

# Formative and Summative Assessment

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*Assessment* is the process of gathering data. More specifically, assessment is the ways instructors gather data about their teaching and their students' learning (Hanna & Dettmer, 2004). The data provide a picture of a range of activities using different forms of assessment such as: pre-tests, observations, and examinations. Once these data are gathered, you can then evaluate the student's performance. *Evaluation*, therefore, draws on one's judgment to determine the overall value of an outcome based on the assessment data. It is in the *decision-making* process then, where we design ways to improve the recognized weaknesses, gaps, or deficiencies.

The figure below represents the systematic process of assessment, evaluation, and decision-making. The results (data) of the assessment (examinations, observations, essays, self-reflections) are evaluated based on judgment of those data. What to do next—the decision making step, is based on the evaluation.



## **Types of Assessment**

There are three types of assessment: diagnostic, formative, and summative. Although there are three generally referred to simply as assessment, there are distinct differences between the three.

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### **1. Diagnostic Assessment**

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 (Just Science Now!, n.d.). Knowing students' strengths and weaknesses can help you better plan what to teach and how to teach it.

#### **Types of Diagnostic Assessments**

- 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)

### **2. Formative Assessment**

Formative assessment provides feedback and information during the instructional process, while learning is taking place, and while learning is occurring. Formative assessment measures student progress but it can also assess your own progress as an instructor. For example, when

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implementing a new activity in class, you can, through observation and/or surveying the students, determine whether or not the activity should be used again (or modified). A primary focus of formative assessment is to identify areas that may need improvement. These assessments typically are not graded and act as a gauge to students' learning progress and to determine teaching effectiveness (implementing appropriate methods and activities).

In another example, at the end of the third week of the semester, you can informally ask students questions which might be on a future exam to see if they truly understand the material. An exciting and efficient way to survey students' grasp of knowledge is through the use of clickers. Clickers are interactive devices which can be used to assess students' current knowledge on specific content. For example, after polling students you see that a large number of students did not correctly answer a question or seem confused about some particular content. At this point in the course you may need to go back and review that material or present it in such a way to make it more understandable to the students. This formative assessment has allowed you to "rethink" and then "re-deliver" that material to ensure students are on track. It is good practice to incorporate this type of assessment to "test" students' knowledge before expecting all of them to do well on an examination.

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#### **Types of Formative Assessment**

- Observations during in-class activities; of students non-verbal feedback during lecture
- Homework exercises as review for exams and class discussions)
- Reflections journals that are reviewed periodically during the semester
- Question and answer sessions, both formal—planned and informal—spontaneous
- Conferences between the instructor and student at various points in the semester
- In-class activities where students informally present their results
- Student feedback collected by periodically answering specific question about the instruction and their self-evaluation of performance and progress

### **3. Summative Assessment**

Summative assessment takes place after the learning has been completed and provides information and feedback that sums up the teaching and learning process. Typically, no more formal learning is taking place at this stage, other than incidental learning which might take place through the completion of projects and assignments.

Rubrics, often developed around a set of standards or expectations, can be used for summative assessment. Rubrics can be given to students before they begin working on a particular project so they know what is

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expected of them (precisely what they have to do) for each of the criteria. Rubrics also can help you to be more objective when deriving a final, summative grade by following the same criteria students used to complete the project.

High-stakes summative assessments typically are given to students at the end of a set point during or at the end of the semester to assess what has been learned and how well it was learned. Grades are usually an outcome of summative assessment: they indicate whether the student has an acceptable level of knowledge-gain—is the student able to effectively progress to the next part of the class? To the next course in the curriculum? To the next level of academic standing? See the section “Grading” for further information on grading and its affect on student achievement.

Summative assessment is more product-oriented and assesses the final product, whereas formative assessment focuses on the process toward completing the product. Once the project is completed, no further revisions can be made. If, however, students are allowed to make revisions, the assessment becomes formative, where students can take advantage of the opportunity to improve.

#### **Types of Summative Assessment**

- Examinations (major, high-stakes exams)
- Final examination (a truly summative assessment)
- Term papers (drafts submitted throughout the semester would be a formative assessment)
- Projects (project phases submitted at various completion points could be formatively assessed)
- Portfolios (could also be assessed during it’s development as a formative assessment)
- Performances
- Student evaluation of the course (teaching effectiveness)
- Instructor self-evaluation

#### **Summary**

Assessment measures if and how students are learning and if the teaching methods are effectively relaying the intended messages. Hanna and Dettmer (2004) suggest that you should strive to develop a range of assessments strategies that match all aspects of their instructional plans. Instead of trying to differentiate between formative and summative assessments it may be more beneficial to begin planning assessment strategies to match instructional goals and objectives at the beginning of the semester and implement them throughout the entire instructional experience. The selection of appropriate assessments should also match course and program objectives necessary for accreditation requirements.

**References**

Hanna, G. S., & Dettmer, P. A. (2004). *Assessment for effective teaching: Using context-adaptive planning*. Boston, MA: Pearson A&B.

Just Science Now! (n.d.). *Assessment-inquiry connection*.  
<http://www.justsciencenow.com/assessment/index.htm>