INTRIGUE OF THE PAST

A Teacher's Activity Guide for Fourth through Seventh Grades

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Bureau of Land Management
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   Bureau of Land Management
   National Park Service
   U.S. Forest Service
   The State of Utah
# CONTENTS

Preface .............................................................................................................................................. v
Introduction to Educators .............................................................................................................. 1
How To Use This Book .................................................................................................................. 2

## SECTION ONE - FUNDAMENTAL CONCEPTS

1. Why Is the Past Important? ....................................................................................................... 9
2. Culture Everywhere ................................................................................................................ 11
3. Observation and Inference ....................................................................................................... 14
4. Context ..................................................................................................................................... 19
5. Chronology: The Time of My Life ......................................................................................... 22
6. Classification and Attributes ................................................................................................. 27
7. Scientific Inquiry ..................................................................................................................... 30
8. It’s in the Garbage .................................................................................................................. 34

## SECTION TWO - THE PROCESS OF ARCHAEOLOGY

9. Gridding a Site ....................................................................................................................... 40
10. Stratigraphy and Cross-dating ............................................................................................. 44
11. Artifact Classification ........................................................................................................... 49
12. Archaeology and Tree-ring Dating ...................................................................................... 53
13. Pollen Analysis ..................................................................................................................... 56
14. Measuring Pots ..................................................................................................................... 63
15. Archaeology and Ethnographic Analogy: The Anasazi and the Hopi .................................... 70
16. Experimental Archaeology: Making Cordage ...................................................................... 73

## SECTION THREE - ISSUES IN ARCHAEOLOGY

17. Archaeology as a Career ....................................................................................................... 88
18. Rock Art One: An Introduction ............................................................................................ 89
19. Rock Art Two: Creating Your Own ..................................................................................... 95
21. Rock Art Four: Creative Expression .................................................................................. 102
22. Artifact Ethics ..................................................................................................................... 107
23. The Road Showdown .......................................................................................................... 108
24. Grave Robbers ..................................................................................................................... 114
25. A Journey Back In Time ...................................................................................................... 117
27. State Place Names .............................................................................................................. 122
28. Take Action—Save the Past ............................................................................................... 127
APPENDICES

1. Cross Reference by Skills and Strategies ......................................................... 137
2. Vocabulary ......................................................................................................... 141
3. Rules for Brainstorming .................................................................................. 144

REFERENCES

List of References ................................................................................................. 145

LIST OF FIGURES

Figure 1. A structure for teaching Intrigue of the Past .............................................. 6
Figure 2. Drawing which shows how a site is excavated ......................................... 43
PREFACE

Project Archaeology is an education program sponsored by the United States Department of the Interior, Bureau of Land Management (BLM). The ultimate goal of this program is to educate students to take responsible and thoughtful actions towards our archaeological heritage. Our national lands contain a remarkable and important record of past cultures, but this fragile record is increasingly threatened. The problem is widespread, occurring throughout the United States (and the world), and affecting all kinds of cultural resources, from ancient ruins to historic ghost towns. A primary means of reversing this trend is through education, and actively reaching out to schoolchildren.

Many people feel a sense of well-being knowing that there still remain places where they can connect with lifeways and peoples gone by. For some, it is an archaeological site, for others it might be an historic trail. People with an ethnic connection to certain sites can experience a tangible association with their cultural heritage. As a society, we all can benefit from an understanding of how people before us lived in the very places we live today. How did they solve problems similar to ours, what can we learn from their experiences, what is the long-term climatic record of a region, and how did it affect the lives of indigenous people? The answers to these questions and many others are contained in archaeological sites.

The Bureau of Land Management is steward of some 270 million acres of public land, located primarily in the western states. More than five million archaeological and historical sites, representing a dramatic record of humanity's 12,000-year presence in the New World, are under custody of the BLM. The BLM is committed to use these resources to teach America's schoolchildren about their nation's cultural heritage, and has developed its Cultural Heritage Education Program to accomplish this ambitious goal. Investigating the mystique of the past is an innovative way to capture students' interest. The Cultural Heritage Education Program builds on that interest to enhance student skills in science, math, higher-order thinking, and communicating. At the same time, a sense of responsibility for stewardship of America's cultural resources is strengthened.

Project Archaeology is one of the programs sponsored by the Cultural Heritage Education Program. It builds on Utah's archaeology education program, Intrigue of the Past. The Utah Interagency Task Force on Cultural Resources, representing the Utah divisions of the BLM, U.S. Forest Service, National Park Service, and the State of Utah, sponsored development of the Intrigue of the Past program. While the BLM directed the effort, the participation of the other agencies and institutions has been key to Intrigue's statewide use. The premise of interagency cooperation to achieve more than could any one agency alone is borne out by the Utah experience.

Numerous archaeologists, educators, and Native Americans reviewed drafts of this guide and provided many useful suggestions. Seventy-five teachers taught early versions of these lessons in their classrooms; their invaluable experience and creative suggestions helped us to refine and improve the guide.
INTRODUCTION TO EDUCATORS

The past... we all feel connected to our personal history, how it has shaped the person we are today and will condition who we become tomorrow. Our society too has been formed by its history. For hundreds of generations people have lived in the very places we do, have prospered, failed, and endured. The past offers us a unique perspective on who we are, personally and culturally.

America’s past is rich almost beyond belief. Archaeological and historical sites offer the opportunity to travel in time: explore abandoned townsites along the first transcontinental railroad, follow colonial roads, wander at the huge and ancient earthworks of the Midwest, or contemplate the meaning of drawings and patterns etched in rock by sure hands millennia ago. Refresh yourself at a spring and note by the chipped stone and broken crockery at your feet that you are simply the most recent visitor to a place that has meant survival to uncounted numbers of people. In many places in this country you can stand at a site and take in a landscape little changed by the centuries. You can see what those who came before you saw, and imagine another way of life. You become a richer person for knowing the human history of your home.

Studying the past gives us a rare chance to examine our place in time and forge links with the human continuum. Archaeologists also want to learn about the many cultural lifeways people have chosen, and how these lifeways have changed over time. Anthropology, the parent discipline of archaeology, seeks to understand human behavior in a broad sense. Archaeology contributes to anthropological knowledge by studying behavior through the material remains people left behind—sites and artifacts.

Archaeologists study both the prehistoric and the historic periods, and some archaeological techniques are even applied to modern people and situations. Archaeology is the only way we have to study people who left no written records; in North America, this includes nearly 97 percent of the human occupation span. The methods and issues of archaeology apply to sites of all ages.

The Challenge of Protecting the Past

Everyone has the opportunity to touch the past and to access information gained by archaeological research. Sadly, however, that opportunity is disappearing. The very accessibility of America’s prehistoric and historic sites could soon mean the destruction of our cultural legacy. The number of sites that have not been disturbed or looted is dwindling at an alarming rate. Greed and ignorance are robbing us of our heritage and the opportunity to experience and connect with our past.

An illegal and thriving market in antiquities supports the destruction of sites by looters in search of artifacts. Also, hikers and tourists collect a few pottery sherds or rusty horseshoes, not knowing that they are walking away with the data archaeologists rely on to study the lifeways of past people. Vandals walk on the fragile walls of ruins or spray-paint their names over rock art panels, ignorant of or uncaring about the fact they are desecrating places of spiritual significance to Native Americans.

State and federal laws protect sites on public lands, but law enforcement is only part of the solution to protecting our past. Education and teachers can influence whether the schoolchildren of today will know and experience America’s rich cultural legacy as the adults of tomorrow.

Why Teach Archaeology?

Education in archaeology serves two purposes. First, it promotes a sense of responsibility and stewardship of America’s cultural heritage. Secondly, archaeology is an innovative means to capture students’ attention while addressing many educational concerns in the classroom. This interest is perhaps the most attractive aspect of teaching with archaeology. Almost everyone seems to be curious about it...the intrigue of the past.

Archaeology is an integrating, interdisciplinary field. Archaeologists ask questions rooted in the social sciences, and research those questions using scientific methods. This fusion of the social and physical sciences means that archaeology is an excellent way to teach students to think holistically, to
cellent way to teach students to think holistically, to
integrate information from different topics. The
study of archaeology can also address some of the
concerns of educators today, namely, scientific in-
quiry, problem solving, cooperative learning, and
citizenship skills.

Project Archaeology as a Teaching Tool

Project Archaeology is a program designed to
teach students that America has a rich and fascinat-
ing past, that the archaeological evidence of that
past is fragile and threatened, and that we all have
a responsibility to see to its wise use.

Project Archaeology teaching materials include
two main components. The *Intrigue of the Past*
Activity Guide forms the foundation, and includes
information about the fundamental concepts, pro-
cesses, and issues of archaeology. A State Hand-
book has been prepared for many states, and is
designed to provide local and regional information
which complements *Intrigue of the Past*. The state
handbooks include essays about local cultural his-
tory, and also a list of available teaching resources
(i.e., speakers, museums, places to visit, teaching
kits, recommended reading). Together, *Intrigue of
the Past* and the State Handbook form an integrated
means of teaching archaeology. The Activity Guide
provides a comprehensive understanding of ar-
cheology which the State Handbook relates to
your students through local examples and cultural
history.Designed with you, the educator, in mind,
all activities use readily available materials and
require little preparation to teach. Many of the ac-
tivities help you teach required concepts and skills.

Lessons in this Activity Guide teach concepts
that apply in any geographic area. For a few lessons,
however, it was necessary to use data from an actual
site or area to illustrate the concept. In these cases,
you are encouraged to substitute local data and
examples where practicable.

*Intrigue of the Past* does not include guidance for
undertaking time- and labor-intensive activities,
such as mock digs and dioramas. While these ac-
tivities can certainly enliven the study of archae-
ology, they are best built on the basic ideas presented
here, and are not necessary for giving students a
grounding in the science and issues of archaeology.
Also, be aware that conducting a dig at a real site on
public land without a federal or state permit is a
violation of law.

