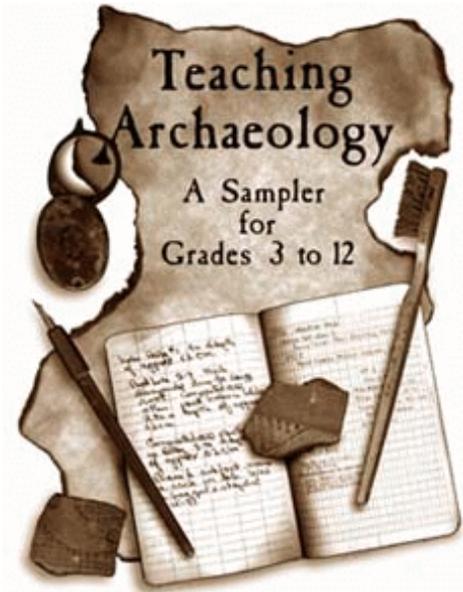


Teaching Archaeology



*Produced and distributed by
Society for American Archaeology
Public Education Committee*

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A Sampler for Grades 3 to 12

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Bloom, Benjamin. *Taxonomy of Educational Objectives, Handbook One: The Cognitive Domains*. New York: David McKay, 1956.

Butler, Kathleen. *Learning and Teaching Style in Theory and Practice*. Columbia, Conn.: The Learner's Dimension, 1984.

"Avery Island: Archaeology and Geology in Louisiana"

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Figures 2 & 3 from:

Gagliano, S.M. *An Archaeological Survey of Avery Island*. Prepared for Avery Island Inc., 1964.

Petroglyphs

From *Intrigue of the Past*.

"Archaeology: A Conservation Issue"

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Introduction



Since 1990, the Public Education Committee of the Society for American Archaeology has worked diligently to promote archaeology education at the precollegiate level. Our efforts have taken many forms: from teacher workshops and outreach programs in schools to lectures, exhibits, and publications—all aimed at building a network of people and an array of materials to enhance the educational process. We also have worked with the archaeological community to broaden its participation in local and national programs for integrating archaeological education into the classroom.

We often receive requests for teaching resources, background information, and lessons to help educators share archaeology with their students. In response, the Committee has assembled this booklet, which describes the benefits of using archaeology in instruction and offers a sample of broad-based, teacher-tested lesson plans.

We hope that you will find this workbook to be useful. The narratives were written by educators who are familiar with the challenge and excitement of using archaeology as a teaching strategy. The lesson plans were taken from publications that are regarded as being in the forefront of precollegiate archaeology education. It is important to note that most of the lesson ideas have a regional focus; however, educators should not dismiss their usability since the basic concepts can be adapted to local sites or circumstances.

Members of the Public Education Committee are eager to help teachers teach the meaning and the methods of archaeology. We invite you to explore this workbook and to venture further into the educational possibilities which the discipline has to offer.

Archaeology in the Classroom

What is archaeology?

Archaeology is



the scientific study of past human culture, technology, and behavior based on the analysis of remains that people have left behind. Archaeologists propose research questions to learn how specific ways of life developed and how they changed over time.



a subdivision of *anthropology*, a discipline which examines human development and behavior from four viewpoints. *Cultural anthropologists* study present cultures. *Physical anthropologists* study physical development and evolution. *Linguistic anthropologists* study the development and evolution of languages. *Archaeologists* study the material remains of cultures, including written records, artifacts, structures, trash dumps, soil stains, or other evidence of human behavior.



a multicultural discipline that promotes respect for present and past human populations.



a way of preserving our shared human heritage by providing individuals with perspectives on their own time and place in human history.



the study of the nonrenewable and fragile remains of past cultures, instilling awareness for the need to preserve and protect archaeological sites.

Why should archaeology be included in the school curricula?

Because archaeologists would like to



share what they have learned about people who lived in the past.



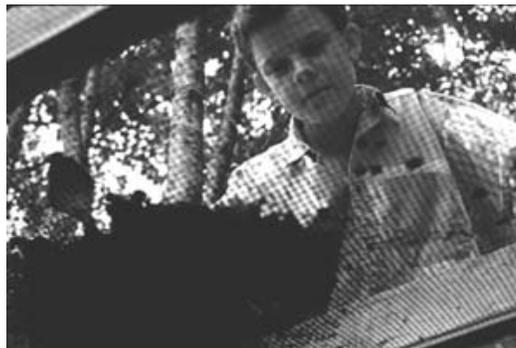
increase appreciation and respect for all cultures.



improve awareness of archaeological methods and issues.



promote stewardship of archaeological sites.



How do teachers benefit?

Teachers who include archaeology in their curricula discover that it is

-  a way to teach critical thinking skills.
-  holistic and interdisciplinary.
-  conducive to small group and cooperative learning.
-  culturally aware and culturally sensitive.
-  a basis for understanding multicultural perspectives.
-  a tool for studying the consequences of human behavior and decision making.

How do students benefit?

For students, archaeology is

-  an adventure that provides rich opportunities in all areas of learning.
-  a means of understanding our common heritage, who we are as human beings, and how we came to be the way we are today.
-  a mystery-laden experience that requires imagination, creativity, and logic.
-  a way to develop informed, thoughtful, and responsible behavior toward all cultural resources, which are nonrenewable and irreplaceable.

Sample Lessons

Scientific Methods in Archaeology

Archaeology gives students the opportunity to apply scientific methods to real situations and to hone critical thinking skills.

Archaeologists apply scientific methods by formulating plans to gather and analyze data. This information helps them to test hypotheses about the people they are studying. Research also includes analyzing the objects people made or used (artifacts) and the locations in which human activity took place (sites). For example, if archaeologists find corn at a site, they might hypothesize that the former residents were farmers, and test their hypothesis by analyzing soil samples or noting the presence or absence of farming implements. Researchers also engage in "experimental archaeology," the replication of past practices using modern materials, such as making clay pots using the coil method to learn about ceramic technology.

The lesson, "What Ought to Rot," shows how archaeologists use scientific methods. Through this activity, students learn that some evidence from past cultures survives over time, and some does not, thus influencing the conclusions that researchers can draw.

