

Connections to the Past: Creating Time Detectives with Archaeology

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The fascination with buried treasures and lost civilizations transcends all ages and serves as an effective magnet for drawing students toward the study of archaeology. Connecting students to the past gives them a better understanding of their own present and future. Where else can the study of trash yield significant insights into how people once lived, worked, and played? Through the development of archaeological skills, students can become “time detectives” and may also become more sensitive to the importance of preservation.¹

Exposure to the scientific method of investigation that is part of archaeological research advances skills development in the classroom. Students engage in reflective thinking as they consider new discoveries, and analytic thinking as they decipher codes and solve puzzles.² They make observations, form hypotheses, analyze data, and keep detailed documentation of their findings.³ Such hands-on experiences demand higher order thinking skills, interpretation of maps, charts and graphs, measuring skills, and the ability to draw conclusions based on evidence collected.⁴

Involving students in research and application through the lens of archaeology not only promotes the development of scientific skills, but also provides a forum for cross-curricula integration. Plotting coordinates, laying out grids, and mapping sites teaches math and geometry. Mapmaking, map reading skills, and examination of physical environments for resource use relate to geography. Communication skills and writing field journal entries apply to the language arts. Analyzing plant and animal remains pertains to biology.⁵ Even

civics can be taught as students examine ethics and citizenship in the responsibilities archeologists have regarding the excavation and protection of sites.

What Misconceptions Do Students Have about Archaeology?

Students may have many misconceptions about the role of an archeologist—misconceptions reinforced in part by movies, such as *The Adventures of Indiana Jones*, *Laura Croft: Tomb Raider*, or *Stargate*. The stereotype of the pith-helmeted scholar finding lost treasures may be the image etched in the minds of most students. Begin by asking students, “What adjectives would you use to describe the work of archaeologists (e.g., thrilling, tedious, adventurous)?” Keep a list of adjectives posted throughout the time your students participate in archaeological activities.

Another misconception that students may have is that the only role of an archaeologist is to dig up sites. Archaeologists spend a lot of time in laboratories analyzing and classifying artifacts, work in museums, teach at universities, write

grants to raise money, or publish in scholarly journals. The Society for American Archaeology describes three main goals of archaeologists: (1) to obtain a chronology of the past, (2) to reconstruct the many ways of life that no longer exist, and (3) to give some understanding of why human culture has changed through time.⁶

Other misconceptions may occur about timelines. For instance, younger students may often believe that dinosaurs and people lived on the Earth at the same time. Nobles created a stratification lesson called *Earth Cake* that deals with this topic.⁷ Begin with a review of a cartoon featuring the Flintstones characters. Ask students, “Did dinosaurs and people live on Earth together?” Use three different color cake mixes to create an Earth cake. The bottom layer should contain several plastic dinosaurs, the middle layer should be left bare, and the top layer should contain plastic people. The middle layer is plain because layers of Earth were laid down for millions of years between the time of dinosaurs and the time of humans. Bake each layer separately and insert figures by hand, covering the holes with icing. Divide the class into groups to excavate the “Earth Cake”, using a grid system to accurately mark each section. Through this tangible activity, students grasp that people and dinosaurs are not found in the same layer. Data collected by each group can be shared by drawing charts. Be sure that students record the

School children observe a 3,000 year-old wooden coffin displayed at The Petrie Museum of Egyptian Archaeology in London, June 13, 2000.

(AP Photo/Christine Nesbitt)



absence of findings in the middle layer. This activity also graphically reinforces the concept of an archaeological site as a nonrenewable resource.

How and When Should You Initiate a Unit on Archaeology?

To begin the development of classroom archaeologists, introduce students to key vocabulary terms. The following definitions were adapted from *Classroom Archaeology*.⁸

Anthropology: the study of humanity

Archaeology: a branch of anthropology that studies the material remains of past societies

Artifact: any object people have made or modified

Excavation: the study of an archaeological site by carefully digging the layers of earth

Grid: a network of uniformly spaced lines that divide a site into equal-size squares

Hypothesis: a tentative assumption that can be further investigated

Radiocarbon (Carbon 14) Dating: a method used in determining the age of organic remains, especially wood charcoal

Strata: distinct layers in the earth

Test Pit: a pit that is excavated at an archaeological site to determine the importance of buried remains

Archaeology can be initiated during units on first civilizations—Mesopotamia, Ancient Egypt, Greece, or Native Americans. Students should be aware of some Native American groups' opposition to excavation. Debate the reasons a group may not want a site disturbed (such as its status as a sacred ground) versus the importance of studying and understanding the past. What should be the fate of human remains? How are compromise and compassion important to the archaeological field?

How Do Archaeologists Decide the Location of a Site?