You should have received Project Archaeology
teaching materials by attending a workshop. If this
is not the case, you have only one piece of the
complete program. Workshops provide a forum for
experiencing the activities firsthand, for asking ques-
tions and exchanging ideas with teachers and ar-
chaeologists, and for providing current information
about archaeology in your area. Also, state,
county, and municipal preservation laws and ordi-
nances may affect projects you are planning with
your students. Workshops can inform you of this
possibility and suggest means to facilitate your
project. Additionally, some areas have networks
you may want to tap into, such as avocational ar-
chaeology clubs, newsletters, and on-going field-
work. To find out about workshops in your area,
communicate with the contact listed in your State
Supplement, or with Project Archaeology.

You can contact Project Archaeology, Bureau of
Land Management, Anasazi Heritage Center, P. O.
Box 758, Dolores, Colorado 81323, (970) 882-4811,
with suggestions, questions, and comments.

**HOW TO USE THIS BOOK**

Project Archaeology teaching materials support
many state curriculum requirements in the subjects
of science, social studies, language arts, mathematics,
and art. Current teaching strategies such as
scientific inquiry, problem solving, values clarifica-
tion, higher level thinking skills (Bloom, 1956) and
teaching/learning styles (Gregorc, 1982; Butler,
1984) are woven into the lessons.

Teaching cooperative skills at all levels of think-
ing is important. Specific cooperative learning les-
sions have not been included. Rather, most of the
lessons lend themselves to the cooperative learning
process.

Instructors are encouraged throughout the guide
to adapt the lessons according to teaching/learning
styles, class size/age, time, subject, or any other
considerations. Educators in scouting, outdoor edu-
cation, youth groups, and after-school programs
will also find this material useful.

**Organization of the Activity Guide**

This book is organized into three sections:

- Section One—Fundamental Concepts in
  Archaeology
- Section Two—the Process of Archaeology
- Section Three—Issues in Archaeology
The three sections are followed by three appendices which contain supporting material.
- Cross-Reference by Skills and Strategies
- Vocabulary
- Rules for Brainstorming

Finally, the References section lists sources used in the lessons.

The Activity Guide is flexible; many of the lessons can be taught individually, although Section One is a prerequisite to the rest of the guide and is to be taught as a whole. Section Three activities are best taught after students have received a background in archaeological concepts and methods. The guide can also be used as a unit or as part of a year's thematic study. Because there is no prescribed sequence, some information is repeated in several places.

Description of Sections One through Three (see Figure 1)

Section One - Fundamental Concepts

Activities in this section teach the fundamental concepts necessary for understanding archaeology: the importance of the past, culture, observation, inference, context, chronology, classification, and scientific inquiry. Teaching this section as a unit prior to other lessons will prepare students to more easily assimilate information from the rest of the guide. The final lesson, "It's in the Garbage," is an activity in which students use each of the concepts they have covered in Section One to analyze and interpret archaeological evidence.

Section Two - The Process of Archaeology

This section is about the process of archaeology—finding, excavating, analyzing, and interpreting archaeological sites and data. The lessons build on the basic concepts presented in Section One. If taught as a whole, this section will give students a broad understanding of the archaeological process, but the lessons are designed to be taught singly as well.

Section Three - Issues in Archaeology

Many archaeological issues today revolve around how sites and artifacts are to be conserved and used. This section presents lessons about these issues, and gives students an opportunity to examine their own beliefs about the past. Students need background knowledge to thoughtfully form ideas. Therefore, lessons in this section should be taught only 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. These lessons bring closure to the learning process, and promote personal responsibility. A lesson on "Archaeology as a Career" is also included.

The final lesson, "Take Action—Save the Past," is a capstone to the guide. It provides educators and students with a creative problem-solving model if they wish to design and implement a program to protect archaeological resources.

Appendices
1. Cross-Reference by Skills and Strategies: Lessons are cross-referenced according to teaching skills and strategies.
2. Vocabulary: An alphabetical listing of all defined vocabulary words used in this guide.
3. Rules for Brainstorming: A one-page master that can be copied and distributed to students.

Organization of Each Lesson

Each lesson is designed to teach one or two archaeological concepts. Lessons are organized in the following format:

Objective: highlights the content, process, and product of the lesson.

Materials: lists all materials needed.

Vocabulary: list of key words, defined.

Background: information for the teacher.

Setting the Stage: an activity to "hook" the students' interest.

Procedure: step-by-step process to teach the lesson.

Closure: an activity to conclude the lesson.


Extension: some lessons contain additional activities.
Link: a reference to other lessons that address the same or similar concepts.

References: sources from which background materials were drawn.

A key (at the head of each lesson) lists subjects addressed, skills learned, strategies used to teach skills and concepts, duration, and class size.

Activity sheets for students to complete are included in many lessons. Some lessons include masters which can be used as teaching aids. Both activity sheets and masters are reproducible as transparencies or handouts.

The activities are easy to prepare and all materials are included or readily available.

Strategies for Using the Guide

The following are examples of ways to use Intrigue of the Past to teach units in social studies, science, mathematics, language arts, and art. This guide can also be used to teach a unit in interdisciplinary studies. In all cases you are encouraged to teach all of Section One so that students understand the fundamental concepts of archaeology. Some suggestions for choosing and organizing lessons follow.

SOCIAL STUDIES

Intrigue of the Past lessons can be easily integrated into the social studies curriculum. The following is an example of how to use the lessons; many other strategies are possible.

Section One
all lessons

State Handbook
focus on cultural history and change over time

Section Two
Stratigraphy and Cross-dating
Artifact Classification
Archaeology and Tree-ring Dating
Measuring Pots
Archaeology and Ethnographic Analogy

SECTION THREE
Artifact Ethics
Grave Robbers
A Journey Back in Time
The Road Showdown
Take Action—Save the Past

SCIENCE

Science objectives can be taught using many lessons in the guide.

Section One
all lessons

State Handbook
focus on technology and past environments

Section Two
Stratigraphy and Cross-dating
Artifact Classification
Archaeology and Tree-ring Dating
Pollen Analysis
Experimental Archaeology

Section Three
Archaeology—A Conservation Issue
The Road Showdown
State Place Names

LANGUAGE ARTS

Language arts are used in many lessons; others can be adapted to focus on language.

Section One
all lessons

Section Two
Archaeology and Ethnographic Analogy

Section Three
Archaeology—A Conservation Issue
Artifact Ethics
Grave Robbers
State Place Names
The Road Showdown

MATHEMATICS

Many lessons contain mathematical applications.

Section One
all lessons

State Handbook
focus on activities using charts and graphs
Section Two
Gridding a Site
Archaeology and Tree-ring Dating
Pollen Analysis
Measuring Pots
Experimental Archaeology

Section Three
Archaeology as a Career
State Place Names

ART
These lessons contain art activities based on the art work of prehistoric people.

Section One
all lessons

State Handbook
focus on art activities

Section Two
Experimental Archaeology

Section Three
Rock Art One through Four

INTERDISCIPLINARY STUDIES
Because of its interdisciplinary nature, archaeology is a perfect topic to teach across traditional subjects. Archaeologists use scientific inquiry (science) to research questions about past cultures/people (social studies). Some of their research requires the manipulation of numerical data (mathematics). Research results must be communicated to an audience using a variety of writing and communication techniques (language, arts and art).

Although Section One lessons have been categorized into subject areas, it is suggested they still be taught first as a unit.

Language Arts
Section One
Observation and Inference
Chronology

State Handbook
focus on language arts activities

Section Three
Archaeology—A Conservation Issue
Artifact Ethics

Grave Robbers
A Journey Back in Time

Science
Section One
Observation and Inference
Context
Classification and Attributes
Scientific Inquiry

Section Two
Pollen Analysis
Stratigraphy and Cross-dating
Archaeology and Tree-ring Dating

Social Studies
Section One
Why Is the Past Important?
Culture Everywhere
Chronology
It's in the Garbage

State Handbook
focus on cultural history

Section Two
Archaeology and Ethnographic Analogy
Experimental Archaeology

Section Three
State Place Names
The Road Showdown

Art
State Handbook
focus on art activities

Section Three
Rock Art One through Four

Mathematics
State Handbook
focus on activities using charts and graphs

Section Two
Gridding a Site
Measuring Pots

Handbook all phases of interdisciplinary study with various readings for children. Your State Handbook “Resource Directory” may recommend books and articles.
A Structure for Teaching

SECTION THREE
ISSUES IN ARCHAEOLOGY

STATE HANDBOOK
CULTURE HISTORY
SECTION TWO
THE PROCESS OF ARCHAEOLOGY

SECTION ONE
FUNDAMENTAL CONCEPTS

ENTER HERE

Figure 1. A structure for teaching Project Archaeology.
WHY IS THE PAST IMPORTANT?

SUBJECTS: Science, social studies
SKILLS: Knowledge, evaluation
STRATEGIES: Brainstorming, discussion, application
DURATION: 15 to 30 minutes
CLASS SIZE: Any; groups of 3 to 4

Objectives:
As an introduction to the study of our archaeological heritage, students will use a personally owned object to:
1. Share the importance of their past.
2. Connect this importance with reasons why the human past is important.

Materials:
Students bring to class an object, photograph, or drawing of an object that represents their past.

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

archaeology: a method for studying past human cultures and analyzing material evidence (artifacts and sites).

artifact: any object made or used by humans.

Background:
Sites and artifacts can be messengers from the past. If we know how to read their messages, material remains can tell us about the people who made and used them and then left them behind. Although the owners of the artifacts and the inhabitants of the sites may have lived hundreds or even thousands of years ago, they undoubtedly had many of the same needs and concerns, hopes and fears, joys and sorrows that we have today.

