

Operation Forensics

Students became very interested in the topic of forensic science. All of the activities were completed with great enthusiasm. Comments from parents were very positive. Students seemed to understand the material very well and very quickly. It was a great way to teach the genetics of blood types.

Curriculum/State Standard

WV State Instructional Goals and Objective: 9.6, 9.18, 9.23, 9.100, which state: Students will analyze and explain the fundamental principles of genetics and experience hands-on activities related to occupational opportunities in science.

Overview

In this project, students were exposed to the basics of forensic science in an active, hands-on situation. Students had to use the same techniques actual crime scene technicians and forensic scientists use to solve a mock murder mystery at school. At the end, it was the scientific evidence that found the murderer.

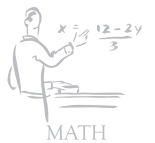
Objectives

- Student will become aware of opportunities in forensic science as possible career options and will be made aware of the forensic program of study at West Virginia University, located in Morgantown WV.
- Students will carry out forensic techniques which emphasize the goals and objectives of the ninth grade science curriculum of West Virginia, focusing on genetic principles. Specific activities that relate to these goals are DNA analysis and blood typing analysis.
- Students will learn how to perform these clinical tests and apply them to the investigation.

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9

GRADE LEVEL



Misc
MISCELLANEOUS



2

WEEKS

\$430

TOTAL BUDGET

“Operation Forensics” project continued...

Materials

Simulated blood typing materials: these can be obtained from WARD's Biologicals. I have had success with this supplier in the past and have obtained the best results using this type.

DNA restriction digests: I use the pre-digested Lambda DNA cut with Hind III and EcoR I and a combination of the two. The specific type from WARD's does not require refrigeration and is stable for some time. In order to complete the DNA analysis, TBE and Agarose gels are also needed as well as hot plates, beakers, heat gloves and distilled water to prepare the agarose. Other supplies needed include horizontal gel electrophoresis equipment, micropipettes for sample delivery, microcentrifuge tubes for sample preparation. DNA stain will be needed to visualize the results. Fingerprint analysis materials will also be needed, which includes Carbon Black dusting powder, tape, slides, brushes. Hair analysis materials will be needed, which includes hair samples for analysis, clear fingernail polish, and microscope slides. I recommend purchasing a kit for each of these activities in order to get the background material and procedures.

Readiness Activity

Before beginning the unit, students must be given some background information on forensic science and crime scene processing. This was handled through lecture presentation of topics including crime scene preservation, evidence collection, and chain of custody.

Strategies/Activities

Set up of crime scene and development of scenario. This will take some time. All of the fictitious information must be prepared in advance. You will still need to come up with other information as students ask questions.

Crime scene observation. Students are permitted to visit the crime scene, photograph, sketch, and collect evidence.

Students are to obtain clues from faculty who have agreed to participate. The clues are in the form of pre-printed cards.

Students are then to complete one of the following activities each day and analyze that form of evidence: fingerprinting; hair and fiber analysis; blood typing analysis; DNA analysis.

After students have completed these activities, they are to complete their portfolios and submit all lab write-ups and arguments using the scientific evidence to back them up.

Culminating Activity

Students were given the results of their DNA analysis and had to use this new evidence in conjunction with prior discoveries to form an argument for their belief as to who the murderer was. Students then had to defend their conclusion in an oral discussion.

Evaluation

Students were evaluated primarily on their forensic notebook. This included all lab write-ups, sketches, and testimonials. Students were also given a test on the material at the end of the unit.