

Shoobox Dig

Shelby Brown

THE ARCHER SCHOOL FOR GIRLS

LOS ANGELES, CALIFORNIA

Acknowledgements: Shoobox digs and other small-scale excavation projects have been developed, refined, and passed on by many teachers over the years. Examples can be found in books, on the web, and in teachers' personal collections of lesson plans.

This dig is based on one conducted with the second grade students of Fairburn Avenue Elementary School in Los Angeles and refined with the help of the participants in the 2006 AIA Teacher Session on shoobox archaeology at the AIA/APA convention in Montreal and the October 2006 teacher session at The Archer School for Girls in Los Angeles. Many thanks to the students and teachers for their enthusiasm and helpful suggestions!

This dig also owes a great deal to dozens of fellow excavators who have brought archaeology into schools. AIA member Craig Lesh polled archaeologists about their goals in introducing young students to the discipline, and this lesson attempts to address some of their most pressing concerns about teaching the importance of context.

OVERVIEW

Students will become archaeologists on a small scale and uncover the stratified layers in a shoobox. This is a manageable, compact, and fun (although sometimes messy!) dig for older elementary school children that can be modified for middle school. Unlike the other small-scale AIA digs (Layer Cake Archaeology and Transparent Shoobox Dig), which allow younger students to see the archaeological layers of a site before digging them, this is a blind dig more like a real excavation. Students excavate in teams, uncover three or four layers, record their findings, and answer questions that reveal how carefully (or carelessly) they served as excavation supervisors and how well their digging strategies worked. Since archaeologists use the metric system, the teacher may incorporate metrical calculations into the lesson.

The Shoobox Dig teaches basics of archaeology, the logic of horizontal excavation, the nature of stratigraphy, and the importance of keeping records and preserving the context of finds. The artifacts used in our example are simple and

easily obtained, and they are not representative of genuine cultures. They permit students to focus on observation and analysis and help them avoid jumping to conclusions based on cultural cues. Alternatively, teachers may choose to add culturally specific simulated artifacts, replicas, or laminated images of real artifacts to relate the lesson to cultures students are studying in class.

GRADE LEVELS

The dig is designed for third graders and older elementary ages. To adapt the dig for use by middle school students, the shoe boxes can be modified so that they are not all identical. Each older team is then responsible for an area of the site, and the whole site will not be completely comprehensible until all the teams join forces to discuss and interpret their findings.

GOALS

Interdisciplinary goals are to

- help students practice transferable skills of observation, critical thinking, inquiry, and hypothesis-testing applicable to many disciplines, including science, math, social science/history, art, and English.
- permit teachers to make connections across disciplines and engage in kinesthetic learning, including excavating, presenting orally, writing, listening, and drawing (translating three dimensions into two).
- illustrate the importance of context to the meaningful interpretation of data.
- promote teamwork, sharing ideas, academic honesty, and building on the past work of others.
- show the distinction between observations (the discoveries we make) and inferences (the stories we make up).
- engage students in thinking about multiple interpretations.
- allow for design flexibility, so that teachers can meet their own classroom's needs.

Archaeological goals are to

- introduce principles of stratigraphy and make excavation strategies (digging horizontally and excavating one layer at a time to preserve context) clear and relevant.
- show that our knowledge of the past is incomplete and illustrate how some of its gaps came to exist.

- illustrate how careless work can affect interpretation, destroy context, and disguise cultural change.
- emphasize that excavation and archaeological research are not treasure hunting, but rather ethical endeavors to restore a past culture's heritage.
- teach students how to measure, map, draw, and understand a top plan and cross section (translate three into two dimensions).

Students experience in a kinesthetic way the fact that excavating an archaeological site destroys it, so that afterwards there is no possibility of checking information not recorded. Even if record-keeping needs to be simplified with young children, they should still be asked to do some form of recording as they dig, and the dig should still end with discussion of what the students observed in each layer and why it is important to dig one layer at a time.

MATERIALS AND PREPARATION

The teacher should first read *Basics of Archaeology for Simulated Dig Users*.

