



# NATIONAL COMMISSION ON FORENSIC SCIENCE

**NIST**  
National Institute of  
Standards and Technology  
U.S. Department of Commerce

## Abstract

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### Proposed Topic

Assessment tools for a national forensic science curriculum

### Sponsoring Subcommittee

Training on Science and the Law

### Type of Work Product Proposed

Views Document

### Statement of the Issue

Assessment tools must be developed for all educational instruction to evaluate (1) the effectiveness of the education on the targeted audience and (2) whether the information provided was retained and used in actual practice long after the training ended.

### Background

The assessment of learning and teaching can be viewed as two complementary and overlapping activities that aim to benefit both the quality of a participant's learning and the professional development of the instructor. While assessing learning alone is not sufficient because the ultimate success of the participants is also dependent upon their motivation and commitment to learning, assessing only teaching behaviors and course activities is also not sufficient because qualities of the instructor may be appreciated by participants but not optimally helpful to their learning and growth in the knowledge of the subject. While almost all educational seminars require some form of feedback to enhance, reproduce, or update the program, actually capturing a true assessment for evaluating the success of a program is difficult at best.

#### *A. Formative vs Summative Assessments*

Throughout all forms of education, there are two basic forms to assess an instructor's performance: (1) formative assessments and (2) summative assessments. KIM BAILEY & CHRIS JAKICIC, COMMON FORMATIVE ASSESSMENT: A TOOLKIT FOR PROFESSIONAL LEARNING COMMUNITIES AT WORK 13–24 (Caroline Wise ed., 2012). Formative assessments refer to a wide variety of methods that instructors use to conduct in-process evaluations of a participant's comprehension, learning needs, and progress during a seminar. *Id.* Formative assessments help instructors identify concepts that participants are struggling to understand, skills they are having difficulty acquiring, or learning standards they have not yet achieved. *Id.* Formative assessments are commonly contrasted with summative assessments, which are used to evaluate a participant's learning progress and achievement at the conclusion of a specific instructional period (i.e., a final examination). *Id.* In other words, formative assessments are for learning, while summative assessments are of learning. *Id.*

Many educators and experts believe that formative assessment is an integral part of effective teaching. PAGE KEELEY, SCIENCE FORMATIVE ASSESSMENT: 75 PRACTICAL STRATEGIES FOR LINKING ASSESSMENT, INSTRUCTION, AND LEARNING 1–25 (Jessica Allan ed., 2nd ed. 2015). In

contrast with most summative assessments, which are deliberately set apart from instruction, formative assessments are integrated into the teaching and learning process. *Id.* For example, a formative-assessment technique could be as simple as an instructor asking a participant to raise their hands if they feel they have understood a newly introduced concept, or it could be as sophisticated as having a participant complete a self-assessment of their own understanding of the lesson that the instructor reviews and comments on. *Id.* While formative assessments help instructors identify learning needs and problems, in many cases the assessments also help participants develop a stronger understanding of their own strengths and weaknesses. *Id.* When participants know what they do well and what they need to work harder on, it can help them take greater responsibility over their own learning and progress. *Id.*

While the same assessment technique or process could, in theory, be used for either formative or summative purposes, many summative assessments are unsuitable for formative purposes because they do not provide useful feedback. KAY BURKE, *BALANCED ASSESSMENT: FROM FORMATIVE TO SUMMATIVE* 19–25 (Caroline Wise ed., 2010). For example, standardized test scores may not be available to instructors for months after the participants take the test (so the results cannot be used to modify lessons or teaching and better prepare future participants), or the assessments may not be specifically fine-grained enough to give instructors and participants the detailed information they need to improve. *Id.*

### ***B. Examples of Formative Assessments***

- Questions that the instructor poses to individual participants, and groups of participants, during the seminar to determine what specific concepts or skills they may be having trouble with. A wide variety of intentional questioning strategies may be employed, such as asking a participant to sum up the lesson in 25 words or less.
- Testing participants before, during, and after the program to see how much they retained throughout the seminar.
- Require participants to ask three questions to the instructor at the end of the seminar and then have the instructor give specific, detailed, and constructive feedback to the individual participants.
- What are known as “exit questions” which quickly collect a participant’s response to a question at the end of a seminar. Based on what the responses indicate, the instructor can then modify the next lesson to address concepts that participants have failed to comprehend or skills they may be struggling with. “Admit questions” are a similar strategy used at the beginning, or after a break during a seminar, to determine what a participant has retained before the seminar starts or after a break is over.
- Self-assessments that ask participants to think about their own learning process, to reflect on what they do well or struggle with specifically concerning the topic, and to articulate what they have learned or still need to learn to meet the expectations set out for the seminar.
- Peer assessments that allow participants to use one another as learning resources (i.e. a small group activity during the seminar).

### ***C. Examples of Summative Assessments***

- A final examination at the end of the seminar to be compared to some standard or benchmark (or, for example, what participants initially indicated as their understanding of the science). *Id.*

- A final project/paper that participants must complete and present to the rest of the participants to be compared with some standard or benchmark. *Id.*
- Some form of a standardized test that all seminars across the country must give to the participants at the end of the seminar to be compared to some standard or benchmark. *Id.*