Anthropology Lab

Target audience 9-12

Background: Ask students to list some types of physical evidence that might be found at a crime scene that would help to solve a crime. Help them understand that fingerprints, hair samples, fibers from fabric, the remains of soil, blood and bone(s) are all examples of physical evidence. Using the tools of science, trained professionals can analyze these samples to learn more about the person or persons who may have left evidence behind. Ask students what information might be obtained from each type of physical evidence. For example, by analyzing fingerprints, professionals can identify the type of fingerprint and match it to a person who has committed a crime in the past and has fingerprints on file. Hair and fiber samples can be looked at under a microscope, revealing if it is human or animal or even natural hair. Soil samples can be analyzed to determine whether the person had been nearby or in a different environment before being present at a crime scene.

Forensic Anthropology is a subset of Physical Anthropology. Forensic anthropologists specialize in the human skeleton. Physical or forensic anthropology concerns human identification when traditional means of identification is not possible. Often, a pathologist who normally focuses on organs and soft tissues may need bones examined to find the answer to a question. Forensic anthropologists examine skeletal remains to provide age, race, sex, and height of the skeleton. Comparisons to anatomical landmarks can be made using X-rays of known individuals. To determine the manner of death, analyzation of fracture patterns enable a forensic anthropologist to reconstruct a trauma. Scenarios requiring the skill of a forensic anthropologist could include a skeleton that had been burned, decomposed, mummified or dismembered

Anthropological Analysis includes the following questions:
  a. Is it bone?
  b. Is it human?
  c. What are the Minimum Number of Individuals (MNI), e.g. count the number of skulls?
  d. What is the Post Mortem Interval (PMI) time since death?
  e. What is the biological profile e.g. Sex, age, ancestry, stature?
  f. What individualization can be found e.g. Peculiar, handedness, weight, pathologies, trauma?

Knowledge and skills
  • Students should know the basic anatomy of the human body
  • Students should know the importance of details when gathering evidence in forensic science

Fundamental Understanding:
  • Understand the relationship of anthropology to forensic science.
  • Understand the use of the scientific method to solve crimes.

• Understand the respect given to deceased persons when handling bones

Essential Question
What characteristics of bones can be used to determine the sex, age and size of different people?

Purpose: To learn some basic characteristics of male and female skulls and pelvis in order to be able to determine the identity of the deceased.

Materials:
1. male and female skulls
2. male and female pelvis
3. Reference pictures worksheets from Carolina Biological Supply company http://www.carolina.com/anthropology/index.asp
4. calipers and protractor to measure some angles within the bones

Procedure:
1. Determine the sex of an individual skull by referring to the reference sheets.
2. Determine the sex of an individual pelvis by referring to the reference sheets.

Questions:
1. How would you distinguish a male skull from a female skull?
2. How would you distinguish a male pelvis from a female pelvis?
3. Based on what you learned during the lesson, identify the different types of evidence investigators could look for at a crime scene.
4. How is the evidence gathered and stored? What is "Chain of Custody"?
5. What do investigators do to ensure that the crime scene does not get contaminated?
6. How can a biologist, a chemist, and/or a physicist help at a crime scene? What types of evidence would they analyze?
7. What skills does each type of scientist bring to forensic science?
8. The technology currently used by forensic scientists is DNA testing. What are the advantages of DNA testing? Are there any disadvantages?
9. What tools does the Federal Bureau of Investigation (FBI) use when investigating a crime?
10. How does the FBI synthesize the data it collects and analyze it in order to solve a crime?
11. How do you think detectives solved crimes 100 years ago?
12. What tools did they have available back then?
13. Do you think they were able to solve the majority of crimes correctly?
14. What personality traits do you think a detective needs to have?
15. What skills help make detectives successful at their work?