

Forensic Detectives: Archaeology at Work

Grade Level: 6-8

Subject: Forensics

Duration: Four class periods

Objectives

Students will

- discuss the definition of archaeology and its applications;
- compare two archaeological investigations; and
- write mystery about the archaeological discovery of a body.

Materials

- Paper and pencil

Procedures

1. After watching the program *Forensic Detectives: Archaeology at Work*, ask students the following questions: What is archaeology? (*The study of material remains of past activities.*) How does archaeology teach us about ancient cultures? (*Artifacts, or recovered objects, can show us how people lived.*) In addition to ancient cultures, what else do archaeologists study? (*Events in the recent past, such as crimes.*)
2. Tell students that archaeologists are like detectives. They search for evidence and analyze clues to reach a conclusion. Archaeologists often uncover evidence during digs, or excavations. Ask students to compare two digs featured in the program: the Chiribaya in Peru and the bones in Barrington, Illinois. What did these digs have in common? (*They uncovered people who have died.*) What did archeologists want to know about the Chiribaya mummies? (*Details about the ancient Chiribaya culture*) What were the investigators in Illinois looking for? (*The identity of the body, the cause of death, and if a murder, who committed it.*)
3. Divide the class into two groups. Have one group focus on the Chiribaya and the other focus on the investigation in Illinois. Ask each group to describe the evidence and what each piece revealed. Have them record their answers in a chart. The charts below provide possible answers. For younger students, you could provide the evidence and have them complete the second column.

Chiribaya Mummies

Evidence	What It Reveals
Wool clothing	The Chiribaya used domesticated animals.
Decorated pots, beautiful jewelry, ornaments	They were craftsman, and they worked with gold and other metals.
Some bodies carefully preserved and buried with food, pots, and other objects	They believed in an afterlife.
Food offerings of corn, potatoes, peppers, and grains	These were typical foods.
A mummy buried with coca leaves inside the chest cavity	Artificially prepared body; must have been an important person.
Coca leaves' age determined by carbon 14	Death took place between 1350 and 1450.

Skeleton in Illinois

Evidence	What It Reveals
No zippers, elastic, or other objects in grave	Body buried without clothes
Body carefully laid out	Buried by someone who took care
Notch in the hipbone; larger forehead on skull	Male
Length of leg bones (femur and tibia)	Body about 1.5 meters tall
Gaps between the ends of long bones	An adolescent
Rust-colored stain (dried blood) on the right femur, which had started to heal	Old injury on right leg at the time of death
DNA from teeth	Related to the suspect and his ex-wife
Hospital record	The missing person believed to be the skeleton in an accident 6 months before disappearing.

4. Have each group share their charts with the class and fill in any missing pieces of evidence.
5. Ask students to describe the tools and technology used and the experts consulted in both investigations. (*The archaeologists used shovels, spades, brushes, X-rays, endoscope, and carbon-dating; they consulted with an expert on Chiribaya culture. The investigators in Illinois used hand shovels, rubber gloves, spades, newspaper archives, DNA analysis, and hospital records; they consulted forensic anthropologists.*)
6. Challenge students to write a brief mystery about the archaeological discovery of a body. They can write about a mummy from an ancient culture or a person from the recent past. Their stories should describe at least five pieces of evidence, including where they were found and what each object revealed and the resources used (tools experts consulted). Stories should be no longer than two pages.

Evaluation

Use the following three-point rubric to evaluate students' work during this lesson.

- **Three points:** Students were active in class discussions; recalled several pieces of evidence and what each revealed; wrote a creative mystery that included at least five pieces of evidence and what each revealed; clearly described resources used.
- **Two points:** Students participated in class discussions; recalled a few pieces of evidence and what each revealed; wrote a satisfactory mystery that included four or five pieces of evidence and what each revealed; adequately described at least one resource used.
- **One point:** Students did not participate in class discussions; recalled few or no pieces of evidence and what each revealed; wrote an incomplete mystery that included three or fewer pieces of evidence and did not explain what each revealed; did not include resources or provided unclear descriptions of how they were used.

Vocabulary

archaeology

Definition: the study of material evidence of past human life and culture

Context: The field of archaeology helps piece together information about the past by examining bones and artifacts.

evidence

Definition: an object or information used to reach a conclusion

Context: Examples of evidence from a crime scene include fingerprints and hair, blood, or fiber samples.

excavation

Definition: the process of digging a hole or cavity for the purpose of locating and removing artifacts from an archaeological site

Context: Archaeologists often use hand shovels, spades, brushes, and dental picks in the excavation of burial sites.

forensic archaeology

Definition: the use of techniques of conventional archaeology to uncover physical evidence from a crime scene

Context: People working in the field of forensic archaeology may analyze bones and teeth to determine a crime victim's age, sex, and cause of death.

forensic science

Definition: the study of evidence discovered at a crime scene and used in a court of law

Context: Forensic science is used to investigate details of a crime, such as the identity of a victim or suspect or the time the crime took place.

Academic Standards

The National Academy of Sciences provides guidelines for teaching science and a coherent vision of what it means to be scientifically literate for students in grades K–12. To view the standards, visit this Web site:

<http://books.nap.edu/html/nses/html/overview.html#content>.

This lesson plan addresses the following national standards:

- Science as Inquiry: Understandings about scientific inquiry
- Physical Science: Properties and changes of properties in matter
- Science in Personal and Social Perspectives: Science and technology in society
- History and Nature of Science: Science as a human endeavor

Credit

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