Project Archaeology:
Investigating Food and Culture

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Introduction

Discover the Past - Shape the Future

To understand the present, we must know the past. The world is a complicated place—the sum of untold years of human sweat and toil, building and destroying, war and peace, laughter and tears. Unique cultures arose, flourished for a time, and then vanished. Other cultures endured, little changed for centuries, while others have adapted to accommodate changing climates, technologies, or social conditions. At the dawn of the 21st century, while we may seem to be forming a global society through technology and trade, vast cultural differences still exist. How did we get here? Why is the world like it is now? Why are cultures different? How are they similar? How can we learn from each other and share our complex world? How can we use lessons from the past to make the world a better place to live now and for children yet to come?

Archaeology is one way to learn about the past, both the past of thousands of years ago and more recent historic times. Archaeology is one of the few ways that we have to learn about people who left no written records; in North America this includes approximately 97 percent of human occupation and for the rest of the world, the percentage is even higher. While archaeology provides an engaging way to learn about the past, it also informs the present and the future. How, for example, do changes in food production change cultures and how can we use that information today?

Archaeology is everywhere. We marvel at the ancient pyramids of Egypt. How were they constructed without large machinery? Machu Picchu, the ancient city of the Inca, makes us wonder why people would build such a beautiful place so high in the Andes Mountains of South America. In the United States, the ancestors of today’s Puebloan peoples built “palaces” in alcoves of the sandstone cliffs. Were they for protection or to take advantage of the warming winter sunshine? Archaeological sites offer a way to travel in time: to imagine what it might have been like to hunt mammoths on the High Plains of North America at the close of the Pleistocene epoch; to abandon hunting and rely primarily on agriculture for food; to see the pyramids of Egypt under construction; or to live in a slave cabin in the United States before the Civil War. Archaeology is the record of the past and our database for learning about environments, cultures, and lifeways that came before us. In America we are fortunate—everyone has the opportunity to touch the past by visiting archaeological sites, but the archaeological record is also fragile, vulnerable, irreplaceable, and in need of protection so that everyone may benefit from it now and in the future.

This curriculum guide is for upper elementary and middle school teachers and their students studying world history and geography. Through the processes of archaeological inquiry this guide explores the transition from foraging (hunting and gathering) to farming and urbanization on the upper Euphrates River. Students examine issues of preserving archaeological sites for the present and future. To bring the study of archaeology into the present, students use archaeological data to address dietary diversity in their schools and communities.

Knowing the Past: Archaeology and History

Archaeology and history share the same goal of seeking to reconstruct and understand the human past. The two disciplines differ in some important ways (Kosso 2001, 29-33). Of the two, history is the more familiar way to know about the past. History relies on written evidence such as diaries, letters, public documents like treaties or laws, legal documents, or literature. These documents can range from something as important as the Declaration of Independence or as humble as a grocery store ledger. For the most part, these documents were written intentionally to relay a particular piece of information, and for this reason they are inherently biased. Historical documents might record a special event or a
narrative about a person’s experiences or provide information about individuals, their character, or experiences.

Archaeology uses material evidence such as artifacts, buildings, stone walls, fire hearths, foundations, butchered animal bones, charred seeds, or even altered landscapes to reconstruct the past. An archaeological site might comprise an entire city or a small scatter of stone artifacts on the surface of the ground. Archaeological data are rarely produced intentionally; rather they are the unintentional evidence of human activities. For example, people who killed and butchered Persian gazelles on the banks of the Euphrates River in what is now Syria were just getting something to eat and probably not trying to communicate anything to anyone. In this sense, archaeological remains do not carry the same bias as written records, which were produced intentionally. The archaeological record rarely records the lives of individuals, but is instead a result of collective activity. Similarly, with the exception of sites like Pompeii, which was buried in volcanic ash in AD 79, archaeologists rarely find evidence of a single event. Most archaeological sites are the accumulation of physical materials from many events over some period of time.

While written documents appear to give us the “answer,” they must always be evaluated for their authenticity and veracity. Similarly, archaeological remains were not endowed with any literal meaning by their creators; hence, it is up to archaeologists to give them meaning. Peter Kosso, a philosopher of science, explains:

> Historical evidence may seem the more direct, in light of the difficulties in making sense of the archaeological record. A written account of what happened, after all, is pretty close to just telling us the answer. Archaeologists may struggle for example, with their inscrutable pot sherds to figure out patterns of Athenian colonization, but Thucydides plainly says that there was a colony at Mytilene, that part of the case seems closed. Now we know. But, of course, the case of an Athenian colony at Mytilene is not closed any more than the testimony of eye witness is sufficient to make the courtroom case. The jury needs more than just the words of the testimony; they must also know some background on the credibility of the witness (Kosso 2001, 31-32).

Each discipline has both strengths and weaknesses. Despite the limitations of each, they both have a powerful role to play in knowing the past (Kosso 2001, 33). When used together, they can complement one another to give us a deeper, richer picture of the past.

**Archaeology in the United States**

In the United States, archaeology is usually divided into two domains (Kosso 2001, 29-30; Fagan 1999, 28-31): prehistoric archaeology and historical archaeology. Prehistoric archaeology covers the vast time span of human existence before written records; it is one of the few ways we have to learn about people who lived long ago. Historical archaeology studies people who have left written records primarily through their material remains. Historical archaeologists use written records and historic photographs to augment their investigations and build their interpretations whenever possible. Underwater archaeology is a specialty within the discipline and refers to any archaeological work conducted under the water. Underwater archaeology usually involves historic sites such as shipwrecks but may include prehistoric sites such as inundated caves as well.

Much of the archaeological work done in the United States today is conducted to comply with the National Historic Preservation Act (NHPA) of 1966. This type of archaeology is referred to as *cultural resource management*. The purpose of cultural resource management is to protect the tangible remains of human history. Under NHPA, whenever federal land will be impacted by a construction project or whenever federal funds are used for a project such as a highway or dam, archaeologists...
investigate the area to locate sites and decide how to minimize damage to the sites. They recommend that the project avoid sites completely or gather data about the site for posterity before it is damaged or destroyed by the construction project.

Archaeology around the World

People travel all over the world to see archaeological sites. Hundreds of historic and archaeological sites are included on the United Nations Educational, Scientific, and Cultural Organization (UNESCO) World Heritage List of cultural and natural places considered to be of universal value. These places provide a rich link to the cultural identity of the nation and to the history of all humankind.

Many archaeological sites throughout the world are endangered by natural processes such as erosion, by illegal collecting or looting, or by development. Since the invasion of Iraq in 2003, looting of archaeological sites has continued largely unabated and artifacts are sold on the international market (Brietkopf 2007). Many of these sites are considered to represent the “Cradle of Civilization” in Mesopotamia. The Hill of Tara, seat of the 6th century Irish kings and one of the most important historic places in Ireland, was the subject of considerable controversy throughout the first decade of the 21st century (Bensen 2009). A new toll road was constructed near the site to accommodate commuters to Dublin, the booming capital of the country. Many archaeologists and members of the public thought the road was much too close and would compromise the historical context of the site. Others thought that the road was essential and that any other route would have impacted private homes and farms.

Archaeology in the Classroom

Archaeology is usually not an academic subject in pre-collegiate classrooms, but teachers in most states are required to teach history beginning with prehistoric times—a period known largely through archaeology. Because of its interdisciplinary nature, many upper elementary and secondary educators find archaeology an engaging way to teach social studies, history, and science (Smardz and Smith 2000). Archaeology in the classroom requires many skills in language arts, mathematics, and visual arts. Teachers can also use archaeology to teach citizenship and character (Moe et al. 2002) and science inquiry and the Nature of Science (Moe 2011).

This curriculum uses archaeological inquiry to teach social studies, history, and science. Students also use language arts and mathematical skills to analyze and apply data. Students learn about the laws protecting archaeological resources and their own responsibilities as citizens of the United States and the world. In their Final Performance of Understanding, students use archaeological inquiry to understand a contemporary problem of global proportions, the reduction of diversity in human diets and the consequences reduced food diversity for human health (Cordain, 2001; Mangum, 2004), and to design localized solutions.

Teaching Archaeological Inquiry

This curriculum unit models the processes of archaeological inquiry about human nutrition, food production, and culture. Students begin by exploring their own diets. They learn and practice the basic concepts of archaeological inquiry (observation, inference, evidence, context, stratigraphy, and chronology), and then apply them to the investigation of subsistence. They construct meaningful questions, collect archaeological data to answer a question, and analyze and interpret the data. Students rely primarily on archaeological evidence including site maps and artifacts and their relationships to each other (context) to reconstruct and interpret the past. Students end their investigation by comparing archaeological data on diet diversity to their own diets and the diet of most of the world’s people. Students complete their study of archaeology by learning about the laws that protect archaeological
resources. They also explore ways to use archaeological information in the contemporary world by designing a healthy eating plan for students in their school based on information drawn from the past.

Archaeology provides an engaging way to teach conceptual understanding of scientific and historical inquiry in the classroom (Moe 2011). Archaeologists regularly employ conceptual tools such as observation, inference, context, evidence, and chronology to study the record of the human past, as do scientists and historians. This curriculum provides a guided investigation of two archaeological sites in which students learn and apply conceptual tools of scientific and historical inquiry.

**Teaching Citizenship with Archaeology**

Although it may not be readily apparent, archaeology can be used to teach personal character and ethics. Most people do not associate archaeology with ethics, but the average archaeologist makes ethical decisions on a regular basis (Lynott and Wylie 1995). Archaeologists wrestle with a variety of issues including the needs of living descendants whose ancestors are the subject of research, the handling and disposition of human remains encountered during excavations, and the relevant laws when deciding the fate of archaeological resources on land slated for development. These ethical issues can be woven throughout the study of archaeology and help educators impart character and basic citizenship skills to students of all ages (Moe 2000; Moe et al., 2002).

Knowing and understanding the past is a prerequisite for participating effectively in a pluralistic democracy. Keith Barton and Linda Levstik (2004, 36-40) define three elements of history education for democratic participation: (1) promote reasoned judgment, (2) promote an expanded view of humanity, and (3) involve deliberation about the common good. The study of archaeology can contribute to all three elements.

Inquiry of any type provides some of the knowledge and skills necessary for discussions in a pluralistic democracy. Archaeology combines elements of both scientific and historical inquiry and requires rigorous adherence to the rules of evidence to build good interpretations of the past. Students can use the fundamentals of archaeological inquiry to study and evaluate the problems and challenges of a pluralistic democracy.

Archaeology provides an effective viewpoint for teaching cultural understanding because it allows students to step back in time and view cultural differences from a safe distance (Moe et al. 2002). By examining how other people meet basic human needs such as food and shelter in creative ways, students realize that people are far more similar than they are different. Archaeology is one of the few ways we have to know about people who do not have much written history and it can help us see our own ancestors in a very human light.

The practice of archaeology in the United States almost always involves deliberation over the common good. Archaeologists must continually wrestle with many issues such as protecting archaeological sites from theft, looting, and destruction; conducting research on human remains; and ensuring the maintenance of museum collections over long periods of time for all to learn from and enjoy. Issues of historic preservation can serve as an introduction to American civic life.

**Unit Overview - Project Archaeology: Investigating Food and Culture**

Research and Design

Project Archaeology is a comprehensive education program primarily for upper elementary and middle school teachers and their students. *Project Archaeology: Investigating Food and Culture*, for grades 5 through 6, is one of a series of curriculum guides. The program as a whole teaches four overarching enduring understandings:

1. Understanding the past is essential for understanding the present and shaping the future.
2. Learning about cultures, past and present, is essential for living in a pluralistic society and world.
3. Archaeology is a systematic way to learn about past cultures.
4. Stewardship of archaeological sites and artifacts is everyone’s responsibility.

Project Archaeology used two well-researched learning models: Understanding by Design, a backwards design model by Grant Wiggins and Jay McTighe (1998, 1999), and a concept-based model by H. Lynn Erickson (2001), to develop this curriculum unit on the archaeological study of food and culture. Both models emphasize teaching for deep understanding of big ideas or broad concepts rather than acquisition of isolated facts. For Wiggins and McTighe (1998, 10), enduring understandings are, “. . . the big ideas, the important understandings, that we want students to ‘get inside of’ and retain after they’ve forgotten many of the details.” Similarly, Erickson (2001) emphasizes the selection of universal generalizations or enduring understandings to organize and facilitate student learning rather than memorizing facts or focusing on topics. This curriculum is designed to help the students master the enduring understandings.

Following Erickson (2001), we chose a topical theme, food, to explore the enduring understandings. Food is a basic human need, but people eat different foods because of differences in culture, history, environment, and available technology. Archaeologists regularly study food remains to learn what people ate, how they produced their food, and how changes in food production changed their lives and culture.

This curriculum unit teaches six enduring understandings specific to the theme of food, subsistence, and culture. These enduring understandings are derived from and support the four overarching enduring understandings for Project Archaeology:

1. Humans have nutritional needs that must be met.
2. Cultures change when there is a shift in food production or consumption.
3. Using the tools of scientific inquiry, archaeologists study what people ate and how they got their food.
4. Subsistence practices and human nutrition have changed over time.
5. The loss of archaeological sites reduces our ability to learn about the past and plan for the future.
6. Understanding consequences of subsistence practices helps us understand the present and plan for our future.

Essential questions facilitate thinking by engaging students in uncovering the enduring understandings at the heart of each lesson (Wiggins and McTighe 1998; Erickson 2001). Rather than simply covering content, students uncover big ideas through asking and investigating important questions—questions that cannot be answered with yes or no or in a single sentence. In this unit, essential questions guide each phase of learning.

Assessment is an integral part of each instructional event and the unit as a whole. Assessments are designed to determine if students have grasped the enduring understandings (Wiggins and McTighe1998, 63), and all learning activities are designed to enable students to complete the assessment successfully. In most cases, assessments are authentic—simulations of problems, issues, or challenges that a professional archaeologist might face. They are usually performance based, allowing students to “. . . relate learning to real-life contexts and situations” (Erickson 2001, 160). Assessment in this unit is primarily formative, to check and refine understanding as learning progresses, and a summative assessment (the Final Performance of Understanding) allows students to demonstrate their understanding of the entire unit.

True understanding is multi-dimensional. Wiggins and McTighe define six facets of understanding: explanation, application, interpretation, perspective, empathy, and self-knowledge (1998, 44-45, in Appendix 1). To achieve a mature understanding, students need to master all six facets at some
level. Lessons and learning activities in this guide address one or more of the six facets of understanding.

Benjamin Bloom (1956) developed a classification of levels of intellectual behavior important in learning; the classification system is now commonly known as “Bloom’s Taxonomy.” The taxonomy was revised in 2001 (Anderson and Krathwohl 2001) and is described in Appendix 2. Lessons in this curriculum address one or more of the levels.

Multiple Intelligences

The curriculum requires students to use all of the intelligences as defined by Howard Gardner (1983). Scientific inquiry develops the mathematical-logical intelligence. Reading oral histories and writing scientific reports help develop the linguistic intelligence. Vocabulary collages, classification of artifacts, reading archaeological and ethnographic maps, and analyzing historic photographs develop the spatial and bodily-kinesthetic intelligences. Partner and group work develop the interpersonal intelligence, and as students reflect on their newly acquired knowledge, they develop intrapersonal intelligence. Knowledge of geography and environment as it relates to the students’ archaeological study of shelter develops the naturalist intelligence.

The Learning Cycle

Following constructivist theory (Brooks and Brooks 1993), lessons are designed using a learning cycle: Uncover Prior Knowledge, Discover New Knowledge, Reflect on New Knowledge, and Assessment (Figure 1). Not only is the cycle of learning important in and of itself for student learning, but students also need to understand where they are in the learning process and what each step means. Research shows that teaching students the purpose for each element of the cycle of learning helps them become independent learners who are more able to direct their own learning processes.

