

Layer Cake Archaeology

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Acknowledgements: This edible excavation site owes its development to many people; AIA member Alexandra Cleworth, among others, has conducted layer cake archaeology with elementary school children.

Caveat: Below we suggest that a miniature simulated burial is one option for the content of the lowest layer. For some students and in some contexts it will not be acceptable to simulate the excavation of a burial. Teachers should modify the project as needed to suit their own classroom goals and students, and they should be attentive to varying cultural standards.

OVERVIEW

Almost everyone likes cake! Digging (and eating) the layers of a cake is a fun and easy way for children to learn the basic principles and techniques of archaeological excavation. The cake can be designed to be completely edible, with layers filled with raisins, nuts, or candy artifacts; this is the safest possible cake for a large or rowdy class or a teacher with too little help. The layer cake described here, however, uses non-edible artifacts and requires adult supervision. In this case, adults must make sure the artifacts have all been removed before anyone starts eating.

Grade Levels

This simple excavation works best with young elementary grades, especially K-1.

GOALS

Students learn basic archaeological terms, skills, and concepts through excavating and eating a stratified cake. They use teamwork to uncover the layers, and they can observe that information is lost when layers are mixed.

Overarching goals are to

- + introduce children to the principle of stratigraphy.
- + illustrate the importance of context in interpreting artifacts.
- + model excavation strategies of digging horizontally, excavating one layer at a time, and leaving part of a square unexcavated until the stratigraphy has been revealed in another part.
- + show how digging carelessly can mix layers and disguise chronological and cultural change.
- + allow students to experience in a kinesthetic way the fact

that excavating an archaeological site destroys it, so that afterward there is no possibility of checking information not recorded.

- + show the importance of carefully recording the finds in each layer.

Although the value of careful recording in archaeology (and social science and science) cannot be overestimated, record-keeping may need to be simplified with younger students. Students should still be asked to do some form of recording 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 and helpers should read *Basics of Archaeology for Simulated Dig Users*.

They will need to bake three cake layers in advance, each of a different flavor and color: vanilla, strawberry, and chocolate are reasonable choices. Either pre-selected candy or non-toxic, non-melting objects may be baked directly into the layers, or (as here) toy artifacts may be added after the layers have been baked, before they are stacked to create the site. The total time needed for baking and preparing to excavate will be about one and a half hours; this does not include finding artifacts!

Materials

The artifacts suggested here may be replaced as the teacher sees fit, depending on the availability of other objects and on an individual teacher's ideas about the history of the cake site and the story behind the artifacts. Artifacts may also be replaced with laminated images of real artifacts.

- + Chocolate, vanilla, strawberry cake mix to make layers of different colors
- + Square or rectangular loaf pans (to mimic the square excavation units on an archaeological site)
- + Small dolls' fast food containers and plastic dishes ("Barbie" sizes)
- + Tiny plastic tools; alternatively, a small plastic (Halloween) skeleton (see the *Caveat*, above), jelly beans, and a small toy plastic dagger or sword (possibly from a Lego set) and/or other possible burial possession, such as a tiny bowl or jug
- + Small tea set of a different style and color from the plastic

dishes (there are many such doll tea sets of thick, durable porcelain, but the teacher must decide whether a breakable material is appropriate)

- Shopping cart refrigerator magnet
- Small metal teaspoons (excavation tools)
- A container to hold excavated cake and cake crumbs
- Small plastic bags to hold the artifacts from each layer
- Waterproof black markers to label the bags
- For the hygienically minded, disposable gloves (to keep the cake clean during excavation)
- A big plastic tablecloth to work on!

And, for students old enough to record their finds:

- 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 (a simple version only requires a list of artifacts found in each layer; a more complex version, a description and sketch of each artifact; see samples.)

Preparing the layers

The themes and artifacts presented here are optional and should be modified by the teacher to meet classroom goals. Lay out the three cake layers on a table. Trim the tops, if necessary, to make them level. When seeding the layers with artifacts, stay a few inches away from one edge, so that a slice can be removed from the edge of the stacked layers to reveal the stratigraphy clearly prior to excavation. Push artifacts into the layer from the top. The surface will be disturbed, but this will not be apparent during digging.



