



## Criminalistics Section – 2007

### **B189 Implementing a Criminalistics Based High School Curriculum — Theoretical and Practical Considerations**

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After attending this presentation, attendees will gain an appreciation for a new instructional philosophy in developing a one-year high school or college class curriculum in forensic science centered on the science of criminalistics. The advantages of pairing a criminalistics professional with a high school instructor to integrate criminalistics theory and practice into the limitations of high school science classes will be described. Attendees will also learn a different paradigm of laboratory practice, the use of laboratory-based skill set building with critical thinking and problem solving, consistent with criminalistics practice, as the cornerstone of instruction.

This presentation will impact the forensic community and/or humanity by showing current and future instructors the importance of pairing a criminalistics professional with a high school instructor to integrate criminalistics theory and practice into the limitations of high school science classes and an alternate model of laboratory practice to stimulate critical thinking and problem solving. In addition to the six foundational concepts of criminalistics in this curriculum are the various skill sets required to be a capable forensic scientist including strong scientific knowledge, understanding of law and its affects on forensic science, good communication, and ethics. By providing both the philosophy and the science of criminalistics with an emphasis on critical thinking, impressionable students may have a better understanding of forensic science as practiced, which can have an effect on their eventual role as jurors or on their initial understanding of their potential career choice.

Too often non-forensic instructors of science consider criminalistics and forensic science as simply an application of their science; while some consider it as edutainment, and rarely do they treat it as a separate science. Additionally, the concept of court and the legal system is foreign to most scientists as is good communication skills in the traditional science classroom.

In discussions with high school teachers and college instructors, who were teaching or wished to teach forensic science, it became clear that a lack of understanding of forensic science was present. For many, the CSI television model was reality and classes were based on broad categories described from the show or selected from various topics from the numerous books recently available. Some of the classes incorporated a diversity of non-profession related matter: memorization of forensic science trivia facts, inclusion of behavioral science/profiling, psychology of offenders, interview methods, homicide scene photo collections, or internet searching of notable crimes. Some classes have included only a few in-the-laboratory science experiments.

One high school instructor<sup>1</sup> teamed with a criminalist to develop a one-year forensic science curriculum. They focused on the science commonly practiced in the crime lab, keeping in mind the limitations of the high school science classroom. The curriculum was developed at the level of understanding of the college bound high school science student.

The criminalist developed the course concepts, skill set building laboratories, and many of the experiments, while the high school instructor taught the concepts and altered the skill set building and laboratories to suit the limitations of the high school science equipment, and collaborated in creating realistic assessments for the students. Constant feedback on the efficacy of the concepts and problems with the laboratories for the students resulted in immediate revisions of the content.

Since no one argues that having fundamental knowledge of the various natural sciences, such as physics, chemistry, and biology, is an essential requirement to be successful in the crime lab or the forensic science classroom, chemistry and biology classes were required before admission to the forensic science class. The goal was to show applicability of their fundamental knowledge to solving analytical problems, not to teach basic science concepts.

The curriculum incorporates and emphasizes the six foundational concepts of criminalistics: observation, documentation, collection, analysis, conclusion/interpretation, and communication. The class focus is on science used in the crime lab (crime scene investigation, various types of impression evidence, trace evidence, DNA, etc.) and not on the specialized areas of forensic science.

The first night's homework assignment is reading a portion of a chapter in a fictional detective story wherein a generalized description of crime scene approach is given. Observation, documentation, and communication being primary concepts in science and criminalistics, the students are teamed up and asked to process a crime scene on the second day. On the third day the students learn of the scene items they missed, their lack of documentation, and the lack of communication among the team members. This immediate immersion is to drive home several points: 1) observation, documentation, and communication are critical in forensic science, 2) crime scene processing is not what they understand it to be, 3) they don't know what they are doing yet and the class will be much harder than they thought, and 4) every reading assignment has not only theory but a practical application associated. The scene results are used as a baseline assessment of progress for the rest of the year. This first scene is not graded, but used as a learning opportunity. All first module reading and laboratories are designed to emphasize students building their observational skills, learning proper documentation, and improving communication abilities orally and in writing. These skills will not only be useful for the rest of this class, but all of their future science classes.



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In the next module, students learn of the ethics, philosophy, and science of criminalistics as part of an introduction to forensic science and criminalistics. The students are taught that criminalistics is the science of individualization.<sup>2</sup> While analysis in criminalistics often results in identification, as it does in other sciences, the ultimate goal of criminalistics is in individualizing an item of evidence to a person, place, or thing (the exemplars). This latter type of analysis differentiates criminalistics from other sciences.

Rather than providing students with a cookbook format to follow to complete a laboratory, the students are taught to build a certain task or skill. At the end of the laboratory, they are provided with a scenario and an unknown, which requires using their newly acquired skill set sometimes in a new way. Additionally, the solution may include utilizing any previously learned skill set to solve the problem. Critical thinking and problem solving are systematized into the curriculum. Information in the scenario must be carefully assessed to determine if it is consistent with the evidence or in order to make a conclusion or an interpretation. This integration of realistic criminalistics into the classroom benefits the student by requiring thought at nearly every step of the process. A written report and oral presentation in the form of testimony are required for several assessments during each semester and the final.

Before entering into the remaining traditional criminalistics topics, courtroom procedure and legal issues are presented to the students. In addition to laboratory skill building in this module, students are required to make oral presentations of their legal issues research project in front of the class.

By teaming the forensic scientist with the high school or college instructor, students benefit by the practical and realistic laboratories that are developed. Using the new paradigm for laboratory practice facilitates knowledge with critical thinking and problem solving. Emphasizing the six foundational concepts of criminalistics improves the students' abilities in each of these areas for forensic science and will further help the student in any future science class. Lastly, the emphasis on critical thinking and problem solving in the curriculum provides some students with the realization that forensic science may not be their career choice after all.

### References:

- <sup>1</sup> Rogers, S., Cerritos High School, Cerritos, California
- <sup>2</sup> Kirk, P., "The ontogeny of criminalistics." *Journal of Criminal Law, Criminology, and Police Science*. 54, 235-238, 1963

**Forensic Science Education, High School/College, Criminalistics Curriculum**