- When students UNCOVER PRIOR KNOWLEDGE, they understand that you are checking in to see what they might already know about content of the lesson, and that they are not expected to know the answers. They understand that they are preparing to learn more.
- When students DISCOVER NEW KNOWLEDGE, they understand that they are learning new concepts and understandings.
- When students REFLECT ON NEW KNOWLEDGE, they understand that they are thinking about how and what they learned and how it connects to other things they know. They understand that this part of the learning cycle helps them more firmly grasp the enduring understanding and retain it.
- When students perform the ASSESSMENT, they understand that they are showing themselves and their teacher their mastery of the enduring understanding. In some lessons, Reflect on New Knowledge and the Assessment may be reversed if the Assessment advances instruction and contributes to uncovering the Enduring Understanding.

Misconceptions can impede learning and, therefore, must be identified and dispelled before more accurate perceptions can be acquired by the learner (Bransford et al. 2000). MISCONCEPTION ALERTS are embedded in the learning cycle and help teachers detect and change misconceptions about archaeology before moving on to new material.
Figure 1. The *Project Archaeology: Food and Culture* Learning Cycle

**Unit Organization**

The Unit Organizational Flow Chart (Figure 2, page 8) shows the basic flow of the unit. The Unit Overview (page 9) outlines the enduring understandings, essential questions, what students will do, what students will learn, and assessments for teachers.

The National Standards chart (located in Appendix 3, under development) shows how each lesson fulfills standards in social studies, history, civics, science, language arts, mathematics, and life skills.

**PREPARE FOR THE UNIT** – Instructions for preparing for the unit in advance.
## Project Archaeology: Investigating Food and Culture – Unit Overview

<table>
<thead>
<tr>
<th>Unit Enduring Understandings &amp; Essential Questions</th>
<th>What Students Will Learn</th>
<th>What Students Will Do</th>
<th>Assessment</th>
</tr>
</thead>
</table>
| **Lesson One: Nutritional food is a basic human need.** 1. What is a healthy diet? | ● Food is a basic human need.  
● Food diversity is important in human nutrition. | ● Track their own diets for three days and graph what they eat.  
● Compare their own diets to two other diets and evaluate the health of their own diet. | ● Write a short persuasive essay describing dietary changes they might encourage their family to make. |
| **Lesson Two: Cultures change when there is a shift in food production or consumption.** 1. How does food production or consumption change?  
2. What happens to cultural elements, such as shelter or social organization, when there is a shift in food production? | ● Cultural elements may change when there is a change in food production.  
● Cultures did change when people shifted from foraging to agriculture.  
● Human diets have changed over time. | ● Complete a chart comparing the cultures of foragers, early horticulturalists, and urban dwellers. | ● Students write an essay describing how American culture might change if all fast-food restaurants disappeared. |
| **Lessons Three-Four-Five: Using the tools of scientific inquiry, archaeologists study what people ate and how they got their food.** 1. How do archaeologists study the past? | ● Archaeologists study food remains to learn what people ate in the past and how they got their food, as well as how cultures change when subsistence changes.  
● Archaeologists use observation, inference, evidence, and context to study food remains. | ● Analyze modern trash to learn what happened in the past. | ● Students conduct an archaeological investigation of modern food remains to determine changes in diet. |
| **Lesson Six: Subsistence practices and human nutrition have changed over time.** 1. Why do subsistence practices change?  
2. How are cultures affected by changes in subsistence practices and vice versa?  
3. How do archaeologists analyze past subsistence practices? | ● Human diets changed significantly with the advent of agriculture. | ● Investigate three archaeological assemblages to reconstruct what people ate in the past.  
● Compare three prehistoric reconstructed diets to each other and to the student’s own diet. | ● Analyze and compare three archaeological assemblages. |
| **Lesson Seven: The loss of archaeological sites reduces our ability to learn about the past and plan for the future.** 1. Why is it important to protect and preserve archaeological sites?  
2. How would the loss of archaeological sites reduce our ability to learn about past subsistence and plan for future subsistence? | ● Laws protect archaeological sites.  
● Conventions protect archaeological sites and cultural heritage internationally. | ● Compare how US laws protect archaeological sites with how the international community protects archaeological sites and cultural heritage.  
● Determine their responsibilities for protecting cultural heritage. | ● Students will use their knowledge of the Archaeological Resources Protection Act and the UNESCO Convention on cultural property to evaluate the ethics of buying artifacts or cultural property. |
| **FPU: Understanding consequences of subsistence practices helps us understand the present and plan for our future.** 1. How can we use archaeological knowledge to design a healthy diet today? | | ● Develop a healthy eating plan that increases the diversity of foods eaten by students in your school. | |

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WARM-UP LESSON: Thinking Like an Archaeologist – Introduces archaeology and the archaeological sites that the students will be studying and provides a way to identify misconceptions about archaeology.

LESSON ONE: You Are What You Eat – Students explore the basic need for food and good nutrition. The “Outline of Learning” provides an overview of the unit for students and parents.

LESSON TWO: The Culture of Food – Students compare the cultures of foragers, horticulturalists, and urban dwellers.

LESSON THREE: Observation, Inference, and Evidence – Students observe objects and infer their use in an archaeological context and use evidence to answer a question about the past.

LESSON FOUR: Context – Students learn the importance of context in the study of archaeology and apply context in decision-making about an archaeological site.

LESSON FIVE: Stratigraphy and Cross-dating – Students learn the basics of stratigraphy and how archaeologists determine the relative age of artifacts.

LESSONS THREE-FOUR-FIVE ASSESSMENT: The Archaeology of Food – Students demonstrate their understanding of observation, inference, evidence, context, and stratigraphy.

LESSON SIX: Investigating the Archaeology of Food and Culture – Students complete an extensive investigation of food and culture using archaeological and historical inquiry.

LESSON SEVEN: Taking Care of Our Heritage – Armed with archaeological concepts and analytical techniques, students explore issues of stewardship and protection of archaeological sites and artifacts. Students learn about United States laws and international conventions that protect archaeological sites and artifacts.

FINAL PERFORMANCE OF UNDERSTANDING: Archaeology and Food Diversity – Students use archaeological data about the diet diversity of foragers, horticulturalists, and urban dwellers to develop a healthy eating plan for their schools.

Lesson Organization
Each lesson is organized in two main parts: (1) information for the teacher to prepare and teach the lesson, and (2) the cycle of learning. Lessons contain some or all of the following key components.

Teacher Preparation

Enduring Understanding – The key idea that students will acquire.

Essential Question(s) – The questions that guide the lesson.

What Students Will Learn – A list of concepts and skills that students will learn.
**What Students Will Do** – A list of activities students will engage in to learn the concepts and grasp the enduring understandings.

**Assessment** – Method for students to demonstrate their grasp of the concepts and enduring understandings. The assessment is described at the beginning of the lesson so you will know how the students will demonstrate their comprehension of the content and the enduring understanding.

**Key Box** – A brief description of the facets of understandings from *Understanding by Design* (Appendix 1), skills from Bloom’s Taxonomy (Appendix 2), strategies for instruction, approximate duration of the lesson, and appropriate class size.

**Materials** – Items needed to complete the lesson, divided into items needed for each student, for the class as a whole, and for teacher-led instruction. Most materials are provided in this book. Other materials are inexpensive and easy to find and prepare.

**Background Information** – Information on the direction of the lesson, how to plan for it, and content to be shared with students.

**Misconception Alerts** – Insets designed to help teachers detect and correct common misconceptions about archaeology. Guidelines for using the misconception alerts are imbedded in the cycle of learning.

**Preparing to Teach** – Step-by-step procedures to prepare to teach the lesson and coordinate all activities. In some cases, materials need to be prepared or student assignments made a few days in advance of actually teaching the lesson.

**Word Bank** – A place for students to collect vocabulary words for reference and use in writing assignments.

**The Cycle of Learning**

**Uncover Prior Knowledge** – A brief activity to discover what students already know about the concept(s) to be taught.

**Discover New Knowledge** – An activity or activities designed to teach new concepts and understandings.

**Reflect on New Knowledge** – Reflection on the content and concepts taught to reinforce the new knowledge.

**Assessment** – Method for students to demonstrate their grasp of the concepts and enduring understandings. The assessment is also part of the learning process because students are required to apply information to a new situation, synthesize information and concepts into a new whole, or use knowledge to solve new problems.
Electronic Curriculum Support (under development)
Resources available will include:
- Student data collection sheets.
- List of literacy resources to supplement and enhance the study of food and culture.

How to Teach the Unit as a Whole
The unit is designed to be taught in sequence and as a whole to ensure student mastery of the enduring understandings. It can be broken into relatively discrete pieces such as whole lessons or activities within lessons to be taught over several days or weeks. The entire unit could be taught in one piece over a few days because it incorporates social studies, scientific and historical inquiry, language arts, mathematics, and the arts.

Because Project Archaeology: Investigating Food and Culture is a complete archaeological inquiry, it includes a lot of data sources and instruments for students to analyze and interpret. To reduce copying costs you might want to project some of the materials to the whole class with an LCD projector or have students work online to complete the investigation food and culture.

Preparing to Teach the Unit
Before beginning the unit, you will need:
- Portfolios or folders for storage of student work.
- A place for students to record and store vocabulary words (Word Bank) and definitions for reference and use in writing assignments. The word bank could be in a notebook or part of the student portfolio. You may also want to write words on a bulletin board or white board, forming a word wall for easy classroom reference.

While Teaching the Unit
As you teach the unit:
- Post essential questions in a prominent location for easy reference during instruction.
- For each lesson, inform students which part of the learning cycle they are entering and remind them what it means.
- Be aware of potential student misconceptions and use the techniques and information provided to dispel them before moving forward.
- Use the Rules for Brainstorming (Appendix 4) to guide brainstorming sessions.
PREPARE FOR THE UNIT
Begin One Week in Advance of Instruction

Materials
For Each Student
● “My Diet Diary” data collection sheet from Lesson One (page 20)

Preparing to Teach
1. Make a copy of “My Diet Diary” for each student.
2. Post the essential question for Lesson One: “What is a healthy diet?”

Procedure
1. What is a healthy diet? Inform students that this question will guide their learning in Lesson One.
2. In preparation for the unit, have students record all foods they eat over a three-day period including all meals and snacks on the “My Diet Diary” activity sheet.
WARM UP LESSON
Thinking Like an Archaeologist

Materials
For Each Student
- “What Is Archaeology?” data collection sheet (page 16)
- “My Diet Diary” data collection sheet from Lesson One (page 20)

For the Teacher
- Transparency or PowerPoint of the “Final Performance of Understanding”
- A posted classroom chart of this unit’s enduring understandings and essential questions

Background Information
This lesson introduces the science of archaeology. The words archaeology, archaeologist, and archaeological site will be defined as the unit progresses after students have experienced and applied some of the conceptual tools that archaeologists use. Archaeology and paleontology have some similarities and are often confused. The Misconception Alert below shows the differences between the two. The lesson introduces the archaeological investigation of human subsistence practices in the distant past. You can more firmly ground your students in learning by explaining the unit’s Final Performance of Understanding and by posting this unit’s essential questions. While students will not totally understand what the performance requires, it sets the stage for what they will be expected to know. Sharing the unit’s enduring understandings and essential questions shows them the route they will take to the Final Performance of Understanding.

Misconception Alert: Archaeology versus Paleontology
Many people of all ages think that archaeology is the study of dinosaurs and other prehistoric animals. Archaeology is the study of the human past through the objects that people made and left behind. Sometimes archaeologists study animal remains, but only if they are related to human activity. Paleontology is the study of prehistoric plant and animal fossils; paleontologists do not study humans. Archaeology and paleontology employ some of the same methods and concepts, but what they study is very different.

Preparing to Teach
1. Make a copy of the “What Is Archaeology?” data collection sheet for each student.
2. Prepare to share background information.

UNCOVER PRIOR KNOWLEDGE
1. Direct students to think quietly as you ask each question:
   - What do you think the term archaeology means?
   - What picture comes to your mind when you hear the word archaeologist? How would you describe an archaeologist?
   - What picture comes to your mind when you hear the words archaeological site? What do you think an archaeological site looks like?
   - How does an archaeologist investigate a question that she or he has about how people lived in the past?
3. Guide students to complete the activity sheet. Emphasize that they do not need to have the correct response and may not be able to respond in all four blocks at this time. The object is to find out what they already know.
4. Have students pair up and share their work.
5. As students share their work, walk around the room to get a general idea of what students think archaeology is. If some students think that archaeologists study dinosaurs or other fossils, use the “Misconception Alert: Archaeology versus Paleontology” to lead a brief discussion about the difference between the two. Before continuing with the unit, be sure that students understand that archaeologists study humans and they do not study dinosaurs.
6. Explain that they will return to this activity at the end of Lesson Seven for possible changes and/or additions to their ideas.

DISCOVER NEW KNOWLEDGE
1. Tell students:
   - We are going to use archaeology to learn how people obtained their food thousands of years ago. We will find ways to apply our knowledge of the past to food challenges that we have today. We will study, as archaeologists do, the plant and animal foods that people ate in the past. You do not know how archaeologists do their work yet, but you will learn that as we go along.
   - We are going to study two archaeological sites, Abu Hureyra and Tell al-Raqa’, in what is now Syria. (Show students the artist’s reconstructions of Abu Hureyra and Tell al-Raqa’i [pages 63, 74, 84] to prepare them for the investigation.) Search Syria on Google Earth or other map.
   - We are going to look at the words archaeology, archaeologist, and archaeological site more closely after you have learned and applied some conceptual tools that archaeologists use.
2. Ask students: What questions do you have? Record examples to refer to later in the unit or post them and check each one off as it is answered.
3. Display the “Final Performance of Understanding” transparency or PowerPoint (page 102).
4. Explain that this performance will be the assessment for this unit. It will show that they have learned the information in this unit.
5. Have students read the “Final Performance of Understanding” silently as you read it out loud.
6. Ask students: Imagine you are going to have a birthday party next month. Why is it important to plan for your party? How is examining what you will have to know at the end of the unit like planning for a birthday party?
7. Have students read the enduring understandings and essential questions for the unit. Explain that the enduring understandings and questions will guide their learning. Ask students to predict what they will learn in the unit.

Copyright 2011 Project Archaeology-MSU
1/12/2012
<table>
<thead>
<tr>
<th>What Is Archaeology?</th>
<th>Name______________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define the word archaeology.</td>
<td>Draw a picture of an archaeologist, of what an archaeologist does, or the tools used by an archaeologist; or describe an archaeologist.</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Draw a picture of an archaeological site or describe it.</td>
<td>List the steps an archaeologist might take when he or she studies an archaeological site?</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
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</tbody>
</table>
LESSON ONE
You Are What You Eat

Enduring Understanding
Nutritional food is a basic human need.

Essential Questions
What is a healthy diet?

What Students Will Learn
- The basics of human nutrition.
- The importance of diversity in human nutrition.

What Students Will Do
- Track their own diets for three days and graph what they eat.
- Compare their own diets to two other diets and evaluate the health of their own diet.

Assessment
Write a short persuasive essay describing dietary changes they might encourage their family to make.

SUBJECTS: Social studies, language arts, science, math
SKILLS:
  - Bloom’s Taxonomy: Remember, understand, apply, analyze
  - Facets of Understanding: Explanation, interpretation, application, self-knowledge
DURATION: 45 to 60 minutes
CLASS SIZE: Any

Materials
For Each Student
- “My Diet Dairy” data collection sheet (page 20)
- “Eating at Maria and John’s” data collection sheet (page 23)

For the Teacher
- Transparency or PowerPoint slide of the “Vitamins” and “Minerals” charts (pages 21 and 22)

Background Information
Human nutrition is a very complicated subject and it is impossible to determine exactly what every person should or should not eat because of differences in genetics, cultural traditions, individual metabolic types, and activity levels. Most experts agree, however, that a wide variety of foods, foods of many different colors, and foods that have undergone as little processing as possible are conducive to good nutrition.
In this unit students will use archaeology to discover how diets changed significantly when people shifted from hunting, fishing, and gathering wild foods to growing their own food (agriculture). They will examine the changes in diet as a result of agriculture and the consequences of those changes. They will use the information to recommend more diverse diets today.

