INVESTIGATION 1 What is Archaeology?

OVERVIEW

Lesson 1: What Do We Know about Archaeology?
Students begin by sharing what they already know about archaeology. Then they develop working definitions for the terms site, artifact, and feature, and preview the gridding technique they will use for the field work.

Recommended Time: 1 or 2 class sessions

Lesson 2: Conducting a Practice Dig
The field work session serves two purposes. It gives students a concrete experience in measuring and gridding a site, and it enhances their understanding of what artifacts and features are.

Recommended Time: 1 session
Teacher Preparation Time: 1 hour to set up the grid

Lesson 3: Analyzing the Data
Back in the classroom, students interpret their finds. They discuss the observable properties of the artifacts they found at the site and infer meaning from the patterns in which the artifacts were distributed. They compile their data on a class chart, and then come to conclusions about the identity of the site.

Recommended Time: 1 class session
ASPECTS OF INQUIRY

Students practice important skills that archaeologists use. They measure the dimensions of a site, examine the placement and number of artifacts uncovered, and systematically record their observations. They work as a class to analyze the data and draw conclusions about the identity of the site and what people might have done there in the past.

BIG IDEAS

Archaeology is the study of human history and prehistory based on the structural and material remains of a culture. Through the study of artifacts and features, and the patterns and relationships among them, we can learn about the human past, and how people lived in the past.

BACKGROUND INFORMATION

Often when we think of archaeology and archaeologists, glamorous and exciting images of Indiana Jones or the discovery of King Tut’s tomb come to mind. In reality, dramatic discoveries like these are the exceptions and not the rule. Instead, archaeologists’ finds are the result of painstaking work. Their task is to piece together a coherent story about the human past from fragmented physical evidence, which is often sparse or incomplete.

The science of archaeology is one of discovery and interpretation. The archaeologist first develops hypotheses, then unearths physical evidence, and, based on the evidence, generates new questions about its meaning. The questions lead to more hypotheses which are subject to change as more investigations and observations yield more data. The archaeologist looks for clues in physical evidence as well as in historical records, and for links and patterns that might help interpret the discoveries. Students will engage in similar processes in the course of this unit.

IT’S NOT ABOUT DINOSAURS!

Students often mention dinosaurs when asked what they know about archaeology. The study of fossil remains and the reconstruction of organisms such as dinosaurs from their remains belongs to the science of paleontology. Archaeology deals with human life and activities.
Artifacts, Features, and Patterns

Artifacts and features are the primary physical evidence, the data of archaeology. They communicate information indirectly. It is the archaeologist’s task to analyze and interpret the data and patterns that indicate past activities that occurred at the site.

Simply defined, artifacts and features are products of human activity. The age of an object is not a determining factor in the definition: artifacts and features may be things people created hundreds of years ago, or they may be brand new. They may be hand-made or mass-produced, depending on the culture that produced them.

Artifacts include portable objects such as bottles, buttons, jewelry, and tools. Features are also evidence of places where human activity occurred, but they are not easily transportable. In this unit, the features are permanent, non-transportable artifacts, and include structural remains such as foundations, walkways, and post molds. An artifact such as a pencil can be removed from the site and still retain its identity. But a feature such as an earthen pathway cannot be removed and transported back to the lab. Because features are more likely to remain in place, they provide evidence to help reconstruct the architecture of a site.

One product of human activity is trash, the unwanted leftovers from making an object or performing a task. For instance, stone flakes lying in a pile may represent an area where a human created a stone tool. The flakes are what remain from that activity and indicate that tools were made there, even though no tool is found on the site. The pile of rock shards can be considered a feature when all the pieces are viewed as a whole, but each individual piece can be called an artifact. The pattern implied by a pile of chipped rocks can tell the archaeologist much about what went on in that location.

In the field work in Lesson 2, students will attempt to analyze modern artifacts and features based only on the properties and patterns that they can observe. They are asked to make interpretations as if they had no prior knowledge of the society that produced the objects, and to infer meaning from the physical evidence alone. This is a challenging task, and one that archaeologists continually face in their field work.
Examples of Features

Stone Steps

Post Mold

Ruins of the Roman Forum include numerous features.

Examples of Artifacts

Coin

Jewelry

Piece of Glass

Button

Pottery Shard
Lesson 1: What Do We Know About Archaeology?

