

Schoolyard Dig

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Acknowledgements: This dig 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 our discipline, and this lesson attempts to address some of excavators' most pressing concerns about teaching the importance of context.

OVERVIEW

Students will become archaeologists and uncover part of a single-layer (one-period) site. This dig works well with older elementary ages and can apply all the way through high school as well. Unlike small-scale portable digs (*Layer Cake Archaeology*, *Transparent Shoebox Dig*, and *Shoebox Dig*), this "blind" dig is a full-scale simulated excavation, requiring considerable planning. Since archaeologists use the metric system, the teacher may incorporate metrical calculations into the lesson.

The simulated dig teaches basics of archaeology, the logic of horizontal excavation, and the importance of keeping records and preserving the context of finds. The lessons in thinking, categorizing, recording, drawing, writing, and analysis are applicable to many disciplines. Adding culturally specific artifacts or laminated images makes the excavation relevant to even more fields. Teachers should modify the site to suit their classroom goals and areas of study.

Surface finds supposedly from nearby farmers' fields and/or partial excavation allow students to hypothesize about what they will uncover before they begin to dig. They then take on different roles as excavators, recorders, and draftspersons as they excavate and interpret the site, ending with a report on their finds, their conclusions, and their remaining questions. The teacher, the all-knowing seer into the past (who unfortunately does not exist on a real dig), can ask final questions and reveal the purported history of the site. This will reveal how carefully (or carelessly) the students excavated, show how well their digging strategies worked, and validate the importance of collaborative teamwork, proper procedures, and basing one's inferences on careful observations.

GRADE LEVELS

The dig is designed for older elementary ages through high school. The teacher can modify the complexity of the site or the record-keeping to suit the ages and abilities of the students.

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* and look at the *Shoebox Dig* lesson.

This dig requires the permission of the school or owner of the property to be used as a site. Time for planning is essential since someone must prepare the site, generally by digging excavation squares in hard earth. A 5' x 2' long excavation site with edges students can stand on is recommended for 10 students, so that each student will have a square foot—or a minimum of 30 cm. x 30 cm.—in which to work. Squares should be approximately 8 inches (or 20 centimeters) deep. Sufficient squares will be needed to accommodate all the students, or the available squares will have to be re-seeded with artifacts for different digging teams, which can be tricky to accomplish if the schedule is tight. Digging the excavation squares is not an easy task for the unfit, and suitably strong and willing helpers are required! It is certainly possible to make the squares shallower than 8" or 20 cm., but the finds should be covered with enough dirt to make the experience one of actual digging and not merely of brushing soil. If the teacher includes any but the smallest/shortest artifacts or features, it may be necessary to have a deeper square. The site will require some equipment that can be expensive and some tools should therefore ideally be borrowed or re-used over the years. Students can rotate through the role of digger so that the teacher does not need to create too large a dig site.

The teacher designs (or one class designs for another) the layout and content of the squares so that students can uncover sections of different work or habitation areas in a larger inhabited site. Once the artifacts and features have been set out as planned, the square is filled back in with dirt and the dirt is vigorously tamped down. It is quite difficult to excavate 8" of soil properly, so to save time and to encourage observation and analysis, the square(s) should be envisioned as already partly excavated or the soil as partly eroded.

Artifacts put into each layer can be inexpensive and may include small objects saved up from past projects. Simple features, such as a (very damaged) wall or a fire pit, can be created from bricks, pieces of wood, or stones. The dig site should be built around a story the teacher has in mind, which will vary depending on the artifacts s/he has collected. The site can be culturally neutral (see Shoe Box Dig) or specific. Replicas of genuine artifacts can enhance the site and make it more relevant to topics being studied in class, and laminated images of real artifacts may also be substituted for artifacts.

If the dirt excavated from the squares during preparation of the site is too rocky or debris-filled to be re-used, potting soil is a good substitute. Students will be confused by many small rocks and twigs and may spend too much time excavating and recording them.

The site, once seeded with artifacts and filled in with soil, will be divided into grids using nails and string. When the string sags and breaks during digging, the grid should be maintained and the string lines repaired, since they assist in proper drawing and recording. Set the nails back at least 5 inches from the square's edge since otherwise they will tend to fall into the square.

Why not a sand pit?

Many would-be excavators have worked with sand or sandy soil. The problem with sand is that it is too loose to keep objects in place, and most lessons about context are lost as objects move around in the sandy matrix. The end result is that the excavated objects can only be evaluated as a group, since the relationships of specific objects to one another have been lost. Recording sometimes becomes an exercise in futility and students do not learn why recording is important. In fact, they may internalize the lesson that "rooting around in sand produces finds." What an archaeologist wants them to learn is the importance of observing the positions and relationships of artifacts and features in the ground. If teachers do not want to teach lessons about context and careful digging, but instead just want to help students analyze groups of objects (for example, to infer their different contexts or functions, such as "habitation," "workshop," "kitchen," etc.), it is better to lay the objects out on a table in their groups and explain that they have already been excavated rather than have students excavate them from loose sand.