Physicians and dieticians are beginning to understand the profound changes that have occurred in human nutrition as a result of the transition to agriculture and their consequences to human health (Cordain 2001, Mangum 2004). In particular, the diversity of the foods that we consume has reduced drastically, but our intake of processed foods and non-local foods has increased dramatically since our reliance on agricultural subsistence.

This activity is designed to have students identify nutritional needs that are essential to all humans. By keeping a diet diary and analyzing its nutritional content, students will be able to connect nutritional needs to their own diet.

Preparing to Teach
1. Make copies of the “My Diet Diary” and “Eating at Maria and John’s” data collection sheets for each student.
2. Make transparency or find PowerPoint slide of “Vitamins” and “Minerals” charts.
3. Obtain and make a copy of a school lunch menu for groups of two.
4. Prepare to share the background information.
5. Post the essential question: “What is a healthy diet?”
6. Post the Word Bank words

Word Bank

diversity: difference; variety
minerals: an inorganic substance found in food that contributes to a healthy diet
nutrition: the processes by which a living thing takes in and uses food
vitamins: organic substances found in food that contribute to a healthy diet

UNCOVER PRIOR KNOWLEDGE
What is a healthy diet? Remind students that this question will guide their learning.
1. As a class, have students brainstorm a list of human dietary needs. Identify and define needs such as: protein, vitamins (Vitamin D and Vitamin B), minerals (salt, calcium, etc.), fat, carbohydrate, fiber, and water. This information could also be expressed as food categories such as fruit, grains, vegetables, diary, legumes, meat, sugar, and, junk food, if students are not familiar with dietary requirements.
2. Ask students: Why do humans need to have these elements in their diets? How do we decide what a healthy diet is? Give examples and list on board.

DISCOVER NEW KNOWLEDGE
1. Share the background information.
2. Project the “Vitamins” and “Minerals” charts.
3. Have students examine the charts. Ask: What does the data show about the need for a healthy diet? Can we get the vitamins and minerals we need from regularly eating a few foods or from eating a variety of foods? Explain.
4. Distribute a copy of “Eating at Maria and John’s” data collection sheet. Students also will need their “My Diet Diary” data collection sheet.
5. As a class, read and complete the “Eating at Maria and John’s” data collection sheet.
6. Assist students in defining **diversity**, **minerals**, **nutrition**, **vitamins** and adding them to the Word Bank.

**ASSESSMENT**
1. Using graph data from the “Eating at Maria and John’s” data collection sheet and words from the Word Bank, have students write a short persuasive essay describing dietary changes they might encourage their families to make.
2. Have students save their assessment in a unit folder. They will refer back to their essay at unit’s end to determine any changes or additions they might make based on what they learned about the change in the diversity of food from hunter and gather societies to agriculturalist societies.

**REFLECT ON NEW KNOWLEDGE**
Ask students: Why is understanding the components of a healthy diet important when studying social studies?
My Diet Diary

You will need some data about yourself to compare with data from ancient sites. Please record the foods that you eat. Try to break foods down to the plant or animal that was used to make the food. For example, pizza would be wheat (for the crust), tomatoes (for the sauce), and cheese. A salad could be lettuce, tomatoes, cucumbers, olives, and artichokes. A hamburger could be cow, tomatoes (ketchup), wheat and sesame seeds (bun). Get it? Now, keep a diary of your diet in the space below.

<table>
<thead>
<tr>
<th>Day 1</th>
<th>Day 2</th>
<th>Day 3</th>
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<tbody>
<tr>
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</tbody>
</table>

Day 1 total foods: Day 2 total foods: Day 3 total foods:
Different foods: Different foods: Different foods:

For these three days I ate this many different foods: _________
# Vitamins

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Function</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thiamine (vitamin B&lt;sub&gt;1&lt;/sub&gt;)</td>
<td>Supports nerve function</td>
<td>Found in all nutritious foods</td>
</tr>
<tr>
<td>Riboflavin (vitamin B&lt;sub&gt;2&lt;/sub&gt;)</td>
<td>Important for normal vision and skin health</td>
<td>Milk and milk products; leafy, green vegetables; whole-grain, enriched breads and cereals</td>
</tr>
<tr>
<td>Niacin (vitamin B&lt;sub&gt;3&lt;/sub&gt;)</td>
<td>Important for nervous system, digestive system, skin health</td>
<td>Meat, poultry, fish, whole-grain or enriched breads and cereals, vegetables, peanut butter</td>
</tr>
<tr>
<td>Pantothentic acid</td>
<td>Needed for energy metabolism</td>
<td>Widespread in foods</td>
</tr>
<tr>
<td>Biotin</td>
<td>Needed for energy metabolism</td>
<td>Widespread in foods; also produced in intestinal tract by bacteria</td>
</tr>
<tr>
<td>Pyridoxine (vitamin B&lt;sub&gt;6&lt;/sub&gt;)</td>
<td>Helps make red blood cells</td>
<td>Meat, fish, poultry, vegetables, fruits</td>
</tr>
<tr>
<td>Folic acid</td>
<td>Needed for making DNA and new cells, especially red blood cells</td>
<td>Leafy, green vegetables and legumes, seeds, orange juice, and liver; now added to most refined grains</td>
</tr>
<tr>
<td>Cobalamin (vitamin B&lt;sub&gt;12&lt;/sub&gt;)</td>
<td>Needed for making new cells; important to nerve function</td>
<td>Meat, poultry, fish, seafood, eggs, milk and milk products; not found in plant foods</td>
</tr>
<tr>
<td>Ascorbic acid (vitamin C)</td>
<td>Antioxidant; important for immune system health; aids in iron digestion</td>
<td>Found only in fruits and vegetables, especially citrus fruits, vegetables in the cabbage family, cantaloupe, strawberries, peppers, tomatoes, potatoes, lettuce, papayas, mangoes, kiwifruit</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>Important for vision, healthy skin, bone and tooth growth, immune system health</td>
<td>Fortified milk, cheese, cream, butter, fortified margarine, eggs, liver, leafy, dark green vegetables; dark orange fruits (apricots, cantaloupe) and vegetables (carrots, winter squash, sweet potatoes, pumpkin)</td>
</tr>
<tr>
<td>Vitamin D</td>
<td>Needed for proper digestion of calcium; stored in bones</td>
<td>Egg yolks, liver, fatty fish, fortified milk, fortified margarine. When exposed to sunlight, the skin can make vitamin D.</td>
</tr>
<tr>
<td>Vitamin E</td>
<td>Antioxidant; protects cell walls</td>
<td>Polyunsaturated plant oils (soybean, corn, cottonseed, safflower), leafy, green vegetables, wheat germ, whole-grain products, liver, egg yolks, nuts, and seeds</td>
</tr>
<tr>
<td>Vitamin K</td>
<td>Needed for proper blood clotting</td>
<td>Leafy green vegetables and vegetables in the cabbage family, milk, also produced in intestinal tract by bacteria</td>
</tr>
</tbody>
</table>
# Minerals

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Function</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sodium</strong></td>
<td>Maintains fluid balance, nerve transmission, and muscle contraction</td>
<td>Table salt, milk, beets, and celery</td>
</tr>
<tr>
<td><strong>Chloride</strong></td>
<td>Maintains fluid balance, stomach acid</td>
<td>Table salt, soy sauce; large amounts in processed foods; small amounts in milk, meats, breads, and vegetables</td>
</tr>
<tr>
<td><strong>Potassium</strong></td>
<td>Maintains fluid balance, nerve transmission, and muscle contraction</td>
<td>Meats, milk, fresh fruits and vegetables, whole grains, legumes</td>
</tr>
<tr>
<td><strong>Calcium</strong></td>
<td>Promotes healthy bones and teeth; helps muscles relax and contract; important in nerve functioning, blood clotting, blood pressure regulation, immune system health</td>
<td>Milk and milk products; canned fish with bones (salmon, sardines); fortified tofu and fortified soy milk; greens (broccoli, mustard greens); legumes</td>
</tr>
<tr>
<td><strong>Phosphorus</strong></td>
<td>Important for healthy bones and teeth; found in every cell</td>
<td>Meat, fish, poultry, eggs, milk, processed foods</td>
</tr>
<tr>
<td><strong>Magnesium</strong></td>
<td>Found in bones; needed for making protein, muscle contraction, nerve transmission, immune system health</td>
<td>Nuts and seeds, legumes, leafy green vegetables, seafood, chocolate, artichokes, &quot;hard&quot; drinking water</td>
</tr>
<tr>
<td><strong>Sulfur</strong></td>
<td>Found in protein molecules</td>
<td>Meats, poultry, fish, eggs, milk, legumes, nuts</td>
</tr>
<tr>
<td><strong>Iron</strong></td>
<td>Part of a molecule (hemoglobin) found in red blood cells that carries oxygen in the body</td>
<td>Organ meats, red meats, fish, poultry, shellfish (especially clams), egg yolks, legumes, dried fruits, dark leafy greens, iron-enriched breads and cereals, fortified cereals</td>
</tr>
<tr>
<td><strong>Zinc</strong></td>
<td>Needed for making protein and genetic material; has a function in taste perception, wound healing, normal growth, immune system health</td>
<td>Meats, fish, poultry, leavened whole grains, vegetables</td>
</tr>
<tr>
<td><strong>Iodine</strong></td>
<td>Regulates growth, development, and metabolism</td>
<td>Seafood, foods grown in iodine-rich soil, iodized salt, bread, dairy products</td>
</tr>
<tr>
<td><strong>Selenium</strong></td>
<td>Antioxidant</td>
<td>Meats, seafood, grains</td>
</tr>
<tr>
<td><strong>Copper</strong></td>
<td>Needed for iron metabolism</td>
<td>Legumes, nuts and seeds, whole grains, organ meats, drinking water</td>
</tr>
<tr>
<td><strong>Manganese</strong></td>
<td>Part of many enzymes</td>
<td>Widespread in foods, especially plant foods</td>
</tr>
<tr>
<td><strong>Fluoride</strong></td>
<td>Formation of bones and teeth; helps prevent tooth decay</td>
<td>Drinking water, fish, and most teas</td>
</tr>
<tr>
<td><strong>Chromium</strong></td>
<td>Regulates blood sugar levels</td>
<td>Liver, brewer's yeast, whole grains, nuts, cheeses</td>
</tr>
<tr>
<td><strong>Molybdenum</strong></td>
<td>Part of some enzymes</td>
<td>Legumes; breads and grains; leafy greens; leafy, green vegetables; milk; liver</td>
</tr>
</tbody>
</table>
Eating at Maria and John’s

Maria and John are in sixth grade at the same school. They live next door to each other and their two families are close friends. They often share meals together—picnics and barbecues in the summer, spring and fall, dinners around family tables, and, best of all, holiday meals.

Maria’s parents love to cook and always serve many different kinds of foods. They were raised in South America, so they cook traditional foods such as red quinoa, amaranth, lamb, salmon, pork, chicken, avocados, mangos, pineapples, plums, peanuts, black beans, kale, eggplants, and squashes.

John’s parents were raised in a large city and neither of them learned how to cook. As a result, they have never really enjoyed cooking. Meals at John’s house are tasty, but they consist of the same foods: chicken, beef, green beans, green peas, jell-o, apples, peaches, potato chips, white rice, cakes, and vanilla cookies.

Examine each of the family graphs and then use “My Diet Diary” to complete your own graph.

Maria’s Family

<table>
<thead>
<tr>
<th>meats</th>
<th>fruit</th>
<th>vegetables</th>
<th>grains</th>
<th>legumes</th>
<th>colors</th>
<th>sugar</th>
<th>junk food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken</td>
<td>Avocados</td>
<td>Pork</td>
<td>Salmon</td>
<td>Lamb</td>
<td>Plums</td>
<td>Squashes</td>
<td>Red Quinoa</td>
</tr>
<tr>
<td>Red</td>
<td>Black</td>
<td>Purple</td>
<td>Orange</td>
<td>Yellow</td>
<td></td>
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</tr>
</tbody>
</table>

John’s Family

<table>
<thead>
<tr>
<th>meats</th>
<th>fruits</th>
<th>vegetables</th>
<th>grains</th>
<th>legumes</th>
<th>colors</th>
<th>sugar</th>
<th>junk food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken</td>
<td>Peaches</td>
<td>Beef</td>
<td>Apples</td>
<td>Green beans</td>
<td>White rice</td>
<td>Green</td>
<td>Cakes</td>
</tr>
<tr>
<td>Yellow</td>
<td></td>
<td></td>
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</tbody>
</table>

Your Family

1. Which family’s diet, Maria’s or John’s, is healthier? Why?

2. Using your “My Diet Diary,” construct “Your Family” graph. Compare your graph to Maria’s and John’s. Is your graph more similar to Maria’s or more similar to John’s?

3. If Maria’s graph shows a healthier diet, what conclusion can you make about the health of your diet? Explain.
LESSON TWO
The Culture of Food

Enduring Understanding
Cultures change when there is a shift in food production or consumption.

Essential Questions
How does food production or consumption change?
What happens to cultural elements such as shelter or social organization when there is a shift in food production?

What Students Will Learn
- Cultural elements may change when there is a change in food production.
- Cultures did change when people shifted from foraging to agriculture.
- Human diets have changed over time.

What Students Will Do
- Complete a chart comparing the cultures of foragers, early horticulturalists, and urban dwellers.

Assessment
Students write an essay describing how American culture might change if all fast-food restaurants disappeared.

SUBJECTS: Social studies, language arts, science, math
SKILLS:
  Bloom’s Taxonomy: Remember, understand, apply, analyze, evaluate
  Facets of Understanding: Explanation, interpretation, application, self-knowledge
DURATION: 45 to 60 minutes
CLASS SIZE: Any; groups of two

Materials
For Each Student
- “Changes in Food over Time” (pages 27 and 28)
- “Changing Cultures Chart” data collection sheet, one copy for each team of students (page 29)

For the Teacher
- Transparency or PowerPoint of the “Changing Cultures Chart” data collection sheet (page 29)
Background Information

We are what we eat—not only physically, but also culturally. In Lesson One, we discovered that humans have nutritional requirements that must be met. In Lesson Two, students will explore the relationship between food and culture. How do subsistence practices affect culture? If subsistence practices change, do cultures change? If so, how?

Culture is the way people think and act and the objects they make and use. Cultures meet basic needs in different ways. The ways in which people satisfy basic human needs, such as the need for food or protection from the elements, differs from group to group, and often changes over time. The different ways that people meet these basic human needs has resulted in the world’s rich cultural diversity.

Archaeologists study how past cultures met basic needs by analyzing and interpreting the objects and sites those cultures left behind. 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.

Misconception Alert: Archaeologists Study Past Cultures
Many people mistake archaeology for a swashbuckling “Indiana Jones” adventure. 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 single artifact removed from its context discloses very little about a culture. By studying many sites and artifacts and their relationship to each other and the environment, one discovers the way people lived. Archaeologists study a people’s culture by studying the things they left behind.

Preparing to Teach
1. Make copies of “Changes in Food over Time” for each student.
2. Make copies of the “Changing Cultures” data collection sheet for each team of students.
3. Make a transparency of the “Changing Cultures” data collection sheet.
4. Post the essential questions: “How does food production or consumption change?” “What happens to cultural elements such as shelter or social organization when there is a shift in food production?”
5. Post the Word Bank words.

