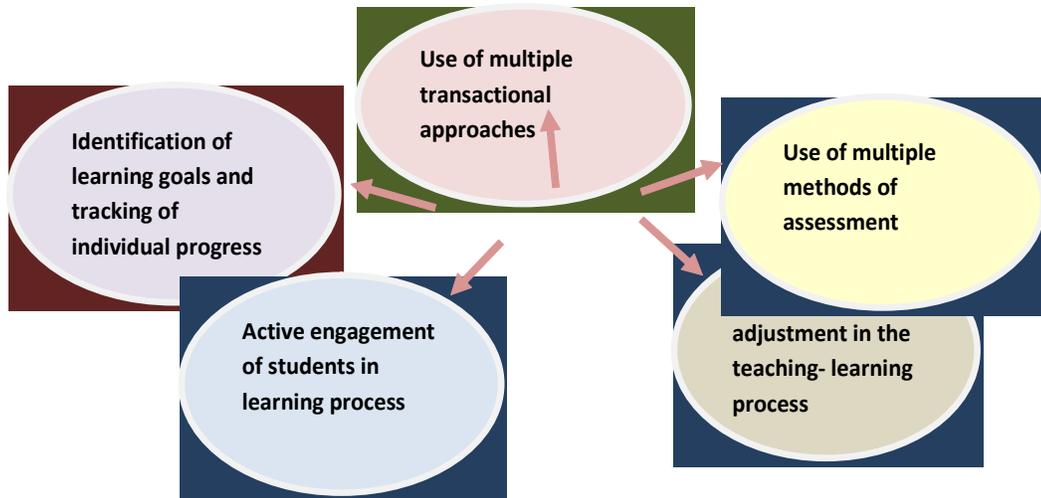


Components of formative evaluation



Examples of formative evaluation:

- i. Monthly tests.
- ii. Class tests.
- iii. Periodical assessment.
- iv. Teacher’s observation, etc.

Distinction Between Formative and Summative Evaluation

Parameters	Formative Evaluation	Summative Evaluation
Time of use	During the process of instruction	At the end term/semester or session
Purpose	To know the progress and mastery of learning. To provide feedback both to the learners and teachers. To provide data for summative evaluation	To certify and grade the learners. To provide feedback to the learners for further study. It includes formative evaluation.

Parameters	Formative Evaluation	Summative Evaluation
Learning Objectives	Are related with the topic caught. Are related in scope.	Are related with the objectives of the course and the programmes. Are vast in nature.
Process	By classroom observation. Can be conducted through oral/written teacher made tests. By conducting peer and group assessment. Mostly internal in nature. It supports criterion-referenced evaluation. Formative evaluation is usually a quick evaluation.	By conducting term end examination. Mostly external in nature. By conducting mostly written type of examinations. By using teacher-made as well as standardized tests. It supports norm-referenced evaluation. Output of formative evaluation can be used in summative evaluation.
Tools and techniques used	By using varieties of assessment tools and techniques like text, questionnaire, scale, schedule, quiz etc.	Can only be conducted through written test, paper and pencil etc.

8.4.3 Diagnostic Evaluation

It is concerned with identifying the learning difficulties or weakness of pupils during instruction. It tries to locate or discover the specific area of weakness of a pupil in a given course of instruction and also tries to provide remedial measure.

N.E. Gronlund says “..... formative evaluation provides first-aid treatment for simple learning problems whereas diagnostic evaluation searches for the underlying causes of those problems that do not respond to first-aid treatment.”

When the teacher finds that inspite of the use of various alternative methods, techniques and corrective prescriptions the child still faces learning difficulties, he

takes recourse to a detailed diagnosis through specifically designed tests called 'diagnostic tests.

Diagnosis can be made by employing observational techniques, too. In case of necessity the services of psychological and medical specialists can be utilised for diagnosing serious learning handicaps.

8.4.4 Summative Evaluation

It is concerned with making judgements about a finished product or process. Terminal examinations whether external or internal are good examples of it. Various forms of summative evaluation are like cumulative assessments, teacher made achievement tests, rating of laboratory skills and evaluation of projects.

Summative evaluation is done at the end of a course of instruction to know to what extent the objectives previously fixed have been accomplished. In other words, it is the evaluation of pupils' achievement at the end of a course.

The main objective of the summative evaluation is to assign grades to the pupils. It indicates the degree to which the students have mastered the course content. It helps to judge the appropriateness of instructional objectives. Summative evaluation is generally the work of standardized tests.

It tries to compare one course with another. The approaches of summative evaluation imply some sort of final comparison of one item or criteria against another. It has the danger of making negative effects.

This evaluation may brand a student as a failed candidate, and thus causes frustration and setback in the learning process of the candidate, which is an example of the negative effect.

The traditional examinations are generally summative evaluation tools. Tests for formative evaluation are given at regular and frequent intervals during a course; whereas tests for summative evaluation are given at the end of a course or at the end of a fairly long period (say, a semester).

8.4.4.1 The functions of this type of evaluation are:

(a) Crediting:

Crediting is concerned with collecting evidence that a learner has achieved some instructional goals in contents in respect to a defined curricular programme.

(b) Certifying:

Certifying is concerned with giving evidence that the learner is able to perform a job according to the previously determined standards.

(c) Promoting:

It is concerned with promoting pupils to next higher class.

(d) Selecting:

Selecting the pupils for different courses after completion of a particular course structure.

8.4.4.2 Characteristics of Summative Evaluation

- (a) It is terminal in nature as it comes at the end of a course of instruction (or a programme).
- (b) It is judgmental in character in the sense that it judges the achievement of pupils.
- (c) It views evaluation “as a product”, because its chief concern is to point out the levels of attainment.
- (d) It cannot be based on teachers observations only.
- (e) It does not pin-point difficulties faced by the learner.
- (f) Its results can be used for placement or grading purposes.
- (g) It reinforces learning of the students who has learnt an area.
- (h) It may or may not motivate a learner. Sometimes, it may have negative effect.

