

Using Archaeology to Solve Mysteries

Lesson Plan

Grade Level: 6-8

Curriculum Focus: Scientific Inquiry

Lesson Duration: Four class periods

Student Objectives

- Discuss the definition of archaeology and its applications.
- Compare two archaeological investigations.
- Write a mystery about the archaeological discovery of a body.

Materials

- Video on *unitedstreaming: Forensic Detectives: Archaeology at Work*

Search for this video by using the video title (or a portion of it) as the keyword.

Selected clips that support this lesson plan:

- Mummies: Messengers from the Past
 - Studying Chirabaya Skeletal Remains
 - Mysterious Bones Uncovered
 - Interpreting the Remains of an Uncovered Skeleton
 - Bones Lead to Further Investigation
 - Matching DNA
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- Paper and pencil

Procedures

1. After watching *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	Old injury on right leg at the time of

Evidence	What It Reveals
right femur, which had started to heal	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.

- Have the groups share their charts with the class and fill in any missing pieces of evidence.
- 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.)
- 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.
- Have students choose a partner. Ask them to share their report with their partner and answer any questions. Then have each student summarize their partner's report for the class, including at least three interesting facts.

Assessment

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

- 3 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.
- 2 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.
- 1 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 conventional archaeology techniques 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

National Academy of Sciences

The National Science Education Standards provide guidelines for teaching science as well as a coherent vision of what it means to be scientifically literate for students in grades K-12. To view the standards, visit <http://books.nap.edu>.

This lesson plan addresses the following science 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

Mid-continent Research for Education and Learning (McREL)

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit <http://www.mcrel.org/>.

This lesson plan addresses the following national standards:

- Science – Nature of Science: Understands the nature of scientific inquiry
 - Language Arts – Viewing: Uses viewing skills and strategies to understand and interpret visual media; Writing: Uses the general skills and strategies of the writing process, Gathers and uses information for research purposes; Uses reading skills and strategies to understand and interpret a variety of informational texts
 - Technology – Understands the nature and uses of different forms of technology
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Support Materials

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>