What Ought to Rot

Prepared by Nan McNutt

Overview

Every archaeological site is affected by conditions such as soils and climate. Some sites are found in hot, dry deserts; some in frozen tundra; some under water; some in caves; some in soils that drain well or in wet clays. Wet conditions present an interesting situation in which bacteria that decompose vegetable matter are sealed off from oxygen. Artifacts buried in wet environments are "preserved" until exposed to air. If not properly treated with wax or similar consolidants, they immediately begin to decompose.



Objectives

This experiment will give students firsthand knowledge about what happens to vegetable matter under different conditions. It also will reinforce the scientific processes used in any science.

Age Level

Grades 6 - 8, or gifted 4 - 5

Time Required

This activity will cover a month of observation for at least fifteen minutes once a week. Plan one period for an introduction and one for a conclusion.

Materials Required

30 clear plastic cups (8-ounce)
 30 pieces of local fruit (berries or fruit from the store)
 water
 plastic wrap
 a freezer or refrigerator
 pottery clay (enough to individually wrap six pieces of fruit)
 lamp
 masking tape
 pea gravel (7 1/2 cups)
 rubber bands
 worksheet: Observation Worksheet

Skills Developed

hypothesis, observation, recording, testing/analyzing, drawing conclusions

Vocabulary

constant: a factor in an experiment that is not manipulated

decompose: to break down; to rot

inorganic: materials that have never been alive

organic: materials that were or are alive

oxidation: the combining of a substance with oxygen

variable: a factor in an experiment that is manipulated

Preparation

This activity is designed to use the scientific method. Hypothesis, observation, recording, testing/analysis, and drawing conclusions are some of the basics of experimentation, and should be stressed throughout the activity.

Divide the class into five groups. Set up each of the work stations needed to simulate the site conditions: freezer, lamp, and cool and warm places in the room.

This experiment simulates what happens to materials on an archaeological site, but do not tell the students until they give their results. Make enough copies of the *Observation Worksheet* for each student.

CONDITION	RESULT
1. Frozen (Arctic site)	Fruit remains the same
2. Dry (desert cave site with extremely little moisture present)	Fruit shrivels up
3. Humid (typical Northwest Coast site, or anyplace with a lot of moisture)	Fruit rots (smells are terrible)
4. Under water site (a site that is submerged in water)	Fruit rots
5. Wet clay (a site that has been covered with mud and always remained wet)	Fruit remains almost the same

Activities

Activity I: Observation of Sites

Give each group five cups. Have the students in each group set up the cups and label them with masking tape as outlined below.

Cup 1 (Condition 1 - Frozen)

Put the fruit in the cup, surrounded by gravel, but so the fruit can be seen through the cup. Fill the cup with water and place the cup in a freezer. Label the cup "frozen."

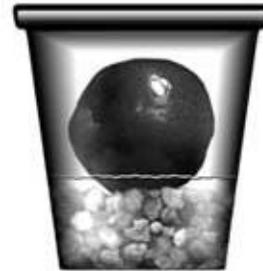


Cup 2 (Condition 2 - Dry)

Fill the bottom of the cup with 4 cm of gravel and carefully place the fruit on it or into the gravel, but so the fruit can be seen easily. Place in a hot, dry (under lamp) location. Label the cup "dry."

Cup 3 (Condition 3 - Humid)

Fill the bottom of the cup with 4 cm of gravel and place the fruit carefully on top of it. Add water until it just touches the fruit. Seal the cup with plastic wrap and rubber bands. Be sure the fruit can be seen from the outside. Place the cup in a room temperature location. Label the cup "humid."



Cup 4 (Condition 4 - Under water)

Same as Cup 1, but stored in a cool place (not a freezer). Label the cup "under water."

Cup 5 (Condition 5 - Wet clay)

Compress damp clay around the fruit and wrap with plastic wrap. The fruit must be as airtight as possible. Fill the bottom of the cup with 3 cm of gravel and fill the cup with water until it just begins to show on top of the gravel. Place the clay ball on top of the gravel and seal the cup with plastic wrap and rubber bands. Store in a refrigerator or cool place. Label the cup "wet clay."



Have students put their cups in the appropriate places around the room.

Ask students the following questions:

- 1. What does the term "experiment" mean?** (testing information for results)
- 2. What kinds of experiments do you know about?** (variety of answers depending on experience)
- 3. Can you name all of the components that were used or considered to make up this experiment?** (cup, fruit, gravel, temperature, humidity, air, water, clay)

Some of these components are called variables; others are called constants. Variables differed at each site (temperature, humidity, and the material that surrounded the fruit: air, water, clay). Constants remained the same at each site (cup, fruit, and gravel).

Now have the students refer to the Observation Worksheet, which will be used to record changes.

Ask students to hypothesize about what will happen to each of their fruits. Tell them that they will observe any changes over the next five weeks. Remind them that they cannot open their clay cups until the end of the experiment. Have them indicate what variables are affecting each condition.

The steps that occur in an experiment are called scientific processes. These are hypothesis, observation, recording, testing/analysis, and drawing conclusions. These processes are used during any archaeological study.

Ask students to look at the illustration "Applying the Scientific Process" (below). Discuss their ideas about the seven steps to help them form a definition of each process and to describe the cyclical nature of the scientific process. Ask them to describe, on a separate sheet of paper, the conditions of each site that were set up in each cup. They should include a drawing of how each site and its surrounding environment would look.

Activity II: Observing, Recording, and Concluding

Each group will observe its fruit every seven days and will note changes. Groups will not report to the rest of the class at this time. After four weeks of observing, they will be ready to find out whether their hypotheses were correct and to state their conclusions before the class. The rest of the class then can check their hypotheses with the results.

Ask students to compare their results with their original hypotheses. Discuss the variables and the conditions that resulted in the best preservation.

Applying the Scientific Process

1. What's the Problem?

Why aren't there bone artifacts in 10,000-year-old sites?

2. Gather Evidence

Some archaeologists say that 10,000-year-old people did not make bone tools. Other archaeologists say that the bone tools have not been found, but that they are there.