Examples:

1. Traditional school and university examination,
2. Teacher-made tests,

3. Standardized tests,
4. Practical and oral tests.

Check Your Progress–1

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

- I. _____ concerned with identifying the learning difficulties or weakness of pupils during instruction.
- II. The main objective of the _____ is to assign grades to the pupils.
- III. Which is not the function of formative evaluation?
(a) Diagnosing (b) Monitoring (c) Certifying (d) Placement
- IV. Which evaluation is terminal in nature?
- V. The term evaluation is closely re-lated to_____.
- VI. The _____ examinations are generally summative evaluation tools.
- VII. It is concerned with identifying the _____ or weakness of pupils during instruction.
- VIII. Formative evaluation provides first-aid treatment for simple learning problems whereas diagnostic evaluation searches for the underlying causes of those problems that do not respond to first-aid treatment. (Put true / false).

8.4.5 Norm Referenced Evaluation

Norm-referenced evaluation is the traditional class-based assignment of numerals to the attribute being measured. It means that the measurement act relates to some norm, group or a typical performance.

It is an attempt to interpret the test results in terms of the performance of a certain group. This group is a norm group because it serves as a referent of norm for making judgements.

Test scores are neither interpreted in terms of an individual (self-referenced) nor in terms of a standard of performance or a pre-determined acceptable level of achievement called the criterion behaviour (criterion-referenced). The measurement is made in terms of a class or any other norm group.

Almost all our classroom tests, public examinations and standardised tests are norm-referenced as they are interpreted in terms of a particular class and judgements are formed with reference to the class.

Examples:

- (i) Raman stood first in Mathematics test in his class.
- (ii) The typist who types 60 words per minute stands above 90 percent of the typists who appeared the interview.
- (iii) Amit surpasses 65% of students of his class in reading test. Rating-scales, etc.

A simple working definition

A norm-referenced test is used to ascertain an individual's status with respect to the performance of other individuals on that test.

In the above examples, the person's performance is compared to others of their group and the relative standing position of the person in his/her group is mentioned. We compare an individual's performance with similar information about the performance of others.

That is why selection decisions always depend on norm-referenced judgements. A major requirement of norm-referenced judgements is that individuals being measured and individuals forming the group or norm, are alike. In norm-referenced tests very easy and very difficult items are discarded and items of medium difficulty are preferred because our aim is to study relative achievement.

8.4.6 Criterion-Referenced Evaluation:

When the evaluation is concerned with the performance of the individual in terms of what he can do or the behaviour he can demonstrate, is termed as criterion-referenced evaluation. In this evaluation there is a reference to a criterion.

But there is no reference to the performance of other individuals in the group. In it we refer an individual's performance to a predetermined criterion which is well defined.

Examples:

- (i) Raman got 93 marks in a test of Mathematics.
- (ii) A typist types 60 words per minute.
- (iii) Amit's score in a reading test is 70.

A simple working definition

A criterion-referenced test is used to ascertain an individual's status with respect to a defined achievement domain.

In the above examples there is no reference to the performance of other members of the group. Thus criterion-referenced evaluation determines an individual's status with reference to well defined criterion behaviour.

It is an attempt to interpret test results in terms of clearly defined learning outcomes which serve as referents (criteria). Success of criterion-reference test lies in the delineation of all defined levels of achievement which are usually specified in terms of behaviorally stated instructional objectives.

The purpose of criterion-referenced evaluation/test is to assess the objectives. It is the objective based test. The objectives are assessed, in terms of behavioural changes among the students.

Such type of test assesses the ability of the learner in relation to the criterion behaviour. Glaser (1963) first used this term, 'Criterion-reference test' to describe the learner's achievement on a performance continuum.

Hively and Millman (1974) suggested a new term, 'domain-referenced test' and to them the word 'domain' has a wider connotation. A criterion referenced test can measure one or more assessment domain.

Check Your Progress – 2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of this lesson.

- I. A _____ test is used to ascertain an individual's status with respect to a defined achievement domain.
- II. A _____ test is used to ascertain an individual's status with respect to the performance of other individuals on that test.
- III. Norm referenced evaluation serves as a referent of norm for making judgements.(put true/ false).
- IV. In criterion referenced test, there is reference to the performance of other individuals in the group(put true/ false).
- V. Criterion referenced test is the subjective based test.(put true/ false).
- VI. A major requirement of _____ judgements is that individuals being measured and individuals forming the group or norm, are alike.
- VII. Norm-referenced evaluation is the traditional class-based assignment of numerals (put true/false).
- VIII. In which evaluation the measurement is made in terms of a class or any other norm group?

8.5 LET US SUM UP

Evaluation

Evaluation is describing something in term of selected attributes and judging the degree of acceptability or suitability of that which has been described. It is a systematic process of collecting, analysing and interpreting in-formation to determine the extent to which pupils have achieved instructional objectives

Types of evaluation

Evaluation can be classified into different categories in many ways.

- On the basis of function
- On the basis of approaches
- On the basis of interpretation

8.6 LESSON END EXERCISE

1. What is evaluation?
2. Explain types of evaluation on the basis of interpretation.
3. Discuss the functions of summative evaluation.

8.7 SUGGESTED FURTHER READINGS

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8.8 ANSWERS TO CHECK YOUR PROGRESS

Answers to Check Your Progress-1

- i. diagnostic Evaluation.
- ii. summative Evaluation.
- iii. certifying.
- iv. Summative
- v. Measurement
- vi. Traditional
- vii. learning difficulties
- viii. true

Answers to Check Your Progress- 2

- i. criterion-referenced
- ii. norm-referenced
- iii. true
- iv. false
- v. false
- vi. Norm- referenced test

EVALUATION TOOLS

Structure

- 9.1 Introduction
- 9.2 Objectives
- 9.3 Evaluation Tools
 - 9.3.1 Diagnostic Testing and Remedial Teaching
 - 9.3.2 Oral Tests
 - 9.3.3 Quizzes
 - 9.3.4 Essay Type Tests and Objective Type Tests
 - 9.3.4.1 Meaning : Essay Type Test Notes
 - 9.3.4.2 Extended and Restricted Response Type Test
 - 9.3.4.3 Principles of Constructing Essay Type Test
 - 9.3.4.4 Improving in Reliability of Scoring Essay Type Test
 - 9.3.4.5 Advantages of Essay Type Test
 - 9.3.4.6 Limitations of Essay Type Test
- 9.4 Objective Type Test
 - 9.4.1 Meaning of Objective Type Test
 - 9.4.2 Objective Test Formats
 - 9.4.3 Construction of Objective Test Items

