

Student information system :

A student information system (SIS), student management system, school administration software or student administration system is a management information system for education establishments to manage student data. Student information systems provide capabilities for registering students in courses; documenting grading, transcripts, results of student tests and other assessment scores; building student schedules; tracking student attendance; and managing many other student-related data needs in a school. Information security is a concern, as universities house an array of sensitive personal information, making them potentially attractive targets for security breaches, such as those experienced by retail corporations or healthcare providers.

What is an ePortfolio?

An ePortfolio (electronic portfolio) is an electronic collection of evidence that shows your learning journey over time. Portfolios can relate to specific academic fields or your lifelong learning. Evidence may include writing samples, photos, videos, research projects, observations by mentors and peers, and/or reflective thinking. The key aspect of an eportfolio is your reflection on the evidence, such as why it was chosen and what you learned from the process of developing your eportfolio.

An ePortfolio is not a specific software package, but more a combination of process (a series of activities) and product (the end result of the ePortfolio process). Presentation portfolios can be created using a variety of tools, both computer desktop tools and online (Barrett, 2000; Barrett, 2004-2008). Most commercial ePortfolio tools are focused on the product (right-hand) side of the diagram below, although some open source tools contain some of the Web 2.0-type tools that enhance the process (left-hand) side of the diagram, such as blogs, social networking, and RSS feeds.

The real value of an e-portfolio is in the reflection and learning that is documented therein, not just the collection of work. I

" The overarching purpose of portfolios is to create a sense of personal ownership over one's accomplishments, because ownership engenders feelings of pride, responsibility, and dedication."

" The e-portfolio is the central .and common point for the student experience. It is a reflection of the student as a person undergoing continuous personal development, .not just a store of evidence."..

Evaluation rubrics

A rubric for assessment, usually in the form of a matrix or grid, is a tool used to interpret and grade students' work against criteria and standards. Rubrics are sometimes called "criteria sheets", "grading schemes", or "scoring guides". Rubrics can be designed for any content domain.

A rubric makes explicit a range of assessment criteria and expected performance standards. Assessors evaluate a student's performance against all of these, rather than assigning a single subjective score. A rubric:

- handed out to students during an assessment task briefing makes them aware of all expectations related to the assessment task, and helps them evaluate their own work as it progresses
- helps teachers apply consistent standards when assessing qualitative tasks, and promotes consistency in shared marking.

You can use rubrics to structure discussions with students about different levels of performance on an assessment task. They can employ the rubric during peer assessment and self-assessment, to generate and justify assessments. Once you've familiarized students with the idea of rubrics, you can have them assist in the rubric design process, thus taking more responsibility for their own learning.

Evaluation Rubrics

The grading rubrics available on this page are intended to assist with the evaluation of student assignments and projects that involve wide ranging but important aspects of their work.

- The Source Evaluation Rubric helps instructors and students evaluate the value of online information sources.
- The Video-Multimedia Rubric helps instructors with little or no video project experience evaluate the technical quality of student video and multimedia projects just by determining whether certain things are present and to what extent. There is lots of room to add content criteria so as to ensure that technical wizardry does not outweigh the quality of the ideas presented.