3. Make a Guess A Hypothesis

I guess that bone tools were made, but have decomposed.

4. Experiments and Observations

Test bone in extreme soil and weathering conditions.

6. A New Problem Arises

Bone point found in mastodon rib, dating 11,000 years old.

7. Gathering New Evidence

On soils and bone preservation.

5. A Conclusion--Was Hypothesis Covered?

Bone decomposes in extreme conditions. Therefore, 10,000-year-old man could have had bone tools, but the bone has decomposed.

Observation Worksheet

Name:

Conditions of Experiment (Circle)

Frozen

Humid

Under water

Dry

Wet clay

Hypothesis:

Description of vegetable material:

	First Week	Second Week	Third Week	Fourth Week
Size:				
Shape:				
Color:				
Other things that you see happening:				

Conclusions:

What Archaeologists Have Learned

Archaeologists have learned about previous cultures and environments in nearly every area in the world, but some areas have been studied more intensively than others. Ancient, historic, and modern people all can be studied using the methods of archaeology, although when studying prehistoric peoples, the evidence comes primarily from excavated sites. Researchers looking at historic and modern groups also have the benefit of written information.

Archaeologists know that excavation destroys a site. They address this problem by only sampling or unearthing a portion of a site, leaving the rest for future researchers, who will have better tools and methods.

When teaching about the ancient cultures of North America, keep in mind:



Names given to ancient cultures (Anasazi, Archaic) are modern archaeologists' classifications, and may not correspond to prehistoric peoples' identifications or perceptions of their societies.



Teaching about ancient cultures is also teaching American Indian ethnic history, which should be accorded a high degree of sensitivity and respect.



The archaeological view of the past is based on inferences derived from the scientific analysis of material remains. This perspective can differ from a Native American view. Many people see the past as embodying their heritage and cultural traditions, religion, and myths.



Unfortunate confrontations have occurred between archaeologists and Native Americans, especially regarding human burials encountered during excavation. However, there are many examples of Indian people and archaeologists working together and learning from each others' perspectives.



Not all Indian people are closely tied to their traditional culture, nor do they practice the same lifeways or express the same feelings about their heritage.



There is no such thing as a single "Indian" culture. Just as there were hundreds of Indian nations and languages in North America at the time of European contact, there have been many cultures that have migrated to the Americas, each with its own lifeways.

Teaching Options for Local Culture History

Prepared by Shelley Smith, Jeanne Moe,
Kelly Letts, and Danielle Paterson

The lessons in this section can be adapted to study the prehistory or history of any locale. They can be taught independently, or they can be taught as an entire unit. Suggested projects for each alternative follow. The independent activities proposed for single lessons also can be used as unit activities.

Activities for Single Lessons



The study of prehistory should emphasize the humanity of past people. For each lesson, a teacher might use cooperative teams and strategies to challenge students to think about the special skills and knowledge that the presented lifeways required. This might be done using the following questions:

1. How were these people the same as I am?
2. How were they different?
3. What might have concerned, delighted, frightened, and exhilarated them?
4. What contributions have American Indians made to our American way of life?

An archaeologist's study of artifacts and sites is one way to piece together the stories of past people. To demonstrate this concept, ask students to read any essay and be prepared to:

1. List artifacts that were found by archaeologists that helped them to piece together the cultural story of these people.
2. Explain what part of the story each artifact helped to reveal.

Students might be asked to imagine how ancient people solved problems and to share this information in a skit, role play, diorama, drawing, demonstration, report, or chart.

Problem-solving questions they might consider include:

1. How did early hunter-gatherers (Paleo-Indians) kill a huge mammoth with hand-held weapons? Ideas to consider during problem solving are: the size of the mammoth, its reaction to being hunted, and the importance of placing the spearhead just right.
 2. How did the Archaic and the Fremont people find, gather, and store food? Ideas to consider during problem solving include: the environment and available resources, the need for weapons, the distance traveled to food sources, and the harshness and restrictions of winter.
 3. How did the Anasazi build communities high in the cliffs? Ideas to consider during problem solving are: heights, tools, distance from a water source, and hauling of materials to and from the location.
 4. How did the Numic and Navajo people adapt to the arrival of Euro-Americans? Ideas to consider during problem solving are: the loss of available land, disease, and herds of horses and cattle grazing and consuming seed resources.
-

Activities for a Unit of Study

The following activities are grouped by thinking skills identified in Bloom's Taxonomy. The model was adapted from Kathleen Butler. The activities in each skill category are designed to meet the needs of a variety of learning styles. Each activity is only an example of what is possible; feel free to adapt the ideas. The activities might be used in a variety of ways; for example, students might:



1. Complete one project from each thinking skills category.
2. Complete one or more projects from any category of their choice.
3. Divide into cooperative teams and complete one or more activities from an assigned thinking skills category.

Knowledge and Comprehension



Using the "Technology Through Time " activity sheet, list appropriate examples of each type of technology through a visual timeline.



Pretend that you are an archaeologist and create:

1. A brochure describing the importance of artifacts for understanding the past.
2. An essay on why archaeologists know more about the Anasazi than they do about the Paleo-Indian people.
3. A report describing the changes in Indian lifeways from the Paleo-Indians to the Numic and Navajo cultures.



Pretend that you are a travel agent with a time machine. Create a play that highlights a trip back in time through the prehistoric cultures of Utah (or any state). Show it to another class or group of people.



Make a webbed map showing characteristics of each prehistoric culture. Share your map with another class or group of people.

Application and Analysis



Make a timeline, chart, or computer spreadsheet showing the most important events or technological changes of each culture.



Prepare a lecture designed to convince local residents of the need to protect archaeological sites for the purposes of future research and public enjoyment. Contact a community group and present your lecture to its members.



Interpret the need for conserving ancient archaeological sites for future research and public enjoyment through the eyes of an American Indian, archaeologist, or tourist. Role play each group through the monologue of a character.



Brainstorm a list of ways that a tourist might enjoy visiting archaeological sites to learn about people of the past, without looting or vandalizing sites. Put these ideas into a newspaper article or public service announcement for TV or radio.