- 9.5 True/False Items
 - 9.5.1 Construction of Objective Based True-False Items
 - 9.5.2 Matching Type Test Items
 - 9.5.3 Rearrangement - Type Items
 - 9.5.3.1 Types of Rearrangement Items
 - 9.5.4 Structured Questions
 - 9.5.5 Multiple Choice Questions
 - 9.5.6 Objective Test Items
 - 9.5.6.1 Advantages of Objective Test Items
 - 9.5.6.2 Limitations of Objective Test
- 9.6 Let Us Sum Up
- 9.7 Lesson End Exercise
- 9.8 Suggested Further Readings
- 9.9 Answers to Check Your Progress

9.1 INTRODUCTION

Evaluation is a series of activities that are designed to measure the effectiveness of the teaching learning as whole process. It is the assessment of systematic planned and quality learning. It helps the teacher to make better judgements in various aspects. So it is important and continuous component. For this purpose we need variety of evaluating tools.

9.2 OBJECTIVES

After going through this lesson, you shall be able to:

- know the various evaluation tools,
- understand the types of evaluation tools, and
- understand the characteristics, merits and demerits of evaluation tools.

9.3 EVALUATION TOOLS

An evaluation tool is a means of appraisal scientifically designed to evaluate or measure what is required to be evaluated or measured. Evaluation is the process which is inevitable in instruction. Tools are the instruments used for measuring the learning outcome. Carefully collected evaluation data help teachers to understand the learners, plan learning experiences for them, and determine the extent to which the instructional objectives are being achieved.

Various evaluation tools

- Diagnostic testing and remedial teaching
- Oral tests
- Quizzes
- Essay type tests
- Objective type tests

9.3.1 Diagnostic Testing and Remedial Teaching

The Meaning of Diagnostic Evaluation

The term 'diagnosis' is borrowed from the medical science. Educational diagnosis Diagnostic evaluation is a pre- assessment of the students where the teacher can evaluate their strengths and weakness before giving the instructions. It is a technical procedure designed to locate specific learning and instructional difficulties and to determine - their causes.

According to Stadola and Stordahl

“A diagnostic test is developed to identify specific strengths and weakness in basic skills such as reading, and arithmetic.”

According to Mehrens.

“Diagnostic tests are primarily concerned with the skills or abilities that the subject matter experts believe are essential in learning a particular subject.”

According to Payne

“Diagnostic test undertakes to provide a picture of strengths and weaknesses.”

Conclusion of the above definitions:-

It is concluded that a diagnostic test is primarily concerned with the process of finding out weaknesses of the pupils in particular subjoin area.

Objectives of Diagnostic Test

1. To provide educational and vocational guidance to students and guardians on the basis of traits realized from specific subject-related learning unit.
2. To make teaching-learning circumstances effective.
3. To make evaluation process more meaningful and effective.
4. To arrange for remedial teaching.
5. To give advice to a teacher for proper improvement in his teacher process.
6. To know about the weaknesses, deficiencies and difficulties of a student.
7. To assist in the selection of different tests, techniques and tools for knowing the causes related to the problem.
8. To assist in the selection of different types of questions for the construction of different achievement tests.
9. To amend textbooks of different subjects on the basis of the specific points and shortcomings and to make them more useful for students.

Characteristics of Diagnostic Test

A diagnostic test should have the following characteristics in order to its beings useful for teachers and students:

1. A diagnostic test is more elaborate, it consist of a large number of items of different levels
2. These tests are standardized
3. Time limit for these tests is not specified.

4. These tests are the essential part of the curriculum.
5. These tests helps to reveal mental process of a learner.
6. These tests are based on the specific objectives.
7. The basis of these tests is formed by such facts or norms which are established on the basis of experiments.
8. These tests do not measure a child's ability, but diagnose his weakness in order to provide remedy.
9. More than one item is included from each teaching point in order to make sure whether the students know thoroughly.
10. A diagnostic test undertakes to provide a detailed picture of strengths and weaknesses in an area.
11. These tests are analytical and analyze all parts of a process fully.
12. These tests, test the progress of a student objectively.

Check Your Progress-1

Note: (a) Write your answers in the space given below.

(b) Compare your answers with the one given at the end of this lesson.

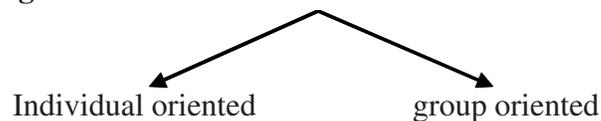
1. Fill in the blanks using the words: (1) detailed, (2) errors, (3) assess, (4) located, (5) identify, (6) analysis.
 - (i) The aim of class test is tothe performance of pupils.
 - (ii) Diagnostic Test impliesstudy of learning difficulties.
 - (iii) In the Diagnostic Testing process the problem is.....through due
.....
 - (iv) Diagnostic Testing means tothe problem areas.
 - (v) In Diagnostic Testing we try to find the area where occur.

Construction and Standardization of Diagnostic Test

The subject for which a diagnostic test has to be constructed, is at first analyzed minutely and it is determined what concepts, principles, theories, rules, facts, formulae or processes have to be attached importance. Besides, those mental faculties of students have to be analyzed which are directly related to such knowledge, such as reasoning, logic, thinking power, observation power etc.

A diagnostic test can be individual oriented or group-oriented.

Constructing diagnostic test



- (a) **Individual oriented test** :- It comprises of test items that are related to the weaknesses and abilities of a particular student.
- (b) **Group oriented test** :- In it, the test - items are constructed keeping in view the specific group errors or weaknesses. For construction of test items, common and specific errors of the students are collected.

Process of Diagnosis Test

Following are the five important steps of the process of instructional diagnosis :

1. **Selection of Students for Diagnosis:** In this, those students are selected, who are weak in one or more subjects, and are not able to adjust well with some other activities of the school. Such students can be selected on the basis of test results held in school from time to time.
2. **Identify Difficulty Points:** In it, the teacher tries to find out that what type of difficulty is faced by the students. For this, the diagnostic and performance or achievement tests can be administered which can be either teacher-made or standardized.
3. **Analysis of Difficulty Points:** in it, the teacher tries to find out why a student is doing particular type of error again and again, because the mind of each student functions in a peculiar manner. A teacher can estimate the causes and tries to ascertain them on the basis of his experience or interview.