The messengers from the past belong to everyone. Everyone has a right to know how the world came to be and to know his or her place in the world. Material remains and their context play a universal role “...in providing cultural continuity and perspective, and hence in linking past, present and future within the experience of any given human generation” (Lipe, 1984, p. 2).

The link to the past is provided through scientific analysis as well as through traditional values placed on archaeological sites and artifacts. For example, Colonial Williamsburg in Virginia provides a tangible link to the colonial history of America and it is valued for that reason. By examining its historic buildings and objects, Colonial Williamsburg might also provide scientific information about the lives of the historic inhabitants. Similarly, some prehistoric sites throughout the United States may represent the heritage of American Indians and are valued accordingly. These sites are also capable of providing scientific information about the prehistory of the region.

Setting the Stage:
This lesson sets the stage for Section One. It will help students to begin to discover why we study the past. The remainder of Section One explores how we study the past.

Assign the students to bring an object (artifact) or photograph from home that tells about their own or their family’s past. If the object cannot be brought to class, a drawing or description will suffice.
Procedure:
1. Share background information and vocabulary.
2. Working in groups of 3 to 4, students tell each other what the object conveys about their past.
3. In a class discussion, ask the following questions:
   a. Is it important for you to know about your past? Why or why not?
   b. Is it important to know about the human past? Why or why not?
   c. Humans have lived in North America for at least 12,000 years. Is it important to know about their lives? Why or why not?
4. What can we learn from the past? The students brainstorm ideas. Some examples: how humans lived in the past and how and why human cultures changed over time.

Closure:
If your past is important to you, what statement can you make about the importance of the past in general?

Extension:
Repeat this lesson again at the close of your study of archaeology to demonstrate that students have broadened their understanding of archaeology and the past.

Reference:
CULTURE EVERYWHERE

SUBJECTS: Social studies, language arts
SKILLS: Knowledge, comprehension, analysis, evaluation
STRATEGIES: Brainstorming, categorizing, discussion
DURATION: 30 to 45 minutes
CLASS SIZE: Any

Objectives:
In their study of culture students will use a chart to:
1. Show the different ways that cultures meet basic human needs.
2. Recognize that archaeologists study how past cultures met basic needs by analyzing and interpreting the artifacts and sites that those cultures left behind.

Materials:
"Comparing Cultures" activity sheet for each student.

Vocabulary:
anthropology: the comparative study of human behavior.
archaeology: a method for studying human cultures by analyzing material evidence (artifacts and sites).
cultural relativism: studying other cultures without making judgments about them.
culture: the set of learned beliefs, values and behaviors generally shared by members of a society. "The way the members of a group of people think and believe and live, the tools they make, and the way they do things" (Braidwood, 1967, p. 30).
ethnocentrism: the attitude that one’s traditions, customs, language, and values are the only right and proper way and that other cultures are inadequate or wrong.

Background:
Anthropology is the comparative study of humans and their behavior. Cultural anthropologists usually study behavior by observing the members of a cultural group as they live their lives and interact with one another. Archaeologists learn about past cultures by analyzing material evidence (sites and artifacts).

All people everywhere have several basic needs which must be met. These basic needs may be categorized as follows:
1. The need for food and water (economics).
2. The need for protection from the elements (clothing and housing).
3. The need to reproduce the culture (marriage, kinship, education).
4. The need for explanation (religion, philosophy, science).

What must be satisfied is universally human. How needs are satisfied is cultural. The many different ways that cultures have evolved to meet the basic human needs results in the world’s rich cultural diversity.

When studying other cultures, there is a tendency to emphasize the differences among people, and to look at other cultures ethnocentrically. Cultures with less sophisticated forms of technology are frequently portrayed as simple-minded and naive. However, on the contrary, such people often have unequaled understanding, knowledge and adaptability to the environments in which they live. It is important not to accentuate “them” and “us.” When scientifically studying other cultures it is necessary to suspend judgment. One culture is neither better nor worse than another, just different. This is the concept of cultural relativism.
A basic assumption of archaeological study is that people who lived in the past had the same basic needs for existence as do people living in the present. Archaeologists are anthropologists who study past cultures by analyzing material remains (artifacts and sites) to learn how people met their basic needs.

Many people mistake archaeology for a swashbuckling "Indiana Jones" adventure, and archaeologists often are thought of as questing after rare and beautiful artifacts. Although it is true that at times archaeologists do find rare and beautiful things, they could more accurately be compared to Sherlock Holmes, a detective of the past, gradually piecing together the culture of a people to understand more about them. A lone artifact discloses very little about a culture. It is by studying many sites and artifacts and their relationship to each other and the environment that one discovers the way people lived. Archaeologists study a people's culture by studying the things they left behind.

Setting the Stage:

1. List on the board students' responses to the following: What do you need to have in order to live?
2. Now, help students categorize their list. They do not have to arrive at the four categories outlined above. Anthropologists themselves do not agree on how to categorize the needs. For example, the students may come up with eight needs: food, water, shelter, clothing, reproduction, transportation, education, and explanation.

Procedure:

1. Distribute the "Comparing Cultures" activity sheet to the students. Write the category of basic needs (food, shelter, etc.) down the vertical column on the chart's left side. Choose another culture to analyze—for example, an East African culture, the culture of Mexico, or any culture with which your students are familiar.
2. The students construct the chart, comparing and contrasting the basic human needs as they are met in different cultures.
3. In a class discussion, the students compare and contrast our culture with others. If different cultures seem strange or inferior to the students, inform them that our culture can be baffling to people from another culture. For example, Hindus are horrified at the thought of eating meat; it is against their religion to do so.
4. Explain that because archaeologists can neither ask the people who left the artifacts how they met their needs, nor observe them using the artifacts, past behavior must be inferred from the material remains of the culture. For example, if corn cobs are present archaeologists could infer that the people were farmers.

Note: Do not single out or make an example of students in your classroom who are from minority ethnic groups. The attention can be embarrassing and hurtful. However, welcome what these students might freely offer to the study of other cultures.

Closure:

As you analyze the chart, what do you notice about the ways cultures meet their basic needs? How do archaeologists study past cultures?

Evaluation:

The students turn in their activity sheets for evaluation.

Links:

Section Two, Lesson 15: "Archaeology and Ethnographic Analogy: The Anasazi and the Hopi"

Section Three, Lesson 27: "State Place Names"

Reference:

Braidwood, Robert J., 1967, Prehistoric Men. 7th ed. Scott Foresman, Glenview, IL.
<table>
<thead>
<tr>
<th>Comparing Cultures</th>
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Basic Needs
OBSERVATION AND INFERENCE

Objectives:
In their study of observation and inference the students will use worksheets and coins to:
1. Differentiate between observation and inference through a problem-solving approach.
2. Demonstrate their knowledge by analyzing an archaeological artifact and creating their own observation-inference statements.

Materials:
"Boy in the Water" activity sheet and master, and "An Ancient Coin" activity sheet for each student, and/or transparencies of each. A collection of foreign or U.S. coins (one per each student/team).

Vocabulary:
hypothesis: a proposed explanation accounting for a set of facts that can be tested by further investigation.
inference: a conclusion derived from observations.
observation: recognizing or noting a fact or occurrence.

Background:
Science is based on observation and inference. Any phenomenon being studied must first be observed, whether it be from a satellite or through a microscope. An inference is a reason proposed to explain an observation. The hypothesis is a chosen inference that the scientist will attempt to confirm or disprove through testing.

Archaeologists use observation and inference to learn the story of past people. By making observations about objects (artifacts and sites) they infer the behavior of the people who used the objects. When archaeologists find the remains of a large village (observation), they could infer that the people were farmers. To test that inference (hypothesis), they would look for evidence of farming such as farming implements (like hoes), and food remains from crops (corn cobs and squash seeds). If they find these things, their hypothesis is verified. Archaeologists construct careful hypotheses when making inferences from archaeological data.

Setting the Stage:
1. Present students with a possible observation-inference scenario from their lives. Example: All the students in this classroom who ate in the cafeteria on Tuesday were ill on Wednesday (observation).
2. What many and varied reasons (proposed inferences) might there be for this illness? Examples: food poisoning, virus, a student uprising.
3. In what ways might one or more of these inferences (hypotheses) be tested in order to come to a conclusion about the cause of the illness? Examples: Send all the students to the school nurse for examination; test the food from Tuesday; obtain a medical history from the parents of each student.
Procedure:
1. “Boy in the Water”
   a. Project or distribute the master of the “Boy in the Water.” Project or distribute the “Boy in the Water” activity sheet.
   b. Read each statement and ask students to decide if it is a statement of observation or of inference. Ask them to give reasons for their answers.
   c. How might one or more of the inferences (hypotheses) be tested?
   d. Assist students to create a definition for observation, inference, and hypothesis.

2. “An Ancient Coin”
   a. Project or distribute the activity sheet “An Ancient Coin” and explain that the coin was found by an archaeologist at a site.
   b. Which statements are observations and which are inferences? Which observation is each inference based on?
   c. Many different inferences are possible from one observation. What other inferences might be made from observing this coin?
   d. Choose one inference (hypothesis) and think of ways archaeologists might test it by looking at other evidence at the site (e.g., If people are peace loving, archaeologists would not expect to find a lot of weapons or protective gear).

Closure:
Ask the students to summarize what they learned about the importance of observation, inference, and hypothesis in archaeology.

Evaluation:
Be an archaeologist.
1. Give each student/team a foreign or U.S. coin and ask them to imagine they have found the coin at an archaeological site.
2. Ask them to create a list of observation statements and inference statements about the coin.
3. Have them choose one inference as their hypothesis and describe how they might test it.
4. Collect and correct their statements.