Synthesis and Evaluation



Develop a questionnaire to determine people's thoughts or feelings about the importance of studying past cultures and the importance of protecting archaeological resources. Report your findings in the form of a graph or chart. Create a summary statement describing your findings. An example of a question might be: Would you be willing to donate a week's allowance to help preserve an archaeological site for study by archaeologists? Communicate your findings to a local, state, or federal agency that manages sites.



Write a persuasive speech or debate about one of the following propositions. Think of reasons to support or to refute each statement. Take a position and try to convince others of your beliefs.

1. Archaeological sites should be left undisturbed by archaeologists in order to protect places of spiritual importance to Indian people.
2. Society has a right to benefit from the scientific information contained in an archaeological site.



Imagine that you are an American Indian who feels a connection with the prehistoric sites near your home. In a verbal, written, or visual presentation, describe why the protection of these ancient sites is or is not important to your culture.



Invent a board game in which three to five archaeologists search for information about the past. During the game the players encounter looters, collectors, American Indians, archaeologists, and other groups interested in ancient sites. Alternatively, invent a board game that teaches about the lifeways of the prehistoric cultures of your area.

Additional Activities

Cooperative Learning

Assign roles within each team; for example: reader, recorder, on-task coordinator, presenter. Give each team a copy of a prehistoric culture essay to be read by the group.



Assign each team a role; for example: archaeologists, collectors, American Indians, tourists. Ask students to prepare a proposal, from their assigned point of view, for managing sites. Each proposal should answer the questions who, what, where, when, why, and how. Give students a variety of ways to present their proposals (chart, advertisement, skit, speech, song, poetry, diorama, letter), depending on the audience that will receive the proposal (for example, the Bureau of Land Management, the Forest Service, State Historic Preservation Office, politicians, citizens, other students, a newspaper).

Archaeology and/or Culture Fair

Providing an opportunity for children to share or teach what they have learned is an important learning experience. An archaeology or culture fair could be used as a culminating activity. If children are aware of the fair at the start of their studies, they will be better prepared to help with decision making and planning in all

aspects, including the products they create and the fair itself. Many of the preceding activities could be shared, as well as products from other lessons within this booklet. Be sure to invite media reporters, local government and political officials, and archaeologists to your fair.

Technology Through Time

	Housing	Food	Containers	Weapons
Paleo-Indians	?	Big game (bison)	?	Spear
Archaic	Caves	Wild seeds, game	Baskets	Atlatl
Fremont	Pithouses, caves	Wild plants & animals, corn	Baskets, pottery	Bow & arrow
Anasazi	Pithouses, pueblos	Corn, beans, squash, game animals, turkeys	Baskets, pottery	Bow & arrow
Numic	Wickiups	Seeds, roots, game animals	Baskets, pottery	Bow & arrow
Navajo	Hogans	Maize, hunting, sheep	Pottery	Bow & arrow

The Multidisciplinary Science of Archaeology

One might think that archaeology reveals information only about past cultures. In fact, it is an exciting vehicle for teaching a wide variety of subjects at all grade levels. The lesson in this section shows how the multidisciplinary application of archaeology can be used to teach subjects ranging from the arts to the sciences at both elementary and secondary levels.

The "Avery Island" lesson teaches geology and geography at the middle and high school levels. Although the information is relevant to Louisiana, it is clear that the model for such a lesson is applicable to any location.

Avery Island: Archaeology and Geology in Louisiana

Prepared by Connie Nobles and Nancy Hawkins

Overview

Students will examine the interaction of people with geologic formations through interpretation of a topographic map and two stratigraphic profiles.

Age Level

Grades 8 - 12

Materials

group handouts or overheads
paper and pencils

Archaeology Concepts



basic human needs span time.

archaeologists use careful methods to record and excavate sites.

stratigraphy helps to establish relative chronology.

material remains that people leave behind reflect their culture.

the Americas have been home to hundreds of cultures for at least 12,000 years.

Vocabulary

topography, soil profile, uplift, superposition, fossils

Activity

Ask the class to list the basic nutritional needs of all people. One mineral which all humans need, but which may have been overlooked, is salt. Once the discussion is focused on salt, divide the class into small groups. Give the groups about five minutes to list ways that salt can be acquired. Next, have the groups share their ideas. Encourage discussion of ways humans interact with their environment and geographic location to get salt. (Even going to a local supermarket relates to a person's geographic location.)

Ask students to list ways in which prehistoric Native Americans could have gotten their salt. Then tell them about the observations of members of the Hernando de Soto expedition, which traveled in the southeastern United States from 1539 to 1543. The travelers recorded four ways that Native Americans were extracting salt: from the ashes of plants, from salt-impregnated sand, from brine water at salines, and as rock salt. Additionally, some coastal Indians boiled seawater to obtain salt. Indian merchants traded salt to other Indian groups and to European explorers.

Discuss the distribution of the principal saline areas in the eastern part of the United States. In this region, Indians obtained most of their salt from brine springs. An extensive rock salt deposit, called the Salina Basin, underlies states bordering the Great Lakes. Salines emerge in Illinois, Missouri, Kentucky, Ohio, New York, West Virginia, Tennessee, and Virginia.

Another rock salt deposit, called the Gulf Coast Basin, lies deeply buried beneath the Gulf Coast states. Rich brine has come to the surface in many salines in Louisiana, Alabama, Texas, and Arkansas. An important saline, in terms of the history of the salt industry in the United States, is on the Avery Island salt dome in south-central Louisiana.

Have student groups interpret the topographic map of Avery Island (Figure 1), using the following suggested questions:

1. What is the contour interval (5 feet)
2. What is the highest point on the island? (155 feet, near the "WT" in the northeast part of the island)
3. What is the elevation of the surrounding marsh? (less than 5 feet)
4. What are some of the natural features? (ponds, hills)
5. What are some of the human-made features? (gas wells, schools, roads)
6. Why do you think this salt dome is referred to as an "island"? (it stands out from the surrounding area)

Explain that Avery Island is higher than the surrounding marsh because sediments have been uplifted by the salt plug. Uplift has occurred since the late Pleistocene and probably is still active at present. Future periods of geomorphic and tectonic instability are possible. Point out the two clusters of buildings along the north/south road. The northern group is the McIlhenny Company, producer of the famous TABASCO brand pepper sauce; the southern group is Akzo Salt, Incorporated.