Author Jane McIntosh indicated that sites have been found through aerial reconnaissance, remote sensing, geophysical survey, agricultural practices,

construction, and documents from the past.⁹ Excavation can also occur under the sea, under the ground, and in mounds or monuments. Dig sites are often found by accident as new construction takes place, natural disasters occur, or fields are plowed. Technology, such as satellites and aerial photography, also help archaeologists locate and define dig sites.¹⁰ The discovery in the 1950s of an aerial photograph taken in the 1930s revealed evidence of an ancient American settlement—a man-made earthen structure so large that it had not been recognizable from the ground—in the area of Louisiana known as Poverty Point.¹¹

Not all discoveries, however, are made by trained archaeologists. Workers digging a well in China found the terra cotta warriors. A boy named Muhammad Adh-Dhib was throwing stones into a cave beside the Dead Sea when he heard a sound like pots breaking apart. Little did he know that he had stumbled upon one of the greatest archaeological finds, the Dead Sea Scrolls.¹²

Students may have heard about frozen life forms found in the Arctic. Richard Panchyk introduced an interesting lesson on how ice preserves objects. Place the following items into various plastic cups:

bread, blueberry, nail, paper clip, leaf, paper. Fill each cup three-fourth's full with water and place them in a freezer. Remove the cups from the freezer after four days, and let the ice melt. Remove objects with tweezers, and write down the condition of each object. Have any of them changed? Place the objects in a dry, bright place for four days then look at their conditions. How do they look? Although ice is a great preserver, artifacts will not last long if exposed to moisture, heat, and sunlight.¹³

Remind students that the passage of time or natural forces often erase signs of a site. Dry climates preserve artifacts better than humid climates, as microorganisms that cause decomposition cannot live in cold, dry, or airless places. Ask students questions, such as: What other environments preserve artifacts best? How does what survives determine what we do or do not know about a culture?

Have students search the Internet for state laws about archaeological sites and determine whether permits are needed for digging. The National Association of State Archaeologists provides a directory of all state archaeologists who can answer questions regarding laws.¹⁴ Students may ask what should be done if a real artifact is found. According to the Society for American Archaeology, it is best to leave an artifact where it is found. Record a description of the artifact and its location on a map. Contact a professional archaeologist or a historic preservation office for further instruction.

What Tools Do Archaeologists Use?

The tools for our "time detectives" are varied, but simple. Archaeologists need a keen eye for observation, field journals for exact record-keeping, graph paper to make a drawing of the site, pen and labels to document finds, a camera to take photographs, stakes and string to make a grid frame, and tools to pick at or brush away soil. Tools for classroom use are inexpensive and can be as simple as a toothbrush and dental picks.

In field journals, archaeologists note weather conditions, describe what is being excavated, indicate daily progress, and identify the workers at the site.¹⁵ In addition, the archaeologist would make sketches, recreate the site on a graph, measure the size of each artifact found and mark the depth at which it was found.¹⁶

How Do Archaeologists Begin?

As a time detective, an archaeologist follows clues, collects information, and puts together pieces to solve the mysteries of the past. The archaeologist must first determine the purpose of the dig and know where to look for a site. Exact procedures must be followed to ensure accuracy of the documented findings. The archaeologist would make observations aboveground first, formulate hypotheses, choose the appropriate tools, document the daily progress and be prepared to justify any findings with facts.¹⁷

Before allowing students to participate in a simulated archaeological dig, instruction should be given in specific skill areas. The correct procedure for constructing a site grid, using a shovel or trowel for excavation, recovering and labeling artifacts, and cataloging and interpretation should be demonstrated and practiced.¹⁸ However, it is important to note that archaeology lessons do not always have to take place in the field.

Archaeology in the Classroom

In the classroom, students can be assigned different subjects to research: religion, clothing, jewelry, or food of a particular culture; or beliefs, rituals, communication, survival, leisure, or economy of a culture.¹⁹ To focus student attention on artifacts and their meanings, have students pretend they have been chosen to select objects to send to a distant place where nothing is known about the United States. The class as a whole will eventually decide on 20 artifacts that will portray life in the United States. Divide the class into four groups. Have each group list 10 artifacts to send and describe what

they tell about our way of life. Bring the groups together to share, and have the class decide on a list of the 20 artifacts that tell the most about life in the United States. Discuss what things are missing or misrepresented.²⁰

When archaeologists discover artifacts, only a small fraction of the past is evaluated and recorded. Panchyk describes an activity to help students understand how archaeologists date a site. Give students a handful of change and have them write down the dates of the coins on a piece of paper. Note the earliest date, the latest date, and calculate the average of all the dates. What is the average age of the coins? If these coins were found at a site, what could you say for sure about the date of the site?²¹

One of my favorite archaeology lessons was shared with me by teachers Dianne McWilliams and Betty Giroud. Collect small clay pots for each of the students. Tell students that they are members of a culture noted for its pottery/artistic skills, and have each student decorate the pots with symbols that are representative of his or her life. Display the artwork for a week in the classroom. Wrap each pot in a towel and hit the pot once with a hammer. Place the broken pieces in Ziploc bags of potting soil, taking away one piece from each pot and placing it in the bag of another pot. On the following day, explain to students that they will become amateur archaeologists that day. Give each student a bag of pottery pieces, and explain that they are to use glue to "reconstruct" the clay pots. Students will use the assembled pot to describe characteristics of the culture of the pot-painter.