THE LESSON AT A GLANCE

Students:
• Record their prior knowledge of archaeology in their journals
• Discuss their prior knowledge
• Develop working definitions for archaeology, artifact, feature, and site
• Look for meaning in patterns
• Work with a grid to prepare for the field work in Lesson 2

MATERIALS
* Chart paper and markers
* Two or three common related objects such as a soda can, a candy wrapper, and a plastic fork
* Overhead projector
* A compass
* Overhead master called “Gridding the Site”
* 1 copy of Archaeology for Young Explorers by Patricia Sanford and David L. Ribblett
* Teacher provides these items

READING FOR MORE INFORMATION
Suggest that students read Archaeology for Young Explorers during the coming weeks. Make the book available for them to use independently. You may also want to read parts of it aloud to reinforce some of the new concepts. For this lesson, the following pages are useful:
• “What Is Archaeology?” pages 5-9
• “How Do Archaeologists Know Where to Dig?” pages 11-14

PLANNING AHEAD
Preview Lesson 2: Conducting a Practice Dig.
Decide when and how you will prepare your site. Enlist the help of another adult to help you set up the activity and supervise students during the field work outdoors.

BRANCHING OUT
Set up an archaeology center in your classroom. Include books, photos, and maps on the topic. Encourage students to make use of the resources, and to bring in objects to share with the class in the center.

GETTING READY
Prepare a chart for the opening discussion. Label it “What We Know About Archaeology.”
THE INVESTIGATION

1. Explain to the class that they are about to begin a study of archaeology.

Ask students to write in their journals a brief description of what they already know about archaeology.

2. Hang the chart you have prepared called “What We Know About Archaeology” and invite students to share their ideas.

Use some of these prompts to facilitate the discussion:

- What is archaeology?
- What do archaeologists do?
  - What tools do archaeologists use?
- What do archaeologists study?
- What are they trying to find out?
- What kinds of questions do they ask?
- What kinds of evidence do they collect?
- What other kinds of records do archaeologists examine?

During the course of the discussion, help students articulate that archaeology is the study of the human past, and it makes use of a culture’s structural and material remains as well as historical records to reconstruct the past. Encourage students to come up with their own definitions for archaeology, and let them know that they will continue to develop their ideas and definitions as the unit goes on.
PRIOR KNOWLEDGE

Save the chart as another record of prior knowledge. Accept all student ideas, and do not be concerned if their ideas are vague or incomplete at this point. But do return to the chart often to add to it, to clarify, or to change the definitions as they evolve.

TEACHER’S NOTE

I asked students to make a list of words that came to mind when they heard the word “archaeology.” We used their word lists to focus the discussion. It was also a good way to introduce some of the language of archaeology and to begin our own list of definitions.

Class List of Prior Knowledge

This is a sampling of typical prior knowledge. In some cases, ideas are quite vague; in others students list very specific types of items. Misconceptions come up about the glamorous nature of archaeology or about the notion that archaeologists study dinosaurs. Because of media exposure, students often know about the kinds of tools that archaeologists use, but are uncertain about the purpose of their job. Students seem unaware of the importance of historical records such as maps, letters, deeds, and diaries in archaeology, and rarely mention these items.
3. To prepare for the field trip, help students to develop working definitions for the terms artifact, feature, and site. Record their definitions on the chart, and keep the chart posted so that students may continue to refine their definitions.

DEFINITIONS:

For Site
This is a common term with which students may already be familiar. Use the word in a sentence, such as “I saw a sign that said the old warehouse on Route 1 will be the future site of a new candy factory.” Ask students to substitute a synonym for site in the sentence. They will probably mention words such as location, place, or scene—all of which are acceptable working definitions.

For Artifacts
Hold up one object such as a candy wrapper. Discuss its attributes. Ask:

• Of what material is the object made?
• Is it in its original, natural state, or has it been changed by some action? Who or what changed it?
• What purpose does the object serve?
• How long do you think it might last?

Repeat the exercise with a second object such as a plastic fork, and a third object such as a soda can. Then ask:

• If you found all these artifacts together in one area (called a site by archaeologists), what activity would they suggest to you? What might they tell you about how people used the site?

