



A8 The Implications of the National Research Council's Report – Strengthening Forensic Science in the United States: A Path Forward for Graduate Forensic Science Degree Programs

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After attending this presentation, attendees will understand the National Research Council's (NCR) recommendations for forensic

science education in the United States and the issues these recommendations raise for forensic science graduate degree programs.

This presentation will impact the forensic science community by making the forensic science community aware of the implications of the NRC report for graduate education in the forensic sciences and by suggesting ways in which the goals and objectives set forth in the NRC report might be met.

In February 2009, the National Research Council issued a report entitled, *Strengthening Forensic Science In The United States: A Path Forward*. This report included a number of recommendations for strengthening forensic science in the United States. It also reviewed the status of forensic science education programs in the United States and laid out a broad set of goals and objectives for these degree programs:

Forensic examiners must understand the principles, practices, and contexts of science, including the scientific method. Training should move away from reliance on the apprentice-like transmittal of practices to education at the college level and beyond that is based on scientifically valid principles. In addition to learning a particular methodology through a lengthy apprenticeship or workshop during which a trainee discerns and learns to copy the skills of an experienced examiner, the junior person should learn what to measure, the associated population statistics (if appropriate), biases and errors to avoid, other threats to the validity of the evidence, how to calculate the probability that a conclusion is valid, and how to document and report the analysis. Among many skills, forensic science education and training must provide the tools needed to understand the probabilities and the limits of decision making under conditions of uncertainty.

The report also laid out five goals or objectives for graduate forensic science degree programs. For graduate programs, the curriculum should, at a minimum, ensure that each student: (1) understand essential issues in the forensic science disciplines, including the reduction of error rates; (2) develop an understanding of the areas of knowledge that are essential to forensic science; (3) acquire skills and experience in the application of basic forensic science concepts and of specialty knowledge to problem solving; (4) be oriented in professional values, concepts and ethics; and (5) demonstrate integration of knowledge and skills through a capstone experience, such as a formal, objective tool (e.g., the American Board of Criminalistics Forensic Science Aptitude Test) or another comprehensive examination or a thesis and/or research project. The report makes some concrete curriculum suggestions:

Graduate students also should take a hands-on crime scene investigation class that covers investigation techniques and evidence association, including its examination, collection, and preservation. In addition, in-service work with a collaborating institution can provide significant practical training. In addition, student research and exposure to research is a critical component of an appropriate forensic science education.

The specific curriculum components advocated by the authors of the NRC report are easily implemented: indeed most graduate forensic science degree programs already have courses in crime scene investigation and required research courses. However, the overall approach of the NRC report to forensic science education raises a number of interesting issues that this presentation will explore:

- What is the best balance between graduate education and hands-on "apprentice" or "workshop" learning?
- Given the NRC report's focus on understanding of the scientific method, should admission to graduate forensic science degree programs be restricted to students having undergraduate degrees in natural science?
- For would-be forensic science graduate students who did not major in a natural science, how many undergraduate science courses (and in what subjects) should be required to insure an understanding of the scientific method?
- Should the scientific method and critical thinking be explicitly taught in graduate forensic science courses (in graduate seminar courses, perhaps)?
- Does the report's enumeration of minimum goals for graduate degree programs adequately address current problems in the forensic sciences? Or should graduate degree programs set even higher educational goals?



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- Given the fact that the overwhelming majority of forensic scientists will not be involved in research during their careers, is the emphasis on research misguided? Or is research a proxy for other pedagogical goals that might be better met through other teaching approaches?

"If forensic science education programs had sufficient rigor in science, law, and forensics, crime laboratories would have to spend less time and money for training, thereby shortening as well the apprenticeship time needed. Forensic science methods should be taught in the framework of common scientific practice. Even if a student graduates with a science degree, he or she often lacks education in issues that are critical to the functioning of crime laboratories, including quality assurance and control, ethics, and expert testimony."

"Measures should be taken to improve feedback from the laboratories to the schools to insure that the curriculum is not only comprehensive from an academic standpoint but also meets the practical requirements of operating laboratories."

NRC Report, Forensic Science Education, Scientific Method