NO PREP

How an Archaeological Dig Actually Works

Includes: Student reading, case study, differentiated questions, teacher key

Name: Period: Date:

How an Archaeological Dig Actually Works

Before the First Shovel

No legitimate archaeological excavation begins with someone just showing up and starting to dig. Months or even years of preparation happen before a trowel touches the soil. The process starts with a research question — a specific problem the archaeologist wants to solve. Maybe a researcher wants to understand how a particular community lived during the Bronze Age, or maybe a construction project has uncovered remains that need to be documented before the site is destroyed. Whatever the reason, every excavation begins with a purpose. Once the research question is defined, the archaeologist must secure permits from the

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Grid Systems and Test Pits

Once the survey identifies promising areas, the next step is setting up a grid system. Archaeologists divide the site into a grid of precisely measured squares, typically one meter by one meter or two meters by two meters. Each square gets a

unique designation based on its coordinates. For example, N10E5 means 10 meters north and 5 meters east of the datum point. The datum point is a fixed reference location, often marked by a permanent stake or metal pin driven into the ground. Every measurement on the site is taken relative to this single point, which ensures that the exact three-dimensional position of every artifact can be recorded and later reconstructed. Before committing to a full-scale excavation, most archaeologists dig test pits, small exploratory holes scattered across the site. Test pits are like taking core samples of the earth. They reveal what lies beneath the surface: the depth of cultural deposits, the types of soil layers present, and whether artifacts exist at that location. A test pit might show a promising sequence of occupation layers in one area and sterile, artifact-free soil in another. This information helps the team focus their limited time and resources on the most productive areas. Setting up the grid and digging test pits might sound tedious compared to the dramatic discoveries people see in documentaries, but this phase is critical. Without a properly established grid, every artifact found during the excavation would be a floating data point: an object with no recorded position. And an artifact without a recorded position is an artifact that has lost most of its scientific value.

Trowels, Screens, and Patience

The actual digging phase of an excavation is painstaking, physical work. Archaeologists remove soil one thin layer at a time using flat-edged trowels, which are the single most important tool in the field. A good trowel allows the archaeologist to scrape away soil in controlled, even passes, feeling for changes in texture and color that signal a new stratigraphic layer, a distinct deposit of soil that formed during a particular period. Stratigraphy is the backbone of archaeological excavation. The principle is simple: in an undisturbed site, the deepest layers are the oldest and the uppermost layers are the most recent. This is called the law of superposition. By carefully peeling back one layer at a time and recording what is found in each, archaeologists build a chronological sequence of human activity at the site. Disturbing or mixing layers is one of the worst things that can happen during an excavation, because it destroys the time relationships between artifacts. All soil removed during excavation is passed through wire mesh screens, usually with quarter-inch openings. Screening catches small artifacts (beads, bone fragments,

tiny flakes of stone) that the excavator might miss with the trowel alone. On some sites, archaeologists also collect soil samples for flotation, a technique that uses water to separate lightweight organic materials like seeds and charcoal from the heavier dirt. These tiny finds can reveal ancient diets, farming practices, and environmental conditions. Throughout the digging process, every layer, every artifact, and every feature is photographed, drawn on plan maps, and recorded in detailed field notes. Archaeologists measure the depth and horizontal position of each find relative to the datum point. They fill out standardized recording forms and write narrative descriptions of what they observe. This obsessive documentation is not optional: it is the entire point. An excavation is, by its nature, destructive. You cannot re-dig a layer you have already removed. The records are the only thing that survives after the dig is over. This is what separates professional archaeology from treasure hunting. A treasure hunter wants the object. An archaeologist wants the information that the object, its position, and its surroundings can provide. The field notebooks, photographs, measured drawings, and database entries created during an excavation become the permanent scientific record of everything that was found. Decades later, other researchers can return to these records and extract new insights using methods that did not exist when the original dig was conducted. Without thorough documentation, the destruction caused by excavation produces nothing of lasting scientific value. Modern technology has enhanced but not replaced these fundamental recording practices. Digital cameras, GPS receivers, total stations, and tablet-based databases have made documentation faster and more precise, but the underlying principle remains the same: every piece of information about an artifact's position, its surrounding soil, and its relationship to nearby features must be captured at the moment of discovery, because that moment will never come again.

When the Dig Is Done

When the fieldwork phase ends — either because the research questions have been answered, funding has run out, or the site has been fully excavated — the team backfills the excavation. Backfilling means refilling the holes with the soil that was removed, often covered with a layer of landscape fabric to mark where the excavation occurred in case future archaeologists return to the site. Leaving trenches open is dangerous, environmentally damaging, and considered bad practice.

