EVALUATION AND ASSESSMENT IN MATHEMATICS

ROLE OF ASSESSMENT IN MATHEMATICS

The main aim of assessment is to collect information of learner’s achievement and progress and provide direction for ongoing teaching and learning process. Assessment can be done through both formal and informal activities. Assessment in Mathematics refers to the process of identifying, gathering and interpreting information about learners’ mathematical learning. Assessment is the means, which deduces what learners know and what they do not. It suggests teachers, learners, parents, and policymakers something about what learners have learned and what more should be done in order to improve performances in Mathematics.

Assessment for learning: Assessment for learning occurs during the learning process. Information obtained by this type of assessment is used by the teachers to modify their teaching strategies, and learners use it to make changes in their learning strategies. This approach of assessment helps teachers to appraise the learners to monitor their learning; and guide the instruction at process and provide feedback helpful to learners.

Assessment as learning: Assessment as learning means an awareness of learners regarding how they learn and use that awareness to make necessary adaptations in their learning process.

Assessment of learning: Assessment of learning refers to a review process which occurs at the end a learning unit. It provides measures of achievement for the purpose of grading.

Construction of the Achievement Test

The purposes of classroom achievement tests are

- measure an individual's achievement of course objectives
- assess the group's performance
- evaluate the test and the items
- evaluate and improve instruction and the curriculum

Achievement test results should accurately measure individual differences or achievement at a certain pre-specified mastery level and should always foster learning. To accomplish these purposes, a test must be valid and reliable. Validity is addressed when a test plan is formulated to accurately represent the course content and depth of learning achieved in a course. Test results must be reliable or repeatable to be confident that a student's score is a true reflection of an examinee's achievement.
Comparison between objective and subjective tests:
A test consisting of, factual questions requiring extremely short answers that can be quickly, unambiguously scored by anyone with an answer key, thus, minimizing subjective judgments by both, the person taking the test and the person scoring it. On the other hand, a subjective test is evaluated by giving an opinion. It can be compared with an objective test, which has right or wrong answer and so can be marked objectively. Subjective tests are more challenging and expensive to prepare, administer and evaluate correctly, but they can be more valid,

- The techniques used in objective tests are multiple-choice items (MCI), True / false items, matching items, transformation sentences, re-arrangement items and fill the blanks or gap filling.
- On the other hand, the techniques used in subjective tests include: essay writing, composition writing, letter writing, reading aloud, completion type and answer these type questions.
- To answer an objective test, the testee has to select his answers from two, three, four or even more alternatives which has only one correct answer.
- Besides, to answer a subjective test, the testee has to plan and write his own answer by using his own words and expressions.
- Furthermore, objective tests need much time and effort to write the questions because the examiner has to provide the answers as well as the question so that objective test requires more careful preparations than other types of test. But in subjective test the examiner needs to write few questions without answers.
- In objective tests, it seems that kind is more reliable because it gives a stable scoring. But in subjective test, it seems, it is not reliable because it doesn't give a stable scoring.
- Objective tests encourage guessing and it is difficult to write simple to answer, easy to score, suit for a large number of testees, and this type of test can be scored by a machine.
- Besides, subjective test doesn't encourage guessing easy to write, difficult to score and suit for a small number of testee. This type of test can't be scored by a machine.

Evaluation through formal and informal methods:
Evaluation is defined as a process of collecting evidences of behavioral changes and judging the directions and extents of such changes. This means that evaluation is free neither from instructional objectives nor from the teaching learning.

Types of Evaluation:
Formative Evaluation: The goal of formative Evaluation is to monitor student learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning. More specifically, formative Evaluations:
- help students identify their strengths and weaknesses and target areas that need work
- help faculty recognize where students are struggling and address problems immediately
**Summative Evaluation:** The goal of summative Evaluation is to evaluate student learning at the end of an instructional unit by comparing it against some standard or benchmark. Summative Evaluations are often high stakes, which means that they have a high point value.

**Examples of summative Evaluations include:**
- a midterm exam
- a final project
- a paper
- a senior recita

**Observation:** Direct observation has been used as a way to assess mathematical skills since the establishment of formal classrooms, hence Because Mathematics is a subject that consists of step-by-step procedures, direct observation can be used in conjunction with rubrics. By this technique, we can observe the interest, skill, competency etc. It is a continuous process.

**Anecdotal record:** It is an observation method used frequently in the classrooms in which the teacher summarizes a single developmental incident after the event has occurred. A teacher records about what learners are learning, their academic performance, learning behaviour, their achievements and social interactions.

**Rating Scale:** Rating scales are extended form of checklists. In rating scales, we create standards criteria for evaluating a performance and each standard has a definite level of competence and we rate learners according to how well they perform on each standard as they complete the task.

**Assignments:** Assignments are used for both learning and evaluation. Evaluation of assignment is an important aspect. When an assignment is given, it must be based on the instructional objectives. The assignment should be evaluated keeping in view of those objectives and the extent to which objectives have been achieved.

**Project:** A project is a motivated problem, solution of which requires thought and collection of data and its completion results in the production of something of value to the learners. Project enables learners to conduct real inquiry in an interdisciplinary manner. It promotes problem-solving in Mathematics and connects it to real life application.