4. **Remedial Procedures :-** In this step, a suitable plan is made to remove the weakness and error of the student. If a number of students have committed the same type of error, then they maybe treated collectively, and if the error is individual, then it should be remedied individually.
5. **Preventive Measures:** If we desire that a student may not commit any error in the subject in future, then we should effect such changes in his school and domestic environment so that his problem of maladjustment can be permanently eradicated.

Remedial-Teaching

Remedial-Teaching is conducted to eradicate the shortcomings which are found out by the diagnostic tests. The success of remedial measures depends on the fact how widely the teacher knows of the students' shortcomings.

The following factors should be kept in mind, while conducting remedial measures :

- (1) The weak students should be asked to sit on the front seats in the class.
- (2) The development of the subject matter should be done with the help of examples and illustrations.
- (3) The attention of the students should be drawn to those concepts, principles and activities related to the subject matter in which they commit errors.
- (4) The fundamental concepts of mathematics and other subjects, such as factors, percentage, unit, square root, etc. should be taught carefully.
- (5) The students should be provided sufficient opportunity for thinking and reasoning in the class.
- (6) The concepts should be made clear to the weak students by using models, charts and other audio-visual aids.
- (7) The matter written on the blackboard should be clear, correct, orderly and useful.
- (8) The exercises on each sub-topic should be such which the students can think about themselves.

- (9) The correction in the written work of the students should be done in their presence.
- (10) The students should be given individual counselling even after the class, to help them in learning.

Educational Diagnosis and Remedial Teaching

Diagnostic test is constructed for educational diagnosis, and remedial teaching is conducted on the basis of diagnosis. We shall clarify it by an example.

For example, take teaching of a sub-topic of mathematics: square root. Suppose, after the teacher has taught the method of finding out square root, some of the students still commit error in it. The teacher will conduct diagnostic and remedial work in this order:

1. First, the teacher will construct different questions of decimal numbers to find out square root; such as;
 - (a) Find out square root of the following numbers:
 - (i) 1355.23 (ii) 25.2143 (iii) 44.135678
 - (b) Find out square root of the following numbers up to two decimal points:
 - (i) 210.7 (ii) 12345.071 (iii) 7.0357
2. He will give this question paper to the group of students which commits errors.
3. He will analyse the students' answers and then arranges their causes.

Suppose, the students commit the following errors in solving the above questions:

- (a) Some students do not take down the pairs of numbers while calculating square root.
 - (b) Some students do not pay attention to decimal point while making pairs.
 - (c) Some students do not add zero after decimal point to make pairs.
4. On the basis of the above errors, the teacher will classify the students and prepare their lists; such as — the list of students who do not take down

the pairs correctly, the list of students who overlook the decimal point, and the list of students who do not add zero after decimal point to make pair,

5. After this, the teacher will formulate different types of hypotheses. These hypotheses will be formulated on the basis of student-related hindering factors, teacher-related hindering factors, home-related hindering factors and culture related hindering factors. Some of the student related and teacher-related hypotheses are given here, for illustration:

- (i) The student is not attentive in the class.
- (ii) The student thinks that mathematics is a difficult subject and overlooks to learn it.
- (iii) There is no coordination between the rate of students' learning and teacher's teaching.
- (iv) The student has not done sufficient exercise.
- (v) The teaching method is not suitable.
- (vi) The teacher has not made the students practice enough.
- (vii) The teacher has not improved the errors in checking work.

In the same way, if the teacher considers it necessary, he can also formulate hypotheses about curriculum-related, home-related, guardians-related and culture-related hindering factors.

- 6. The teacher will construct questions to test various types of hypotheses.
- 7. The teacher will select correct hypotheses by analysis of the answers to these questions.
- 8. At last, the teacher will conduct remedial teaching on the basis of correct hypotheses.

Check Your Progress-2

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of the lesson.

1. The _____ depends more on the teacher, and less on the form of the test. Time limit for diagnostic tests is not specified. (Put true / false).
2. _____ is conducted to eradicate the shortcomings which are found out by the diagnostic tests.
3. Which test helps the teacher to find out what type of difficulty student is facing?
4. Diagnostic tests and remedial teaching are not related to each other. (Put true / false)
5. The correction in the written work of the students should not be done in their presence. (Put true / False)
6. Diagnostic tests are standardized. (Put true / false)
7. The diagnostic tests are useful only when the causes found are removed. (Put true / false)

9.3.2 ORAL TESTS

An oral test is a direct means of assessing student's learning outcomes by questioning them. Oral tests does not have a structured list of questions.

Types of Oral Tests

(a) Oral test after a direct observation test:-

An oral test is often used as part of a de-briefing session after a practical has been observed. The time duration is usually 3-5 minutes. There is no formal structure.

(b) Oral in the form of a viva voce:-

Vivas are traditionally conducted by an external and an internal examiner. There is no set time limit for a viva voce, but a full day examination is often normal.

(c) Oral/Aural in a language setting:-

Oral in a language setting is a direct speaking test geared at assessing a student's

level of speaking proficiency. Aural in a language setting is a listening test that is made to check the student's level of hearing proficiency.

Structure of Oral Test

The structure of an oral assessment depends on the type of oral assessment, but in general, the followings are used.

Depend on which type of oral assessments, it is sometimes desirable to allow the student to start the oral assessment by giving an account of the analysis of the practice..

Probing questions – to initiate and engage the student in conversation. Questions such as: How did you know that? What method did you use to arrive with that conclusion?

Prompting questions – to give hints that point the student to the right direction to clarify his response, this however does not mean the assessor answers the questions himself.

Challenging questions – to assess the deep understanding - the higher level of Blooms taxonomy. Questions such as: Can you justify why your method is more efficient than Prof. Einstein's?

Advantages of Oral Test

- There can be no plagiarism or false reports.
- Assessors receive immediate reactions and responses.
- It complements perfectly with practical assessments.