But the end of the dig is really just the beginning of the analysis. Artifacts are transported to a laboratory, where they are cleaned, cataloged, and studied. Pottery fragments are sorted by type and compared to known ceramic traditions. Stone tools are analyzed for the type of rock used and the technique of manufacture. Animal bones are identified to species and examined for butchery marks. Soil samples are processed for pollen, seeds, and microscopic organisms. Radiocarbon samples are sent to specialized labs for dating. The analysis phase typically takes three to five times longer than the excavation itself. A dig that lasts six weeks in the field might generate four to seven months of laboratory work. All of this research is eventually compiled into a final site report or published in academic journals. Until the results are published, the excavation is considered incomplete. An unpublished dig is, in the professional world, almost as bad as a looted site — the information exists, but no one else can access or build upon it.

Key Information: Steps of an Archaeological Excavation

Step	What Happens
Research Design	Define the research question and develop an excavation plan
Permits and Funding	Secure legal permits and financial support for the project
Survey	Walk the landscape, use aerial/satellite imagery, and deploy remote sensing to locate features
Grid Setup	Establish a datum point and divide the site into measured grid squares
Test Pits	Dig small exploratory holes to assess what lies beneath the surface
Excavation	Remove soil layer by layer with trowels, recording every artifact and feature
Screening	Pass all removed soil through wire mesh to catch small artifacts

Step	What Happens
Documentation	Photograph, map, and write detailed notes for every layer and find
Backfilling	Refill the excavation trenches after fieldwork is complete
Analysis and Publication	Clean, study, and publish findings — often takes 3-5 times longer than the dig

Case Study: Elena's First Day in the Trench

Elena, a 20-year-old archaeology student at the University of Arizona, had spent two years in classrooms reading about excavation techniques. Now she was finally on her first real dig — a Hohokam village site in the Sonoran Desert. Her supervisor, Dr. Patel, handed her a trowel and assigned her to a one-meter square labeled N4E7. 'Take it down one centimeter at a time,' he told her. 'If you see any color change in the soil, stop and call me.' Elena started scraping carefully, but the August heat was brutal, and after two hours she had removed barely three centimeters of dusty brown earth. Frustrated and sweating, she pressed harder with the trowel — and felt something crack beneath the blade. She froze. Brushing away the dirt, she saw she had scraped through the edge of a thin, dark layer of charcoal and ash. 'Dr. Patel!' she called, her voice shaking. He knelt beside the square, examined the damage, and said quietly, 'That was a hearth feature — a cooking fire from maybe 800 years ago. The layer you just cut through told us when it was used and what was burned in it. Some of that information is gone now.' Elena felt sick. She had destroyed something irreplaceable in a moment of impatience. Dr. Patel put a hand on her shoulder. 'Every archaeologist makes this mistake once. The point is that you never make it again.'

1. Using information from the reading, explain why the charcoal layer Elena damaged was scientifically important. What specific information could that layer have provided?

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2. The reading states that 'an excavation is, by its nature, destructive.' How does Elena's experience illustrate this concept, and what does it teach about the importance of patience and technique in fieldwork?

Multiple Choice

1. What is the primary purpose of establishing a datum point at an excavation site?

    a) To indicate the center of the site for aerial photography

    b) To provide a fixed reference point for all measurements on the site

    c) To mark the location where the most valuable artifacts are expected

    d) To show visiting officials where the excavation boundaries are

2. Why do archaeologists pass removed soil through wire mesh screens?

    a) To remove rocks that could damage excavation tools

    b) To separate different soil types for laboratory analysis from the excavation

    c) To catch small artifacts like beads and bone fragments that might be missed

    d) To dry the soil before placing it in storage bags

3. According to the reading, the analysis phase of an excavation typically takes how much longer than the dig itself?

a) Twice as long

b) Three to five times longer

c) Up to ten times longer

d) About the same amount of time

Matching

Write the letter of the correct definition on the line next to each term.

Term	Definition
1. ___ Test Pit	A) The study of soil layers and their chronological sequence at an archaeological site
2. ___ Stratigraphy	B) A network of measured squares used to record the exact position of finds
3. ___ Datum Point	C) A small exploratory hole dug to assess what lies beneath the surface
4. ___ Backfill	D) A fixed reference location from which all site measurements are taken
5. ___ Grid System	E) The process of refilling excavation trenches after fieldwork is complete

Fill-in-the-Blank

1. The study of soil layers at an archaeological site, where deeper layers are older than those above them, is called _____.

2. Before a full excavation begins, archaeologists dig small exploratory holes called _____ to determine what lies beneath the surface.

3. All measurements at an excavation site are taken relative to a fixed reference location known as the _____.

Short Answer

Answer each question in 2-4 complete sentences.

1. Explain why an archaeologist must secure permits and develop a research question before beginning an excavation. What could go wrong without these steps?

2. The reading says an unpublished excavation is 'almost as bad as a looted site.' What does this comparison mean, and why is publication considered so important?

3. Describe two specific techniques archaeologists use during excavation to ensure that no small artifacts are lost. Why are these small finds important?