Links:
Section Two, Lesson 11: “Artifact Classification”
Section Two, Lesson 15: “Archaeology and Ethnographic Analogy: The Anasazi and the Hopi”

Boy in the Water Activity Sheet Answers

An Ancient Coin Activity Sheet Answers
Boy In The Water
Boy in the Water

Name: ____________________

Place an ‘I’ before the statements that are inferences, and an ‘O’ before the statements that are observations.

  ___ 1. The boy is in the water.

  ___ 2. The weather is cold.

  ___ 3. The tree branch is broken.

  ___ 4. If the boy crawled out of the water the goat would butt him.

  ___ 5. The boy fell off the branch.

  ___ 6. A goat is standing by the pond.

  ___ 7. The branch will fall on the boy’s head.

  ___ 8. The boy fell off the rocks.

  ___ 9. There is a sailboat in the water.

  ____ 10. The sailboat belongs to the boy.

  ____ 11. The goat will soon leave the pond.

  ____ 12. The tree by the pond has no leaves on it.

  ____ 13. There are three rocks in the pond.

  ____ 14. The tree by the pond is dead.

  ____ 15. If it rains leaves will grow on the tree.

  ____ 16. The goat butted the boy into the pond.
Place an "T" before the statements that are inferences, and an "O" before the statements that are observations.

_ 1. There is a representation of a face on one side of the coin.

_ 2. The coin tells us that these were deeply religious people.

_ 3. The words "We Trust the Gods" are printed on the coin.

_ 4. On one side of the artifact is a drawing of leaves.

_ 5. We can tell from the artifact that these were peace-loving people.

_ 6. The face on the coin is a representation of the nation's king.
CONTEXT

SUBJECTS: Science, social studies, language arts
SKILLS: Knowledge, comprehension, application, synthesis, evaluation
STRATEGIES: Game, discussion, problem solving, writing
DURATION: 30 to 60 minutes
CLASS SIZE: Any; groups of 5 to 6

Objective:
In their study of context students will use a game and a discussion to demonstrate the importance of artifacts in context for learning about past people.

Materials:
Index cards; “Context” activity sheet for each student or team.

Vocabulary:
context: the relationship artifacts have to each other and the situation in which they are found.

Background:
The things that people own can tell something about the person. The objects a person has chosen to have can indicate the person’s age, gender, and interests. For example, a baseball bat and a football helmet in someone’s bedroom suggests that the owner likes sports. Posters of pets and a collection of stuffed animals could mean that the person is an animal lover. The objects (artifacts) can only tell a complete story if they are found together, where their owners left them (in context).

Archaeologists rely on the objects that people made (artifacts) and where they left them (context) to learn the story of past people. Think of a prehistoric pottery bowl, beautifully painted. It has a very different meaning if it is found at a prehistoric site in a grave than if it is found full of corn in an ancient storage room. Its meaning changes further if it is found in someone’s modern living room—the bowl has now lost its original context and all connection with its prehistoric owners. It has become only a thing, no longer a messenger from the past.

Archaeologists preserve the context of artifacts they recover from sites by recording the location of everything they find. The artifact and its context provide more information to the archaeologist than could the artifact alone. When context is lost, information is lost.

Setting the Stage:
1. Ask the students: If I had never met you and walked into your bedroom, what would I know about you from the things you have there? Would I know if you were a boy or a girl? Would I know what your interests are? Would I know if you share your room?

2. Think of something in your bedroom that is very special to you. How does that object tell something about you, along with everything else in your room? Everything together tells about you because it is in context. You have selected certain things to have, and these things tell about you when they are all found together.

3. Now imagine that your special object has been taken from you and is found in the city park. How does this change what could be known about you? When it is removed from your room, the object alone tells nothing, and your room is now missing an important piece of information about you. Context has been disturbed, and information about you is now lost.
Procedure:

The importance of context in archaeology can be demonstrated by the Game of Context:

1. Tell the students they are going to play a game requiring that they think like archaeologists. Divide the class into groups of 5 to 6 students, and assign each group a different number. Give each student an index card and pencil. As a group, they are to choose a room or type of building such as a hospital operating room, a kitchen, or a hardware store. They decide what objects (artifacts) in the room make it distinctive; then each student writes one clue on his or her card, for a total of 5 to 6 clues per group. Each card also has the group number written on its back side.

2. The stack of cards from each group is passed to the next group, until every group has seen every stack and tried to infer the function of each place. Be sure the other groups do not hear the correct answers. Each time, before the cards are passed, have a student remove one card and place it off to the side so it does not get mixed up with the other sets of cards.

3. The teacher reviews each group's stack, asking how many groups correctly guessed the rooms' functions.

4. Ask: Is it possible to know the function of the room now? Is one object taken out of context (like a card removed at random) able to give as accurate a picture as are all of the objects in their place of origin? This demonstrates that removing artifacts from a site removes them from their context and makes it very difficult to get a complete understanding of past people.

Closure:

Artifacts in context are the basis for all understanding about prehistoric people; archaeology is a science of context. Imagine that an archaeologist finds your classroom a thousand years from now. Make a statement about how artifacts in the context of your classroom will enable the archaeologist to learn about your class.

Evaluation:

Have the students complete the "Context" activity sheet.

Links:

Section Two, Lesson 9: "Gridding a Site"

Section Two, Lesson 10: "Stratigraphy and Cross-dating"

Context Activity Sheet Answers

1. List could include items such as ruffled curtains, posters, collections of dolls or model cars, certain types of clothing, photographs, other art work, the colors of furnishings, number of beds and dressers, souvenirs.

2. The listed items could indicate the student's sex, age, interests, places they have visited, their dreams and hopes, hobbies, amount of allowance, habits, and whether or not they shared their room.

3. Since these things are out of context, they tell nothing about their owner. In fact, it cannot be established if the artifacts once belonged together, so the story of their owner cannot be learned.

4. Artifacts and their context provide the evidence archaeologists need to learn about the past. If clues are removed or moved, information about the past is lost forever.
Context

1. List ten things in your bedroom that would tell about you. Imagine the things on your list to be clues for an archaeologist.

2. Imagine an archaeologist finds your ten items. What might he/she know about you?

3. All of the things in your bedroom are in context. What could be learned about you if the things in your bedroom were scattered all over town?

4. Why is it important to leave artifacts in place at archaeological sites?
CHRONOLOGY:
THE TIME OF MY LIFE

SUBJECTS:  Science, social studies, language arts
SKILLS:  Knowledge, comprehension, application, analysis, evaluation
STRATEGIES:  Discussion, problem solving, analogy, forecasting
DURATION:  45 to 60 minutes
CLASS SIZE:  Any; groups of 2

Objectives:
In their study of chronology the students will use personal time lines and an activity sheet to:
1. Demonstrate the importance of intact information to achieve accuracy.
2. Compare and contrast their timelines with the chronological information contained in a stratified archaeological site.

Materials:
Ten strips of colored paper, scissors, glue; “The Time of My Life,” “The Life of __,” and “Stratigraphic Section” activity sheets for each student.

Vocabulary:
chronology: an arrangement of events in the order in which they occurred.
data: information, especially information organized for analysis.
stratigraphy: the layering of deposits in archaeological sites. Cultural remains and natural sediments become buried over time; the layer on the bottom is the oldest, the layer on top is the youngest.
timeline: a visual representation of events in chronological order.

Background:
The proper sequence of events must be known when trying to understand the past. Chronological order means that events are arranged in the order of occurrence, establishing a chronology. One way to display events visually in chronological order is with a timeline. A timeline is divided into equal time segments (month, year, or century, for example), with one end representing the oldest events and the other end the most recent events.

Chronology is something we all use everyday. When somebody tells us a story or when we watch a news report, it only makes sense if we can understand the story as it happened. Archaeologists always try to establish the age of the sites, artifacts, or events they are studying so that they can place them in chronological order. Each piece of information contributes some understanding to the overall story of the past, but only if the information can be placed in chronological order.

Archaeological data are often buried. Sites become buried by the deposition of small-grained particles (sand, clay, silt) through the action of wind, gravity, and water. When archaeologists dig a site, they record the location of what they find, so that chronological order can be established. Objects discovered at the bottom of pits dug by archaeologists are the oldest, while those near the surface are the youngest.

When vandals and artifact-seekers dig a site or collect artifacts from the surface, they remove objects which could place the site in time, and therefore, the archaeologist cannot learn the site’s chronological placement. Vandalism mixes the stratigraphic layers together and archaeological events cannot be placed in order. A page of the past has been torn up and thrown away, destroyed. (While events in our lives typically have a short time duration, archaeologists use the term “events” to signify lifeways over a span of time.)

Everyone can help stop this problem by not digging in sites or collecting artifacts, by refusing to buy artifacts from people who dig and destroy sites, and by reporting people they see digging and collecting to law enforcement officials.
Setting the Stage:
Tell a familiar story such as Goldilocks out of sequence, leaving some parts out. Ask students to describe the problems with the story. Why is it important to relate sequential information, including all the important details?

Procedure:
1. Define chronology and state the necessity of establishing chronological order when studying the past.
2. Have the students list ten events in their lives, one on each of the ten strips of colored paper. (Note: It may be helpful to have the students do this as a homework assignment with parental assistance.) Next to each event, students draw an object that might symbolize that event. These events should not have obvious time links, such as “my eighth birthday party,” or “I started 4th grade.” The events could be things like “my sister was born (rattle),” “the family moved (moving van),” “we went to Yellowstone on vacation (tent).” Students should try to include events from their entire lives.
3. They then shuffle their strips and exchange them with another student, who tries to lay the strips out in correct chronological order with the most recent at the top.
4. The two students who have exchanged strips then tell each other their best guess of the proper chronological order. The strips are then returned to their owners. This is usually a humorous experience for students.
5. Discuss: Were you able to reconstruct the timeline correctly? Why or why not? It is difficult, sometimes impossible, to reconstruct a story if the order of events is not known.
6. Ask students to randomly remove four events from their personal timeline. Ask students if the chronological order would have been more difficult to construct and if the story of their classmate would have been as complete if there were even fewer strips. Connect this activity to archaeological sites by stressing how archaeological data is usually impossible to place in chronological order if artifact collectors have dug up a site (like mixing up the event strips) or if people have removed artifacts (equivalent to removing some of the event strips).
7. Distribute the “The Life of _____” activity sheet (which forms the backing for the timeline). Students glue their own strips in chronological order beginning with the most recent event at the top. They can write the year of the event (or they can number the events one through ten) in the column to the left of their strips.