Disadvantages of Oral Test

- Oral Test is very time-consuming, it is an expensive way of assessing.
- Validity is high but reliability is not. Clear assessment criteria and grading are required for all parties so that students and assessors are fully aware of how the performance will be judged to increase reliability.
- There are rarely any clear guidelines about what is fair to judge at a viva. There have been some contentious cases that the assessor has rejected (?) or

even failed a dissertation because the assessor is unwilling to accept the results of a candidate due to difference in opinions. Although there will be examiners' reports, there is rarely any record of the process itself to ensure its fairness.

- Oral tests may present significant difficulties for international students or students with certain impairments, who may require access to an alternative type of assessment that provides an acceptable test of learning outcomes. Students with some other impairments may be able to undertake oral assessment but may require some adjustments in order to have an equal footing.
- Immediate feedback is useful, but sometimes that is difficult due to time constraints.
- Oral test is usually ephemeral, and dissenting views may later be contested if notes or recordings are not documented clearly.

How to design a good Oral Test?

Ensure the students know what the objectives of the assessment are.

- Provide students the time period, location, guidelines, requirements, assessment criteria and if there are items that are not to be included. The students should also be aware of who is going to assess them – tutor, peers and/or self? And if peers or themselves are going to assess, would the weightings be the same as the tutor's assessment?
- Prepare a structured marking sheet for all assessors.
- Give sufficient time for students to respond.
- Teacher should incorporate oral assessment into the practice of teaching during class, e.g. how to think out loud.

9.3.3 Quizzes

Quiz is a form of student assessment that measures knowledge, skills, and abilities. A quiz is generally a frequent and short assessment that can gauge a student's retention and comprehension of a small amount of information. A quiz can function

throughout a course as an informative feedback device allowing both the instructor and the students to see where they are excelling or need more focus.

Types of Quizzes

Below, we've outlined the nine most common types of quizzes.

1. Personality Quiz

Personality quizzes are among the most common types of quizzes, as they can be used for any different purposes and in many different forms. Personality quizzes can be serious, fun, or educational.

2. Scored Quiz

A scored quiz, also known as a tally quiz, is commonly used in online tests and assessments. Each question is assigned a point value. Upon completion, your total score is tallied with your outcome based on the final numbers

3. Multiple Choice Quiz

In it, you're presented with a question and a set of answers. Every question has one right answer, with the outcome based on the number of correct answers. You can use a multiple-choice quiz in many ways,

4. Yes or No Quiz

This is the simplest type of assessment-based quiz. While it's similar in some ways to a multiple-choice quiz, there are only two answers to choose from; yes or no.

It's a concise and efficient way to judge a person's knowledge on a subject or receive feedback. For example: Did you understand the primary purpose of the presentation?

5. True or False Quiz

A true or false quiz also has one answer. As one of the quickest types of quizzes to create, these are commonly used in a variety of applications. There's one right answer and one wrong answer. This makes it easy to administer and grade.

6. Poll

A poll is an interactive quiz that includes only 1 question. Upon completion of the poll, you can check your statistics for the following:

Impressions

Vote percentage

Result report

Responses report

7. Knowledge Tests

A knowledge test is one in which each question has a correct answer. It's among the most formal types of test. The goal of a knowledge test is to test a person's knowledge on a particular subject.

8. Survey

It's not the same as a traditional quiz, as a survey is designed to gather feedback or lead the user to an outcome based on answer (known as skip logic). However, depending on the way you format the survey, it can take on a "quiz-like" form. The most powerful feature of a survey is skip logic. With this, you can display questions based on the respondent's answers.

What's the Difference Between a Quiz, Test, and Exam?

Different But The Same

First, yes, they're the same, and yes, they're different. Confused? Let's explore the subject a bit then. Your thesaurus is likely to say that all three of these words are interchangeable. And in fact, sometimes they are used interchangeably. "Test" and "exam" especially are often used in the same context. However, especially in high school and college, there are subtle differences.

9.3.3 QUIZZES

A quiz is usually a short test. The instructor use the quiz just to check up on how well you're understanding the material. A quiz might instead have just 8 or 10. Although they vary according to the instructor and the quizzes They don't often have interpretive questions.

Tests

These are the standard evaluation technique used to determine your grade in both high school and college classes. The test score is used in determining your grade in the class. A test normally covers a longer chunk of the course: a whole unit or several chapters. For this reason, tests are commonly longer than quizzes.

Exams

Many instructors use “test” and “exam” interchangeably, but for students, an exam refers to either a mid-term or final exam. It’s the granddaddy of tests in both high school and college. You can expect that an exam will be long (long enough that most college instructors allow hours rather than minutes for it to be taken). For instance, some instructors consider the exam grade as one third of your total score for the class.

9.3.4 Essay Type and objective type tests

9.3.4.1 Meaning: Essay Type Test Notes

An essay test is an assessment technique that requires students to thoroughly respond to a question by developing, organizing, and writing an original composition. The purpose of an essay test is to assess students’ abilities to construct a logical, cohesive, and persuasive writing piece.

9.3.4.2 Extended and Restricted Response Essay Type Test

- (a) **Extended essay type test:-** Extended response variety suits better at higher levels like the colleges or university. When thorough understanding of a set of topics or units is the objective of testing and best presentation of the subject-matter is to be appreciated, this variety of extended response of ETQ is the best to take advantage of.
- (b) **Restricted response type test :-** the restricted response variety of ETQ is favoured more for secondary and senior secondary stages. Restriction is imposed and examinees cannot be expected to write extended responses, these types of questions are termed restricted-response essay-type questions. if the focus of measurement of learning outcomes is on interpretation, application of data or outcomes that are more specific and that clearly define the nature of the intended

response and attempt to reduce subjectivity in marking, the restricted response variety of ETQ can be preferred.

To appreciate the difference between the two types of ETQ, let us take the example:-

- (i) Write an essay on India's struggle for independence.
- (ii) Discuss in details the various theories of organic evolution.
- (iii) Describe various allotropic forms of carbon.
- (iv) In what way Kalinga war influenced King Asoka?
- (v) Describe the laboratory method of preparing oxygen gas.
- (vi) Write in about 150 words an essay on 'A Village Fair'.