Word Bank

culture: the customs, beliefs, laws, ways of living, and all other results of human work and thought that belong to people of the same society

horticulturalist: farming method in which only hand tools are used
foragers: people who make a living by hunting and fishing wild animals and by gathering wild plants

nomadic: movement throughout the year to obtain resources
subsistence: food and the work required to get food
urban: of, or relating to, a city

UNCOVER PRIOR KNOWLEDGE
Ask students: How would you define the word culture? What are examples of culture today? What are examples of culture from the past? Do cultures change and, if so, how and why?
DISCOVER NEW KNOWLEDGE
What happens to cultural elements such as shelter or social organization when there is a shift in food production? Inform students that this question will guide their learning.
1. Discuss and define culture and add it to the Word Bank.
2. Briefly review the terms foragers, nomadic, horticulturalist, and urban.
3. Ask students: Who has a more diverse diet, foragers or horticulturalists? Record predictions for future reference.
4. Distribute the “Changes in Food over Time” to each student.
5. In teams of two, students read the “Changes in Food over Time” and list the key points for each section. As a whole class, share some of the key points to check for understanding.
6. Distribute the “Changing Cultures” data collection sheet and divide students into groups of two or three.
7. Using the transparency or PowerPoint slide as a guide for instruction, explain to students that they will describe how foragers, horticulturalists, and urban dwellers respectively met their basic needs for food, shelter, and social organization.
8. The students construct the chart.
9. Assist students with defining foragers, nomadic, horticulturalist, and urban and adding them to their Word Banks.
10. Ask students: Have cultures changed through time? If so, how? What caused the changes?

ASSESSMENT
1. Tell students to imagine that most of their food comes from food grown in their own yards or in their neighborhood rather than shipped in from long distances to grocery stores. Ask how this might change their culture?
2. Have students write a short essay describing how their culture would change if most of their food was grown and sold locally in their community.

REFLECT ON NEW KNOWLEDGE
1. Draw a timeline on the classroom board. Ask students to record this timeline on their own paper and fill it in throughout this discussion.
2. Ask students to describe what they learned about the change in culture. Record the changes on the timeline.
Changes in Food over Time

Introduction

Archaeology is a science that investigates how people lived (culture) in the past—sometimes the past of thousands of years ago or sometimes the more recent past. Archaeologists investigate the objects and food remains people left behind and the places where they lived. They have a number of techniques that help them determine the age of a culture. Archaeologists have learned about people who lived in Mesopotamia as foragers (around 11,000 to 7,000 years ago) and as horticulturalists (around 10,000 to 7,000 years ago). They have also learned about the people who lived in some of the first urban cities in Mesopotamia starting 5,000 to 6,000 years ago.

Forager Societies

Archaeologists call the people who lived about 11,000 years ago foragers. These people lived a mostly nomadic way of life, hunting and gathering food in areas where they knew it would be available. As the seasons changed, they moved in small family or tribal groups following the herds of wild animals they hunted, such as gazelle, deer, and sheep. They gathered many different kinds of nuts and the seeds and roots of wild plants. They did dry or preserve some foods, such as meats, so they could eat them at a later time or while moving camps. Moving often required that they take only what they could carry, so they did not store large quantities of food nor did they spend time and effort building permanent shelters. Instead, they moved to where the food was, taking their shelters with them or building new temporary shelters each time they moved.

Imagine yourself living during this time. What do you think it would have been like? What would you have enjoyed? What would you have found difficult? How much energy did a person have to use to obtain food? What might be positive about this expenditure of energy? What might be negative about this expenditure of energy?

Horticulture Societies

Archaeologists have discovered that about 10,000 years ago there was both a change in climate and in culture in Mesopotamia. The climate became hotter and drier, reducing the numbers and kinds of wild plants and animals that were available to foragers. The change in climate and the decrease in wild foods inspired these people to experiment with growing their own food from the seeds of a few wild plants and maintaining herds of animals for food such as goats and sheep. Growing plants and animals decreased food diversity because people could not grow as many different plants as those found in the wild. Similarly, only a few animals could be maintained in close contact with humans and successfully raised in smaller areas. This new way to meet subsistence needs is known as horticulture.

As humans became more dependent on horticulture (food that they grew) than foraging (gathered foods), they began to build small communities or villages with permanent shelters. They continued to hunt and gather wild foods, but used their villages as bases rather than traveling with the change in
seasons. Living in one place made it necessary to store harvested food in caches dug into the earth and covered to protect it from predators and pests (insects and rodents). They also dried their food, especially meat, for later use. Because people were staying in one place, it became very important to save and store enough food for winter and early spring when there would be no crops to harvest. Extra food would also need to be saved in case of drought. In these horticultural villages, families had more babies, increasing the population of humans more quickly.

Imagine yourself living during this time. What do you think it would have been like? What would you have enjoyed? What would you have found difficult? How might this life be better than and/or worse than a forager’s life? How much energy did a person have to use to obtain food? What might be positive about this expenditure of energy? What might be negative about this expenditure of energy?

**Urban Societies and Modern Life**

Archaeologists have discovered that the very first cities appeared 6,000 years ago in Mesopotamia. These early cities may have housed up to 40,000 people in an area of 2.5 square kilometers. During this time there were also many smaller cities, towns, and villages. However, all of these settlements were involved in trade and manufacture of food (bread, oil, beer) and other products, such as pottery, cloth, jewelry, precious stones, and metals. People began to specialize in a particular trade and no longer lived near fields or grew their own foods.

Today many people live in urban societies in much larger groups and very few people hunt, gather, or grow their own food. Instead, they depend on food shipped into grocery stores from far away. Urban life can be very busy, as people today work at jobs eight or more hours a day and have little time to prepare foods, much less grow and harvest them. As a result, many people do not give much thought to what they eat and rely on readily available pre-cooked and processed foods. Others do not have the resources to purchase healthy foods, resulting in people eating fewer fresh foods, eating the same foods every week, consuming more processed foods, and getting less exercise.

Historically, more than 7,000 plant species have been collected or cultivated for food. About 200 plant species have been domesticated. But in today’s world, humans get 75% of their calories from only 12 starchy plant species: bananas, beans, cassava, corn, millet, potatoes, rice, soy, sorghum, sugar cane, sweet potatoes, and wheat. Three plant species (wheat, rice, and corn) now account for 60% of all human calories. This lack of diversity in modern diets often leads to poor health, despite the consumption of an adequate amount of calories.

How is your life different from the hunter-gather and the horticulturalist societies of long ago? What is better about your way of life? What is more challenging about your way of life?
### Changing Cultures Chart

<table>
<thead>
<tr>
<th>Need</th>
<th>Foragers</th>
<th>Horticulturalists</th>
<th>Urban Dwellers</th>
</tr>
</thead>
<tbody>
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LESSON THREE
Observation, Inference, and Evidence
(Adapted from Intrigue of the Past, Smith et al. 1996)

Enduring Understanding
Using the tools of scientific inquiry, archaeologists study what people ate and how they got their food.

Essential Question
How do archaeologists study the past?

What Students Will Learn
- Archaeologists use observation and inference to form meaningful questions.
- Archaeologists use data and evidence to research answers to their questions.

What Students Will Do
- Differentiate between observation, inference, and evidence.

Assessment
Students conduct an archaeological investigation of modern food remains to determine changes in diet.

SUBJECTS: Social studies, language arts, science
SKILLS:
  Bloom’s Taxonomy: Remember, understand, apply, analyze, evaluate
  Facets of Understanding: Explanation, interpretation, application, self-knowledge
DURATION: 45 to 60 minutes
CLASS SIZE: Any; groups of two

Materials
For Each Student
- Illustration of “The Settler’s Cabin” (page 34)
- “The Settler’s Cabin” data collection sheet (page 35)

For the Teacher
- Transparency or PowerPoint slide of the “The Settler’s Cabin” illustration (page 34)
- Transparency or PowerPoint slide of the “The Settler’s Cabin” data collection sheet (page 35)

Background Information
Scientists may not use exactly the same procedures in exactly the same order, but most scientists rely on a methodical application of observation, inference, and data collection to
answer their questions. Any phenomenon being studied must first be observed, whether from a satellite or through a microscope or directly with the naked eye. An inference is a reason proposed to explain an observation and it often raises questions for further inquiry. When scientists have completed the process of observing, inferring, asking questions, and gathering data, they use evidence to answer their questions.

Archaeologists use observation and inference to learn how people lived in the past. By making observations about objects (artifacts and sites), they infer the behavior of the people who used the objects. For example, when archaeologists find the remains of a large village (observation), they could infer that the people were farmers because a large village needs a large food supply. To find out if that is the case, they would look for evidence of farming such as farming implements (like hoes), and food remains from crops (corn cobs and squash seeds).

Misconception Alert: Archaeology and Excavation

When people think about archaeology they usually imagine archaeologists busily excavating sites in exotic places. While excavation is an important part of archaeology, it is not the only way archaeologists learn about the past. Many sites are visible on the surface and a lot can be learned just from mapping and basic recording procedures. Archaeologists also study existing collections and records in museums to learn more about sites that have already been excavated. After field work is complete, archaeologists spend much of their time in the laboratory analyzing the information and reporting their findings to archaeologists, other scientists, and the public.

Preparing to Teach
1. Make a copy of the “The Settler’s Cabin” data collection sheet and illustration for each student.
2. Make transparencies or use the PointPoint slides of “The Settler’s Cabin” illustration and data collection sheet.
3. Prepare to share background information.
4. Post the essential question: “How do archaeologists study the past?”
5. Post the Word Bank words.

WORD BANK

archaeological site: a place where people lived and left objects behind

evidence: data which are used to answer questions

inference: a conclusion derived from observations

inquiry: an organized investigation to learn new information or solve a problem

observation: recognizing or noting a fact or occurrence

question: meaningful questions used to guide the inquiry process

UNCOVER PRIOR KNOWLEDGE
1. Pose the following scenario: Imagine that you wake up late one Saturday morning. The house is quiet, and you remember that your mom and dad had to get your sister to an early morning soccer game. As you sleepily walked into the kitchen to eat breakfast you see that your family did not clean up after preparing and eating breakfast.
2. Ask students: How would you know what your family had for breakfast?
3. List the students’ ideas on chart paper.
4. Using the charted ideas, ask students: Which ideas demonstrate observation? Which ideas are inferences? What are some questions we might ask about the people who left the remains of their breakfast? How might we use these questions to find out more?

DISCOVER NEW KNOWLEDGE

How do archaeologists study the past?

Inform students that this question will guide their learning. Indicate the Word Bank words (archaeological site, evidence, inference, inquiry, observation, and question) and inform students that they will use these words as tools and define them during the lesson.

2. Explain that the illustration shows an old settler’s cabin (picture of the cabin with a root cellar, hoe, grain bin, sickle, hen house, skeleton of a chicken, broken canning bottle with cap still attached, overturned metal cooking pot, wooden wheelbarrow with a wheel missing, a mature apple orchard) used and abandoned by people. It is an example of a place that archaeologists might study. Students will use the illustration as they learn to do scientific inquiry.
3. Write the following words on the board: observation, inference, and evidence. Inform students that they will be using these words in the activity.
4. Observation: Ask students: What do you notice about “The Settler’s Cabin?” Have them list six or more objects and observations on their data collection sheet. As the students are working, they may have questions about how the people lived. Encourage them to record their questions under number 2.
5. Tell students: Your next step is to make some inferences about the different kinds of food this settler family might have eaten.
6. Inference: Ask students: What inferences can we make based on our observations? Have them write an inference for each of their observations on their data collection sheet.
7. Tell students: Asking good questions can help us find out more about what foods the owners of this cabin produced and ate. Write these two questions on the board: “Did the settlers grow or raise their own food?” “What foods did the settlers produce and eat?” Ask students: Which question is the better question? Why? Guide students to recognize that questions answered with yes or no are too narrow. Meaningful questions usually begin with Where, What, Why, Who, or How.
8. Questions: If students have not written any questions under number 2 on their data collection sheet, encourage them to do so. Or, they may add additional questions.
9. Have students share their questions in small groups. Assist students with improving their questions, if necessary.
10. Tell the students: We are going to use evidence to answer our questions. For example, if we asked the question, “How long ago did people live in this house?” the wheelbarrow would be evidence that people lived here a long time ago. Evidence: Have students complete step 4 on the data collection sheet using their observations and list of objects (data).
11. Assist students with defining observation, inference, and evidence and adding them to their Word Banks.
12. Explain to students that the illustration of the cabin and its surroundings is an example of an archaeological site – a place where people lived and left objects behind – and that they have just conducted an inquiry much as archaeologists do. Assist students with defining archaeological site and inquiry and adding them to their Word Banks.
13. Use the background information and “Misconception Alert: Archaeology and Excavation” to show students that archaeologists can learn a great deal by observing sites and artifacts on the ground surface.

REFLECT ON NEW KNOWLEDGE
1. Return to the Uncover Prior Knowledge chart and, as a class, review the students’ ideas.
2. Ask students: Based on the inquiry process you just completed, would you change the investigation of what your family ate for breakfast? Explain.
3. On chart paper or the board, write some examples of students’ observations and inferences to show that students had different inferences for the same observation. Ask students: How do you account for the differences in inferences? Use the background information to lead a discussion on the possibility of obtaining multiple plausible inferences from a single observation.
4. Ask students: How have we used inquiry to learn about people?

ASSESSMENT
The assessment for Lesson Three is located on page 49. This assessment will assess students’ knowledge of Lesson Three: Observation, Inference, and Evidence; Lesson Four: Context; and Lesson Five: Stratigraphy and Cross-dating.
The Settler’s Cabin
The Settler’s Cabin

Name____________________

1. In the chart below, list some of the objects that you see and make an observation and two inferences for each observation.

<table>
<thead>
<tr>
<th>Object</th>
<th>Observation</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>trees</td>
<td>There are rows of trees behind the cabin.</td>
<td>The trees were a fruit orchard. The trees were a shelter belt.</td>
</tr>
</tbody>
</table>

2. As you observe the homestead, what questions do you have about the people who lived there? Write three or more questions.

3. Think about what makes a good question. Choose your best question and write it below.

5. Answer the question in step 3 using the data chart above. What is your evidence?
LESSON FOUR
Context
(Adapted from Intrigue of the Past, Smith et al. 1996)

Enduring Understanding
Using the tools of scientific inquiry, archaeologists study what people ate and how they got their food.

Essential Question
How do archaeologists study the past?

What Students Will Learn
- Archaeologists study artifacts in context to learn about past people.

What Students Will Do
- Students will demonstrate the importance of artifacts in context.

Assessment
Students conduct an archaeological investigation of modern food remains to determine changes in diet.

SUBJECTS: Social studies, language arts, science  
SKILLS:  
Bloom’s Taxonomy: Remember, understand, apply, create, evaluate  
Facets of Understanding: Explanation, interpretation, application, self-knowledge  
DURATION: 30 to 60 minutes  
CLASS SIZE: Any; groups of four

Materials
For Each Student
- The “Instructions and Checklist for the Context Game” (pages 39 and 40)  
- A “Location Card,” with all members of a group receiving the same location (page 41)  
- “The Historic Ranch Dilemma” (page 42)

For the Whole Group
- A sheet of paper to record brainstormed ideas and guesses in the context game  
- A bell or other signal

Background Information
The things that people own can tell something about the owners. The objects a person possesses can indicate that person’s age, gender, and interests. For example, a baseball bat and a football helmet in someone’s bedroom suggest 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 tell a complete story only 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 and cannot tell us very much about the people who made or used it.

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. In this lesson “The Game of Context” will demonstrate that removing artifacts from a site removes them from their context and makes it very difficult to get a complete understanding of past people.

**Misconception Alert: Artifacts and Context**

Lewis Binford (2002), a famous archaeologist, was once asked what he did for a living. He told the man that he was an archaeologist and the man replied, “That must be wonderful for the only thing you to be to succeed is lucky.” It took Dr. Binford some time to explain to the man that archaeologists don’t depend on luck and they don’t simply “dig up the past.” Archaeology really isn’t about discovery, but rather about piecing together a picture of the past by decoding the information in objects and their relationship to each other (context). Archaeologists are not interested in finding one fabulous artifact by itself, because it can’t tell them much about the past. Instead, they reconstruct past lifeways through the painstaking work of recording all the artifacts in a site and their relationship to each other.