In the process of searching for salt on the island, people have found fossilized bones of extinct vertebrate animals. The bones came from mammoth, mastodon, saber-tooth tiger, ancient horse, and giant bison. These plant-eating animals probably came to the area to get the salt they needed.

Indians also visited the area over thousands of years. Archaeologists studying Avery Island have even found that prehistoric Indians produced salt there. They heated brine in shallow ceramic bowls. After the water evaporated, they scraped out the salt and packed it into small ceramic cups. They took the salt to other areas for trade.

Have the students examine Figures 2 and 3. Figure 2 shows the stratigraphy of one area of the island where archaeologists removed three soil cores. Figure 3 shows what was found in one core, referred to as Bore Hole B. Ask the students to answer and discuss the following questions:

1. What is the oldest (deepest) deposit? (salt)
2. Where were the fossil bones from extinct animals found? (in Bore Hole B, just above the salt)

3. Where was Indian pottery found? (between 5 and 10 feet above MGL; level 7 in Figure 2)
4. Where were historical artifacts found? (near the top)
5. Assuming this is an undisturbed area, were people using pottery at the site at the same time the extinct animals lived there? (no; the extinct animals were there first)

Maps and diagrams used in this activity

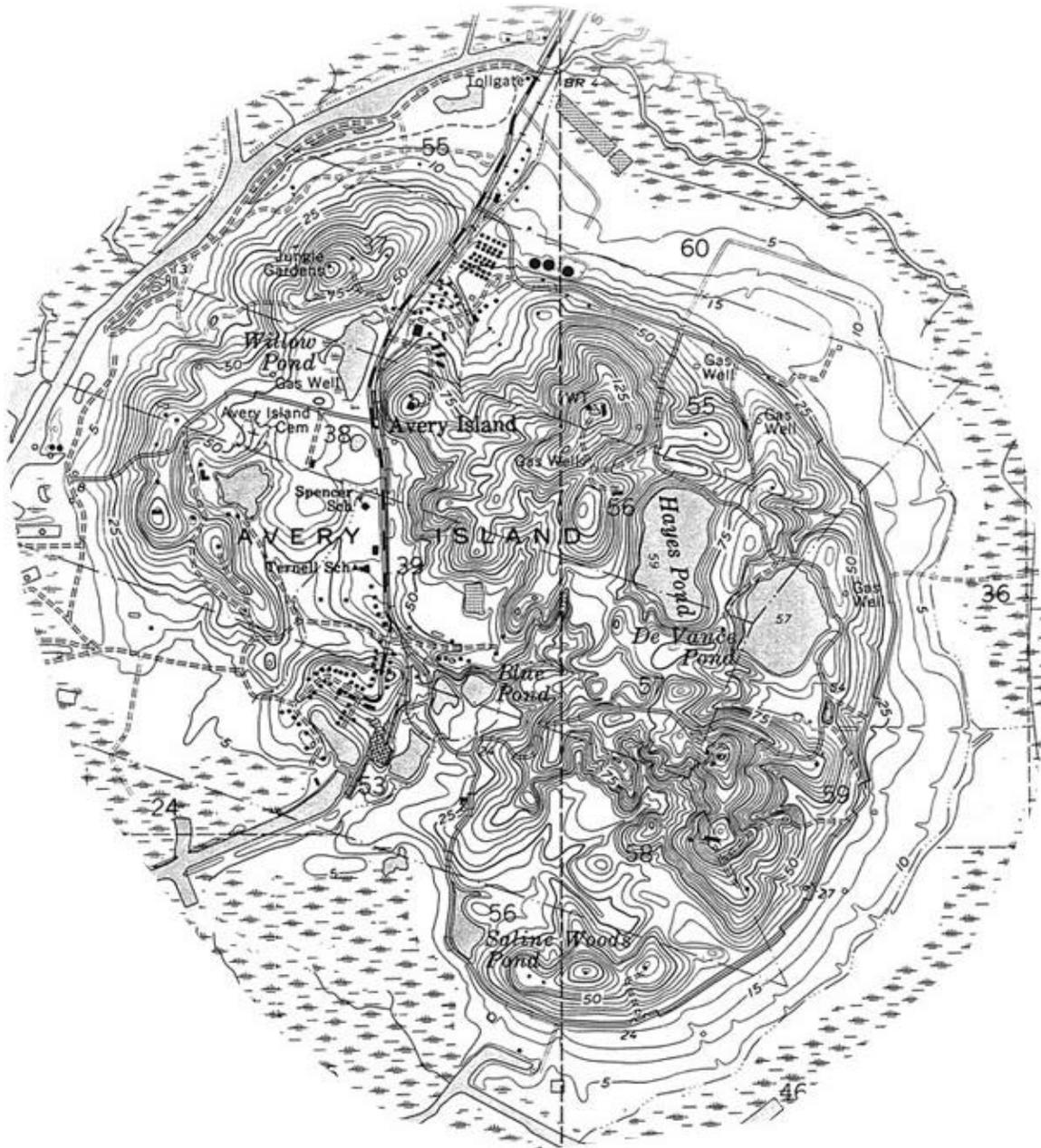
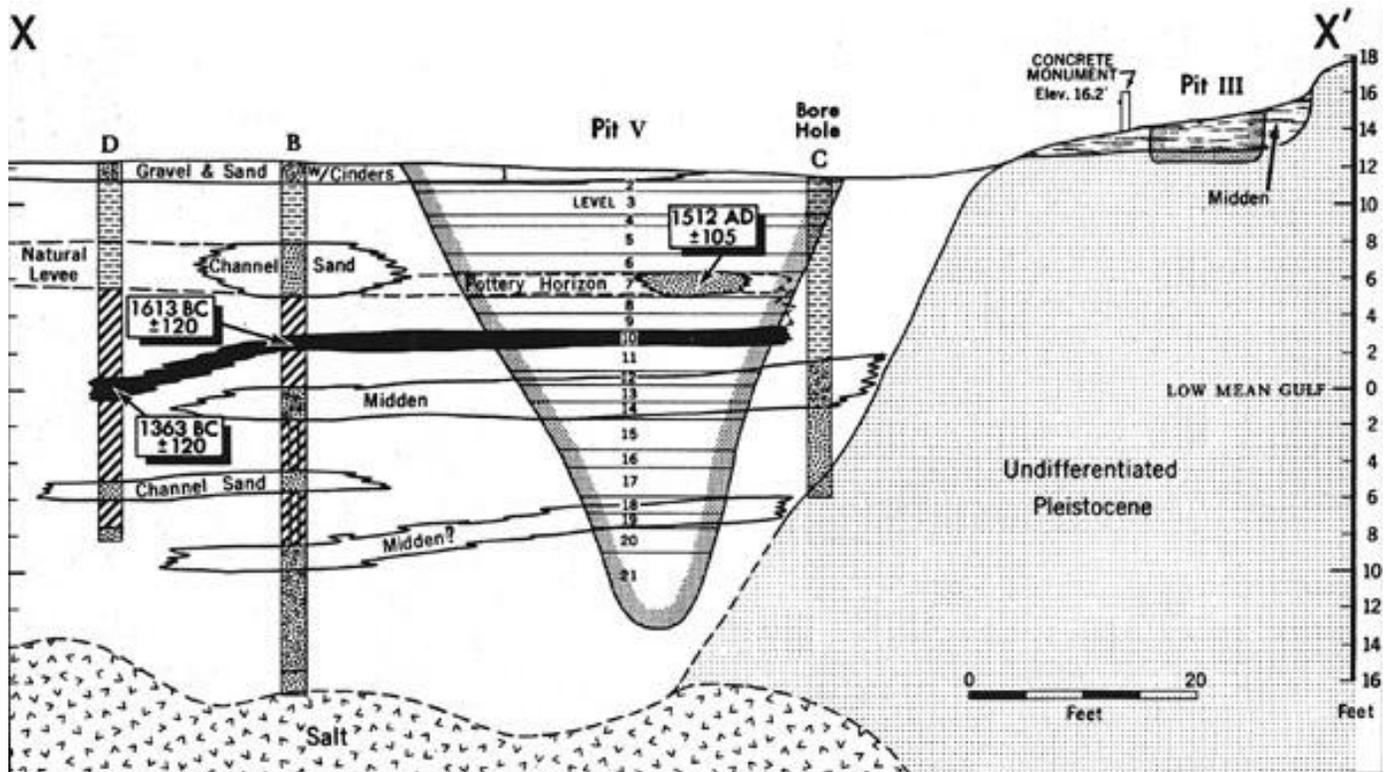