The questions (i) to (iii) are classified as extended-response questions and ETQ. But in questions (iv) to (vi) there is restriction response essay type test.

9.3.4.3 Principles of Constructing Essay Type Test

General Hints

- (i) Use ETQ where you must and avoid where you can.
- (ii) Try to increase the number of questions by including more questions of restricted-response variety in preference to extended-response variety.
- (iii) Avoid giving choice, especially free options (6 out of 9 type), in ETQ to discourage teaching and selective learning besides ensuring better comparison of students.
- (iv) If only ETQ are included in a question paper, ensure wider range of difficulty level to cater to poor, average and right students using lower-order, middle-order and higher-order questions.
- (v) Frame each question keeping in view the stipulated time requirement.
- (vi) Write explicit and clear instructions for examinees to enable them to attempt questions on similar lines for similar goal.

Specific Hints

- (i) Pinpoint the specific assessment objectives, which becomes the basis of your question.
- (ii) Select content clusters from one or more content areas of syllabus which are relevant to assessment objectives.
- (iii) Use familiar and appropriate directional words that evoke the desired responses and demand exercise of intended mental process (list, describe, compare, discuss, justify, evaluate etc.).

Avoid directional words like ‘what do you know of, ‘write short notes on’, ‘give an account of’ etc.
- (iv) Structure the question to pinpoint the area of response and delimit the scope of expected response, by proper wording of the question.
- (v) Avoid semantic difficulties by using simple, precise and unambiguous language.
- (vi) Set task in the question that require students to demonstrate command of the essential knowledge, not the factual information.
- (vii) Indicate clearly part-wise marks for each question that has more than one parts, e.g. Define germination. What are the conditions necessary for germination? Illustrate with the help of an experiment. (2 + 3 + 5)
- (viii) Write model answer to test the efficacy of your questions. It helps improve the question if needed.
- (ix) Work out the marking scheme, indicating major value points and their corresponding marks and the mode of deduction of marks, if any.

9.3.4.4 Improving in Reliability of Scoring Essay Type Test

The following measures may be adopted to control the reliability of ETQ:

- (a) Use precise, unambiguous and understandable language to enable the examinees to think about the expected scope of answer in the same way as intended by the framer of the question.
- (b) Reshuffle answer scripts after marking each question to reduce the carryover effect.

- (c) Use double grading when the test is being used for selection or awarding scholarship.
- (d) Marks of the scripts may be totalled at the end after marking all the scripts to avoid carry over of any impression formed about the quality of the script, when the marks are totalled.
- (e) Avoid contamination of scores by avoiding extraneous factors like spelling, handwriting, punctuation, neatness etc.
- (f) To reduce inter-examiner reliability, examiners may meet together after marking some scripts to discuss the marking scheme and compare marking.
- (g) Allocation of scripts question-wise to each examiner improves scoring objectivity, because the examiner scores the same question in all the scripts.

Despite various limitations, ETQ have come to stay in spite of their low validity and reliability.

9.3.4.5 Advantages of Essay Type Test

There are following advantages of Essay type test

- (i) Such tests induce good study habits in the pupils.
- (ii) The guess work can be eliminated to large extent.
- (iii) Such tests are easier to prepare and administer.
- (iv) By this type of tests it is possible to measure all degrees of comprehensiveness and accuracy.
- (v) Such tests can be used by all type of schools.
- (vi) These help in developing the power of logical thinking, critical reasoning, systematic presentation etc. in the students.
- (vii) Such tests provide an opportunity to the child to show his initiative, originality of thought, fertility of their imagination, etc.
- (viii) This type of tests are considered to be best for measuring ability to organise idea effectively, ability to criticise or justify a statement, ability to interpret etc.

9.3.4.6 Limitations of Essay Type Test

(a) Defects from the Point of View of Students

- (i) The essay type tests are less objective and so they lack of validity. This type of test can reveal child's cramming capacity only.
- (ii) These tests lack reliability. A student is compelled to have a selective reading. He depends more on guess papers and so there is an element of chance.
- (iii) It keeps the students busy and fall of nervous tension. The study does not spread over the whole year and is limited to a short period just before the examinations. Thus, a habit of irregular study is developed in the student.

(b) Defects of Essay-type Tests from the Point of View of the Teacher:-

- (i) The teacher covers only a limited and important portion of course because his aim is to see that maximum number of his students pass the examination.
- (ii) The teaching programme of the teacher is wholly examination oriented and the basic principle of teaching his students are given least consideration.
- (iii) The teacher is compelled to encourage his students to cramming which is not a psychological method of teaching.
- (iv) Since a teacher is judged by the results of his students so everything becomes subservient to the examinations.
- (v) To show good results sometimes the teacher devotes a good deal of his time to indulge in guess work which affects his teaching

(c) Defects from the Point of View of Achievement:-

- (i) Essay type tests are not comprehensive and some students may get good marks only because the questions have been set from the portion prepared by them.
- (ii) These tests are not objective and the score of a student depends on various factors such as Examiners mood and whims etc.
- (iii) This type of tests is not useful from the point of view of improvement. They fail to throw light on the defects of teaching-learning process or the defects of the curriculum.

From the above it can be concluded that essay type examination is not a correct method of evaluation in commerce. The improvement in system of evaluation is possible if following suggestions are given due consideration.

Check Your Progress-3

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of the lesson:

- (1) An essay test is an _____ technique that requires students to thoroughly respond to a question.
- (2) The purpose of an essay test is to assess student's _____ (abilities/aptitudes).
- (3) Write any two advantages of essay type tests.
- (4) Most of the higher order abilities demand inter-disciplinary and intra-disciplinary subject-matter (True/false).
- (5) Critical analysis of content can better be tested by using essay type questions.
(True/false)
- (6) Essay type questions suits better for _____ subjects.
- (7) Name two types of essay type tests?

9.4 Objective type test

9.4.1 Meaning of Objective Test

An objective test item is defined as one for which the scoring rules are so exhaustive and specific that they do not allow scorers to make subjective inferences or judgements. Several types of questions are asked in them. These questions are generally classified into two types:

- i. Recall type question
- ii. Recognition type questions.