Closure:
1. Distribute a copy of the “Stratigraphic Section” activity sheet to each student. Have them lay their timeline next to it.
2. Using a drawing on the chalkboard, different colors of construction paper layered on top of each other, or any other visual model, demonstrate how stratigraphy is formed.
3. Using the background information and the “Stratigraphic Section” activity sheet, discuss the effects of illegal digging on archaeological data recovery efforts.
4. Use the sheet and their timelines to explore the following questions:
   a. In what ways is your chronology similar to an archaeological stratigraphic section? In what ways is it different?
   b. Imagine that you cannot remember significant events in your life. How would that change the history of your life?
   c. In what ways is a hole dug by vandals in an archaeological site similar to a loss of significant events in your life?
   d. In summary, what might you say to an artifact collector about the importance of leaving sites undisturbed, as it relates to the importance of stratigraphy?

Evaluation:
Have the students complete the “The Time of My Life” activity sheet or use it for a discussion. Or ask the students to present an extemporaneous persuasive speech that defines chronology as used by the archaeologist and explains the importance of intact sites.

Links:
Section Two, Lesson 10: “Stratigraphy and Cross-dating”
Section Two, Lesson 12: “Archaeology and Tree-ring Dating”
Section Two, Lesson 13: “Pollen Analysis”

The Time of My Life Activity Sheet Answers
1. Students should express regret, or a feeling of being upset. For someone to wantonly destroy the only evidence of another’s life indicates that they have little respect for the meaning of that person’s life.
2. By extension of the previous question, students should link their feelings about destruction of their timeline to destruction of evidence of past peoples’ lives.
The Time of My Life

1. Write a short paragraph about how you would feel if your time line was all that would ever be known of you, and somebody tore part of it up.

2. How do you think an archaeologist feels when she or he visits a site that has been dug up by vandals? Give reasons for your answer.
Stratigraphic Section

Key:
- tire
- pot sherd
- rock
- basket
- pop can
- fire hearth
- pottery
- projectile point
- mano & metate

0 - 200 years ago
200 - 800 years ago
800 - 1,500 years ago
1,500 - 8,000 years ago
8,000 - 12,000 years ago
CLASSIFICATION AND ATTRIBUTES

SUBJECTS: Science, language arts
SKILLS: Knowledge, comprehension, application, analysis, evaluation
STRATEGIES: Observation, classification, comparing and contrasting, scientific inquiry, decision making, writing
DURATION: 30 to 45 minutes
CLASS SIZE: Any; groups of 3 to 4

Objectives:
In their study of classification and attributes students will use “dooohickey kits” to:
1. Classify objects based on their attributes.
2. Explain that scientists and specifically archaeologists use classification to help answer research questions.

Materials:
“Dooohickey kit” for each group, each kit containing about two dozen familiar objects, such as bolts, string, rocks, paper clips, and cloth (each kit must be identical); "Artifacts From A Mining Camp" activity sheet for each team.

Vocabulary:
artifact: any object made or used by people.
attribute: characteristics or properties of an object such as size, color, or shape.
classification: systematic arrangement in groups or categories according to established criteria.
data: information; especially information organized for analysis.

Background:
A basic element of thinking is classification. We place objects and situations into conceptual categories in order to make sense of the world so we don’t have to respond to each new object or situation as a completely new experience. Classification also helps us to sort a multitude of sensory impressions quickly and enables us “... to cope with complexity that might otherwise be overwhelming” (Hull, 1970, p. 150).

We classify objects almost automatically. This is accomplished by choosing certain attributes to pay attention to while ignoring others. We cannot take all attributes into account at once, therefore, we select only a few as being relevant to the task at hand. For example, if we have a group of blocks alike in every way except for color, then color is going to be the attribute used for categorization. If size is variable, then it, too, could become important for categorizing the objects.

Classification of data is an important part of any scientific study, including archaeology. Scientists must categorize data based on various attributes to reduce their complexity and to examine the relationships between types of data. For example, it is not possible to compare each individual house cat with every other member of the cat family. Instead, the category “house cat” includes creatures with certain shared attributes. All “house cats” are not identical, but all fall within a range of variation. The category “house cat” can then be compared with the category “tiger,” or “lion,” or “lynx.”
Objects (artifacts) left by past people form the archaeological data base. Like all other scientists, archaeologists classify data (in this case artifacts and sites) into categories based on their attributes. A site might contain hundreds of pottery sherds which vary in appearance. An archaeologist cannot compare every pottery sherd to every other pottery sherd. Instead, he or she classifies the pottery into categories and compares the categories, thereby greatly reducing the number of comparisons that have to be made.

Procedure:
1. Divide the students into groups of 4 or 5 and give each group a “dooohickey kit.” Have each group organize the objects into categories, using one or more classification schemes.
2. When everyone is finished, ask each group to explain its scheme. Which attributes did they use to place an object in a certain category (shape, color, function, type of material, other)? Compare and contrast how each group chose to classify the objects.
3. Explore with students the idea that one classification system is not better than another. The utility of a given classification system depends on what the classifier wants to know. When archaeologists bring artifacts back to the laboratory, they decide what they want to know, and using classification, organize the data accordingly.
4. Devise some simple questions that might be answered by classifying the objects in the doohickey kits. For example: What colors are present? How many different shapes are there (name them)? How might these objects be used? The students will need to regroup the objects based on the question asked.

Closure:
1. Distribute a copy of the “Artifacts From A Mining Camp” activity sheet to each team of students.
2. Have the students imagine they are archaeologists who have found an old mining camp. What questions might they ask about what happened in the past at this mining camp?
3. The students cut out the boxes on the activity sheet. How might they group these objects to answer their questions?
4. Summarize why classification is a useful tool for studying the past.

Link:
Section Two, Lesson 11: “Artifact Classification”

Reference:
Artifacts from a Mining Camp

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SCIENTIFIC INQUIRY

SUBJECTS: Science, social studies, language arts
SKILLS: Application, analysis, synthesis, evaluation
STRATEGIES: Scientific inquiry, classification, research skills, writing
DURATION: 45 to 60 minutes
CLASS SIZE: Any; groups of 3 to 4

Objectives:
In their study of scientific inquiry students will use an activity sheet to:
1. Make an inference about the behavior of a classmate and test it using artifacts.
2. Simulate how archaeologists learn about past people by designing and conducting a research project.

Materials:
“Archaeological Inquiry” activity sheet for each student and group.

Vocabulary:
classification: a systematic arrangement in groups or categories according to established criteria.
data: information; especially information organized for analysis.
hypothesis: a proposed explanation accounting for a set of facts that can be tested by further investigation.
inference: a conclusion derived from observations.

Background:
The goal of archaeological research is to answer questions about people who lived in the past. Hypotheses formation and classification are dependent on the chosen question. For example, if we want to learn about a settler family’s income we could hypothesize that more nonessential items than essential items means they had a significant disposable income. We would classify the relevant artifacts into two classes—essential items and non-essential items. Based on the outcome of the classification we would accept or reject our hypothesis.

Setting the Stage:
Have students classify the contents of their own desks, lockers or backpacks in whatever manner they choose. Items could be categorized as follows:
- Writing instruments
  1. pencils
  2. crayons
- Paper
- Books
- Miscellaneous
  1. gum
  2. money
  3. toys
Ask the students how they would proceed if they wanted to know something specific about the owner of a desk, locker or backpack. This is how an archaeologist begins to study past cultures.
Procedure:
1. Distribute a copy of the "Archaeological Inquiry" activity sheet, which the students will fill in as they are led through the following inquiry.
2. The inquiry process begins with a question. Archaeologists want to answer questions about past human behavior and must use material remains to do so. Ask the students to consider the following question: "Is the owner of the desk next to you a saver or a thrower-awayer?"
3. Formulate an hypothesis: If there is a large number of items not required for school work in the desk, then the owner is a saver.
4. Classify the data: Only two categories are essential—items required for school work and items not required for school work. Discuss with the students differing ideas about what constitutes "required items," since this determines how objects are categorized.
5. To answer the research question, ask which category contains the largest number of objects. If there is a greater number of items that are not required, then we accept the hypothesis: the owner of the desk is a saver. The students have made an inference about the behavior of the desk’s owner and have tested their inference (hypothesis) using classified objects.

Closure:
Divide class into groups of 3 to 5 students and give each group an "Archaeological Inquiry" activity sheet. Have them design and conduct an archaeological research project using objects in the school. Since students know the people in their class, it would be best to visit another teacher’s room, the office, the lunchroom, etc. Each project must answer a question about the people who own or use the objects; e.g., what subjects are being studied at this point in time? Each group presents their results to the class.

Evaluation:
Students turn in their "Archaeological Inquiry" activity sheets for evaluation.