**Preparing to Teach**

1. Make a copy of the “Location Cards” and cut them apart for distribution.
2. Make a copy of the “Instructions and Checklist for the Context Game” and “The Historic Ranch Dilemma” for each student.
3. Gather additional supplies needed for the Context Game (index cards, a bell or signal, and a recording sheet).
4. Post the essential question: “How do archaeologists study the past?”
5. Post the Word Bank words.

**WORD BANK**

context: the relationship artifacts have to each other and the situation in which they are found
dilemma: a problem that is hard to solve

**UNCOVER PRIOR KNOWLEDGE**

1. Have students return to the scenario from Lesson Three: Imagine that you wake up late one Saturday morning. The house is quiet, and you remember that your mom and dad had to get your sister to an early morning soccer game. As you sleepily walked into the kitchen to eat breakfast, you see that your family did not clean up after preparing and eating breakfast.
2. Ask students: If I had never met you and your family and I walked into your kitchen that morning, what could I infer about your family’s eating habits from the things found in the kitchen?
3. Pose the following alternate scenario: Imagine that when I walked into the kitchen, it has been cleaned up except for one cereal box which is sitting next to the cat’s food dish. How would cleaning up the kitchen and the placement of the cereal box change what I might learn about your family and their eating habits?

4. Ask students: What would happen to a story if a chapter were torn out of a book? How might this affect the reader’s understanding of the story? If I want to know the story of your family’s eating habits at breakfast time by looking at the objects they used and left behind, but the kitchen is clean when I arrive, how is this like a chapter torn out of a book?

5. Assist students with defining context and adding it to their Word Banks. Explain that in Uncovering Prior Knowledge they have begun to explore this concept, and that the lesson will help them better understand the meaning of context as it relates to the science of archaeology.

**DISCOVER NEW KNOWLEDGE**

**Context Game**
1. Distribute the “Instructions and Checklist for the Context Game” to each student.
2. Review the instructions with the students. (Note: Make sure the students in each group have enough familiarity with the location that they can imagine what objects might be there.)
3. Play the game.
4. Use the background information and “Misconception Alert: Artifacts and Context” to illustrate the importance of context to the study of archaeology.

**ASSESSMENT**

The assessment for Lesson Four is located on page 49. This assessment will assess students’ knowledge of Lesson Three: Observation, Inference, and Evidence; Lesson Four: Context; and Lesson Five: Stratigraphy and Cross-dating.

**REFLECT ON NEW KNOWLEDGE**

1. Looking at “The Settler’s Cabin” site (Lesson Four), imagine that the tools had been removed. How would the removal of the remains (the context) have changed what you could know about the daily life of the settlers?
2. Explain how objects left in context can tell more about people than if the objects are removed from context.
3. Distribute “The Historic Ranch Dilemma” to each student.
4. Assist students with defining for dilemma and adding it to their Word Banks.
5. In their groups, have students read the dilemma and the solutions.
6. Have students discuss how they would solve the dilemma. They do not have to come to a group agreement.
7. Have each group share the results of its discussion.

**Answer Key: Context Game**
1. The more artifacts you have the easier it is to guess which room it is.
2. When artifacts were taken away, it was more difficult to guess what the room was.
3. As you lose information, it becomes harder to guess what room it is.
4. Context is the relationship artifacts have to each other and the situation in which they are found.
Instructions and Checklist for the Context Game

You are going to play a game to help you understand the meaning and importance of context in the science of archaeology.

Get Ready
1. Divide into groups of four. Your teacher will give each group a number.
2. Assign the following roles, one to each student—Recorder, Card Handler, Checker, and Presenter.
3. Write each person’s name on the line below.
4. Read and understand the task for your role.

Name

Recorder ___________________________ Record inferences.
Card Handler ___________________________ Pass and receive cards.
Checker ___________________________ Check off each task as it is completed.
Presenter ___________________________ Present inferences to the whole class.

5. Your teacher will distribute four of the same location cards to each Card Handler, with each group receiving a different location. Keep this location a secret from the rest of the class.

6. _____Card Handler: Write your group number on the blank side of each card.

7. _____Card Handler: Give a card to each person in your group.

8. _____Recorder: Write the number of groups in your class down the right side of a piece of paper. For example, if the class is divided into four groups you will number 1 through 4, if it is divided into five groups, you will number 1 through 5.

Drawing Your Room’s Artifacts (objects that might be found at that location)
Listen to your teacher describe the next three steps before completing them.

1. _____Each group has been given the location of a room.

2. _____As a team, brainstorm artifacts (objects) that might be found in the room.

3. _____Each person selects a different artifact (object) from the brainstormed ideas and makes a drawing of an artifact on the blank side of her/his card. For example, if your group has the family kitchen, one student might draw a TV; another student, dishes; and so on.
Get Set
1. ____ Card Handler: The Card Handler collects your group’s cards into one stack.

2. Listen to your teacher as the directions are explained.

Directions:
   a. At the sound of a bell, the Card Handler in group 1 will pass the group’s stack of cards to the Card Handler in group 2; group 2, to group 3; and so on. Each time you hear the bell, you will pass the set of cards to the next group.

   b. Upon receiving the cards, the Card Handler in each group lays the cards out so everyone in the group can see them.

   c. Your group looks at the drawings of the artifacts (objects) and guesses (or infers) what the room is. Discuss quietly so that other groups cannot hear.

   d. Recorder: The Recorder looks at the number found on the card’s blank side with the drawing of the artifact and writes his/her group’s guess next to that number on the recording sheet.

   e. Important! Card Handler: On the second pass of cards from your group to the next group, remove one object (artifact) from the stack of cards and place it off to one side so it does not get mixed up with other sets of cards. Repeat this for every pass until you are done.

   f. Continue until everyone has studied each group’s cards, and the Recorder has recorded inferences. By the last rotation each group will receive only one card.

Go
____ Play the game.

Conclusion
1. ____ Presenter: The Presenter from each group tells the whole class what room they guessed for Group 1, and Group 1 shares the identity of their room. If your group makes an incorrect inference, the Presenter records the correct identity.

2. ____ Repeat for each group.

Final Questions:
1. What did you notice about your ability to make inferences as objects (artifacts) were removed?
2. Was it easier or more difficult to make inferences? Explain your answer.
3. Define context.
4. Why is context important to the science of archaeology?
5. Add context to your Word Bank.
<table>
<thead>
<tr>
<th>Location Cards</th>
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<tbody>
<tr>
<td>a camp in a campground</td>
<td>a fast food restaurant</td>
</tr>
<tr>
<td>a fancy restaurant</td>
<td>a school cafeteria</td>
</tr>
<tr>
<td>a family kitchen</td>
<td>a garden shed in a backyard</td>
</tr>
<tr>
<td>a TV room where people eat</td>
<td>a baseball park</td>
</tr>
</tbody>
</table>
REFLECT ON NEW KNOWLEDGE

The Historic Ranch Dilemma

You are visiting a state park, which is a historic ranch site with several rock buildings partially intact. There is a large sign by the ruins saying:

These walls are very fragile! Do not take anything, and do not walk on or go into the ruins. All objects found here help to teach how people lived in the past. Respect this site by staying off the walls, leaving all objects where they lay, and staying outside the site unless accompanied by a park ranger.

You are eating your lunch when a family arrives and ignores the sign. Kids are walking on top of the ruins, picking up glass fragments and kicking old tin cans. What do you do?

- Ask the family politely if they have read the sign.
- Ignore them; it is really none of your business.
- Tell them they are breaking the law.
- Say nothing and try to hike out first to find a ranger and report them.
- Other

Be prepared to explain your choice based on what you have learned about context in this lesson.
LESSON FIVE
Stratigraphy and Cross-dating
(Adapted Intrigue of the Past from Smith et al. 1996)

Enduring Understanding
Using the tools of scientific inquiry, archaeologists study what people ate and how they got their food.

Essential Question
How do archaeologists study the past?

What Students Will Learn
- Students will learn how archaeologists determine how old things are through the use of stratigraphy and chronology.

What Students Will Do
- Students will demonstrate the importance of stratigraphy and chronology in dating sites and artifacts.

Assessment
Students conduct an archaeological investigation of modern food remains to determine changes in diet.

SUBJECTS: Social studies, language arts, science
SKILLS:
  Bloom’s Taxonomy: Remember, understand, apply, create, evaluate
  Facets of Understanding: Explanation, interpretation, application, self-knowledge
DURATION: 30 to 60 minutes
CLASS SIZE: Any; groups of two and four

Materials
For Each Group
- “Site in Syria” data analysis sheet (page 47)
- “Cross-dating” data analysis sheet (page 48)

For the Class
- Butcher paper and markers

Background Information
The proper sequence of events must be known when trying to understand the past. When events are arranged in order of occurrence, it means that you have established a chronology. One way to display events visually in chronological order is with a timeline.
Chronology is something we all use every day. 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, and events that 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.

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 study of strata is called stratigraphy.

The materials deposited first are the oldest and are always found at the bottom of a given stratigraphic section if that section not disturbed. The most recently deposited materials are the youngest and are always at the top. 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 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 from public lands, report them to law enforcement authorities.

Preparing To Teach
1. Gather five books of different thicknesses and colors.
2. Make a copy of “Site in Syria” data analysis sheet for each group.
3. Gather butcher paper and markers to make a timeline.
4. Post the essential question: “How do archaeologists study the past?”
5. Post the Word Bank words.

WORD BANK
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

UNCOVER PRIOR KNOWLEDGE
1. Stack five books, preferably of different thicknesses and colors, on a table.
2. Tell students that the books were placed one at a time. Ask students: Which book was placed first? Which was placed last?
3. Ask students: Have you been to a place where you can see layers of soil or rocks? Examples might include road cuts or stream banks. Have students describe what these places look like to the rest of the class. Explain to students that each book represents a layer (stratum), of sediment or soil that is deposited over time. Stratigraphy is the study of strata and archaeologists use stratigraphy to determine the relative age of buried artifacts.

DISCOVER NEW KNOWLEDGE
1. Using the “Site in Syria” data analysis sheet as a guide, draw a line to represent a layer of earth near the bottom of a whiteboard. Show how artifacts are deposited as people live on top of the layer. Then add a new layer of sediment and artifacts on top of the first. Explain that over time natural processes, such as wind and erosion, deposit new sediment. Over thousands of years, this happens several times until the stratigraphy is built up to present-day levels.
2. Divide students into groups of two. Distribute the “Site in Syria” data analysis sheets to the students. Have students answer the questions using the information on the stratigraphy drawing.
3. The artifacts on the “Site in Syria” data analysis sheet have been dated based on the age of the stratum in which they are found. Ask students: If you found similar artifacts elsewhere, would you know approximately how old they are? 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” data analysis sheet to the students. Ask the students to imagine that this site is ten miles away from the “Site in Syria.” Have them determine the approximate age of the artifacts based on the information from the “Site in Syria” data analysis sheet.
5. Have students observe the hole dug in the top layer of the “Site in Syria.” Ask students: How do you think that hole got there? Who might have dug this hole? Why do you think it was dug?
6. 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? How would this affect what archaeologists might learn from this site?
7. Assist students with defining stratigraphy and cross-dating and adding them to their Word Banks.
8. The proper sequence of events, or chronology, must be known when trying to understand the past. Archaeologists establish chronology by using stratigraphy to determine the age of artifacts and use this information to date similar artifacts at other sites. 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.
9. As a class, construct a timeline for the “Site in Syria.”
10. Assist students with defining **timeline** and **chronology** and adding them to their Word Banks.

**ASSESSMENT**

The assessment for Lesson Five is located on page 49. This assessment will assess students’ knowledge of Lesson Three: Observation, Inference, and Evidence; Lesson Four: Context; and Lesson Five: Stratigraphy and Cross-dating.

**REFLECT ON NEW KNOWLEDGE**

1. In groups of four, summarize why cross-dating and stratigraphy are important in the archaeological study of culture.
2. Share summary with the whole class.
Site in Syria

Name: ______________

Who left these artifacts?

1. __________________________
2. __________________________
3. __________________________
4. __________________________

5. Which people came first? _____
6. Which people came last? _____

Modern
0 – 30 years ago

Urban Dwellers
5,000 years ago

Horticulturalists
8,000 – 10,000 years ago

Foragers
10,000 – 12,000 years ago
Cross-dating

Name: ______________

An archaeologist found these artifacts at a site ten miles from the Site in Syria. What is their approximate age?

1. __________________________

2. __________________________

3. __________________________

4. __________________________
LESSONS THREE-FOUR-FIVE: ASSESSMENT

The Archaeology of Food
(Adapted from Intrigue of the Past, Smith et al. 1996)

Enduring Understanding
Using the tools of scientific inquiry, archaeologists study what people ate and how they got their food.

Essential Question
How do archaeologists study the past?

What Students Will Learn
- Archaeologists study food remains to learn what people ate in the past and how they got their food, as well as how cultures change when subsistence changes.
- How to apply observation, inference, evidence, and context to the study of food remains.

What Students Will Do
- Analyze modern trash to learn what happened in the past.

Assessment
Students conduct an archaeological investigation of modern food remains to determine changes in diet.

SUBJECTS: Social studies, language arts, science
SKILLS:
  Bloom’s Taxonomy: Remember, understand, apply, analyze, evaluate
  Facets of Understanding: Explanation, interpretation, application, self-knowledge
DURATION: 45 to 60 minutes
CLASS SIZE: Any; groups of two

Materials
For Each Group
- One set of trash in a trash can or paper bag.
- One copy of “The Archaeology of Food” data collection sheet (page 52)

For the Teacher
- Transparency or PowerPoint slide of “The Archaeology of Food” data collection sheet (page 52)

Background Information
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 that they eat lots of fruit and vegetables, yet their garbage shows that 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 in 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 from which these remains came can be identified and archaeologists can learn very precise information about the economies of past people.

Food remains from archaeological sites can be used by archaeologists to learn about how people ate in the past and how they got their food. By looking at animal and plant remains, archaeologists can determine if people were foragers, horticulturalists, or agriculturalists. Archaeologists can also look at food remains to determine if everyone in a past culture ate the same food or if some people had more food or better quality (healthier) food than other people. In some cultures only the wealthiest people had the ability to get rare or imported food items; in others men and women often ate different types of foods.

If a midden is disturbed and the layers mixed, it becomes impossible to interpret the lifeways of past people. Vandals looking for artifacts dig in middens, and they destroy irreplaceable information about the past. They tear pages from the history book of time.

Misconception Alert: The Archaeological Record

Modern archaeology is not so much about finding fabulous treasures, but more about the remains of everyday life, for example, shelter and food. All people have basic needs that must be met and archaeologists study how people met these needs in the past. What did they live in? How did they build their shelters? How did they cover their bodies to protect themselves from the cold, the rain, and the burning sun? What did they eat and how did they get it? By answering these questions, archaeologists can learn a lot about how people lived their lives and what was important to them.

Preparing to Teach

1. Make one copy of the “The Archaeology of Food” data collection sheet for each group.
2. Gather samples of modern food remains for analysis. You will need one set for each group. Use clean, empty packages such as cookie wrappers or cereal boxes. Do not include undesirable or unsanitary items such as used tissue or rotting food remains. Arrange the items in a clean trash can to represent a significant change in diet over a two-day period.
   a. Day One – placed at the bottom of the trash can; include high calorie food remains such as empty cookie or potato chip packages, clean soft drink cans, the wrappers from ice cream bars, etc.
   b. Day Two – placed at the top of the trash can; include items that show evidence of a significant change in diet such as packages from commercial weight loss meals, evidence of fresh vegetables and fruit (stickers or labels, but not the actual food), or artificially sweetened soft drinks.
3. Make a transparency or PowerPoint slide of “The Archaeology of Food.”
4. Prepare to share background information.