9.4.2 Objective Test Formats

A variety of different types of objective test formats can be classified into two categories:-

1. **Selected response format**, in which examinees select the response from a given number of alternatives, including true/false, multiple choice, matching test items; and
2. **Constructed response format**, in which examinees are required to produce an entire response, including short answer test items.

9.4.3 Construction of Objective Test Items

Basically, scoring objective test items is easy: It only requires one to follow the scoring rules. However, constructing good objective test items requires much more skill and effort. The first step is

- **To develop a set of test specifications** that can serve to guide the selection of test items. A table of specifications (or test blueprint) is a useful tool for this purpose. This tool is usually a two-way grid that describes content areas to be covered by the test.
- **Appropriate test item format is selected** for each item. At this point, not only objective test items but also other types of test items like essay test or performance assessment should be considered, depending on the learning outcomes to be measured.
- **To create specific test items.** It is particularly important for objective test items to be written in clear and unambiguous language to allow examinees to demonstrate their attainment of the learning objectives. If complex wording is used, the item simply reflects reading comprehension ability.

9.5 TRUE/FALSE ITEMS

The format of items that represent true-false and allied varieties requires examinees to select the answer from two alternatives, which remain the same for the whole series of items. These items are usually in the form of statements. These items may also take the form of Yes-No, agree-disagree, synonym antonyms, correct-wrong etc.

Forms of Constant Alternative Items

- (a) True-False variety (T/F)

- (i) Temperature remaining the same, pressure in a gas varies directly proportional to its volume.
- (ii) Star fish belongs to the class Pisces. (T/F)
- (b) Right-Wrong variety (R/W)
- (i) Chandigarh is the capital of both Haryana and Punjab. (R/W)
- (ii) Isosceles triangle has all the three sides equal. (R/W)
- (c) Agree-Disagree variety (A/D)
- (i) Every religion teaches hatred for other religions. (A/D)
- (ii) All religions emphasise the same tenets of good living. (A/D)
- (d) Yes-No variety (Yes/No)
- (i) Is potato an underground stem?
- (ii) Does a water pump work on the principle of air pressure? (Yes/No)

9.5.1 Construction of Objective-based True-False Items

It looks easy to frame T/F items, but construction of good T/F items requires insight into their structure. **It involves:**

- (a) selection of good concept. principle proposition;
- (b) restating the essence of the idea
- (c) finding its implications
- (d) couching its an thesis
- (e) writing the item using the same essential point for one true and one false version.

9.5.2 Matching-Type Items

Design

Matching-type items are prescribed as set of terms, events, phrases, definitions etc., called the premises, which are written on the left-hand side, say **column I**.

Another set of name pictures, statements etc., called the responses, are placed

on the right-hand side under **column II**. Students are asked to match each item with the corresponding response, which is considered as one test item.

Relationship may be between a term and definition, object and its functions, inventor and inventions, author and work, dates and events, problems and solutions etc. If the number of responses are equal to the number of premises, it is termed perfect matching.

9.5.3 Rearrangement-Type Items

Examinees are required to re-arrange the randomly presented material into some specified order. Material may be presented in the form of a series of statements one after the other or responses maybe given of the multiple-choice type. Direction is to be provided whether the responses are to be rearranged by writing them in specified order; to serial them into particular order; or indicate the serial number of each response etc.

9.5.3.1 Types of Re-arrangement Items

- **Chronological Order**

Rewrite the serial number of the Indian Presidents listed below from past to present according to chronological order in the space provided.

1. A.P.J. Abdul Kalam 3. S.D. Sharma (4-2-3-1)
2. Giani Zail Singh 4. Rajendra Prasad

- **Functional Order**

Rearrange the following steps involved in the manufacture of food by plants in order of their occurrence, giving the serial number in the bracket provided against each.

1. Splitting of water (3)
2. Formation of starch (5)
3. Excitation of chlorophyll (1)
4. Evolution of oxygen (4)
5. Formation of A.T.P. (2)

9.5.4 Structured Questions

Concept

Such questions are rooted in a given stipulated situation, providing the needed introductory statement in the form of a passage, experimental data, table, or diagram, followed by a number of sub questions based on the subject matter.

Chart: Format of structured questions

- **Principles of Construction**

- (a) Same introductory paragraph or material is to be used for each question.
- (b) Introductory material should neither be inadequate nor have redundant matter.
- (c) Sub questions may be of short-answer or objective type. Usually the same form of question is used in one set.
- (d) Each sub question must demand reading of introductory paragraph for answering.
- (e) Each sub question must be independent and should not depend on knowledge of previous questions.
- (f) Each question should test different abilities as far as possible.
- (g) All questions must test high-order abilities – not simply recall.
- (h) Sub questions may be arranged according to abilities tested, difficulty level, sequence of events or concepts involved.
- (i) Such questions should be time effective by keeping limited number of questions.

9.5.5 Multiple-Choice Questions (MCQ)

The most potential and usable form of objective tests is the MCQ. These questions are either used exclusively as in some selection tests, or in combination with other forms of questions.

Exclusive use of MCQ is warranted in all such situations where 100% scoring objectivity, time constraint, computerisation of results, machine scoring, ranking, post examination statistical moderation and record of psychometric properties of items are considered the necessary conditions or requirements.

The multiple-choice items are based on response-directed stimulus, in which responses or options may be arranged in different ways. The choice of the correct answer among the given options can be made from the independent set of responses given for each item or from the same set of responses given for different items MCQ may be used exclusively to ensure complete objectivity in scoring.

9.5.6 Objective Test Items

9.5.6.1 Advantages of Objective Test

The objective tests have all the qualities of a good test, though all the abilities of the students cannot be measured by them.