Bottom layer:

- Gently push tools into the layer to leave evidence of a tool room or work area. Alternatively, carefully cut a rectangular burial chamber, the length of the tiny skeleton, into one layer. Line it with jelly bean stones. Put the small Halloween skeleton* into the chamber and provide it with burial goods, such as a small plastic dagger and/or a pot or bowl. Plug the chamber up with half the remaining cut-away cake, leaving the surface of the burial chamber

sunken, and top it with more jellybeans to raise the height back to surface level.

*The small skeleton and simulated burial featured in the bottom layer will be unacceptable in some contexts. Students studying ancient Greek and Roman, Near Eastern, or Mesoamerican civilizations can probably excavate a burial, but those studying North American archaeology should not do so, since digging up graves will not be acceptable. Teachers should use their own judgment in deciding whether or not to include a human skeleton in a simulated dig. The layer cake can be planned to be culturally neutral and not to center on a particular civilization, or simulated artifacts can be chosen to represent a specific culture.



Middle layer:

- Create a grid of 4 smaller squares on the cake surface by laying fine string or dental floss across the top. Gently push several small porcelain dishes and cups from a tea set into different areas of the cake. To make the analysis more complicated, leave one quarter free of porcelain artifacts and fill it with small plastic dinnerware. In this scenario, two types of dinnerware were in use here, but only one will survive into the later top level.



Top layer:

- Gently push small plastic dishes and drinking glasses into the cake.

- Create an abandoned lot on the top surface by scattering doll-size fast food cartons and leaving the shopping cart magnet tipped over onto its side.

Stack the cake in three layers. Wrap tin foil around three sides to help hold the site together during digging. Leave one side exposed and cut off a slice of cake about an inch from the edge to reveal the stratigraphy.

Class Time

Introducing essential concepts, digging, recording, discussing, and eating will take several hours.

Procedures

Introduce archaeology

The teacher should introduce the concepts of stratigraphy and stratigraphic excavation and should define archaeological terms. See *Basics of Archaeology for Simulated Dig Users*.

Assign teams

Depending on class size, the students can be divided into teams of 3 or 4 who take on responsibility for part of a layer. So that everyone can participate, two or three teams might excavate different parts of one layer, the members of each team taking turns to dig the cake and (as relevant) draw the top plan, record the finds, and write down observations.

Tell the story of the site

The teacher may (depending on the artifacts chosen) invent a story about the layers and tell it either before students begin digging or after excavation has ended. Waiting until the end of digging to tell the story allows students to develop and revise hypotheses about the site as they uncover the layers. With younger ages, however, personalizing the layers by telling students the story first may encourage greater investment in digging properly. Making the story dramatic helps. For example, the burial may be of a great warrior, male or female, buried in a special way for some interesting reason. The story should directly relate to the artifacts at the site, although some materials can be described that would logically have decayed over time and disappeared.

Dig

During excavation students should be reminded to go slowly, stay within one layer, preserve finds in bags labeled with the layer number, and draw the top plan. When the layers are different colors, it is easy for students to dig only one layer at a time.

PITFALLS

Cake is messy and it is not easy to dig. Students need to be motivated to dig carefully or the lessons and rewards of stratigraphic excavation will be lost. If the layers have too many artifacts, these may become 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 things.” Everyone shares in uncovering and interpreting the puzzle—and eating the cake!

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 design a series of questions about the layers that students answer in teams, so that careful observers and excavators can be rewarded for their understanding of collaborative teamwork, their careful stratigraphic digging, and their attention to detail.

SUMMING UP

The teacher should review (or tell for the first time) the story of the site. Student teams report on their observations about each layer. Ask what would have happened (or what actually did happen!) if the students were not careful excavators. The skeleton and jellybeans might have been removed separately, the dagger lost, and the burial of the great warrior (or whoever the buried person is) might never have been recognized!

After discussing the dig, students can share the very crumbled cake, possibly with (or on) ice cream.

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.

RESOURCES

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