UNCOVER PRIOR KNOWLEDGE
3. Tell students: A famous anthropologist, Franz Boas, reportedly said, “… man never lies to his garbage heap.”
4. Ask students: Think for a minute about your family’s trash. What could I know about you and your family if I were to examine that trash? Ask for examples.
   a. Could I know the size of your family? Could I know the ages of family members?
   b. Could I know if you have pets?
   c. Could I guess how much money your family has?
   d. Could I know what foods you prefer? Could I know what activities you do in your home?
3. Briefly summarize the discussion.

DISCOVER NEW KNOWLEDGE
1. Share background information about how archaeologists can learn about modern people by studying their garbage.
2. Explain to students that they are going to be archaeologists and analyze modern food remains to learn about the people who threw it away. In preparation for the analysis, borrow a full trash can from another teacher’s classroom (garbage might include construction paper from an art project, worn out pencils, used up markers, empty glue sticks, etc). As you show objects from the trash, ask students:
   - What do you notice about these objects? What can you infer?
   - What evidence can you use to support your inference?
   - How might you classify the objects to learn more about the people who left the trash?
   - Does the context of this trash (another classroom) make a difference in your conclusions? What if you did not know where this trash came from?
   - How might you find out when the trash was thrown away? Is it possible to know which objects were thrown away first?
   - What questions do you have about the people who left this trash?

ASSESSMENT
1. Divide the students into groups of three to five students and give each group one set of trash (Day One and Day Two) and a copy of “The Archaeology of Food” data collection sheet.
2. Students analyze the trash and complete their data collection sheets as a group.
3. Each group reports its findings to the class. As students share, record their observations on a whiteboard or transparency of “The Archaeology of Food” data collection sheet.

REFLECT ON NEW KNOWLEDGE
Ask students:
- What consequences does a change in diet have? For the person? (e.g., better health) For the community? (e.g., better individual health makes a better community) For the nation? (e.g., someone must produce healthy foods) For the world? (e.g., someone must distribute healthy foods globally)
- If you moved to a different country and could no longer eat your favorite foods, how might your life change?
The Archaeology of Food

Name:__________________

Procedure
1. Remove each item from the container and place it on the table top. Try to keep the items in the same relative order they were in the container – this will be essential to identifying and recording layers.

2. List each item in order. Make four observations and inferences about the items in the container.

3. Were you able to identify more than one layer? What is your evidence? List and describe each layer in the container.

4. What can you say about the person who left these food remains behind? What is your evidence?

5. If it is healthy to eat a variety of foods, how would you describe this person’s diet in terms of health? What is your evidence?

6. What role did context play in your analysis and interpretation of these food remains?

7. What information is missing? What can you not know about this person’s life by studying only these remains? What other archaeological information would help you know more about this person?
LESSON SIX
Investigating the Archaeology of Food and Culture

Enduring Understanding
Subsistence practices and human nutrition have changed over time.

Essential Questions
Why do subsistence practices change?
How are cultures affected by changes in subsistence practices and vice versa?
How do archaeologists analyze past subsistence practices?

What Students Will Learn
● Human diets changed significantly with the advent of agriculture.

What Students Will Do
● Investigate three archaeological assemblages to reconstruct what people ate in the past.
● Compare three prehistoric reconstructed diets to each other and to the student’s own diet.

Assessment
Analyze and compare three archaeological assemblages.

SUBJECTS: Social studies, language arts, science, math
SKILLS:

    Bloom’s Taxonomy: Remember, understand, apply, analyze,
    Facets of Understanding: Explanation, interpretation, application, self-knowledge
DURATION: 45 to 60 minutes
CLASS SIZE: Any; groups of two

Materials
For Each Student
● “Diet Diversity: Analyzing the Data” (page 62)
● “Diet Information Guide” (pages 93 and 94)

For Each Group
● Inquiry packets for Abu Hureyra 1, Abu Hureyra 2, and Tell al-Raqa’I (beginning on pages 63, 74, and 84 respectively)
● “Compare Three Assemblages: Analyzing the Data” (page 59)
● “Compare Three Cultures: Analyzing the Data” (pages 60 and 61)

For the Teacher
● Transparencies of packet information as needed for instructing
Background Information

The transition from foraging wild foods to agriculture is one of the most significant events in all of human history. The human species (Homo sapiens) have spent most of their time (about 99.9%) on earth living as foragers. Agriculture began only 10,000 years ago. If we were to start the clock of human history at midnight (12:01 am) and each hour represents 10,000 years (multiplied by 24 equals 240,000 years), agriculture would have begun at 11:00 pm.

We think that foragers must have had a very difficult and marginal existence with barely enough food to eat. In the words of philosopher Jean Jacques Rousseau, we often imagine their lives were “nasty, brutish, and short.” Instead, Marshall Sahlins, Richard Lee, and other anthropologists who have lived with foragers in the Kalahari believe that early foragers may have been the “original affluent society” because they spent very little time working to meet subsistence needs, and everyone had the same amount of food, leisure time, and other goods (Delaney, 2004).

Studies show that an average food intake for the Bushman of the Kalahari was over 2,000 calories, and 90 grams of protein. They also ate up to 75 different wild plants; this variety increases chances that they will survive droughts or blight, unlike farmers, whose diet depends heavily on single crops, such as rice, potatoes, corn, or wheat (Delaney, 2004). In fact, the increase in malnutrition, starvation, and epidemic diseases associated with agriculture led Jared Diamond (1987) to ask if the transition from foraging to farming was “the worst mistake in the history of the human race.” Indeed, because the foragers have little or no stored food, there is little inequality. Without stored surpluses, there cannot be a class of elites that live off the excess food produced by hard-working commoners. Archaeological research from royal and elite burials in Greece, Chile, and Mesopotamia all display hallmarks of better health and nutrition than commoners. The elites had better teeth, increased stature, fewer bone lesions, fewer examples of arthritis, and minimal instances of anemia or malnutrition.

Similar contrasts in nutrition and health are visible today between rich and poor countries, and even between classes of people within countries such as the United States. The United Nations Food and Agriculture Organization (UNFAO) estimates the number of chronically undernourished people in the world at 840 million or about 14 percent of the global population. Undernourishment, as estimated by the UNFAO, relies heavily on assessments of available calories. Lack of diversity in diets also leads to nutrient deficiency, malnutrition, and poor health despite adequate calories.

Historically more than 7,000 plant foods have been collected or cultivated for food throughout the world. About 200 plant species have been domesticated. Unfortunately, the huge diversity in plant foods of the past has shrunken dramatically. Just 12 plant species now account for 75 percent of plant derived calories: bananas, beans, cassava, corn, millet, potatoes, rice, soy, sorghum, sugar cane, sweet potatoes, and wheat. Of these, only three plant species (wheat, corn, and rice) now account for 60 percent of all human calories (European Union Brief).

We can never return to a foraging way of life, because there are simply too many people on the planet. Wild foods cannot be gathered in sufficient quantities to feed 7 billion people. While we cannot return to foraging, we can learn something about alternative, and often nutritious, human diets from the archaeological record.

In this lesson, students will examine three archaeological assemblages from two sites on the upper Euphrates River (Abu Hureyra and Tell al-Raqa’i) to discover the changes in diet that occurred during the shift from foraging to farming, and how those subsistence and dietary changes affected many aspects of culture. In addition, they will learn the consequences of decreased food diversity, especially the reliance on starchy crops, for human health.
Abu Hureyra

Abu Hureyra, an important archaeological site on the upper Euphrates River in what is now the nation of Syria, was excavated in the early 1970s and is now under a reservoir of water. The data that came from these excavations was analyzed for decades before the final report was published at the beginning of the new millennium (Moore et al. 2000, p. iii).

Abu Hureyra is one of the few archaeological sites in the world to have revealed the remains of settlement of hunters and gatherers (foragers) that developed into a village of early farmers. That, together with the great size and excellent preservation of the site, and its location in a region where agriculture began earlier than anywhere else, gives it extraordinary significance.

The transition from foraging is visible in the stratigraphy (layers) of the site. Foragers occupied the lowest levels of the site approximately 12,000 years ago (Abu Hureyra 1) and village farmers occupied the upper levels dating approximately 8,000 years ago (Abu Hureyra 2). In this lesson, students will examine site maps, artifacts, structures, plant remains, and animal bones from each of the levels to identify changes in diet and cultural practices.

Tell al-Raqa’i

Tell al-Raqa’i was a small village occupied approximately 5,000 years ago. Most studies of archaeological sites from this time period have concentrated on large urban areas. Recent excavations at Tell al-Raqa’i show that this site may have been a place where grain was grown and stored. The grain was probably transported to larger cities farther down the Euphrates River. It may have been similar to small agricultural towns in the United States today, which supply food to large cities. In both cases, the rural villages are part of a much larger urbanized society.

Students will examine site maps, artifacts, structures, plant remains, and animal bones to determine how human diets in the ancient Near East changed to what they were in rural villages 5,000 years ago. They will compare the Tell al-Raqa’i data to data from Abu Hureyra and identify the similarities and differences of foraging, horticultural, and agricultural lifeways.
Preparing to Teach

1. Locate the two sites, Abu Hureyra and Tel al-Raqa’i, on Google Earth or a map and prepare to show students where the sites are located.
2. Prepare packets for the class. You will need five or six packets for the class, depending on the number of students. Because the students must examine the assemblages in chronological order, it is not possible to use fewer packets and pass them around.
4. Make copies of “Compare Three Assemblages: Analyzing the Data” and “Compare Three Cultures: Analyzing the Data” for each group.
5. Make transparencies of the assemblage cards as needed to show students how to analyze the data.
6. Post the essential questions: “Why do subsistence practices change?” “How are cultures affected by changes in subsistence practices and vice versa?” “How do archaeologists analyze past subsistence practices?”
7. Post the Word Bank words.

WORD BANK

assemblage: a group of artifacts representing a specific group of people in a specific time period
domestication: gradual process of genetically adapting plants and animals to life in intimate association with humans, usually to human advantage.

UNCOVER PRIOR KNOWLEDGE

Compare foraging to agriculture. Review what students know about foraging cultures and what they know about agriculture. Ask students: Does agriculture provide a better diet for humans than does foraging? Is agriculture progress? Record students’ ideas for later discussion.

DISCOVER NEW KNOWLEDGE

Why do subsistence practices change? How are cultures affected by changes in subsistence practices and vice versa? How do archaeologists analyze past subsistence practices? How can archaeology help us solve problems today? Inform students that these questions will guide their learning.

1. Project pictures of wild seeds and domestic seeds. In pairs, students examine the photos/illustrations or the real seeds with hand lens and make a list of observations. How are the seeds different? How are they similar? The domestic seeds should be much larger and

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1/12/2012
generally have tougher coats. What inferences can they draw? For example, domestic seeds have more bulk but are harder to crack. Explain that the larger seeds are the result of domestication.

2. Explain to students that they will examine information from two archaeological sites in the Middle East. Show students where the sites are located on Google Earth or on a map.

3. Distribute the Abu Hureyra 1 investigation kit and a copy of “Compare Three Assemblages” and “Compare Three Cultures” to each cooperative group.

4. Each group examines the kit and records the information in the appropriate row on the “Compare Three Assemblages” sheet. Students continue their analysis by responding to the questions on the “Compare Three Cultures” sheet.

5. When finished, collect all the Abu Hureyra 1 kits and replace them with the Abu Hureyra 2 kits; have students repeat the process. Repeat the entire process with the Tell al-Raqa’i kits.

6. In a whole class discussion, ask students: How are the assemblages similar? How are they different? Which is from the oldest site? Which is from the youngest site?

7. Summarize the three sites using background information.

8. Assist students with defining assemblage and domestication and adding them to their Word Banks.

ASSESSMENT

Compare Abu Hureyra 1, Abu Hureyra 2, and Tell al-Raqa’i

1. In groups, students reconstruct the chronological sequence showing the transition from foraging to agriculture and express it on a timeline. Formulate a hypothesis to explain why people in the Ancient Near East switched from foraging to growing food. What evidence supports your hypothesis? Show how the cultures changed as a result of changes in subsistence. Each group presents its reconstruction and hypothesis to the rest of the class.

2. Compare the reconstructions developed by each group. How are they similar? Different? Why did the groups interpret the same information differently?

3. Tell students: Globally, food diversity has shrunk since foragers’ times and humans depend on only 12 plant foods for 75 percent of their calories and on only three for 60 percent of their calories. Remind students that a lack of diversity in the diet results in poor health.

4. Have students add a bar for global diet that shows just three plant foods that account for 60 percent of human diet globally on their “Diet Diversity: Analyzing the Data” graph.

5. Students compare each of the three prehistoric diets to each other, to their own, and to the world diet using “Diet Diversity: Analyzing the Data.” What can we learn from the diets of foragers’ and use in the present and future?

REFLECT ON NEW KNOWLEDGE

Below are four options for students to reflect on their new knowledge; the options range from classroom discussions to full implementation of an Ancient Near East diet. Family support and participation are essential for options three and four.

1. Have students reread the information recorded on their “My Diet Diary” in preparation for a discussion. The recorded information reflects only three days of their diet. Ask students: Would your diet have more diversity over a longer period of time? A month? A year? Project your diet for one year. How many more foods could you add? How does the
number of foods added to your diet compare to the diet diversity at Abu Hureyra? At Tell al-Raqa’i?

2. Have students use the foods listed within “Vitamins” and “Minerals” to create meal plans for a week. Compare the variety of foods used in meal plans and the variety in students’ “My Diet Diary.”

3. Have students practice eating a diet of only locally grown food for one week. Ask students: How does this change your diet? If everyone ate locally, how would it change what foods were sold in your town?

4. Have students practice each of the three diets for one week using the “Diet Information Data” sheets. Ask students: How did your diet change? How did food preparation change? How did family relationships change when the diet was implemented? How did mealtime conversations change?
## Compare Three Assemblages: Analyzing the Data

<table>
<thead>
<tr>
<th>Kit</th>
<th>Animal Foods</th>
<th>Plant Foods</th>
<th>Tools</th>
<th>Shelter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abu Hureyra 1 Foragers 8,000 BCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abu Hureyra 2 Horticulturalist 6,000 BCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tell al-Raqṣa‘i Urban 3,000 BCE</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Compare Three Cultures: Analyzing the Data

Life at Abu Hureyra 1
1. What kinds of work do you think people did to meet the subsistence needs of their families?

2. Do you think that some people had much more than others?

3. Look at the size of the shelters and how they are arranged. Do you think that these people shared food or kept separate households as we do today? What is your evidence?

3. Do you think that the community was dependent on outside sources for food, tools, shelter or protection? Explain your answer.

Life at Abu Hureyra 2
1. What kinds of work do you think people did to meet the subsistence needs of their families? Do you think that some people might have specialized in a trade? If so, what is your evidence?

2. What inferences can you make about the changes in shelters during Abu Hureyra 2? Why, do you think, did they begin making these new types of shelters?

3. Do you think these people may have relied on outside sources for food, tools, shelter or protection? If so, what is your evidence?
Life at Tell al-Raq’a’i

1. What kinds of work do you think people did to meet the subsistence needs of their families?

2. Describe the diet of the Tell al-Raq’a’i people. What inferences can you make about the diet? What is your evidence for these inferences?

3. How is the diet of people from Tell al-Raq’a’i different from the people at Abu Hureyra 1? Different from the people at Abu Hureyra 2?
Diet Diversity: Analyzing the Data

Construct a bar graph to compare the diets of Abu Hureyra 1 (AH1), Abu Hureyra 2 (AH2), Tell al-Raq’a’i (Raq’a’i), and your own diet. Add a bar for global diet using information supplied by your teacher.

Comparing the Data:
1. Which period used a greater variety of foods? Why might that be the case?

