

Basics of Archaeology for Simulated Digs

by Shelby Brown (J. Paul Getty Museum)

Archaeological excavation is conducted in a scientific manner and the process of digging and thinking about a site teaches skills of critical thinking and analysis that apply to many topics and disciplines. The following definitions, rules, and suggestions will help teachers explain archaeology and the goals of excavation to their students and allow them to design and conduct a simulated dig based on archaeologists' approaches. See AIA's *Simulated Digs*.

Definitions and explanations

Archaeology

Archaeos = old, ancient and *Logos* = word, study. Archaeology is a discipline, a systematic approach to uncovering the past, and a way of thinking. Archaeologists dig up and study the physical (material) remains of people who lived long ago, including their public architecture, private houses, art, objects of daily life, trash, food, and more, to answer questions about who the people were, how they lived, what they ate, and what their lives were like.

Excavation

Archaeological excavation involves digging, recording, and interpreting the physical remains of the people who lived in an area to understand their culture.

Site

A place where humans left substantial remains can be identified as a site (a working area, habitation, or other place of human activity).

Culture

The beliefs and behavior of a group of people. These cannot be excavated, but the material culture (the objects and structures) people leave behind give us clues to their beliefs and behavior.

Material culture

Tangible remains of cultural behavior: the tools, houses, art, food, and other objects and structures made or modified by people who lived in the past. Remains made of *inorganic* (never living) materials, such as stone and clay, survive better than those of *organic* (once living) materials that can rot and decay, such as wood, plant fibers, and animal hides. Both survive best in dry, sealed (air-tight) environments.

Artifacts

Artifacts are **portable** objects, tools, artworks, and other items made or modified by humans.

Features

These are large and other **non-portable** structures made or modified by humans, for example buildings, pits, post holes, and modified caves.

Context

The association of artifacts and features found within a particular area or layer, and the relative position and relationship of this area or layer to those around, above, and below it, provide crucial information. The context of archaeological finds is what allows us to interpret them and understand their function and meaning.

Strata

Layers (stratum = layer) reveal the sequence of activities, habitation, and abandonment in an excavation square and across a whole site.

Stratigraphy

A series of strata, the study of the strata

Dirt, rubble from fallen buildings, and other debris build up in layers around the artifacts and features of past cultures. Strata may reflect different activities in one period within one culture, or a series of different times or cultures. Older layers are on the bottom, unless an earthquake, human activity, or other catastrophic event changes their position.

How sites become lost

Theft and re-use: These are significant reasons why objects, art, structures, and sites disappear. Buried sites are seriously damaged by illegal digging, a form of theft.

Even very large, famous monuments (the pyramids of Egypt, the Colosseum in Rome) that have been in view for thousands of years have suffered during the periods when they were no longer considered culturally important and protected. Aside from damage by time and weather, the exterior stones of the pyramids and a big section of the outer ring wall of the Colosseum, along with all its structural and decorative stone and metal attachments, were removed and re-used over time. On a smaller scale, vandals and graffiti also damaged the sites. Now that the monuments are tourist attractions, they are protected again by society.

Build-up of dirt: Consider what happens today if trash collectors go on strike or a city lot is abandoned. Since foodstuffs and many of the materials people use are bio-degradable, ordinary trash and weeds can build up, decay, and soon start to turn into soil even in an inhabited area (and even more quickly if there is any disaster). In the past, people sometimes needed to raise their floors or their entire houses above accumulated layers. This might happen several times, and each rise in floor level left a new layer.

Disasters cause strata: When houses burn down in a fire or are damaged by flood, war, or an earthquake, the owners may not clear all the rubble away, but rather smooth the site over and

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build on top. The new houses will form a layer above the earlier houses. If many houses are destroyed, a whole city may rebuild itself on top of them. A city that started on flat ground may end up on a hill made of earlier layers, each layer from a different time houses burned or were re-built for other reasons. Repeated floods may similarly damage a site and cause layers to build up, as in Egypt and Rome on the Nile and Tiber rivers.