Making context important

- In designing the contents and layout of a square, the teacher should plan for several objects to be related (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 that might have appeared in a certain order in a necklace can be arranged in a circle. A circle of stones with charred wood inside it can represent a fire pit. Cherry pits may be left just outside a bowl fallen on its side. Olive pits may be put inside as well as near a jar for olive oil.
- Additives to soil or changes in soil type in certain areas of the square can reveal (real or simulated) spilled food, a fireplace, pigments from a fallen fresco, and so on.
- The teacher should put a mystery artifact in the square.
- If there are several excavation sites, or if rotating teams are digging the same squares that have been re-seeded with artifacts, the teacher may leave some objects out of certain squares so that it is only possible to learn about all the finds if teams share information.
- Different squares can represent different areas of a site altogether.
- For older grades, the teacher can increase complexity, emphasize teamwork, and ask students to participate in the planning and design of other teams' or classes' dig sites.

Materials

- + Potting soil
- + A pre-selected number of artifacts of different types for each square
- + Colored sugar crystals, bird seed, charcoal, and other additives to enhance texture and color in small areas of the site
- + Oregano, sesame, coffee, or other additives with a distinctive odor
- + Plastic sheet or tablecloth to cover the square at night and in rainy weather to keep out moisture

Excavation Materials

- + Cheap masons' pointing trowel (excavation tools)
- + Paintbrushes, large and small, for brushing finds
- + Containers for excavated dirt
- + Small plastic bags to hold the artifacts
- + Waterproof black markers to label the bags
- + Pencils
- + Clipboards
- + Reproduced artifacts and/or laminated images of artifacts
- + Sieve or screen (several feet square) to check for small missed finds
- + Wheelbarrow, shovel
- + Plastic storage bin for tools and for finds and records from each square

Examples of artifacts

- + Fake ancient or real (modern, not ancient!) coins
- + Plastic and ceramic dishes and pots
- + Plastic and metal tools
- + Objects being worked on (wood, etc.)
- + Dried pasta
- + Popcorn, fruit pits, bones
- + Beads of different types
- + Fake gems

Examples of features

- + Wall of stones or bricks
- + Hearth or fire pit of stones (with charcoal or wood inside)
- + Midden (garbage dump with darker potting soil mix)

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 of artifacts. See *Sample Record Sheets* for full-page examples of simple record sheets.

Needed are

- + a record sheet, designed by the teacher and requiring (in a simple version) a list of artifacts uncovered, or (in a more complex version) a description and sketch of each artifact (see attached simple versions).

- + a top plan: a sheet of graph paper with a square or rectangle already drawn on it representing the excavation square.
- + As an alternative or addition to individual top plans, the teacher can set up a tripod stand with large sheets of paper (an "architect's top plan") at the site. Teams draw the squares of the site on it and add finds to the squares as they dig. Since this is not a stratified (multi-layer) site, if the finds are not too numerous this system can replace individual top plans for each square. Used in addition to top plans, this overview of the site ensures that everyone can follow what is happening and can discuss the site as a whole at the end of each visit to the site.

CLASS TIME

Depending on how the site is designed and how much dirt needs to be removed, the project takes the students several hours of class time spread out over a week and requires several adults to remind them not to dig holes 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 and re-seeding and re-filling the squares takes time and adult assistance if different groups rotate through the site. Discussion of the dig and follow-up with questions and answers should take at least another hour or more of class time.

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 can explain how the history of the place is known (old records, previous excavation, construction that revealed artifacts), or simply begin the dig by revealing several finds that have turned up in this area. These artifacts lead archaeologists to think a site lies buried here. Ideally, the site is partially dug or eroded and some finds are partially and/or fully exposed, so the students will begin by examining the excavation squares and discussing what they see. The artifacts should reveal something about the kind of site this is, and students should discuss what they expect to find and generate hypotheses about the site, which they will test as they dig. Some of the finds may be contradictory or confusing and generate discussion of multiple uses or changes 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 story of the site can be modified based on available artifacts, the students' ages, and the degree of complexity desired in the dig.



Schoolyard dig: the excavation unit is divided into grid squares with string. Sixth grade students discuss their first finds and their hypotheses about the site.



Maintaining excavation squares: students re-tie broken grid string. Recorders hold record sheets on clipboards. An easel with paper permits students to draw an ongoing site plan.