Figure 1: Topographic map of Avery Island
 Avery Island is private property and may only be entered by special permission of Avery Island, Inc.



- | | | |
|---|---|--|
|  Highly organic clay |  Laminated silt and clay |  Sand |
|  Silty Clay |  Sand and gravel |  Peat |

Figure 2: Cross section showing stratigraphy of fill in Salt Mine Valley on Avery Island

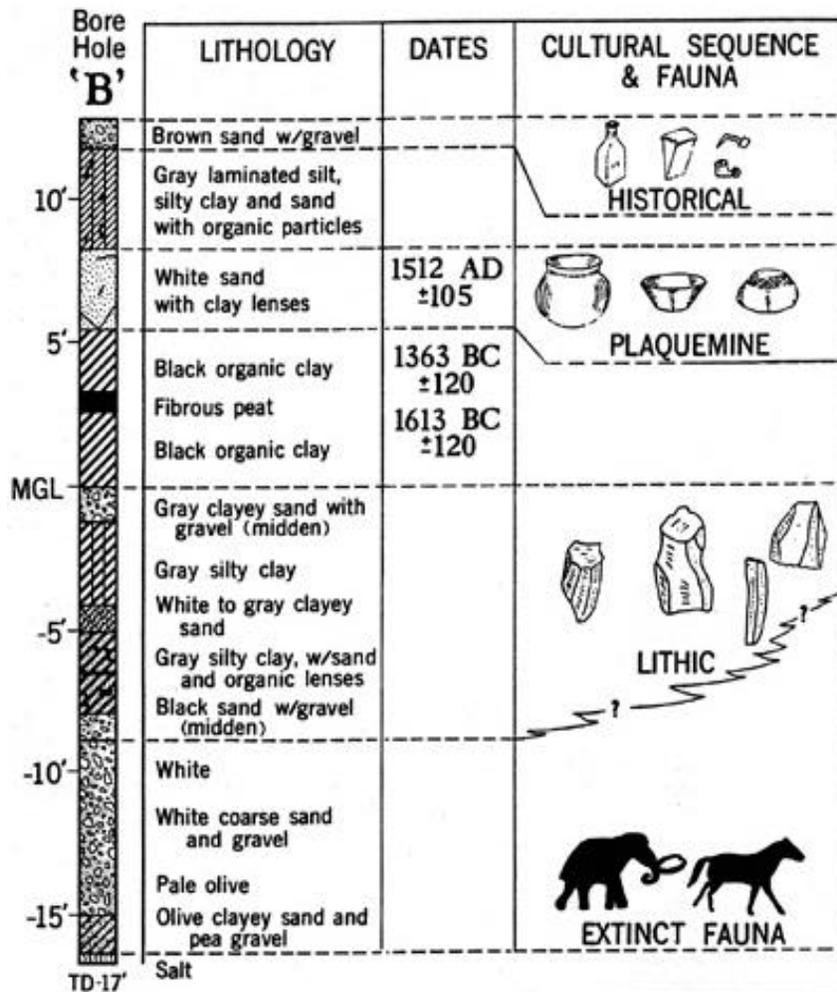


Figure 3: Details of stratigraphy in Bore Hole "B" and excavated trench

Further study

- 1. Why do herbivorous animals and vegetarian people need more salt than meat-eaters?** Whenever in history or prehistory there was a reliance on agricultural products (rather than animal foods), there was a need for salt to supplement the diet. What happens to a person who does not get enough salt? What happens when a person gets too much salt?
- 2. Research the historical use of salt as payment.** For example, the word "salary" comes from a Latin term meaning salt money; it was payment to Roman soldiers so they could buy salt. Several countries once taxed salt. Discuss the meaning of the saying, "He's not worth his salt."
- 3. Identify natural sources of salt in your area.**

