



E5 No Lab, No Problem! Practical Active Learning Ideas for a Forensic DNA Course

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Learning Overview: The goal of this presentation is to provide attendees with practical ideas for incorporating active learning into a forensic DNA course.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by highlighting the benefits of active learning in the classroom, specifically the forensic science classroom. This presentation will dispel the myth that active learning in science can only be done through wet laboratory exercises. This presentation will emphasize that active learning in forensic science is not only a benefit, but it is essential for planting the seeds of success for our future forensic scientists.

This presentation will acquaint attendees with practical ideas for incorporating active learning into a forensic DNA course. These ideas can be modified for both undergraduate and graduate courses. Current education literature supports the active learning pedagogical technique, which is a technique that encourages students to take ownership of their learning through hands-on, interactive, and problem-based learning done both outside and inside the classroom. Theoretically, most instructors would agree that this type of learning is more beneficial for students in comparison to traditional lecture-style teaching; however, the problem lies in trying to figure out how to practically implement this in the classroom, especially when it comes to science courses.

In most science courses, active learning is typically done in the form of wet laboratory exercises. So what happens when the course does not have an associated laboratory? How can instructors implement active learning in science without one? These are questions many instructors struggle to answer. With much time spent already on course design and implementation, it can be difficult to find additional time to redesign a course to properly implement these active learning techniques.

The George Mason University Forensic Science Program aims to give students hands-on and interactive experiences in their forensic science courses both inside and outside traditional laboratory settings. Two of those courses are the undergraduate *Forensic DNA Sciences* course and the graduate *Survey of Forensic Chemistry, Biology, and DNA* course. Neither of these courses, at present, have a formal laboratory component; therefore, a mock case was added to these courses, which gives the students the experience of working a forensic DNA case from the moment it is received in the laboratory through the Combined DNA Index System (CODIS) upload. Student Assessment of Learning Gain (SALG) surveys were administered in both the fall and the spring semesters to evaluate the students' experiences with the mock case and how the active learning exercises impacted their experience in the course.

To aid in alleviating the difficulties many instructors face when attempting to implement active learning, attendees will be offered numerous examples that can be used in their own courses as well as a detailed explanation of the mock case exercises used in the forensic DNA courses presented.

Education, Active Learning, Forensic DNA