Develop a working definition of artifacts: objects that are made or modified by people. They can be useful (such as pots and buttons), decorative (such as jewelry), for recreational purposes (such as toys and games), or even remains of food (such as bones, shells, and seeds).
For Features

Point to an obvious architectural feature, such as a wall. Ask students to compare and contrast the wall with one of the artifacts you just discussed. Ask:

• In what ways are the two items similar? In what ways are they different?

Help students to recognize that artifacts and features are both made or used by people, but features usually remain in place at a site. Artifacts are more portable, and may be removed from a site.

Have students name some features in and around the building. They might mention items such as the foundations, pathways, fences, chimneys, or parking lots. Ask students to think about which of the features would most likely remain over a long period of time.

4. Discuss the importance of patterns and the associations of artifacts and features at a site. Ask:

• Suppose you discovered an old stone barbecue grill. If you found a candy wrapper, a soda bottle, and a plastic fork near the old grill, what might this pattern tell you about how people used the site? What activity do the artifacts and feature suggest? What else would you expect to find there?

5. Tell students that they will go on a field trip to a site you have selected to look for modern day artifacts. Let them know that you will place a selection of modern day artifacts at the site for them to find and interpret. Ask students to look at the artifacts they find at the site as if they knew nothing about the society that produced them. Later they will interpret the artifacts only through the evidence they can observe firsthand, and not bring in prior knowledge. This is a challenging task.

TIP

If students are struggling with this notion, lead them through an interpretation of one object. For example, students might say about an empty soda can: This culture knew how to process metals, used bright colored paints, had a written language, and knew how to put together numerous ingredients. Students probably would not be able to say anything definitive about what had been in the can, how it tastes, or even if it was used for drinking.
The compacted soil at the opening of the foundation stones suggests a pattern of repeated movement in and out of the building.

PATTERNS
The class may be familiar with the idea of number patterns in math, and it is important to clear up any confusion. The patterns we refer to in archaeology have to do with spatial relations, such as how artifacts or features found in close proximity to each other might form a meaningful group. The patterns also relate to how objects function, and what those functions suggest about how the site was used by humans in the past. For instance, if, in one area of the site, you find a circle of charred stones and a set of artifacts that includes bottles, forks, food wrappers, and cooking implements, the pattern suggests a specific human activity.
6. Show the overhead called “Gridding the Site” to prepare students for the field work. Explain that archaeologists set up a grid over an area to help them record finds accurately. Have students practice using the grid. As they develop an explanation, let them come up to the overhead and add their information to the grid. Ask:

- Why do you think archaeologists mark off a site using a grid pattern? How do they use it to help them record data?
- Give students practice in locating squares. Ask: Where on the grid are squares A1, B2, C3, D4, E2, F3?
- Find North, South, East, and West on the grid. If students have had little experience using a compass, have them practice locating directions in the classroom.
- How big is each grid square? (10 feet x 10 feet) How big is the whole site? (40 feet x 60 feet)

7. Let students know they will use this information when they go outside to determine the site dimensions and record the data in their journals.

NOTE

The dimensions of the field site you will set up are the same as those of the schoolhouse site which students will analyze later. This activity and the field experience that follows will help students visualize the space. You may want to return to the site later, or to refer to it when discussing the dimensions of the schoolhouse in future lessons. When you explain this to students, remember to withhold the name of the building that was on the site in order to maintain the mystery.
### Gridding the Site

**Scale:** 1 quadrant = 10'

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“Gridding the Site” Transparency
Lesson 2: Conducting a Practice Dig

THE LESSON AT A GLANCE
Students:
• Observe features around their school
• Measure a grid and record its dimensions in their journals
• Collect artifacts from the site and make preliminary records of them

MATERIALS FOR MARKING THE SITE
• If indoors
  * Masking tape and twine
• If outdoors
  Twine and 20 stakes
  OR *Chalk (for a hard surface like black top)
  OR *A chalk marking machine (You may be able to borrow one from the athletic department. This is the quickest and easiest method.)