Sixth graders brush and record as a skeleton emerges in one of the dig units. (See the *Basics of Archaeology* for caveat about using burials in simulated digs.)



A seventh grader records finds.

Divide students into teams and prepare to dig

The teacher reminds students that archaeologists do 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.

- Each team has 5–10 students working in a 5' x 2' excavation area, with room for one student per square if there are ten one-foot squares (or approximately 30 x 30-cm. squares). Larger, older students will need more room, up to double the size of the working area.
- Depending on the number and age of the students, 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 several top plans and record sheets.
- Team members (ideally) take turns digging, drawing, recording finds, and putting artifacts into correctly labeled bags. During excavation, student teams should take turns visiting the whole site, watching the other teams in action, and seeing the finds in place.

PITFALLS

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

Loose soil can be messy and, even when it is packed down tightly, it is far easier to remove than the hard soil at a real site. Students should be encouraged to wear clothing that can get dirty. They need to be motivated to dig carefully, or the lessons and rewards of careful, horizontal excavation will be lost. If the layers have too many artifacts, these may be confusing and will certainly be hard 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 on this (or any) dig just to “find treasures.” 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 can grade the care and thoroughness exhibited in top plans and record sheets, and they can assess students’ ability to separate inference from observation. The teacher

should also design a series of questions about the layers, 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. Individual teams will answer some questions while the whole class will answer others.

SUMMING UP

At the end, 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. The students answer the teacher’s questions about the artifacts and come to conclusions about the people who lived here, the functions of different areas, and the information that is still missing. The teacher, who knows the story of the site, can reveal its history, show how proper digging helped uncover the evidence, and point out that some questions can simply not be answered yet. What might further excavation reveal?

FOLLOWING UP

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 *National Standards for Simulated Dig Users*. Consider, for older students, some of the adult sources.

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.

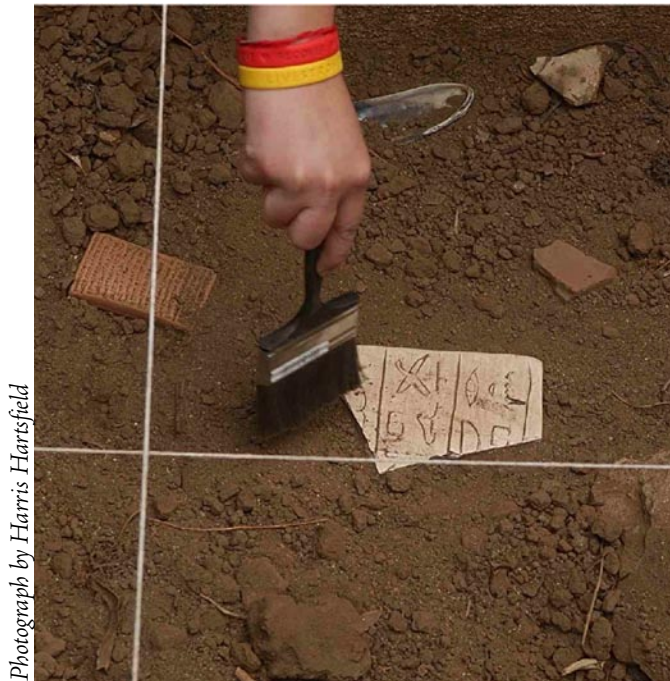
McIntosh, J. 2000. *Archeology*. London: Dorling Kindersley Ltd.

Moloney, N. 1997. *The Young Oxford Book of Archeology*. 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>



Photograph by Harris Hartsfield

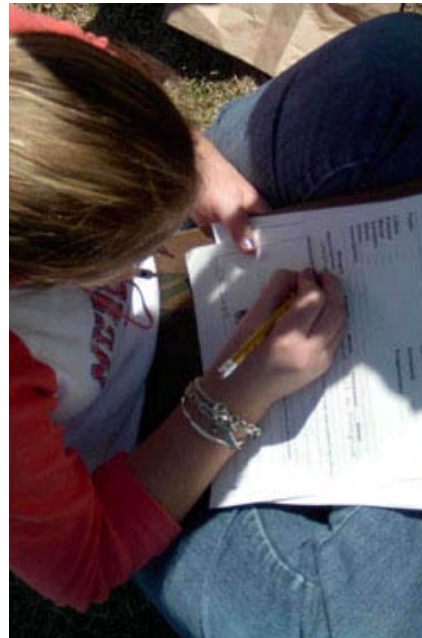
Egyptian dig: a fragment of an artifact bearing hieroglyphs is exposed (the artifact is not genuine!).



Measuring artifacts in a classroom lab.



Plotting a find.



Using a complex recording form.



Students sieve excavated soil to find any artifacts missed during digging.