Link:
Section Two, Lesson 9: "Gridding a Site"
Section Two, Lesson 11: "Artifact Classification"
Section Two, Lesson 16: "Experimental Archaeology: Making Cordage"
## Archaeological Inquiry

<table>
<thead>
<tr>
<th>Behavioral Question</th>
<th>Is the owner of the desk a saver or a thrower-awayer?</th>
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<tbody>
<tr>
<td>Hypothesis</td>
<td>If there is a large number of items not required for school work in the desk, then the owner is a saver.</td>
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<tr>
<td>Classification Categories</td>
<td>items required for school work items not required for school work</td>
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<td>Accept or Reject the Hypothesis</td>
<td>There is a greater quantity of items not required for school work than items required for school work, so I accept the hypothesis.</td>
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<td>Make a Behavioral Inference</td>
<td>The owner of the desk is a saver.</td>
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IT'S IN THE GARBAGE

Subjects: Science, social studies, language arts
Skills: Application, analysis, synthesis, evaluation
Strategies: Scientific inquiry, problem solving, discussion, forecasting, research skills, writing, classification
Duration: 60 to 90 minutes
Class Size: Any; groups of 3 to 4

Objectives:
In their study of archaeological concepts, students will analyze garbage from different places to:
1. Demonstrate competence in applying the concepts of culture, context, classification, observation and inference, chronology and scientific inquiry; and
2. Explain how their study of garbage relates to the methods of archaeology.

Materials:
Filled wastebaskets or small garbage bags from several places in the school, home, or elsewhere, selected to represent rooms of different function; plastic tarps are useful when spreading the garbage out. Undesirable and unsanitary items, such as used tissues or rotting food remains, should not be included. “It's in the Garbage” activity sheet for each group; “Garbage Chart” activity sheet for each group (optional).

Vocabulary:
artifact: any object made or used by humans.
classification: systematic arrangement in groups or categories according to established criteria.
chronology: an arrangement of events in the order in which they occurred.
context: the relationship artifacts have to each other and the situation in which they are found.
culture: the set of learned beliefs, values and behaviors generally shared by members of a society. “The way the members of a group of people think and believe and live, the tools they make, and the way they do things” (Braidwood, 1967, p. 30).
evidence: data which are used to prove a point, or which clearly indicate a situation.
hypothesis: a proposed explanation accounting for a set of facts that can be tested by further investigation.
inference: a conclusion derived from observations.
midden: an area used for trash disposal.
observation: recognizing or noting a fact or occurrence.

Background:
The unusable or unwanted remnants of everyday life end up in the garbage. By studying what people have thrown away, archaeologists can learn a great deal about a culture. This is true not only of prehistoric peoples who left no written record about their lives, but also of people today. Bill Rathje, an archaeologist, studies the garbage of Americans. He has learned many things about the relationships of human behavior and trash disposal, information useful in studying people of the past and the present. He has found that people will often tell an interviewer what they believe is appropriate behavior, but their garbage tells another story. People frequently say they eat lots of fruit and vegetables, yet their garbage shows they do not. Another example is that people say they recycle more than they actually do (Rathje, 1984, p. 27).

Just as we do not throw our trash any old place, neither did prehistoric people. Their garbage heaps are called middens, and are a rich source of archaeological information about their lifeways. Layers of trash also tell a story over time. Archaeologists
excavate middens slowly and carefully, recording the location of artifacts and samples recovered from the midden. They analyze the tiny fragments of prehistoric meals (bone slivers, seed hulls, plant parts) and charcoal from cooking fires. The animals and plants these remains came from can be identified and archaeologists can learn very precise information about the economy of past people.

If a midden is disturbed and the layers mixed, it becomes impossible to interpret the lifeways of past people. Vandalism looking for artifacts dig in middens and they destroy irreplaceable information about the past. They tear pages from the history book of time. Everyone can help by not digging archaeological sites or collecting artifacts, by refusing to buy artifacts from people who do, and by always reporting anyone seen digging at sites or collecting artifacts to law enforcement authorities.

Setting the Stage:
A famous anthropologist, Franz Boas, reportedly said “...man never lies to his garbage heap.” What do you think your family’s garbage could tell about you? (Examples: family size, income, preferred foods and activities).

Procedure:
1. Review the concepts learned in Section One: culture, context, observation-inference, classification, chronology, and scientific inquiry. Students will be applying these concepts to their study of garbage.
2. Explain to the students that they are going to be archaeologists, analyzing garbage (middens) to learn about the people who threw it away. Demonstrate some of the information that can be learned from garbage by examining a small amount of trash from your classroom trash can:
   a. What culture is this garbage from? Could the garbage be mistaken for that of another culture? Is the garbage in your classroom trash the same or different from classroom garbage in China? Portugal? Your town 100 years ago? Are basic human needs represented in the trash?
   b. What can you infer about the behavior of the thrower-awayers and the origin of the garbage based on your observations? Is cafeteria trash the same as that from the wood shop? the library? How is a single person’s garbage different from that of a family with many children? Is a vegetarian’s trash different from a meat-eater’s?
   c. Arrange the trash in chronological order. On the bottom is the oldest trash, on the top is the most recent garbage. If you find dated items through the trash, such as newspapers or post-marked envelopes or product dates, you can establish a precise date for the trash.
   d. Sort the trash into piles based upon some type of similarity. This is a classification, perhaps including categories like paper, food containers, other office supplies.
   e. The trash is obviously from a classroom because you have preserved its context, the relationship artifacts have to each other and the situation in which they occur. If you went to your town’s landfill, you might find some of the artifacts from your classroom trash but you could not interpret it as coming from your classroom because it has been all mixed up with trash from many other places. Its context has been lost.
   f. Construct a scientific inquiry. An example is: “Was the trash made by very young children?” The hypothesis could be: “If there are few papers with cursive writing in the trash, then the trash came from young children.” Classify the trash into two categories: papers with and papers without cursive writing. Accept or reject your hypothesis.
3. Divide the class into groups of 4 to 6 students and give each group a bag of trash. The group analyzes their trash using the activity sheet “It’s in the Garbage” (and optionally the “Garbage Chart”).
4. Students visit each other’s “middens,” and a spokesperson from each group presents a summary of their findings.

Closure:
Lead a discussion using the “Garbage Concepts” questions.

Evaluation:
Collect the students’ activity sheets and reports.

Links:
Section Two, Lesson 10: “Stratigraphy and Cross-dating”
Section Two, Lesson 11: “Artifact Classification”

References:
GARBAGE CONCEPTS

Question:

[When students propose an inference about the people who generated the garbage] What would the activity you are proposing (hypothesis) look like archaeologically? What artifacts would you expect to find if your hypothesis is correct?

Does your study of your garbage tell you everything about American society? Why or why not?

Do the contents of your garbage change throughout the year? ... as a result of special occasions like birthdays or company for dinner? What mistakes might an archaeologist make if he/she studied only the garbage from those special events?

How would the results of your study be different if we had mixed your individual garbage bags all together into one heap?

Concept:

When archaeologists suspect a certain behavior was occurring, they make an hypothesis about what the archaeological evidence would look like. For example, archaeologists could hypothesize that people butchered large game where it was killed and only took the most desirable parts back to their village. In excavating the village, archaeologists would prove or disprove their hypothesis based upon the animal bones present.

One sample is only a glimpse into a complex society. Just as you only see a small piece of our culture from one sample, so too archaeologists see only a sliver of the past from one site.

Just as someone who wants to completely understand your family would study your garbage over a long period of time, an archaeologist studies many sites because one site cannot reflect the range of activities of a prehistoric society.

Context would have been lost, and only very general statements about the culture that generated the garbage could then be made. This is what happens when vandals dig up sites and say the artifacts are preserved, therefore, no information has been lost.
It's in the Garbage

Name: ______________________

Directions: Use this activity sheet to take notes during your “excavation.” When you have completed your excavation, use the information to write a report about the garbage that addresses the items below. You must give reasons for your answers based on the “evidence” —the artifacts which support your answer.

1. Could you tell when your garbage was thrown away? If yes, how? If no, why not?

2. List two or more inferences you can make about the person(s) who threw the trash away.

3. From where did your garbage come?

4. Which basic human needs does your garbage show are being met?

5. Name two or more of the categories into which you classified your trash.

6. How do you know this garbage is from your own culture?
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<thead>
<tr>
<th>Sketch of item</th>
<th>Description of item (Observation)</th>
<th>Guess as to use or purpose (Inference)</th>
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SECTION TWO

THE PROCESS OF ARCHAEOLOGY
INTRODUCTION

Archaeologists employ many processes to address questions about the past. They may gather new data by conducting regional surveys to locate archaeological sites. Occasionally sites are partially or completely excavated to address specific research questions or to salvage information prior to disturbance by a development project. All data recovered are thoroughly analyzed following scientific inquiry procedures before conclusions are reached.

Archaeologists often reexamine data such as artifact collections, site records, and published reports from previously completed projects. New techniques may allow them to learn from data and artifacts that have been curated for many years. Similarly, archaeologists often revisit old data armed with increased knowledge about the past and a new set of questions.

Archaeologists sometimes use experimental methods to help them understand how people may have performed similar tasks in the past. For example, archaeologists who specialize in lithic technology may produce stone tools similar to those made by prehistoric people. The process allows them to better understand how stone tool production was accomplished and how the evidence of it might appear in an archaeological site.

Descriptions of North American cultures at the time of European contact provide archaeologists with insights into how artifacts were made and used, how sites were occupied, and how prehistoric peoples may have lived. These observations and analogies are then used to help interpret archaeological evidence.

The following overview describes how archaeologists find and excavate sites, analyze the data recovered, and interpret what they have found. It can be presented to students as background information. The lessons in Section Two illustrate many of the processes and concepts presented in this overview.

Finding Sites

There are two main reasons why archaeologists look for and sometimes excavate sites. First, they may have a research question about the past that makes it necessary to search a certain area for sites, or to excavate a site. Secondly, sites may be endangered by a development project or natural causes, such as erosion, that requires data to be salvaged before the site is destroyed. In both cases archaeologists structure their data collection to address a variety of research questions.

State and federal laws require that land use decisions take into account, among other things, the effect of a project on archaeological and historic sites (cultural resources). These laws apply to all federal and state-managed lands, including those administered by the Bureau of Land Management, National Park Service, U.S. Forest Service, U.S. Fish and Wildlife Service, and the military, and to projects on private land that use federal or state funds or that involve issuing a permit of some kind. Any project that could change land ownership or disturb the surface of the land requires consideration of cultural resources. Typically, the company or agency proposing the project pays for the archaeological work.