MATERIALS FOR INVESTIGATING THE SITE
* Yard sticks or tape measures
* A trundle wheel, if available (You may be able to borrow one from the math department.)
* Sticky notes
* A selection of “artifacts” with which to seed the site (Please see the illustration called “Seeding the Site” on page 47 and #3 below for suggestions.)
* Bags for collecting artifacts (optional)
Journals
A compass
*Teacher provides these items
Outdoor grid made with aluminum stakes and twine

Indoor grid made with masking tape and twine
GETTING READY

**Time: 1 hour or more to set up the grid and seed the site**

1. Select an appropriate site for the field trip. The size of the site you will lay out is 60 feet by 40 feet, so the area needs to be a bit larger than that to allow space around the edges for students to move about. Outdoors is preferable, but a gymnasium floor would work well too.

2. Before the field trip, measure out and mark the perimeters of the site. Divide the site into 24 squares, just as on the overhead called “Gridding the Site.” Each square measures 10 feet by 10 feet.

3. Seed the area with “artifacts” for students to discover. Put down enough objects so that each student or team of students will find at least one object. Try to include a range of objects that are made of different materials and represent different human activities. For example, if you were to seed the site with household objects, you might include:
   - **Kitchen:** eating utensils (bowl, spoon, fork); trash (envelopes with postmarks, cans, food wrappers or labels, meat tray, milk cartons, soda cans); cookware (pots, lids)
   - **Bathroom:** personal grooming items (soap, shampoo bottle, comb, hair clip)
   - **Bedroom:** toys (ball, top, trading cards, game chips); books
   - **Closet in bedroom:** clothing (hat, glove, scarf, shoe)

Distribute the objects over the area in a pattern so that all items that relate to a particular use are found in the same general area. For instance, place eating utensils in one general area, and items that relate to a bathroom in another area. You might also break some objects (such as pencils) into pieces so that students can reassemble them. You may also leave some squares empty. Please see the illustration called *Seeding the Site* (on opposite page), for one example, but feel free to use your own ideas.

4. Before you take the class to the site, assign each student or each team of students to the square or squares they will investigate on the grid. Because there are 24 squares, you will have to adjust the numbers to fit your class.
Seeding the Site

This is one example of how you could distribute “artifacts” throughout your gridded site.

- **Bathroom grooming items:** comb, soap, toothbrush
- **Bedroom (boy) games, toys, sock or shoe, trading cards, baseball cap
- **Bedroom (girl) doll, stuffed animal, scarf, sock or shoe, hair clip
- **Kitchen bowls, silverware, pots & pans, calendar
- **Trash Area bottle caps, empty cans, envelopes with dates, food wrappers, meat trays, milk cartons
- **Miscellaneous Artifacts**

Scale: 1 quadrant = 10’
THE INVESTIGATION

1. Take students to the site you have selected and seeded with artifacts. On the way to the site, stop periodically and ask students to look around and point out features. These might include a walkway, a fence, walls, bike racks, a flagpole, fixed playground equipment, stairs, or a water fountain. Ask students to think about how this place might look 100 years from now. What would be gone? What would remain?

2. To help students appreciate the size of the site, have them measure the dimensions of each side, and record the results in their journals. They could use yard sticks, tape measures, or a trundle wheel, if available. As an alternative, they could first measure their stride and then pace off the sides.

3. Orient students to the site by showing them square A1. Have them describe the locations of several other squares. Use the compass to determine where the direction North is.

JOURNAL PROMPTS
How big is one square?
How big is the whole site?
What could fit in a space this size?

TIP
Some teachers find it very effective to set the scene by telling the class a brief story about the site before they go to the area. For example, one teacher asked students to imagine that they were archaeologists living in the year 2100. They would be viewing a dig that had uncovered a site dating from about the year 2000. This kind of “back-from-the-future” time travel had great appeal for his students.

TEACHER’S NOTE
I asked students what they thought could fit in a space that is 40 x 60 feet. Is it large enough for a house, a swimming pool, a whole village?

Students creating a grid on asphalt using chalk
4. Allow students some time to take in the big picture. Let them explore the whole site briefly, walking slowly and carefully so as not to disturb the artifacts.

5. Then ask students to go to their assigned squares. When they find an artifact they can put a sticky note on it to record its name and location. Also have them record the information in their journals. Back in the classroom, students will finish recording the information, and then transfer it to a class chart of the grid.