Roman towns located near Mount Vesuvius (near Naples) were buried in heated volcanic mud and falling ash from the volcano's eruption in 79 CE. The volcanic debris hardened into stone. Many hundreds of years later new cities developed on top on the stone layer.

Abandonment: If people abandon a city (perhaps because of drought or war), the houses eventually start to crumble from neglect. People scavenge building materials, animals move in, and weeds, grass, and eventually trees start to grow over the decaying structures. After a long time, the remains of the city can disappear under soil and greenery.

Discovery, research, and excavation

Start with information

Excavation is a way to find out about a site, but it is not the only way, and usually not the first way. Archaeologists do not just go hunting underground. When they dig, they do so for a reason, and they have some information about the area that leads them to think they will find a site. They decide if they can excavate meaningfully. They have specific questions.

Reading stories, listening to farmers' reports, examining maps, walking the land (surveying) to get a big picture of possible habitation, using technology such as ground-penetrating radar to peer under the ground—these and other techniques all help archaeologists figure out where and when people lived in an area.

Design the dig with a story in mind

The changes that occur in the artifacts from one layer to the next in a simulated dig should not be arbitrary. They need an explanation. If there are supposed surface finds leading to an interest in the dig site, students can discuss inferences they can generate before they dig. Then as they excavate, they learn more. Unfortunately, like archaeologists, they usually cannot arrive at the whole explanation. Luckily, the teacher can tell the story at the end. (With younger students, the teacher may choose to start with a story and a question to engage their interest in finding the evidence.)

Excavation units and strata

Archaeological sites are generally divided up into squares to help archaeologists record finds precisely as they dig. The AIA small-scale digs are created in a square or rectangular cake pan, in a rectangular shoebox, or (in the schoolyard digs) in larger squares dug into the ground. These mirror real excavation practices. The squares' side walls reveal stratigraphy.

Archaeologists excavate horizontally and do not dig holes

Archaeologists use flat masons' trowels rather than gardening trowels (which are a bit like spoons), because archaeologists remove soil in flat, horizontal movements designed to expose but not scoop out artifacts. They do not remove finds until they have noted their position and found all the objects around them. Otherwise, they could miss important associations between artifacts or accidentally dig through two layers and merge artifacts from different contexts.

Since trowels do not come in small enough sizes (and can be expensive), for our small dig lessons many students do use spoons, although it can be hard to use them without digging holes. Nevertheless, the principle of **horizontal excavation** should be emphasized. Since the shoebox sites are small, it is possible to pack the soil down firmly and to dig carefully, removing small amounts of dirt and working sideways before digging downwards.

Numbering layers, contexts, and finds

Archaeologists record everything far more carefully than will be possible for students, especially younger ones. Every find is recorded horizontally and vertically and each feature and any change within the layer is also recorded separately and as part of the whole. When excavators do not see any changes, or are not sure exactly what they are seeing, they may make a transition to a new layer at a pre-determined, arbitrary depth, such as 10 centimeters. They do this to protect against accidentally mixing artifacts from different contexts. Even though teachers can't enforce this level of care, they should emphasize the principle and require some record-keeping.

Preserving Context: What goes where?

In a relatively simple simulated dig, just keeping track of layers will be sufficient to make the point that preserving context is important. In a schoolyard dig it will be important to label and bag some artifacts separately, even when they are in the same layer. This should be done whenever there is something clearly different about their environment or they clearly belong together. A ring of stones used as a fire pit and a small trash area dug into a floor are separate units.

Noticing changes within and between layers

As they dig, archaeologists pay attention to the color, texture, hardness, composition, and even smell of the soil they remove. In the cake excavation, students will be able to note color and perhaps smell as they dig, and the layers may have texture differences as well. In the shoebox digs changes in soil color, texture, hardness, and composition can be provided. Even the odor of a layer may be enhanced by adding herbs or ground coffee. When students notice a change in a layer or encounter artifacts, they should dig more slowly, removing small amounts of soil and stopping when they notice changes. They can brush finds to expose them.