In preparing shoe box digs, the teacher will need to acquire a sturdy shoe box for every four or five students. Each box will be filled with layers composed of sand and dirt, possibly mixed with colored sugar crystals, birdseed, or other ingredients to create different colors and textures and to help students recognize changes in strata as they excavate. Each layer should be thick enough (at least an inch deep, or about 3 centimeters) to be identified by students before they dig through it accidentally. Depending on the number of students and teams (there can be as many as 4–5 members per team), filling the boxes and cleaning up afterward may take more than an hour. Excavating, recording, and discussing will take several hours.

The dig should be built around a story the teacher has in mind, which may vary depending on the artifacts. These can be inexpensive and may include small objects saved up from past projects. Keeping the artifacts culturally neutral (not representative of genuine cultures) helps students focus on observation and analysis. Adding laminated images or replicas of real artifacts creates a more realistic site.

It is best to create the digs at the school or location where the boxes will be excavated, preferably outdoors. (The teacher will ideally have some adult assistance.) Once all the boxes, dirt, and objects have been obtained, the easiest way to proceed is for the teacher and helpers to complete the lowest layer of dirt and artifacts in all boxes in exactly the same way, and then move up to the next layer. The layers should be packed down quite tightly to resemble the (generally) compact soil of a real dig as closely as possible.

Making context important

- In at least one layer, several objects should be related and the teacher should place them near one another. Parts of a broken artifact can be positioned so that students who dig carefully will see the original connection. Small beads can be arranged to create a necklace pattern. A small circle of pebbles with a fragment of charcoal inside it can represent a fire pit.
- The teacher might put a mystery artifact in one layer of each box.
- For older grades (middle school) the teacher can increase complexity, emphasize teamwork, and ask students to participate in the planning and design of dig sites.
 - One option is to leave some objects out of certain boxes so that it will only be possible to learn about all the finds if teams share information.
 - Alternatively, different shoeboxes can represent different areas of a site altogether.
 - Teams or classes can design the shoebox digs for one another and exchange them, or can design the dig(s) for the next year.

Materials (for four layers)

- Shoeboxes, numbered, with one side labeled LEFT or WEST at the teacher's discretion
- Sand, not too fine and dusty
- Potting soils, ideally of different textures and colors, and not too fine (choose soils of a uniform consistency that will help make it easy to spot artifacts), for an upper layer of dirt-dwellers
- Colored sugar crystals or bird seed
- Oregano, sesame, coffee, or another additive with a distinctive odor
- A pre-selected number of artifacts of different types for each layer (perhaps 5 items of 5 types in each layer; for example, 5 green beads, 5 plastic fish, and so on, for a total of 15 artifacts in each layer)
- Sugar cubes, clay, or plastic building blocks to create features (if desired)
- A piece of plastic or a plastic tablecloth to work on

The layers of our sample dig are composed of:

- Sand (bottom layer D)
- Soil mixed with birdseed (middle layer C)
- Another soil with a different texture and color (top layer A; left/west half)
- Soil mixed with colored sugar crystals (top layer B; right/east half)

Artifacts from our sample dig

- Fake or real (modern, not ancient!) coins
- Miniature plastic doll dinnerware
- Popcorn
- Small plastic bugs

- + Beads of different types
- + Fake “gems”
- + Dried pasta
- + Marbles

Excavation tools

- + Spoons (excavation tools)
- + Containers for excavated dirt
- + Small sieves
- + Small plastic bags to hold the artifacts from each layer
- + Waterproof black markers to label the bags
- + Pencils
- + Brushes
- + Top plan
- + Record sheets
- + Clipboards
- + Artifacts and/or laminated images of artifacts
- + A top plan for each layer: a sheet of graph paper with a square or rectangle already drawn on it representing the excavation square
- + A record sheet for each layer, designed by the teacher and requiring (in a simple version) a list of artifacts found in each layer, or (in a more complex version) a description and sketch of each artifact (see samples)

Recording is essential

The teacher should design his or her own top plans and record sheets based on the dig goals, the age and number of students, and the number and type of layers and artifacts. See *Sample Record Sheets 1 and 2* for full-page samples. In the particular dig described here, it can be confusing to find two different types of soil, side-by-side, on top. Showing students what to look for can be helpful; thus the sample record sheet should be emended as follows to clarify the layers:

Record Sheet Box # _____ Team# _____

LAYER A (top left/west, soil)

LAYER B (top right/east, colored soil)

LAYER C (middle, soil with birdseed)

LAYER D (bottom, sand)

CLASS TIME

The project takes the students at least several hours and requires several adults to remind them not to dig holes with their spoons and to record properly. It will take more time and require more adult supervision if the teacher allows everyone to rotate through needed roles on the team and gives each student a chance to dig. Cleanup takes between a half hour

and an hour. Discussion of the dig and follow-up with questions and answers should take another hour.