Stewardship of Cultural Resources

Many archaeological issues today revolve around how sites and artifacts are to be conserved and used. This lesson gives students an opportunity to examine their own beliefs and values about the past, and to connect archaeology to other conservation issues. Students need background knowledge to thoughtfully form values; therefore, this lesson is best taught after students have obtained a broad understanding of archaeology. It is very important to give students the opportunity to draw together their knowledge and feelings about the past. Values clarification brings closure to the learning process, and promotes personal responsibility.



Archaeology: A Conservation Issue

Prepared by Shelley Smith, Jeanne Moe,
Kelly Letts, and Danielle Paterson

Overview

The ethical issues surrounding the protection of archaeological resources are similar to conservation issues in general. People often have different opinions about the value of various resources and whether or not they should be protected. Those who do agree on the value of specific resources may disagree on how to protect them.

This lesson allows students to explore their values about conservation issues and to make comparisons about the value and protection of archaeological sites and artifacts.

Objectives

Students will work in groups, using analogies and dilemmas to infer peoples' motivations for using resources, and to decide and justify the best way to deal with the problems of resource depletion.

Age Level

Grades 4 - 12

Time Required

Two 45-minute class periods

Skills/Strategies

analysis, synthesis, evaluation, analogy, discussion, decision making, problem solving, communication, role play, debate, values clarification

Materials

Copies of dilemmas for each group (Njomba, Keri Anne, Millie, Jim, McKenzie, Chad and Alvin)

Activity

Divide the class into three groups. Each group will pick one or two spokespersons and a scribe. Give a copy of Njomba to group 1; Keri Anne to group 2; and Millie, Jim, and McKenzie to group 3. Each group will read its dilemma, discuss the questions, and present its conclusions to the class. At the end of the class, give a copy of Chad and Alvin to everyone. Ask students to take the handouts home and hold a family discussion and/or answer the questions.

The next day, discuss Chad and Alvin; or create a panel to include Chad and his father, Alvin and his mother, one or more archaeologists, and one or more artifact buyers. Using the dilemma questions, each of the panelists must prepare and present a persuasive argument for a solution to the scenario problem. The rest of the class will be the citizens of the small town and will question the panelists about their solutions.

Njomba

Njomba is from Kenya, a country in Africa. He lives with his family in a remote area where the forest is interlaced with areas of large plains. Many elephants live near his home.

One day his father came home with many bullets and a very powerful rifle. His father had found a big bull elephant with huge tusks. It had been shot many times by another hunter, but it had lived long enough to escape and stagger into the forest before dying near their home. Njomba's father had found the bull and taken the tusks. Later, he traded them to the ivory trader who came through the village every so often. In exchange for the tusks, the ivory trader gave his father the automatic rifle and bullets. He made Njomba's father promise that he would only sell tusks to him when he came through the village.

The whole family was excited! Now they would be rich; they would be able to buy anything they wanted! Njomba had heard that the government had a law forbidding the killing of elephants because their population was declining, but Njomba thought there were plenty of elephants. The elephants had been there as long as the people, and he believed that the elephants belonged to the people, not to the government. Njomba loved the elephants and liked to watch them; there really were plenty of them. He kept thinking of things that his family could buy from the sale of ivory.

Questions

1. Does Njomba's family really want to kill the elephants? Describe your thoughts or feelings about their reason for killing elephants.
2. To whom do the elephants really belong?
3. What if nobody would buy the ivory? How could this be accomplished?
4. Would it really matter if there were no wild elephants?
5. List your solutions to this problem. Be creative and imaginative.
6. Be prepared to give a two-minute summary and/or solution to the problem.

Keri Anne

Keri Anne, age 11, lives in a small logging town in Oregon. Her father is a logger who helps to cut the big Douglas fir trees and haul them to the sawmill. Some of the trees are very old and large. Her father said that some of them are 2,000 years old.

When the trees get to the sawmill, they are cut into lumber which is sold and shipped all over the country. Her father's company is starting to clear out a large section of old growth forest, which has a certain ecology that has existed for thousands of years. After the company clear-cuts the old-growth forest, it will plant the area with new seedling trees to make a new forest. When those trees grow up, there will be a new forest there, but the ecology will be different than the old growth forest.

Environmentalists have legally stopped the cutting of the old growth forest because of a bird called the Spotted Owl, which can only live in this environment; it can't live in new growth forest. When all of the old growth forest is cut down, the Spotted Owl will die out and become extinct. However, because there is no work, Keri Anne's father may lose his job. The family may lose its house. Keri Anne has listened at her bedroom door while her mother and father talked about it in very serious tones. If they have to move, she will lose her friends and her school, and she loves them both. She is scared and angry at the same time. The trees have been there for thousands of years and were there before people even came to this country. How can the government tell people they can't cut them down because of some rare bird!

Questions

1. Why does the company cut down the old growth forest?
2. What is more important—a few big, old trees, or jobs for people so they can provide for their families?
3. Does it really matter whether the Spotted Owl dies out and becomes extinct? Some birds have already become extinct, and life is going along okay.
4. The lumber is used for construction and to make paper. Are there ways to reduce the demand for lumber? List some.
5. Who really owns the forests? Who should own the forests? Give reasons.
6. Give your solution to the problem. Be creative and imaginative.
7. Be prepared to give a two-minute summary and/or solution to the problem.

Millie, Jim, McKenzie

The year is 2095. The United States has been a province of Canada for about 100 years. It had happened very quickly, and it had been hard at first, but things are quite different now. The Canadians are good to the American people; they provide money, food, and even houses on a regular basis.