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As they remove the soil and put it into a container, they should check for small artifacts they might have missed. Archaeologists generally sieve the soil they excavate, either gently shaking the dry dirt through a screen, or sometimes floating the soil in water before screening it (water sieving) to catch small finds missed during digging. Dry sieving is feasible on a schoolyard dig.

Top plans and record sheets

Even with young children, the teacher should explain the concept of a top plan (used to record the location of all artifacts in a square in every horizontal layer) and a record sheet (used to list finds, describe and possibly draw artifacts, and write comments). Children should record to the best of their ability the artifacts (or the kinds of artifacts, such as green beads) they find.

Sample record sheets are included in the lessons. The record sheet may need to be modified depending on the age of the students and the number of artifact types in each layer. The teacher can easily design an individualized record sheet and create a simple top plan with graph paper. A square or rectangle drawn on it represents the top view of the dig square.

Young students can learn to measure and plot artifacts on a top plan

The teacher puts out two pieces of graph paper per student with a dig square outlined on each. On one are small pieces of candy (or a substitute). Students count down and across the square to locate the candy, and then do the same on the graph paper and draw a circle that stands for the candy.

After plotting correctly, students can eat their “artifacts.”

Excavation supplies*

These can be modified based on the age of students and the teacher’s goals:

- Spoons and brushes
- Shoe boxes (if relevant)
- Containers for excavated dirt
- Small plastic bags to hold the artifacts from each layer
- Waterproof black markers to label the bags
- Top plans and clipboards
- Record sheets
- Rulers and pencils
- Artifacts or laminated images of artifacts
- Sieve

*Small painters’ palette knives can work as trowels in shoeboxes, instead of spoons. Schoolyard digs need additional supplies, including real masons’ trowels and a large sieve.

Dig design tips

- Students will be able to identify the transition from one layer to the next more easily if the layers are visibly different. **Warning:** although additives are useful for helping identify layers, fine particles can sift down into lower layers and confuse diggers.

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- On a real dig, compact soil holds objects in place. Simulated dig soil is looser, and objects can sometimes move out of position if a shoebox is jolted. The teacher should compress the soil layers as much as possible.
- Preserving the context of finds is important, not just so diggers can compare the finds from one layer to the next, but also so they can identify artifacts associated meaningfully within a layer. Ideally, the teacher will include artifacts that are separated but belong together or are broken but join.
- Recording and measuring are essential. Even very young children should attempt to record and draw the site and finds as well as they can.
- Start with questions
 - Looking at surface finds, what do students expect to find as they dig?
 - What are examples of change within a culture and what is a change to a different culture that they may find?

Students can discuss changes in familiar artifacts such as games or technology that do not imply a cultural shift. A change to all-new artifacts between one layer and the next might show a more sweeping change in people or culture.

AIA sample digs can be modified as needed

- In the **Layer Cake** project, students see a site changing across stratigraphic layers easily identifiable by color, smell, and taste.
- In the **Shoebox Digs**, a change in the material culture of different groups with different interests is shown through changes in food and artifacts.
- With the **Schoolyard Dig**, the teacher has the greatest opportunity to develop a complex site and “back story” in just one layer and reveal that careful digging matters. One way to do this is to place related objects near one another (a bowl and a spoon, the beads of a necklace) or to break something and scatter the pieces in the same area. Joining the objects may reveal more information.

Summing up and thinking ahead

Digs hardly ever answer all the questions archaeologists had in mind, and there are also new questions. These may be answered by further excavation, perhaps even at another site. At the end of their dig, **students should summarize what they learned and consider:**

- What kinds of evidence do they expect to find if they continue to dig in this area?
- What questions do they want answered?

At this point the teacher can tell the story of the site if it has not yet been revealed or provide some new information. In a real-world dig, archaeologists would likely never know the story of a site as well as the teacher does who designed a simulated one!

Knowing the story is a satisfying finale.