PROCEDURES

Introduce archaeology and the dig

The class learns basic rules and procedures of archaeology. See *Basics of Archaeology for Simulated Dig Users*.

Introduce the site

The teacher should introduce some finds at the site and then have students excavate and infer the rest of the story. Explain how archaeologists know about the site (perhaps through old records and surface survey). The teacher might begin the dig by revealing several finds that have turned up in a farmer's field in this area. These artifacts should reveal something about the nature of the site, and students should discuss what they expect to find and generate hypotheses to test as they dig. The teacher may make some of the finds seem contradictory, and these should lead to discussion of multiple uses of a site or changes in activities at the site through time.

- + The teacher should stress how important it is for archaeologists to separate observations of material remains from inferences (invented stories about the finds).

The ultimate story of the site the teacher has in mind should involve simple examples of cultural change (people who eat popcorn and live on a sandy coast are succeeded, once the sea has receded, by people who eat fast food and live on soil instead of sand; artifacts that include small plastic weapons and coins are followed by ones that include peace symbols and . . .). The story can be modified based on available artifacts, the students' ages, and the degree of complexity desired in the dig site.

Sample (ridiculously simple) story

Bottom layer D (sand): artifacts include popcorn, plastic gems, one marble. If possible, arrange gemstones in a circle to reveal the pattern they may have formed in a necklace or bracelet. Do not explain the marble; students will draw their own conclusions later.

Long ago there was a sandy desert in this part of the world. The sun was very hot, and the people who lived in the desert used to make popcorn by putting the kernels out on hot rocks. The popcorn-eaters did not use money; rather, they traded jewelry for the corn grown by farmers who lived far away near a river (where corn could grow because there was dirt and water instead of sand!).

Middle layer C (soil mixed with birdseed): artifacts include coins.

After many years something very upsetting happened. The farmers stopped growing popcorn! They started producing birdseed, AND they wanted money for the seeds, too—not

jewelry. The popcorn-eaters tried to adapt. But they had very little money and they really hated to eat birdseed. “What do they think we are, birds?” they said. They became so discouraged that they moved their whole village 100 miles to be near some other farmers who still grew popcorn and were willing to trade. The popcorn-eaters left behind the birdseed they hated, and money, too.

The whole area was abandoned for a while.

Top layer A (left/west) (soil): artifacts include plastic bugs and another marble exactly like the one in layer D.

Top layer B (right/west) (soil mixed with sugar crystals): artifacts include dried pasta.

Long after the unhappy popcorn-eaters left, the far-away river changed its course and brought water to the desert. The dry desert became green. Now there were dirt and grass and trees. Two new groups of people moved into the area. They lived side-by-side, but they lived their lives in very different ways. For example, one group liked to eat bugs, and the other, pasta. One group liked sugary sweets, while the other did not.

Divide students into teams and prepare to dig

The teacher reminds students that archaeologists would not dig just to “find things,” but rather to interpret someone’s culture and way of life. On a real dig, nothing would be removed at all until it had been drawn, photographed, and recorded. Every dig destroys as it uncovers.

- The teacher should tell the students how many types of artifacts (not the total number) they should expect to find and the number of layers (four, since the top layer is actually in two parts side by side).
- Students should note that boxes have numbers and one side is labeled LEFT/WEST. Each layer is designated by a letter.
- Each team has 4–5 students (more only if necessary).
- Team members or the teacher decide on roles (excavator, top plan draftsman, artifact recorder, artifact bagger, sieve specialist, overseer, and so on). The teacher may allow team members to rotate through different roles so that everyone has a chance to dig. If everyone does not, it should be emphasized that all contributions to a dig are valuable and result in the final publication. The goal is not just to find artifacts, but to interpret the site!
- Each team receives a top plan and a record sheet for each layer.
- Team members (ideally) take turns digging, drawing, recording finds, and putting artifacts into correctly labeled bags. When everything has been excavated, the teams present their finds and conclusions to the class.
- The students answer the teacher’s questions about the artifacts and come to conclusions about the people who lived in the different layers.