Millie, age 10, and Jim, age 12, live in the United States. They have a very good Canadian friend named McKenzie, who is also 12 years old. One day, McKenzie brought two rings and a necklace to school. The items were very intricate and also extremely old. The children were very interested in the relics and asked where they had been found. McKenzie said that his father was an engineer and that his crew was digging a pipeline through the old, abandoned graveyard outside of town. The trench had gone through several graves, and his father had gathered up a few old relics. McKenzie's father said that the right kind of relics were worth money to collectors.

McKenzie wanted to gather and sell enough relics to buy a new bike. He knew that there were a lot of other graves that could be dug up, and he invited Millie and Jim to go with him on Saturday. They could have a picnic. It would be fun! Suddenly, Millie and Jim both had a strange feeling. They remembered that their great- and great-great-grandparents were buried in that old cemetery.

Questions

1. Why did Millie and Jim suddenly feel funny?
2. To whom do the relics really belong?
3. Does it really matter whether the graves are dug up?
4. Is there a difference between McKenzie digging up a grave, and an archaeologist digging up a grave?
5. What if nobody would buy the relics? How could this be accomplished?
6. Should the government make a law against digging up graves? Give reasons.
7. Give your solution to the problem. Be creative and imaginative.
8. Be prepared to give a two-minute summary and/or solution to the problem.

Chad and Alvin

Chad lives in a small town in Utah. His family doesn't have much money. Chad has an old, rusty, second-hand bike, but he dreams about having a shiny, new mountain bike.

On weekends and holidays in the summer, Chad's family digs into the old Indian graves near his town. Many of his friends also dig in the graves. If they can find really nice pots, they can sell them to a man who comes through town every so often. Chad's father says that he has found a grave site that looks really good, and that it has never been dug into. If there are some good pots in the graves, there might be enough money to buy a new mountain bike! Chad is really excited and anxious to dig in the new site.

Chad has a good friend named Alvin, who is the same age. Alvin is an American Indian. Chad told Alvin about the possibility of getting a new mountain bike because of the new site his father has found. He told him about the possibility of finding some very nice pots and selling them to the buyer when he came through town. However, when Chad said this, Alvin acted kind of funny. Chad thought he might be jealous of the new mountain bike. Chad also knew that there was a law against digging in the graves, and that rangers would arrest you for doing it. This made Chad mad because the pots had been there when his great-great-grandfather had settled the area. The pots didn't belong to anybody then, so how could they belong to the government now. Besides, there were probably thousands of them out there. He knew they would have to be careful, but he kept thinking of the new bike.

Questions

1. Why does Chad's family dig into the graves?
2. What is the main problem in Chad's family?
3. To whom do the pots really belong?
4. What if nobody would buy the pots? How could this be accomplished?
5. Will it really matter when all of the pots are dug up and sold? Why?
6. Aren't the pots like a vein of coal? You dig them out and sell them for money.
7. Give your solution to the problem. Be creative and imaginative.
8. Be prepared to give a two-minute summary and/or solution.

Archaeological Terms

The following words are commonly encountered in archaeological literature, especially that of North America.

archaeology / archeology: the scientific study of past human cultures by analyzing the material remains (sites and artifacts) that people left behind.

archaeological site: a place where human activity occurred and material remains were deposited.

artifact: any object made, modified, or used by people.

assemblage: artifacts that are found together and that presumably were used at the same time for similar or related tasks.

attribute: a characteristic or property of an object, such as weight, size, or color.

B.P.: years before present; as a convention, 1950 is the year from which B.P. dates are calculated.

ceramic: pottery, fired clay.

classification: a systematic arrangement in groups or categories according to criteria.

context: the relationship of artifacts and other cultural remains to each other and the situation in which they are found.

culture: a set of learned beliefs, values and behaviors the way of life shared by the members of a society.

diagnostic artifact: an item that is indicative of a particular time and/or cultural group.

excavation: the systematic digging and recording of a site.

experimental archaeology: scientific studies designed to discover processes that produced and/or modified artifacts and sites.

feature: permanent fixtures of a site which are not structures, such as a roasting pit, hearth, or post hole.

grid: a network of uniformly spaced squares that divides a site into units; used to measure and record provenience.

in situ: in the original place.

level: an excavation layer, which may correspond to strata. Levels are numbered from the top to the bottom of the excavation unit, with the uppermost being Level 1.

lithic: stone, or made of stone.

midden: an area used for trash disposal.

pot hunter: a person who removes artifacts from sites for other than scientific reasons, such as to sell or add to a collection. Pot hunting on federal or most state lands is illegal.

pot sherd: a piece of broken pottery.

prehistoric: the period of time before written records; the absolute date for the prehistoric period varies from place to place.

projectile point: a general term for stone points that were hafted to darts, spears, or arrows; often erroneously termed "arrowheads."

rock art: a general term for pecked, incised, or painted figures on rock.

site: a place where human activity occurred and material remains were deposited.

site steward: a volunteer who visits a site and helps to protect it from vandalism and looting.

strata: many layers of earth or levels in an archaeological site (singular: stratum).

stratigraphy: the layering of deposits in archaeological sites. Cultural remains and natural sediments become buried over time, forming strata.

survey: the systematic examination of the ground surface in search of archaeological sites.

test pit: a small excavation unit dug to learn what the depth and character of the stratum might be.

For More Information

If this booklet has piqued your interest in archaeology, numerous resources are available for additional information:

For more information about SAA's Public Education Committee or outreach programs contact:

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Society for American Archaeology
900 Second Street, NE, Suite 12
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public_edu@saa.org
www.saa.org

For the SAA Public Education Committee State Network Coordinator in your state or for additional resources that can be downloaded from the Internet, check the SAA Web page.

State Network Coordinators:
<http://www.saa.org/aboutSAA/committees/network.shtml>

Archaeological and Anthropological Education Materials:

Society for American Archaeology
<http://www.saa.org/education/eduMat.html>

American Anthropological Association
<http://www.aaanet.org/committees/commissions/aec/resarch.htm>

Smithsonian Institution Anthropology Outreach Office
<http://www.nmnh.si.edu/anthro/outreach/outrch1.html>