A small fraction of the country, probably less than 5 percent, has been systematically explored for cultural resources. Consequently, the first step an archaeologist takes is to review the records to see if an area already has been examined, and if any sites were recorded there. Each State Historic Preservation Office usually maintains a central record center for the state. At this time, interested parties, including Indian tribes, may also be contacted to see if they have concerns or areas of importance within the project area.

If an area has not yet been explored, archaeologists conduct a survey, a systematic examination of the land. Since they are trying to find all of the sites present in a project area, they walk about 40 feet from each other in straight lines, back and forth, until all the land has been examined. A compass helps surveyors keep their lines straight. For projects that are linear, such as a proposed railroad or fence, archaeologists walk the strip of land the project will disturb.

Archaeologists are looking for anything that is not natural to the area. They are alert to things like
a row of rocks (possibly the remnant of a wall), depressions or mounds (buried structures), chips of stone (debris from stone tool manufacture), dark soil (possible middens, hearths, or burned structures), and pottery sherds. Because archaeologists want to know how people used resources in their environment, information about where sites aren’t is also very important.

In the arid West many sites are still visible on the ground surface. Often sites are buried, however, and archaeologists check animal burrows and drainage banks for evidence. In densely vegetated areas, archaeologists will sometimes dig a small hole every 50 feet or so, looking for buried sites.

When a site is discovered, archaeologists record data about it on a site form. Information about the vegetation, soil, elevation, and location is recorded, as well as a description of the site, artifacts and structures present. Photos are taken and a map is made. The site is also evaluated for its information potential, and a determination is made about whether or not the site has buried deposits. This recording process is used for both prehistoric and historic sites.

Excavating a Site

If the survey was performed because of a development project proposal, archaeologists will recommend to the agency decision-maker what should be done about the cultural resources. Some sites have limited information potential, and only in-depth recording is needed. It will be recommended that sites containing important data or having some other significance (such as spiritual importance to American Indians) be left undisturbed. An effort is made to move a project to avoid disturbing an important site, but sometimes that is not feasible.

If a site is to be excavated, a research design is prepared. This outlines what questions the archaeologists will try to answer and the techniques they will use to excavate and analyze the data. The agency which manages the land, or the landowner, the state archaeologist, and the President’s Advisory Council on Historic Preservation will each review the research design to assure it meets professional standards. If all agree, the directing archaeologist is issued a permit to excavate.

Finally the excavation begins (Figure 2). The directing archaeologist assembles a team of excavators. These people may be historians, archaeologists, students, and trained amateurs. The first step is to clear vegetation from the site and establish a grid on the surface (Lesson 9: “Gridding a Site”). The grid is the primary way to maintain context, the relationship artifacts and features have to each other.

The process of excavation destroys a site, and once it is dug, you can’t go back and do it differently. Researchers of the future can study a site they never saw if good notes and maps were made of the excavation. Recording context is the key to interpreting the site from records.

The grid is a Cartesian coordinate system. A grid is set up using a survey instrument (usually a transit), measuring tapes, and wooden stakes. Squares are marked on the ground using stakes for each corner; squares are most often 1 or 2 meters on a side. Each square has a unique identifying number from its grid coordinates. A map is made of the site on graph paper; the graph squares correspond to the squares on the ground. Any artifacts, samples or features (such as a hearth or pit) that are found in that square are labeled with its grid number and the depth below the ground surface at which they were discovered.

Using shovels, trowels, screens, and measuring tapes, archaeologists uncover a site. They move dirt slowly because they don’t know what they will be uncovering and they don’t want to destroy something by being in a hurry. The locations where artifacts are found are carefully recorded. The excavated dirt is put in a mesh screen and shaken back and forth so that the dirt falls through and artifacts are left on the screen.

Numerous maps, drawings and photos are made during excavation. Each references the grid location. Artifacts and various kinds of samples (pollen, botanical, faunal, tree-ring, carbon-14) are sent to specialists for analysis.

Once the excavation is completed, the site is usually filled with the excavated dirt. A development project will now be authorized to proceed.

Using the Data

Months after the excavation is completed, results of the analyses will be ready. The time spent actually excavating is the least time-consuming aspect of archaeological research. Processing samples and interpreting the data (Lesson 13: “Pollen Analysis,” Lesson 12: “Archaeology and Tree-ring Dating,” Lesson 11: “Artifact Classification,” Lesson 14: “Measuring Pots”) take several times as long as excavation. Artifacts, records and photos are turned over to a public museum, or to the Indian tribe with jurisdiction after the analysis is complete. A public museum assures the availability of the artifacts and information to future researchers, as well as for use in a display.

Archaeologists make extensive use of comput-
ers and statistical data analysis. They compare their data with data derived from other studies. They may use ethnographic analogy—studying modern groups of people for clues about what archaeological patterns might mean, or what use artifacts could have had (Lesson 15: “Archaeology and Ethnographic Analogy: The Anasazi and the Hopi”). They address the questions they originally posed in their research design.

Sometimes artifacts are experimentally replicated to learn what methods of manufacturing may have been used prehistorically (Lesson 16: “Experimental Archaeology: Making Cordage”).

A strong professional ethic dictates that excavation results be published, so that the information is available to everyone. Publications have most often been written in the idiom of professional archaeology, accompanied by all the jargon that any profession develops. There is a growing emphasis in professional archaeology to communicate with the general public, and to write and present information in more general terms.

**Dating Archaeological Samples**

Archaeologists have two ways of placing events, sites, and artifacts in chronological order. Relative dating can order things in relation to each other, but they are not anchored to a calendar (Lesson 10: “Stratigraphy and Cross-Dating”). Think of a trash can; items on the bottom were placed there prior to the items on the top. Relative to each other, the items on the bottom represent older actions than those on the top, but we don’t know what day or what year the trash can was filled.

Absolute dating can establish a calendar year for an artifact, site or event; archaeologists have several methods to learn an absolute date. Tree-ring dating can be very precise, whereas carbon-14 dating provides a range of possible dates, i.e. A.D. 500 ± 30, means the date is between A.D. 470 and A.D. 530. To return to the trash can example, if something in the garbage had a date on it, like a newspaper or a postmarked envelope, then we could propose that the garbage in the same layer with it is also about that old, and we know an absolute date for its disposal.

In North America, archaeologists use four absolute dating methods: tree-ring, radiocarbon, obsidian hydration, and archaeomagnetic. Tree-ring dating is explained in Lesson 12.

Radiocarbon dating (also called carbon-14 or $^{14}C$) can be used on anything organic, anything that once was living. The method was developed in 1949 by two physicists, W.F. Libby and J.R. Arnold and it revolutionized the young science of archaeology: “…living organisms build up their own organic matter by photosynthesis and by using atmospheric carbon dioxide. The percentage of radiocarbon in any living organism is equal to that in the atmosphere. When the organism dies, the carbon-14 ($^{14}C$ = a radioactive isotope) atoms begin to disintegrate to carbon-12 at a known rate, so that after 5,568 years, only half the original amount will be left; after 11,136 years, only a quarter, and so on. It is possible to calculate the age of an organic object, such as charcoal or wood, by measuring [through a laboratory procedure] the ratio of $^{14}C$ to $^{12}C$ left in the sample” (Fagan, 1980, p. 13).

Carbon-14 dating destroys the sample and requires a fair amount of material. For example, about a quarter-cup of charcoal is needed for a $^{14}C$ date. Sometimes archaeologists are reluctant to destroy an object, or there is not enough material for a standard $^{14}C$ date. Fortunately, there is a newer method of radiocarbon dating that requires very little organic material—about the size of the head of a pin is enough. This method is done with an accelerator mass spectrometer, and is called an accelerator date. An accelerator date costs two to three times what a standard $^{14}C$ date costs.

Obsidian hydration dating is based on the principle that all glass—natural and human-made—absorbs small amounts of atmospheric moisture. Obsidian (volcanic glass) was frequently used by prehistoric people to make tools. A fresh surface was exposed when the tool was made from an obsidian nodule, and so the absorption started on an unweathered surface. An hydration “rind” develops on the obsidian, and the rate of hydration can be determined. Therefore, by examining a thin slice of obsidian under a microscope and measuring the width of the rind, the age of the tool can be determined. Problems exist with this technique and it is not widely used. However, research continues and may make obsidian hydration dating a more reliable method.

Archaeomagnetic dating is based on the fact that the earth’s magnetic poles have changed locations over time. The time and path of the North Pole’s wanderings is roughly known. Some soils contain tiny magnetic particles, such as iron oxide. When soil is heated above 670°, the particles are “loosened” in the soil, and when they cool the particles align with magnetic north. Archaeologists collect small cubes of burned earth, such as that around a hearth, and send them to an archaeomagnetic dating laboratory. The particles will be pointing to the place where magnetic north was at the time they were last heated and cooled, and the date of that event can then be determined.
Excavating a Site

Figure 2. Drawing which shows how a site is excavated.
GRIDDING A SITE

SUBJECTS: Science, mathematics, language arts
SKILLS: Knowledge, comprehension, application, analysis, evaluation
STRATEGIES: Brainstorming, map reading, using scale, scientific inquiry
DURATION: 45 to 60 minutes
CLASS SIZE: Any; work teams of 2 to 4

Objectives:
In their study of site gridding students will use a map and the Cartesian coordinate system to:
1. Establish a grid system over an archaeological site, labeling each grid unit.
2. Determine the location of artifacts within each grid unit.
3. Construct a scientific inquiry concerning the location of artifacts on the site.

Materials:
Rulers, transparencies of “The Lakeside Site” activity sheet and “The Grid” master, “The Lakeside Site” and “Artifact Location Record” activity sheets for each team.