PITFALLS

Also see Dig Design Tips in *Basics of Archaeology for Simulated Dig Users*.

Sand and loose potting soil can be messy and, even when packed down tightly, are far easier to remove than the hard soil at a real site. Students need to be motivated to dig carefully, or the lessons and rewards of stratigraphic excavation will be lost. If the layers contain too many artifacts, these may become confusing and will be difficult to record, yet too few artifacts mean that not everyone can find something. The team members need to know that all the members of a dig team are contributing, whether they are digging or recording, finding artifacts or not, and that it is not the main goal of this (or any) dig just to “find things.” Everyone shares in uncovering and interpreting the puzzle that is the site.

ASSESSMENT

It can be difficult to grade an excavation project on results, since it is acceptable to make mistakes and learn from them. The teacher should design a series of questions about the layers that students answer in teams, so that careful observers and diggers can be rewarded for their understanding of collaborative teamwork, their careful stratigraphic analysis, and their attention to detail. The questions should help students recognize the value of the information they can gain from artifacts evaluated in context (see below).

SUMMING UP

All the teams come together to share their conclusions and show the accuracy and care they maintained during excavation. Students should start by discussing how information can be lost by carelessness.

Questions to ask students

The teacher should design a series of questions to test how carefully students excavated and how well their digging strategies worked. The questions should help students recognize the knowledge they gain from evaluating artifacts in context. Individual teams will answer some questions while the whole class will answer others. If the contents of the shoe boxes are different (because they have been seeded with different artifacts), then discussing them all together will reveal more about the site than any one box can. The teacher should then ask groups to present their different finds and draw conclusions.

Sample questions

- What did the people who used shiny gems eat?
- Did the people who ate bugs use green stones, or metal pennies?
- Did the people who ate popcorn live in this area before or after the pasta-eaters?
- What one artifact did both the pasta-eaters and popcorn-

eaters share? (Marble.) Can you come up with an explanation for how the two groups came to use the same object? (Possible inference: the later people found a marble left by the earlier people and used it, too.) How might the object have been used? (Here it will ideally become clear during discussion that sometimes there is just no way to find out the answer using the evidence at hand. What might further digging uncover to help answer the question?)

- What kind of jewelry was made in layer D? (Were gems or beads in the soil arranged in a patterned necklace or bracelet?)
- What kinds of pasta did the pasta-eaters eat?
- How many different kinds of bugs did the bug-eaters eat?
- How careful was your group in keeping the layers separate?
- What surprised or interested your team members the most?

These questions are not particularly deep; they merely require the excavators to observe closely. In a more complex dig, or in one using laminated images of artifacts that represent a real culture, the students can first develop hypotheses about what finds they will excavate based on the surface finds, and consider after excavation what they may discover if they dig further and uncover more of the same site.

FOLLOWING UP

As a subsequent activity, students can be asked to design (on paper) the possible stratigraphy under their school building. They can imagine or actually research, with assistance, life at the school site before the school was built, and depict the

resulting material remains in layers shown in cross section under the present day surface. Their stratigraphic drawings can range in size from notebook paper-size to the height of the classroom or hallway wall.

In the real world, a dig ends with questions that are still unanswered and reconsideration of hypotheses that were not validated. Older students may continue their analytical thinking by studying the AIAs *Mystery Cemetery*, drawing conclusions about the site (Map 1 and photographs) and then checking their ideas through further excavation (Map 2).

RESOURCES

See *Basics of Archaeology for Simulated Dig Users* and *Resources National Standards for Simulated Dig Users*.

Coan, J. 1999. *Digging into Archaeology: Hands-On, Minds-On Unit Study*. Pacific Grove: Critical Thinking Books & Software.

Cochran, J. 1999. *Archaeology: Digging Deeper to Learn About the Past*. Nashville: Incentives Publications, Inc.

McIntosh, J. 2000. *Archeology*. London: Dorling Kindersley Ltd.

Moloney, N. 1997. *The Young Oxford Book of Archaeology*. Oxford: Oxford University Press.

White, J.R. 2005. *Hands-On Archaeology: Real-Life Activities for Kids* (Grades 4–10). Waco, TX: Prufrock Press.

Online:

“Doing Archaeology in the Classroom: A Sandbox Dig”

<http://www2.sfu.ca/archaeology/museum/classroom/sandbox.html>