

Formative Assessment for Undergraduate Medical Students

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“Assessment” has various connotations, purposes and definitions. It is defined as “the process used by teachers and students to recognize and respond to student learning in order to enhance that learning, during the learning”.¹ It employs a variety of methods to collect, analyze and interpret information in order to evaluate, measure, and document the academic readiness, learning progress, and skill acquisition as a result of their educational experience.

Objectives of Assessment:

The objective of an assessment program is not limited to determination of whether a student has acquired enough knowledge and skills to be allowed to practice these independently. More importantly it provides this information which can be used to refine the educational program in order to improve subsequent learning and development of students. It also provides feedback to students, educators, parents, policy makers, and the public about the effectiveness of educational program

Types of Assessments:

There are various types of assessments described in literature but in health sciences educational program only two types are important, summative assessment and formative assessment. Summative assessment determines the extent to which a student has achieved curricular objectives. It is used to make pass/fail decisions and determine students' grades on predetermined criteria. In other words it is “assessment of learning”. Formative assessment is a continuous and systematic process of gathering information, providing feedback and applying corrective measures during an ongoing educational program. It aims at improving the students' learning process by pointing out there deficiencies in learning and suggesting how to improve their knowledge and appreciation of the standards that are expected from them. In other words it is “assessment for learning”. Formative assessment also helps the faculty in improving their instructional methods and programme directors in improving the programme

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to achieve objectives of the programme.

Types of Formative Assessment:

Formative assessment is again of two types; Formal or Planned and Informal or Interactive.¹ Formal or Planned formative assessment is planned in advance to elicit information on students' understanding of subject and skill learning using specific assessment tasks. It measures the extent to which the students have learnt what they were intended to learn. Informal or Interactive formative assessment, on the other hand, can be used to collect a variety of information. It includes information on students' ongoing understanding and recall, scope and depth of prior knowledge, conception and interest in learning the subject. This information can then be used to devise strategies to enhance students' learning. To make formative assessment useful teachers must be able to assess the gathered information for its significance, interpret it correctly and devise appropriate interventions.

Table I: Comparison of Formal and Informal Formative Assessment

Formal or Planned Assessment	Informal or Interactive Assessment
Parts of the process are eliciting, interpreting and acting	Parts of the process are noticing, recognizing and responding
Carried out on all students simultaneously	Carried out in small groups or individual students
Carried out at long time intervals	Carried out at short time intervals or even continuously
Helps students to get through the curriculum	Helps students in lifelong learning
Assesses mainly the subject learning	Assesses subject, personal and social learning as well as communication skills
Relies on teacher's professional knowledge	Relies on teacher's professional, social and cultural knowledge and communication skills

Purpose of Formative Assessment

Formative Assessment provides information not only about the progress in learning of students but also about the performance of teachers. It helps

students in appreciating the standards that are expected from them. A research review of 250 empirical studies on class-room based assessment studies showed that students' gains from formative assessment were "among the largest ever reported for educational interventions".² The basic purpose of formative assessment is to gather information about the students and faculty performance in order to improve the curriculum and its implementation. Formative assessment, both formal and informal, thus is a part of an ongoing cycle. It begins with either eliciting a response on a pre-designed task or noticing response during an ongoing task. It is followed by interpreting or recognizing the response and then acting on or responding to it. The corrected cycle starts again.

Formative assessment helps us in the following ways:

- 1) Students strengths and weaknesses are pin pointed.
- 2) Directions can be set for teaching and learning.
- 3) Motivates students to improve themselves apart from assessment driven motives.
- 4) Gives opportunity to explore the subject in a thoughtful and meaningful way.
- 5) Promotes holistic understanding of the subject by each student.
- 6) Promotes use of higher-order skills (critical thinking, problem solving, etc.) for the understanding of course content supporting a deep learning attitude.³
- 7) A variety of instructional methods can be used to address individual student's needs.⁴

Key Strategies for Formative Assessment

Dylan William has described five key strategies for Formative Assessment.⁵

1. Clarifying, sharing, and understanding learning intentions and criteria for success – getting the students to really understand what their classroom experience will be and how their success will be measured.
2. Engineering effective classroom discussions, activities, and learning tasks that elicit evidence of learning – developing effective classroom instructional strategies that allow for the measurement of success.
3. Providing feedback that moves learning forward – working with students to provide them the information they need to better understand problems and solutions.
4. Activating learners as instructional resources for one another – getting students involved with each other in discussions and working groups

can help improve student learning.

5. Activating learners as owners of their own learning – engaging the students in process of thinking about and assessing their own work.

Methods of conducting Formative Assessment

The beauty of formative assessment is that one is at liberty to employ any method, ranging from simple observation of the student during an ongoing learning activity to ask students to write reviews on given topics or perform a skill or even to design questions.

The purpose of the assessment items, tasks, or activities must be that they are windows into the students' cognitive processes. Assessments that allow students to show their thinking, and allow teachers to best elicit evidence about these cognitive processes, are where the emphasis should be.

The following is brief description of assessment methods used:⁶

1. Learning /Response Logs: Students maintain a log where they record their learning, and respond to a lesson regarding their understanding. The teacher then collect the logs at the end of the instruction to further reinforce the instruction as and if required. A specimen of such a log is shown in.
2. Practice Presentation: Students practice a presentation model with peer feedback. This will enhance their presentation skills and knowledge of subject matter. Rubrics for presentation should be provided beforehand.
3. Questions: Questions of higher order are asked with students like explain, justify, imagine or defend to challenge their depth of knowledge. The questions may take one of the several forms, e.g.
 - a. Quick questions during the instruction
 - b. Constructed long essay questions
 - c. Short Essay questions based on a scenario.
4. Self/Peer Assessment Quizzes: Students reflect on their learning by answering difficult questions.
5. Think-Pair-Share: The teacher presents a question. Students think for 20-30 seconds. And then share with their colleague. This may also take the form of "Brain Storming" on the question in a small group and after attaining a common understanding, sharing with the class.
6. Generating Questions: Students may be asked to generate questions at the end of an instructional activity. These questions can then be discussed

- either in the class or small groups.
7. Interacting with computer simulation, manikin or model: Students may be asked to perform tasks by interacting with computer simulation, manikin or even a simulated patients and record results. Rubrics may be prepared beforehand.
 8. One minute paper: The teacher says to sum up the important concept and jot it down. The work done can be discussed in the class.
 9. Completing performance based tasks: Rubrics may be prepared beforehand.
 10. Transfer and apply: Once core knowledge is given to the students, students are asked how they will apply it in different practical situations/scenarios.

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