1. **Validity:** Objective tests are generally made to measure the knowledge of the students. First, the questions asked pertain to the field, the knowledge of which has to be measured. Second, the number of questions is generally large which is spread out on the entire range of knowledge.
Third, the evaluation of these questions is objective. So these tests are valid.
2. **Reliability:** These tests are reliable. All the questions contained in them are clear and bear only one meaning, and their answers too are definite. These are very comprehensive.
3. **Objectivity:** The questions asked in these tests are clear and have a single meaning, their answers are also definite and the evaluator has not any liberty to mark them.
4. **Comprehensiveness:-** small questions are asked in these tests and the answers to these questions are given in one mark, number or word.
5. **Discriminative;** The questions in these tests are spread out on the whole course and are of several types. Some questions have to be answered using recall, some have to be answered by knowledge, and some questions have to be answered using logic and prudence; so the classification of the students done on their basis can be reliable.
6. **Practicability:** Making objective test questions is a difficult task. It takes time to construct so many questions. Marking them too takes time. So now in order to

save effort, only multiple-choice questions are constructed and their answers are marked on an answer-sheet which can be evaluated by computer. Thus, the construction, administration and evaluation of these tests have become practicable.

9.5.6.2 Limitations of Objective Test

Despite having all the merits of a good test, these tests are not devoid of some shortcomings.

1. **Measurement of Cognitive Aspect Only;** These tests help to measure the cognitive aspect of the students; these are unsuitable for the measurement of the conative and affective aspects.
2. **Measurement of Memory Power Only:** These tests generally examine the power of memory; the students have to hardly use the higher mental faculties such as logic and thinking.
3. **No Measurement of Language skill and Expression Power:** These tests do not help in the measurement of language skill and power of expression of the students, so we cannot rely on them for language tests. It is considered to be the biggest demerit of these tests.
4. **Difficulty in Construction of Questions:** According to some scholars, it is very difficult to construct the objective questions for these tests. They consider it a demerit of these tests. We are, however, of the view that these questions can be constructed easily by taking a little interest and care. It depends on interest and practice.
5. **Administrative Difficulty:** These tests are expensive and present difficulties in evaluation.
6. **Fluke Answers:** Some people opine that these tests can be answered in a fluke. It is true, but we have already invented a statistical method to control it, which is called negative marking.
7. **Use of Unfair Means:** It is often heard that the students can easily copy in these tests. In our view, this demerit has occurred due to inexperienced people. The fact is that if a student copy from a book or notebook, he cannot answer all questions in the prescribed time.

Check Your Progress-4

Note: (a) Answer the questions given below.

(b) Compare your answers with those given at the end of the lesson.

- (1) Scoring rules for objective test item are so _____ and _____.
- (2) Objective test item allow scorers to make subjective judgements.
(True/false)
- (3) Name two types of objective type tests?
- (4) Multiple choice type questions is a form of _____ type questions.
- (5) Objective test format can be classified into two categories (True/false).
- (6) An entire response is required in a _____ response format.
- (7) The construction of good objective test item requires more skills and effort.
(True/false)

9.6 LET US SUM UP

An instrument to transfer and implement educational objectives into a practice which engage participants in the learning process.

Evaluation tools:

- Diagnostic testing and remedial teaching
- Oral tests
- Quizzes
- Essay type tests
- Objective type tests

9.7 LESSON END EXERCISE

1. What are evaluation tools?
2. Explain the concept of oral tests?
3. Develop an objective type test (MCQ)?

9.8 SUGGESTED FURTHER READINGS

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9.9 ANSWERS TO CHECK YOUR PROGRESS

Check Your Progress-1

- (1) Assess
- (2) Detailed
- (3) located, analysis
- (4) identify
- (5) errors

Check Your Progress-2

1. Diagnostic test
2. True
3. Remedial-Teaching
4. diagnostic test
5. false
6. false
7. true
8. false

Check Your Progress-3

1. Assessment
2. Abilities
3. True
4. True
5. Language
6. Extended and restricted response
7. (i) Such tests induce good study habits in the pupils.
(ii) The guess work can be eliminated to large extent.

Check Your Progress-4

1. Exhaustive and specific
 2. False
 3. Recall type and recognition type questions
 4. Recognition
 5. True
 6. Constructed
 7. True
-

REFLECTION

Structure

- 10.1 Introduction
- 10.2 Objectives
- 10.3 Reflection of Light at Curved Surfaces
- 10.4 Spherical Mirrors
- 10.5 Representation of Images Formed By Spherical Mirrors Using Ray Diagrams
 - 10.5.1 Ray Diagrams for a Concave Mirror
 - 10.5.2 Ray Diagrams for a Convex Mirror
- 10.6 Let Us Sum Up
- 10.7 Lesson End Exercise
- 10.8 Suggested Further Readings
- 10.9 Answers to Check Your Progress

10.1 INTRODUCTION

Dear students, we see a variety of objects in the world around us. However, in a dark room we are unable to see anything. On lighting up the room, things become visible. What makes things visible? During the day, the sunlight helps us to see objects. An object reflects light that falls on it. This reflected light, when received by our eyes, enables us to see things. We are able to see through a transparent

medium as light is transmitted through it. Light is a form of energy, which includes the sensation of vision in our eyes and make us able to see various things present in our surrounding. There are a number of common wonderful phenomena associated with light such as image formation by mirrors, the twinkling of stars, the beautiful colours of a rainbow, bending of light by a medium and so on. A study of the properties of light helps us to explore them. By observing the common optical phenomena around us, we may conclude that light seems to travel in straight lines. The fact that a small source of light casts a sharp shadow of an opaque object points to this straight-line path of light, usually indicated as a ray of light. In this lesson, we shall study the phenomena of reflection of light using the straight-line propagation of light. This basic concept will help us in the study of some of the optical phenomena in nature.

10.2 OBJECTIVES

After going through this lesson, you shall be able to:

- explain the reflection of light at curved surfaces, and
- state how images are formed by spherical mirrors.

10.3 REFLECTION OF LIGHT AT CURVED SURFACES

A highly polished surface, such as a mirror, reflects most of the light falling on it. You are already familiar with the laws of reflection of light. The laws of reflection can be recalled as under:

- (i) The angle of incidence is equal to the angle of reflection, and
- (ii) The incident ray, the normal to the mirror at the point of incidence and the reflected ray, all lie in the same plane.

These laws of reflection are applicable to all types of reflecting surfaces including spherical surfaces. You are familiar with the formation of image by a plane mirror. Image formed by a plane mirror is always virtual and erect. The size of the image is equal to that of the object and is laterally inverted. The image formed is as far behind the mirror as the object is in front of it. Now let us study about the images formed by curved surfaces.