Vocabulary:
datum: something to use as a basis for measuring.
site datum: an arbitrarily established point from which the entire site is measured and recorded.
Cartesian coordinate system: two- or three-dimensional graph based on intersecting, perpendicular incremented lines or planes.
flake: a thin piece of stone removed from a nodule by striking it with a flaker made of bone, antler, or other stone. Flakes have sharp edges, and could be used as cutting implements. Flakes were also further shaped into tools or were left as waste by-products of flint knapping.
grid unit: a specific spatial area on the Cartesian coordinate system, designated by the coordinate in one corner (usually the southwest corner).

Background:
Once a site has been dug (or in the case of sites with no depth, the surface artifacts have been collected), it is gone forever, and can never be replaced with another just like it. Because sites are destroyed during collection or excavation processes, archaeologists record them on paper to preserve the context of all the artifacts and structures. Archaeologists of the future can study a site if good notes and maps were made.

One way archaeologists preserve context on paper is through the use of the rectangular grid, or Cartesian coordinate system. The first step in the excavation process is establishing a grid. A site datum is set at an arbitrarily chosen location and is designated as (0,0). Two perpendicular axes intersecting at the site datum are then established and a rectangular grid is superimposed over the entire site. Each square on the ground is marked with numbered stakes in the corners, so that each square has a unique “name” referred to by its coordinates. The coordinates indicate the distance of a given point north, south, east, or west from the site datum.

Once the grid is established, all artifacts and structures are measured and recorded using the system. Before excavation actually begins all artifacts visible on the surface are collected and their locations on the grid are recorded. As excavation proceeds, materials found under the surface are similarly recorded and collected. When the archaeologist returns to the laboratory, the maps and the data recorded in the field can be used to make inferences about past events and the lifeways of the site’s inhabitants. The exact location of each artifact transported back to the laboratory is known—the object can be tied to its place in the site.
Setting the Stage:

Have the students imagine they are a team of archaeologists who have found an archaeological site. Artifacts, including projectile points, pottery sherds, and stone flakes are scattered on the surface of the ground. They want to make a map of the site. How might they accurately record the location of the artifacts? Have the students brainstorm ideas.

Procedure:

1. Project the map of the “Lakeside Site” and explain this is the site they have found. Overlay a transparency of the grid matching the site datum points, to demonstrate that an archaeologist establishes a grid over the site to assist with accurate recording of data. Share background information about the importance of gridding a site for current and future study.

2. Distribute the “Lakeside Site” activity sheet to each team. Point out the site datum in the lower left hand corner and explain this is the point from which the grid is established. The name of the site datum is (0,0).

3. Using rulers, each team will establish a grid system using the scale 1" = 1 meter, starting from the tip of the datum (see “The Grid Sheet”). It is helpful to model this procedure on the overhead projector.

4. Label each point on the grid. The southwest corner of each unit becomes the reference (designation) for that unit. Example: (1,2); (2,2); (2,3). Each coordinate indicates the location east and north of the site datum.

5. Using the “Artifact Location Record” students will record the grid unit designation and count and name the artifacts in each grid unit.

6. Following the procedure of scientific inquiry ask:
   a. What do you notice about the distribution of the pottery sherds? (observation)
   b. Why is there a concentration of pottery sherds in part of the site? (List some inferences.)
   c. Choose one inference and formulate an hypothesis from it. Describe how the hypothesis might be tested.

   Example: There are a lot of pot sherds in one location. We might infer a pottery vessel broke here. If all the sherds have similar attributes and fit together, then we could accept the hypothesis that a vessel broke in this location. What other reason could explain the concentration of sherds?

   Note: The students will not be able to actually test the hypothesis without access to the artifacts. This exercise is designed to have them think like archaeologists.

d. Conduct a similar inquiry using the stone flakes or other artifacts.

Evaluation:

Students turn in their completed “Artifact Location Record” for evaluation.

Closure:

Summarize the importance of gridding archaeological sites to assist with accurate recording and making inferences from data, now and in the future.

Extensions:

Extension 1. With older students, precisely map artifacts within each grid unit. Measure the distance north and east of the grid unit’s southwest corner to find the exact distance of each artifact from the site datum (0,0). Examples: (2.1, 4.6) or (3.3, 8.8).

Extension 2. Create a site on the playground by depositing “artifacts”, and then gridding the playground. Map the “artifacts” using the grid.

Links:

Section One, Lesson 4: “Context”

Section One, Lesson 7: “Scientific Inquiry”

Artifact Location Record Answer Sheet

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<th># Flakes</th>
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The Lakeside Site

Name: ____________________________

× Flake
○ Sherd
△ Projectile point

(x,y)
(0,0)

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The Grid Sheet

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STRATIGRAPHY AND CROSS-DATING

Background:
Natural materials such as rocks, soil, and plant and animal remains occur on the earth's surface and can accumulate in layers. Each layer or stratum may be distinguished by its physical characteristics: color, texture, and structure. Similarly, materials of human origin are also deposited onto the earth's surface. In archaeological sites natural and human-generated materials occur together in layers. These layers, called strata, form a record of past events that archaeologists analyze and interpret.

The materials deposited first are the oldest and are always found at the bottom of a given stratigraphic section. The most recently deposited materials are the youngest and are always at the top. This concept is known as the Law of Superposition. It always applies except when some type of disturbance has occurred.

Strata in archaeological sites provide archaeologists with temporal and spatial information. All of the artifacts in a given stratum will be of approximately the same age, while those in strata above or below will be younger or older respectively.

Cross-dating can indirectly establish a date for artifacts and sites. Artifacts such as stone points and pottery were made in distinctive styles through time. A modern analogy is automobiles: one would not mistake the style of a car made in the 1920s with one made in 1990. If an arrow point was found in association with a hearth that was radiocarbon dated to be 500 years old, it is assumed that the arrow point is the same age. When that style of arrow point is found at another site, the archaeologist would assign the site and the arrow point an age of approximately 500 years. Often cross-dating is the only method archaeologists have to determine the age of sites.

Most sites represent a single occupation. It is much more rare for a site to contain evidence of repeated occupations. Stratified sites can show culture change over time and have the potential to give clues about the relationship one group of people had to those who came before or after them. Because of their great information potential, and their

Vocabulary:
cross-dating: the principle that a diagnostic artifact dated at one archaeological site will be of the same approximate age when found elsewhere.
diagnostic artifact: an item that is indicative of a particular time and/or cultural group; a computer would be a diagnostic artifact of the modern age.
spatial: concerned with space.
strata: many layers of earth.
stratigraphy: the arrangement of layers of earth representing different geologic events.
stratum: one layer of earth.
temporal: concerned with time.
rarity, archaeologists regard stratified sites as particularly important.

When an archaeological site is vandalized or artifacts are removed, knowledge about past cultures is lost forever. Damage to stratigraphy by unauthorized digging destroys the information that could be obtained under controlled scientific excavation. The removal of diagnostic artifacts from a site often removes all possibility of determining the site's age. If you see anyone digging in an archaeological site or taking artifacts, report them to law enforcement authorities.

**Setting the Stage:**

Stack five books on a table. Tell the students that the books were placed in their positions one at a time. Ask them which book was placed in position first. Which one was placed last? This illustrates the Law of Superposition.

Now have the students imagine how thick the dust would be on a table if no one dusted it for 100 years. Each book represents a layer of sediment built up in a similar fashion for hundreds or even thousands of years.

**Procedure:**

1. Using the "Site Near Richfield" activity sheet as a guide, draw a layer near the bottom of the blackboard. Show how artifacts are deposited as people live on top of the layer. Then a new layer of sediments is deposited on top of that, by natural processes or by another group of people leaving different types of artifacts. This happens several times until the stratigraphy is built up to present-day levels.

2. Distribute the "Site Near Richfield" activity sheets to the students. Have students answer the questions using the information on the stratigraphy drawing.

3. The artifacts on the "Site Near Richfield" activity sheet have been dated based on the age of the stratum in which they are found. If you found similar artifacts elsewhere, would you know approximately how old they are? Yes. This concept is known as cross-dating. An artifact type that has been dated in one place can be dated when found elsewhere.

4. Give the "Cross-dating" activity sheet to the students. Ask the students to imagine that Richfield is a town ten miles away from their town. Have them determine the approximate age of the artifacts based on the information from the "Site Near Richfield" activity sheet.

5. Ask the students if they would be able to study the stratigraphy of a site if the strata had already been mixed up by illegal digging. If someone took an arrow point, what kind of information would he or she have removed from the site?

**Closure:**

Summarize how archaeologists use stratigraphy and cross-dating to study archaeological sites.

**Evaluation:**

The students turn in their activity sheets for evaluation.

**Extension:**

Field trip. Examine the stratigraphy of road cuts. Measure and draw the layers on graph paper. Describe the strata by comparing differences in color and texture and other observable characteristics.

**Links:**

Section One, Lesson 5: "Chronology: The Time of My Life"

### Site Near Richfield Activity Sheet Answers

1. modern Americans
2. settlers
3. ancient farmers
4. early hunters
5. 4
6. 1

### Cross-dating Activity Sheet Answers

1. 10,000 to 12,000 years ago
2. 750 to 1,000 years ago
3. 100 to 150 years ago
4. 750 to 1,000 years ago
Site Near Richfield

Name:__________________

1. ________________
   0 - 30 years ago

2. ________________
   100 - 150 years ago

3. ________________
   750 - 1,000 years ago

4. ________________
   10,000 - 12,000 years ago

Who left these artifacts?

1. ______________________
2. ______________________
3. ______________________
4. ______________________

5. Which people came first? ______
6. Which people came last? ______
Cross-dating

An archaeologist found these artifacts near your town. What is their approximate age?

1. 

2. 

3. 

4. 

Name: ___________________________