B152 Aspects of Curriculum and Pedagogy in Forensic Science Programs

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After attending this presentation, attendees will be able to discuss the concepts underlying forensic science curriculum and pedagogy and make more informed decisions regarding their selection.

This presentation will impact the forensic community and/or humanity by demonstrating how delineation of some of the concepts under- lying the selection of curriculum and pedagogy will stimulate a more com- prehensive discussion of what subjects should be taught in forensic science educational and training programs, at various levels, and how they should be taught.

Much as the field of forensic science encompasses virtually all the sci- ences, so does teaching forensic science encompass all of the problems inherent in teaching science, mathematics, and the philosophy of science. Forensic science courses have become one of the most popular types of courses from middle school to graduate school. Teachers like the interest in science that the courses generate, even among students not planning on a forensic science career. However, detractors fear the creation of pseudo- scientists, of non-thinking technicians, and of unrealistic expectations for future employment. Accreditation initiatives now focus the concerns both for teachers and practitioners. These concerns seem to revolve around ped- agogy, curriculum, and instructor credentials. This presentation will deal with the first two topics as they, hopefully, constrain the instructor creden- tials to include both relevant education and varied experience.

Although an instructor's enthusiasm and a high profile topic go a long way towards enticing students to learn, they accomplish nothing without substance. The key questions thus become: "What is that substance?" and "How should it be taught?" The debate begins with the definition of forensic science. A superficial approach to "Application of science to the purposes of the law" leads to the idea that the forensic scientist is a passive tool of the attorney. A more professional approach, by contrast, is that the forensic scientist knows both science and the law and thus can, himself, intelligently apply science to a dispute under investigation. Learning to think like either an investigator or a scientist is a significant challenge. Learning to think like both is formidable indeed. Which learning goals are realistic and/or desirable, and what does it take to achieve them?

Subject matter in too many instances includes only forensic chemistry and DNA examinations, leaving both the use of the findings and the thought process of the more complex disciplines unexplored. This gen- erates a technician mentality that is contrary to the needs of the profession in the opinion of many professionals. What then should the curriculum include?

Fundamentally, there are three critical requirements of physical evi- dence – relevance, reliability, and authenticity. This triumvirate requires knowledge of logic and the law for relevance, of statistics and science for reliability, and of legal procedures for authenticity. Unfortunately, of the three, legal procedures are simplest and thus receive the most focus by those college instructors who have little or no forensic science experience and thus can teach little else. A comprehensive forensic science program includes examples of all of the fundamental examination types – identifi- cation vs. explanation, and classification vs. individuation vs. association (individualization and causation). Also, any forensic science education program, even a truncated one, should be grounded on the scientific method – logic, protocols, and statistical analysis – and on probability, the principle that underlies all three.

How should this range of subject matter be taught? Facts are easy to teach and test. Applying those facts via examination protocols is much harder due to the testing equipment required and to the time necessary to learn a skill. Even more difficult is learning to select and apply the appro- priate protocols for problem solving. It requires considerably more time and individual attention to teach a student to reason through a problem, empirically test a variety of hypotheses, and assign a probability to the results of each. The concept called "higher order learning" counters years of training students only to read and regurgitate and requires rethinking of teaching techniques by teachers and of learning techniques by students. But, it is absolutely mandatory for a professional discipline. As an example, how an error rate is determined via protocol development is a key concept required of the forensic science professional.

This session will present an overview of the pedagogical aspects of forensic science with justifications for teaching some of the more funda- mental topics and examples of how they could be approached.

Delineation of some of the concepts underlying the selection of cur- riculum and pedagogy will stimulate a more comprehensive discussion of what subjects should be taught in forensic science educational and training programs, at various levels, and how they should be taught.

Forensic Science Education, Pedagogy, Curriculum

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