2. How might this difference in diversity of foods affect nutrition?

3. Which people had the most diverse diet? Why?

4. Which of the three prehistoric diets would you prefer? Why?

5. How does your diet compare to the diet at each of the three sites in the Near East?
Inquiry Packet for
Abu Hureyra 1
Two basalt querns found in Trench E
Pit complexes with associated postholes in Trench E.
Seasonal Use of Plants and Animals

ABU HUREYRA 1

PLANTS
- Tillage, sowing and tending of crops
- Harvesting and processing of crops
- Availability of wild plants
- Estimated period of plant food use in storage
- Potential extended storage period

ANIMALS
- Herding activity
- Interception of animal migrations
- Hunting of non-migratory wild animals
- Estimated period of stored meat use
Wild rye is a cereal grain. These tall grass plants grew in thick stands near Abu Hureyra about 11,500 years ago. The seeds can be easily harvested simply by beating the seed heads into a basket. The seeds can be easily ground into flour or boiled into a mush. Wild rye is highly nutritious and was probably a staple at Abu Hureyra 1.

Lentils are legumes and are related to peas. The wild lentil seeds found in Abu Hureyra 1 were large in size, almost as large as small domestic lentils. They were probably a staple food at Abu Hureyra 1.

Einkorn or “one-grained wheat” grew in thick stands near Abu Hureyra about 11,500 years ago. Einkorn is more difficult to harvest than wild rye because the seeds do not separate from the husks easily. The grains are harder than wild rye and more difficult to grind into flour or boil into porridge. It was probably a staple food at Abu Hureyra 1 despite the problems in gathering and preparing.
Hares were hunted all year long with a throwing stick. Hares feed mainly on plants and grasses. Hare bones made up 10% in the Abu Hureyra 1 assemblage.

Onagers are similar to horses or donkeys. Onagers are migratory and were hunted seasonally. They eat grasses mainly but can eat other plants as well. Onagers can survive long periods in the desert without water. The meat was stored and preserved in order to be used throughout the year. Onager bones made up 11-14% of the Abu Hureyra 1 assemblage.

Gazelles migrate in large herds, sometimes numbering in the thousands. They were hunted mainly in the early summer due to their absence in the winter months. People hunted at Abu Hureyra 1 by driving them off cliffs or herding them into an enclosure. The meat was stored and preserved for use throughout the year. The bones were also highly fragmented, showing that the people extracted the rich fatty marrow. The gazelle made up 80% in Abu Hureyra 1.
Lunates are flaked stone tools shaped like a quarter moon. They probably were attached to wooden or bone handles to form a long cutting edge or sickle. They probably were used to harvest wild grains and possibly used as spear points for hunting animals.

Grinding dishes were made of basalt, imported to Abu Hureyra from about 50 miles away. They were used to grind seeds and other plant foods.

Pestles are cylindrically shaped stone tools. They were probably used with a grinding dish or a mortar to break seeds and grind them into flour.

Scrapers are flaked stone tools with one or more sharp edges. Illustration shows flaking around much of perimeter. They are used to scrape the hair and excess flesh off animal skins.
Other Foods at Abu Hureyra 1:

- Grains – wild feather grasses, Euphrates knot grass, wild millets (120 types total)
- Nuts – wild acorn, wild almonds, wild pistachios
- Legumes – club rash (pea)
- Other – roots and tubers
- No evidence of fresh foods, such as greens or fruits, but their presence may be inferred.

- Total number of plant species eaten = 250
Inquiry Packet for
Abu Hureyra 2
This is a photograph of a house in Trench E at Abu Hureyra 2.
Quern and rubbing stone found in the house at Abu Hureyra 2, Trench E
Seasonal Use of Plants and Animals

PLANTS

Wheats and ryes
Barley
Legumes
Wild plants—Euphrates valley
Wild plants—steppe

ANIMALS

Sheep and goat herding
Gazelle hunting

O | N | D | J | F | M | A | M | J | A | S
SEASON 1 | SEASON 2 | SEASON 3 | SEASON 4

ABU HUREYRA 2A

Tillage, sowing and tending of crops
Harvesting and processing of crop
Availability of wild plants
Estimated period of plant food use in storage
Potential extended storage period

ANIMALS

Herding activity
Interception of animal migrations
Hunting of non-migratory wild animals
Estimated period of stored meat use
Domestic rye has fatter grains than wild rye. The seeds are more difficult to harvest because the stalk is tougher. Domestic rye seeds are more difficult to grind into flour and have a more mealy texture than wild rye. Domestic rye is very nutritious and was a staple at Abu Hureyra 2.

Bread wheat or domestic einkorn has fatter grains than wild einkorn. The seeds are more difficult to harvest because the stalk is tougher. Bread wheat has a more mealy texture than wild einkorn and is difficult to grind into flour. It is not as nutritious as domestic rye, but was probably a staple food at Abu Hureyra 2.

Lentils are legumes and are related to peas. Large-seeded domestic lentils were cultivated at Abu Hureyra 2. They were probably a staple food at Abu Hureyra 2.
Caprines were domestic animals similar to goats and sheep. Caprine bones rose with the drop in gazelle bones found in the assemblage. They rapidly increased to be around 65-80% of the Abu Hureyra 2 assemblage.

Aurochs are a type of domestic cattle. In the spring, summer, and winter months, they ate grasses, herbs, leaves, and grass-like plants. In the autumn the aurochs fed mainly on trees and bushes. Auroch bones are about 2-7% of the Abu Hureyra 2 assemblage.

Gazelles migrate in large herds, sometimes numbering in the thousands. They were hunted mainly in the early summer due to their absence in the winter months. People hunted at Abu Hureyra 2 by driving them off cliffs or herding them into an enclosure. The meat was stored and preserved for use throughout the year. The bones were also highly fragmented, showing that the people extracted the rich fatty marrow. The gazelle made up 15-30% in Abu Hureyra 2.
Lunates

Lunates are flaked stone tools shaped like a quarter moon. They probably were attached to wooden or bone handles to form a long cutting edge or sickle. They probably were used to harvest both domestic and wild plants at Abu Hureyra 2 and may have been used as projectile points for hunting.

Basalt saddle querns are large stone tools used for grinding seeds into flour. Querns have a trough where the seeds were placed for grinding. A separate rubbing stone was used to grind the seeds. Because of their large size, they probably were not moved.

Scrapers are flaked stone tools with one or more sharp edges. They are used to scrape the hair and excess flesh off animal skins.

Pestles are cylindrically shaped stone tools. They were probably used with a grinding dish or mortar to break seeds and grind them into flour.

Pottery vessels were made at Abu Hureyra 2. Water could be boiled in pottery vessels, making it possible to cook grains for long periods of time.
Other Staple Foods at Abu Hureyra 2:

- Grains – barley
- Legumes – chick peas (garbanzo beans), field beans
- Other – chenopods
- No evidence of fresh foods, such as greens or fruits but their presence can be inferred.
- Weeds – over 100 species
- Total plant species eaten = 120
Inquiry Packet for
Tell al-Raqqa’i
Fig. 2. Contour map of Tell al-Raqā'ī. Excavated architecture of Level 3; areas excavated only to Level 2 shown with hatched lines. Excavation units designated by east–west grid line to north and north–south grid line to west, with exception of northern trenches 29/126, 29/120, 29/114, 29/108, 29/102.
Fig. 10. Rounded building, (later) Level 4. The outer edge of the enclosure wall is approximate at points in the northwest and southwest (dashed lines = blocked doorways)
Rounded building, Level 4 (composite photograph), looking northwest.
Tell al-Raqāʾi, looking east
Lentils are legumes and are related to peas. Only small amounts of lentils were found at Tell al-Raqa‘i; however, valued for their high protein content, lentils were probably an important part of people’s diet at Tell al-Raqa‘i. Lentils require a warm climate and prefer light, warm, sandy soil.

Wheat was the second most important grain at Tell al-Raqa‘i. Rainfall is very important to the growth of wheat. Wheat depletes the land more than any other crop. It prefers damp and rich land. About 5% of plant remains were wheat.

Barley was the most important grain at Tell al-Raqa‘i. Barley grows better in warm desert areas than wheat does. Barley can be used in many things, including breads, porridge, and alcoholic beverages. About 90% of plant remains were barley.
Swine or pigs were domesticated animals. Small amounts of swine bone were found at Tell al-Raq'a'i. The swine made up 9% of the al-Raq'a'i assemblage.

Caprines were domesticated animals similar to goats and sheep. Caprine bones rose with the drop in gazelle. They became 62% of al-Raq'a'i assemblage.

Gazelles migrate in large herds sometimes numbering in the thousands. They were probably hunted mainly in the early summer due to their absence in the winter months. The gazelle made up 11% of the al-Raq'a'i assemblage.
This fish pendant was made from limestone. A person may have worn it as some sort of jewelry. No remains of fish were found at Tell al-Raq’a’i.

Fish Pendant

This clay tablet was one of five found at Tell al-Raq’a’i. It may represent a local recording system used to keep track the amount of grains produced and transfer of food. This tablet may show the desire of the people to start recording in more complex ways.

Clay Tablet

The top seal impression is representative of the “Piedmont Jemet Nsar” style. This style has ladder-like lines and dotted circles.

Cylinder Seal Impressions

The bottom seal impression has figures of people standing and squatting back to back. It represents the “Fara” style from southern Mesopotamia.

al-Raq’a’i
Other Foods at Tell al-Raqqa’i

- Barley – grain, most common food (about 90% of the samples)
- Wheat – small amounts (about 5% of the samples)
- Lentils – small amounts of lentils and a few other legumes
- Weeds – 46 species
  - Total plant species eaten = 56

- Small amounts of animal bone – mostly swine (pigs)
**Diet Information Guide** (draft, need to flesh out information and formats, etc.):

### Abu Hureyra 1: Forager Diet

<table>
<thead>
<tr>
<th>Forager Foods</th>
<th>Modern Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Raw Nuts</strong></td>
<td></td>
</tr>
<tr>
<td>• Almonds</td>
<td>Same</td>
</tr>
<tr>
<td>• Walnuts</td>
<td>Same</td>
</tr>
<tr>
<td>• Hazelnuts</td>
<td>Same</td>
</tr>
<tr>
<td>• Pistachios</td>
<td>Same</td>
</tr>
<tr>
<td><strong>Wild Grains and Seeds</strong></td>
<td></td>
</tr>
<tr>
<td>• Wheat grasses</td>
<td>None, use wild rice</td>
</tr>
<tr>
<td>• Wild rye</td>
<td>None</td>
</tr>
<tr>
<td>• Flax seeds</td>
<td>Same</td>
</tr>
<tr>
<td><strong>Legumes</strong></td>
<td></td>
</tr>
<tr>
<td>• Wild lentils</td>
<td>French lentils</td>
</tr>
<tr>
<td>• Small seeded legumes</td>
<td>None</td>
</tr>
<tr>
<td><strong>Meat and eggs</strong></td>
<td></td>
</tr>
<tr>
<td>• Gazelle/antelope</td>
<td>Wild antelope or deer</td>
</tr>
<tr>
<td>• Wild sheep</td>
<td>Lean lamb</td>
</tr>
<tr>
<td>• Onager</td>
<td>None</td>
</tr>
<tr>
<td>• Various wild eggs</td>
<td>Chicken eggs</td>
</tr>
<tr>
<td><strong>Roots and Tubers</strong></td>
<td></td>
</tr>
<tr>
<td>• Club rush tubers</td>
<td>Potatoes</td>
</tr>
<tr>
<td>• Bulrush rhizomes</td>
<td>None</td>
</tr>
<tr>
<td><strong>Seasonal Greens and Non-starchy vegetables</strong></td>
<td>Seasonal greens for your area</td>
</tr>
<tr>
<td>• Unknown</td>
<td></td>
</tr>
</tbody>
</table>

Foragers: Eat as many different varieties of food within each category as you can, but no sugar or processed foods and very little salt.

### Abu Hureyra 2: Horticultural Diet

<table>
<thead>
<tr>
<th>Horticultural Diet</th>
<th>Modern Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cereals</strong></td>
<td></td>
</tr>
<tr>
<td>• Wheat</td>
<td>Same</td>
</tr>
<tr>
<td>• Rye</td>
<td>Same</td>
</tr>
<tr>
<td>• Barley</td>
<td>Same</td>
</tr>
<tr>
<td><strong>Legumes</strong></td>
<td></td>
</tr>
<tr>
<td>• Lentils</td>
<td>Same</td>
</tr>
<tr>
<td>• Chickpeas</td>
<td>Same</td>
</tr>
<tr>
<td>• Small seeded legumes</td>
<td>French lentils</td>
</tr>
<tr>
<td><strong>Meat</strong></td>
<td></td>
</tr>
<tr>
<td>• Sheep</td>
<td>Lamb or mutton</td>
</tr>
</tbody>
</table>
Goat  
Cattle  
Pig  

Cabrito (may not be readily available)  
Lean beef  
Lean pork  

Milk and milk products  
Yogurt, milk, cheese  

Seasonal vegetables for your area

Incipient Horticulture: Eat as much as you want of any food on the list, but no sugar or processed foods (except for whole grain bread) and very little salt.

**Tell al-Raq’a’i: Early Urban Diet**

<table>
<thead>
<tr>
<th>Early Urban Diet (Common People)</th>
<th>Modern Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grains</td>
<td></td>
</tr>
<tr>
<td>• Wheat</td>
<td>Same</td>
</tr>
<tr>
<td>• Barley</td>
<td>Same</td>
</tr>
<tr>
<td>• Rye</td>
<td>Same</td>
</tr>
<tr>
<td>Meat</td>
<td>Lean pork</td>
</tr>
<tr>
<td>• Pig</td>
<td></td>
</tr>
<tr>
<td>Dairy</td>
<td>Yogurt, milk, and cheese</td>
</tr>
<tr>
<td>• Milk and milk products</td>
<td></td>
</tr>
<tr>
<td>Non-starchy Vegetables</td>
<td></td>
</tr>
<tr>
<td>• Onions</td>
<td>Same</td>
</tr>
<tr>
<td>• Garlic</td>
<td>Same</td>
</tr>
<tr>
<td>• Leeks</td>
<td>Same</td>
</tr>
<tr>
<td>• Cucumbers</td>
<td>Same</td>
</tr>
</tbody>
</table>

Early Urban Diet: Choose one grain (probably wheat) and make it about 70% of your total diet. Non-starchy vegetables listed should comprise about 20% of your diet; the remaining 10% will consist of pork and a small amount of milk and milk products. Add a small amount of sugar to your diet and as much salt as you want, but no processed foods (except for whole grain bread).
LESSON SEVEN
Taking Care of Our Heritage

Enduring Understanding
The loss of archaeological sites reduces our ability to learn about the past and plan for the future.

Essential Question
Why is it important to protect and preserve archaeological sites?
How would the loss of archaeological sites reduce our ability to learn about past cultures and to plan for the future?

What Students Will Learn
- Laws protecting archaeological sites in the United States.
- Conventions protecting archaeological sites and cultural heritage internationally.

What Students Will Do
- Compare how US laws protect archaeological sites with how the international community protects archaeological sites and cultural heritage.
- Determine their responsibilities for protecting cultural heritage.

Assessment
Students will use their knowledge of the Archaeological Resources Protection Act and the UNESCO Convention on cultural property to evaluate the ethics of buying artifacts or cultural property.