NOTE

Try to avoid a “treasure hunt” atmosphere. Emphasize instead the systematic search for evidence. Encourage students in adjacent squares to exchange information about their discoveries. Remind them that the grid squares are not boundaries, they are merely tools to help students record their data. Discourage ownership of objects as opposed to joint ownership of the patterns they indicate.
Lesson 3: Analyzing the Data

THE LESSON AT A GLANCE

Students:
- Finish recording their data about artifacts they found at the site
- Discuss their findings with the class
- Create a class chart of their findings
- Analyze the patterns they discovered
- Come to conclusions about the identity of the site

MATERIALS

Journals
* Chart paper and markers
* Overhead projector
* Artifacts students collected at the site
* Overhead entitled “Gridding the Site”

* Teacher provides these items

THE INVESTIGATION

1. When students have finished collecting the artifacts and making notes of any features, return to the classroom and have them finish recording the data in their journals. Their records might include:
   - drawings of the artifacts and features with labels and measurements. Some students may trace the objects directly onto the page. Mention that the drawings do not have to be artistic, but should be accurate representations of the objects so that they will be good records from which to work.
   - written descriptions of the artifacts and features
   - the locations where the artifacts and features were found
   - new questions

TEACHER’S NOTE

Before students attempted this task, I modeled a journal entry using an overhead transparency of the journal page. I wanted to establish a common methodology so that students could read each other’s symbols and maps. The exercise also reinforced the criteria we had discussed for making a good journal entry.
2. Discuss the observations students recorded. Remind students to interpret the artifacts and features based only on observable evidence, as if they were looking at them with no prior knowledge. Use some of these prompts:

- How do you think the artifact or feature got there?
- Of what material is it made?
- What is the condition of the item: whole, broken, rusted, rotted?
- How do you think it was used?
- Who do you think used it?
- What does the artifact or feature tell you about the society that produced it?
- Is there any indication of how old an item is? Are any of the materials dated?
- What questions do you have about the artifacts or features? Where might you get more information? What kinds of historical records could you consult?

3. Compile all the data from the field work on a class chart. The chart should include an arrow indicating North. There are several options:

- Project the overhead called “Gridding the Site.” Have students transfer the information from their sticky notes and journals onto the grid in the locations where they found the artifacts and features. They may write the names of the objects in the appropriate square.
- Or, you may want to create a large chart that can serve as a permanent display of the data. Hang the chart paper, and mark it off into the grid squares. Then either have students place their sticky notes directly onto the chart or make drawings of their finds in the appropriate locations.
- Or, you can run off copies of the grid for each student. As each team describes what they found, students can record the data on their individual copies.
4. Talk about the patterns students can infer. Try some of these prompts:
   - What do you observe about how objects are grouped on the site?
   - What might these patterns indicate about how the building was used?
   - How many different rooms were in the building?
   - Based on the evidence, can you determine what kind of building this was?
   - If this building was a house, for example, what else might you expect to find on the site?
   - If this were a real archaeological site, how would you know where the boundaries of the building were? Why do archaeologists consider blank areas important? How do the blank areas help to define the edges of the site?

Thinking It Through

5. Take the time to let students reflect on the experience, communicate their ideas, compare their findings, and interpret the data.

After students have created a visual display (such as a chart) of the artifacts they found at the site, they need to search for meanings in the patterns. One way to begin is to look at patterns of placement and think about what kinds of artifacts seem to be grouped close together in one area of the site. Then have them think about how the artifacts within that grouping relate to each other in function or usage. Both of these patterns (placement and function) provide clues about how an area of a site was used. Finally, look at the site as a whole and try to relate the different patterns to each other to get a bigger picture.

Where are the boundaries of a site? Again, patterns are important. The boundaries of a structure may be indicated by an architectural feature such as a wall, but the structure may not enclose all there is of importance at the site. Archaeologists may continue to explore a site and to extend the grid until a pattern of blank areas indicates that they have reached its boundaries.
Connections
To understand further the search for patterns among artifacts and features, and how those patterns can help explain what human activity took place in the past, use some of these activities:
- Classify the items found at the site. For example, classification could be based on the material from which each item is made or on the inferred use of the item.
- Color-code the objects based on the functions they serve. Use the code to define areas of the building on the site.
- Create a graph showing the relative numbers of each type of item found at the site.

Self-Assessment
6. Have students complete the statement below in their journals:
“I used to think that archaeology was ______________. Now I think archaeology is ______________.”

Plan to repeat the Self-Assessment at the end of the unit.