E51 Multidimensional Model for Assessing Student Achievement

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After attending this presentation, attendees will be able to adapt a proposed multidimensional model for evaluating student achievement in forensic science higher education.

This presentation will impact the forensic science community by defining what successful student achievement encompasses. The assessment of student achievement demonstrates accountability and academic quality of a forensic science academic program to the forensic science community and public.

Complex tasks engage students in active learning; however, it is difficult to measure student progress with an objective exam. Students demonstrate their knowledge not as discreet items but rather across a continuum. Assessment strategies should incorporate situated judgments and contextual information to adequately evaluate the decisions made by students while performing complex tasks.

Currently, the primary tool utilized to assess student achievement in higher education forensic science programs is the Forensic Science Aptitude Test (FSAT) or an in-house comprehensive exam. A single standardized test does not accurately assess a student's ability to perform efficiently or effectively in a laboratory. This presentation will present the preliminary findings from a study directed at creating a multidimensional framework by which institutions can assess student achievement in forensic science education. Such a framework would provide a structure for forensic science programs to document student performance and demonstrate program quality and accountability to crime laboratories and the public.

Specific questions addressed in this study include: (1) How do forensic science education programs evaluate student achievement?; (2) How do disciplines other than forensic science evaluate student achievement?; (3) What knowledge, skills, and abilities are forensic science laboratory personnel expected to possess in an accredited laboratory?; (4) What standards/policies/best practices would best define successful student achievement in a forensic science undergraduate program?; and, (5) What standards/policies/best practices would best define successful student achievement in a forensic science graduate program?

The proposed framework was derived from literature assessing student achievement in higher education as well as from accreditation standards for forensic science and other academic disciplines such as nursing, medicine, and education. Accreditation standards for higher education institutions such as Council for Higher Education Accreditation (CHEA) and Middle States Commission on Higher Education (MSHEA) were also reviewed. Additionally, current standards utilized to assess student achievement by forensic science academic programs were reviewed to identify promising models. The practices identified in the various accreditation standards and promising practices were aligned with the International Organization for Standardization and the International Electrotechnical Commission (ISO/IEC) 17025 general requirements for the competence of testing and calibration laboratory standards.

Institution and discipline-specific accreditation standards incorporate several strategies for demonstrating student achievement including: (1) completion of degree coursework; (2) capstone experience or independent research projects, both with a written report; (3) completion of a comprehensive examination (in-house, FSAT, certification, licensure, or boards); and, (4) post-graduation employment or graduate school.

Literature on assessing student learning stresses that evaluation of student learning should occur at all levels and stages of the forensic science education process. Summative assessments, like the FSAT and comprehensive exams, provide one measure of a student's knowledge; however, formative assessments tend to have a greater impact on student knowledge and skills because of the reduced risk. Formative assessments, such as reflection and self-evaluation, allow students to explore both strengths and weaknesses. Most university faculty members have been given little formal training in how to develop formative assessments or measurable outcomes that can be assessed by multiple strategies.

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