SUBJECTS: Social studies, language arts, science, math
SKILLS:
  Bloom’s Taxonomy: Remember, understand, apply, analyze,
  Facets of Understanding: Explanation, interpretation, application, self-knowledge
DURATION: 45 to 60 minutes
CLASS SIZE: Any; groups of two

Materials
For Each Student
- Copies of the “Archaeological Resources Protection Act” (page 99) and the “UNESCO Convention” (page 100)
- Copy of the “Stewardship Map” (page 101)
- Copy of “Dig Up an Artifact on eBay” (page 102)

For the Teacher
- Transparency or PowerPoint slide of the “Stewardship Map” (page 101)

For the Class
- Pictures of local historic and archaeological sites
Background Information

Archaeologists rely on artifacts (objects that people made and used) and their context (the relationship of artifacts to each other and to the place in which they were found) to learn about the past. Illegal collecting or digging damages the context of artifacts and makes it difficult for archaeologists to learn much about the people who lived at a particular site. In 1979, the Congress of the United States enacted the Archaeological Resources Protection Act (ARPA), which prohibits unauthorized digging and collecting of archaeological structures, rock art, graves, and artifacts on public lands. These lands are managed by federal agencies such as the Bureau of Land Management, Forest Service, National Park Service, Bureau of Indian Affairs, Bureau of Reclamation, and the Fish and Wildlife Service. Public lands are found throughout the United States. Many states have similar laws protecting archaeological sites on state and sometimes private land.

In 1970, the United Nations drafted the UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property to protect cultural property internationally. The Convention covers both cultural and natural heritage. Parties to this Convention agree to adopt measures to protect their own cultural property and the cultural property of other nations.

This lesson explores the Archaeological Resources Protection Act and the UNESCO Convention on cultural property. Protecting archaeological sites is everyone’s responsibility. Ultimately, by taking care of our shared heritage, we are taking care of each other.

Misconception Alert! Archaeology Under Your Feet

When people think of archaeology, they often imagine fascinating places in distant lands. They envision archaeologists unearthing exotic treasures made of silver, gold, and precious gems. A few sites like these do exist, and some ancient sites like Abu Hureyra in Syria show the important transition from hunting and foraging to farming. Many people do not realize that archaeology is everywhere — it is right under your feet! In the United States, we are fortunate to have many archaeological sites to represent the long history of Native Americans on this continent, as well the emigrants and their descendants who came from all over the world. Archaeological sites can tell us stories about our ancestors, if we know how to listen and if we protect these sites for the future.

Preparing to Teach

1. Make copies of the “Archaeological Resources Protection Act” and the “UNESCO Convention” for each student.
2. Make a copy of the “Stewardship Map” for each student.
3. Make a transparency or project the PowerPoint slide of the “Stewardship Map.”
4. Make a copy of “Dig Up an Artifact on eBay” for each student.
5. Prepare to share the Background Information.
6. Post the essential questions: “Why is it important to protect and preserve archaeological sites?” “How would the loss of archaeological sites reduce our ability to learn about past cultures and to plan for the future?”
7. Post the Word Bank words.
Word Bank

**cultural property**: property thought by a nation to be of importance for archaeology, history, literature, art, or science

**export**: to send to another country for trade or sale

**heritage**: something of importance that is handed down from one generation to another

**illicit**: illegal; against the law

**import**: to bring in from another country for trade, sale, or use

**preserve**: to maintain intact, to protect from injury or harm

**United Nations**: an international organization that includes members from most of the countries in the world

UNCOVER PRIOR KNOWLEDGE

Why is it important to protect and preserve archaeological sites? How would the loss of archaeological sites reduce our ability to learn about past cultures and to plan for the future? Inform students that these questions will guide their learning.

1. Have students find something or some place in their community that is very old: a farmstead, a ranch, a community building such as a county court house or school, a home, a park, vehicles such as an old fire truck or old farm machinery, etc. Have students bring in pictures or drawings of these places or objects.

2. Ask students: Have the places or items you mentioned been preserved? If so, how? If they have been preserved by simply being abandoned, would it be worth restoring the place or object? Why or why not?

3. What can be learned about our community from the preservation of these places or items? What difference does this knowledge make?

4. If nothing of archaeological or historical value has been preserved in your community, what history has been lost? Does this loss matter? Why or why not?

5. Assist students with defining **preserve** and adding it to the Word Bank.

(Alternatively, bring in pictures of places in the community that have been preserved, even if they have only been abandoned. Distribute a picture to each group of students. Have students answer the questions in #3.)

DISCOVER NEW KNOWLEDGE

1. Tell students: In the United States, archaeological sites on public lands are protected by the Archaeological Resources Protection Act (ARPA). Have students read the ARPA summary and complete a concept map.

2. Internationally, archaeological sites are protected by conventions. Students read the UNESCO Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property and complete a concept map.

3. Using their concept maps, students compare the UNESCO convention with ARPA. How are they similar? How are they different?


5. Have students search for artifacts from the Ancient Near East and from the ancient Southwest on [www.ebay.com](http://www.ebay.com). Before searching, students will generate questions to guide their search for artifacts in groups of three or four. Questions could include:

a. Does the artifact come with a certificate?
b. Where does the artifact come from? Can you tell if it was legally obtained?
c. Would the purchase of this artifact cause additional looting? Why or why not?

6. Distribute copies of “Dig Up an Artifact on eBay” to each student as a homework assignment.

7. Discuss the results of their research in groups of four or with the whole class.

ASSESSMENT
Not many adults know about artifacts or about the laws that protect them. Have students design a presentation that would teach adults about what artifacts are, why they are important, how they are protected, and what everyone’s personal responsibility is under ARPA and under the UNESCO Convention. Students can create an essay, PowerPoint, skit, brochure, or a poster or other form of art.

REFLECT ON NEW KNOWLEDGE
(Note: If you have a Smart Board or a projector with an Internet connection, you could explore this site as a class and use the questions in number 2 for class discussion.)

1. Have students:
   a. Access the site http://whc.unesco.org/en/list/277
   b. Search the World Heritage List and look for archaeological sites in the United States and/or Syria, Jordan, Iraq, and the surrounding area.
   c. Choose one site and become an expert on that site.
   d. Print the information for their site.
   e. Be prepared to share their information in groups of three or four. Include where the site is located and why it has been designated a World Heritage site.
   f. Share information about their site in groups of three or four.

2. As a class, ask students: Why do countries want to protect their cultural property? How does protection of sites enhance our ability to learn about the past and to plan for the future? What might you do to help protect archaeological sites in the United States and in other countries?
United States of America
Archaeological Resource Protection Act of 1979
(Adapted from Project Archaeology: Investigating Shelter)

In 1979, lawmakers in the United States wanted to stop archaeological sites on public lands and Indian lands from being damaged and artifacts from being stolen. They believed that these sites and artifacts are an important part of our history. Lawmakers created the Archaeological Resources Protection Act (ARPA) to help protect these important places and objects on public lands.

The law says that people may not dig for or collect archaeological resources including pottery, baskets, bottles, sites with coins or arrowheads, tools, structures, pit houses, rock art, graves, and human skeletons. No person may sell or buy archaeological resources that are taken illegally. People who break this law are punished.

First Offense: A person who breaks this law for the first time may be fined $100,000 and spend one year in jail. If the cost of repairing the damage to the site costs more than $500, the person may receive a fine of $250,000 and spend two years in jail.

Second Offense: A person who breaks this law for the second time may be fined $250,000 and spend five years in jail.

Additionally, vehicles and other equipment used in breaking this law may be taken away from the person who breaks this law.

The Archaeological Resources Protection Act rewards people who tell law enforcement officers about people who break the law.

ARPA protects all public lands including the Bureau of Land Management, Forest Service, National Park Service, Fish and Wildlife Service, Bureau of Reclamation, military lands, and tribal lands.

Laws similar to ARPA have been passed by several states. Contact your State Historic Preservation Office or the State Archaeologist to learn what the laws are in your state.

How long would it take?

Imagine an archaeological site in southwestern Colorado on land administered by the Bureau of Land Management. The site was built and occupied by village farmers about 800 years ago. They grew corn, beans, and squash and hunted deer in the surrounding forest. They built houses out of stone and wood, some of them two or three stories high. The villagers made beautiful pottery vessels for storing food, hauling water, and cooking. Archaeologists estimate that there are about 30,000 pieces of pottery on the site. About 1,250 people visit the site every year. If everyone who visited the site took a piece of pottery, how many years would it take before all of the pieces were gone? If a visitor took a piece of pottery, what law would be or she be breaking? Why should pieces of pottery be left where they are found? How might a visitor enjoy the pottery without taking a piece home? What would you tell your friends or family about protecting archaeological sites and artifacts?
UNESCO Convention

In 1970, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) adopted the Convention on the Means of Prohibiting and Preventing the Illicit Import, Export and Transfer of Ownership of Cultural Property. A United Nations Convention is an agreement among nations. Because the title of this convention is long, it will be referred to as the “UNESCO Convention” or the “Convention.”

The nations that adopted the UNESCO Convention recognized that cultural property is one of the basic parts of national culture. Cultural property is property that each nation values for its archaeological, historical, artistic, literary, or scientific value. Cultural property contributes to a nation’s cultural heritage or natural heritage. Examples of cultural heritage properties include archaeological sites, artifacts, historical documents, monuments, and works of art.

The true value of cultural property can be appreciated only in relation to its origin and history. In other words, cultural property is best appreciated in its original context. Under the UNESCO Convention, nations are responsible for protecting their own cultural property. To this end, nations have drafted laws and rules to protect their cultural property. For example, the Archaeological Resources Protection Act (ARPA) protects archaeological sites on public lands in the United States.

Any nation that wishes to export cultural property provides a certificate with the property saying that it is legal to import it into another country. The nations that have adopted the Convention also try to restrict the movement of cultural property taken illegally from another country. All of these nations try to educate their citizens about the importance of cultural heritage and cultural property to everyone.
Stewardship Map

- ARPA
- UNESCO Convention
Dig Up an Artifact on eBay

In 1970, the United Nations Educational, Scientific and Cultural Organization (UNESCO) adopted an agreement between nations that cultural property contributes to a nation’s heritage. The agreement recognizes that cultural property is best appreciated only in relation to its original context. Transporting property from one nation to another requires a certificate showing that the transfer is legal.

Look for an artifact that catches your eye on eBay. Search using words like ancient, antiquity, Egypt, Native American, Roman, weapon, artifact, tool, stone age, etc.

Be sure to tell your parents what you are doing and that you do not really want to buy anything. They might want to join you because you might find wonderful things, but it is your job to inform them about ARPA and the UNESCO Convention before they buy any antiquities. You would not want them to get into trouble.

Draw a picture and write a brief description of your eBay find in the box. Include the price of the artifact. How much is it selling for?

Price: ______________________
Description provided by eBay:

Do you believe this artifact complies with the UNESCO Convention? Why or why not?

Do you have any idea of the site from where this artifact came?

If you bought this artifact, it could end up in your sock drawer. What archaeological knowledge could be lost because this artifact is out of its context and not with the original assemblage?

What would we not know about the past?

Would the purchase of this artifact cause additional looting? Why or why not?
FINAL PERFORMANCE OF UNDERSTANDING
Archaeology and Food Diversity

Enduring Understanding
Understanding consequences of subsistence practices helps us understand the present and plan for our future.

Essential Question
How can we use archaeological knowledge to design a healthy diet today?

Materials
For Each Group
- Final “Performance of Understanding: Archaeology and Food Diversity” (page 104)

Preparing to Teach
1. Make copies of “Final Performance of Understanding: Archaeology and Food Diversity” for each group.
2. Assemble and review all unit materials.
3. Post the essential question.

UNCOVER PRIOR KNOWLEDGE
Review all of the information acquired during this unit and organize it into major categories:
- Archaeologically reconstructed diets.
- Change in human diets over time (Abu Hureyra 1, Abu Hureyra 2, and Tell ‘al Raqai)

DISCOVER NEW KNOWLEDGE
How can we use archaeological knowledge to design a healthy diet today?
Inform students that this question will guide their learning.
1. Remind students that food diversity has shrunken since foragers’ times and that humans depend on only 12 plant foods for 75% of their calories and only three for 60% of their calories. Remind students that a lack of diversity in the diet results in poor health.
2. Ask students: What can we learn from the diets of foragers and use in the present and future? Why does this matter in the twenty-first century?

ASSESSMENT
Students complete the Final Performance of Understanding: Archaeology and Food Diversity in groups of four or five.
Final Performance of Understanding
Archaeology and Food Diversity

Goal: Based on your archaeological investigation, develop a healthy eating plan that creates a way to increase the diversity of foods eaten by students in your school.

Role: A team of experts on archaeology and human nutrition.

Audience: Families or School/School District Lunch Program

Situation: Historically more than 7,000 plant species have been collected or cultivated for food. About 200 plant species have been domesticated. But in today’s world, humans eat 75% of their calories from only 12 plant species: bananas, beans, cassava, corn, millet, potatoes, rice, soy, sorghum, sugar cane, sweet potatoes, and wheat. Three plant species (wheat, rice, and corn) now account for 60% of all human calories. Lack of diet diversity leads to poor health, even though calories are adequate.

Product: Your team will develop a healthy eating plan that creates a way to increase the diversity of foods eaten by students in your school. Your plan can be presented in a PowerPoint presentation or on overhead transparencies and should include charts, graphs, or tables to show information. Your plan must draw on information from archaeology, particularly the concept of the diversity of foods used in the past by foragers and agriculturalists. Be sure to include modern information on human nutrition.

Examples of the plans you might create include:
- A school garden to provide fresh vegetables for the lunch program.
- A family garden to provide fresh vegetables for families.
- A community garden to supplement diets of people who cannot afford fresh vegetables.
- New menus using locally grown and raised foods to improve school lunches.
- A personal plan to improve your own diet.
Appendix 1: The Six Facets of Understanding

The six facets of understanding are defined in terms of what the student can do (Wiggins and McTighe 1998, 44).

**Explanation** – the student can provide thorough, supported, and justifiable accounts of phenomena, facts, and data.

**Interpretation** – the student can tell meaningful stories, offer apt translations, or provide a revealing historical or personal dimension to ideas or events.

**Application** – the student can effectively use and adapt what he or she knows in diverse contexts.

**Perspective** – the student can see and hear different points of view through critical eyes and ears; see the big picture.

**Empathy** – the student can perceive personal style, prejudices, or habits of mind that impede or promote understanding; aware of what one does not understand.

**Self-knowledge** – the student perceives the personal style, prejudices, projections, and habits of mind that shape and impede his or her own understanding.
Appendix 2: Bloom’s Taxonomy

Original Taxonomy (Bloom, 1956)

**Evaluation** The judgment and evaluation of characters, actions, outcome, etc., for personal reflection and understanding.

**Synthesis** Organizing parts together into a new whole.

**Analysis** Breaking down information into parts and making comparisons.

**Application** Using skills or understandings in new situations.

**Comprehension** An understanding of what was read or learned.

**Knowledge** Remembering or recognizing previously learned information.

Revised Taxonomy (Anderson and Krathwohl, 2001)

**Create (Synthesis)** Organizing parts together into a new whole.

**Evaluate (Evaluation)** The judgment and evaluation of characters, actions, outcome, etc., for personal reflection and understanding.

**Analyze (Analysis)** Breaking down information into parts and making comparisons.

**Apply (Application)** Using skills or understandings in new situations.

**Understand (Comprehension)** An understanding of what was read or learned.

**Remember (Knowledge)** Remembering or recognizing previously learned information.
Appendix 3: Correlation to National Standards and to Common Core Standards
(under development)
Appendix 4: Rules for Brainstorming
(Bouchard 1977)

1. Criticism is ruled out.
Judgment of positive and negative ideas must be withheld. No one should criticize anyone else’s ideas.

2. Freewheeling is welcome—the wilder the better.
It is easier to tame down than to think up ideas. Don’t be afraid to say anything that comes to your mind—the farther out the idea the better. This complete freedom stimulates more and better ideas.

3. Quantity is wanted.
The greater the number of ideas, the more likelihood of winners. Come up with as many ideas as you can.

4. Try piggybacking ideas—combination and improvement.
In addition to contributing ideas of your own, suggest how ideas of others can be turned into better ideas, or how two or more ideas can be joined into still a better one.
Appendix 6: References