The exercise works best if you don't tell students ahead of time that you are going to break their pots. When I first did this with a group of fifth graders, my students were angry to find their pots broken after the time and effort spent painting the pots. But soon they became absorbed and delighted in the task of reconstructing the pots. I heard comments like "I wonder what this symbol means?" and "I can't find all the pieces of this pot!" As students made their pre-

sentations, they stepped into the role of archaeologist and made inferences about the pots with comments like “I estimate this pot is exactly one week old.”

Another classroom archaeology activity suggested by Grambo can be done with pottery shards or chicken bones.²² Begin the activity by mixing plaster of Paris according to package directions. Add brown tempera paint with the added water to give the plaster the look of soil. Pour some plaster mixed with dry soil for texture into a box. Place bones or pottery shards into the box of plaster, cover with more plaster and allow the plaster to dry. Students can then work in small groups to pick apart the plaster. Be sure that students number and label all found objects, as well as draw on a grid the exact location of the objects’ placement in the plaster. Finally, have the students reconstruct the pottery from the shards or form the skeleton from the bones discovered in the plaster.

If teachers can find an area on the school grounds to excavate, a more realistic experience could be facilitated. Berrett and Bjornstead suggest that teachers bury artifacts from numerous cultures and time periods for students to excavate.²³ Assigned articles could represent these cultures and time periods. For instance, a small pot could represent food storage, transportation of water, or cooking; a sharpened flint—tools, warfare, hunting; adobe brick—shelter, culture; or a Roman coin—commerce, materials processing.

Teams could be assigned specific jobs for the site excavation and rotated daily.

Team 1: Grid the site. Begin with a point from which all measurements (north, south, east, west) are taken. Sketch a map of the site.

Team 2: Excavate. Brush top layers and sketch any findings. Carefully document place in grid where artifact is located.

Team 3: Describe and measure every artifact, and assign a number to the artifact. Use drawings, tracings or photography to document each artifact.

Team 4: Enter information about

the artifacts on a computer master list.

Team 5: Document in a journal everything that has been found. Analyze the artifacts and make deductions.²⁴

What Resources are Available for Teachers?

Students could do a scavenger hunt for recently reported archaeological finds in newspapers or journals, and discuss their implications for today. For example, in 1994 the site of Jamestown was discovered by archaeologist William Kelso. Within two years, more than 180,000 artifacts and several skeletons were unearthed. Kelso and his crew came to tentative conclusions about Jamestown based on their findings: trade existed with the Indians, the English used Jamestown to dump outdated weapons and armor, and murder was committed within the settlement.²⁵ Some recent journal articles on archaeological discoveries can be accessed at About.com, archaeology.about.com/od/popularscience, or students can follow current digs at *Archaeology Magazine’s* Interactive Dig site, www.archaeology.org/interactive/digs.html.

There are a number of resources that can be used to encourage an interest in archaeology, including museums and exhibits. Teachers can learn about archaeology and applications for the classroom through *Project Archaeology*, a national heritage educational program established in 19 states. *Passport in Time* is a volunteer archaeology and historic preservation program sponsored by the Forest Service. Individuals and families can participate in experiential field and lab work, lasting from several days to several weeks (www.passportintime.com). *Dig*, the archaeology magazine for kids, is available online at www.digonsite.com.

Although I have found very few children’s books about archaeology, there are two very good ones that I would recommend. In *Archaeologists Dig for Clues*, by Kate Duke, a boy and his friends go on a dig in a local cornfield with their archaeologist friend Sophie. The children are disappointed when they don’t

find treasure, but Sophie explains that archaeologists do detective work to find out how ordinary people lived long ago.²⁶ The Magic School Bus series includes *A Book about Archaeology* which tells the story of an artifact brought to class that none of the students recognize. The teacher then takes the class on a field trip to discover the past.²⁷

Conclusion

Just as real-life archeologists present findings to a wider audience, students need a forum for presentations. Cochran recommends that students research an archaeologist and report from a first-person perspective.²⁸ Some prominent archeologists include Kathleen Kenyon (ancient city of Jericho); Thomas Jefferson (first American archaeologist); Hiram Bingham (Machu Picchu); Yigael Yadin (translator of the Dead Sea Scrolls); Howard Carter (Tomb of Tutankhamen); and Heinrich Schliemann (city of Troy). Students could dress as the archaeologists they select and participate in a Living History Museum.

Through archaeology, students may develop more respect for the past, the environment, and our cultural heritage.²⁹ Although archaeologists are often portrayed in a glamorous light in film, through these lesson ideas, teachers can entertain discussions about archaeological finds and perhaps change the image portrayed of the suave treasure hunter. Rarely do archaeologists make single-handed discoveries of glorious treasures, yet the smallest discoveries can tell fascinating stories. Revisit the movies with students, and ask if opinions have changed after this unit of study. Refer back to the adjective list to see if new adjectives can be added. Making connections through film, books, activities, field trips, and simulations will provide the clues that your time detectives need to transcend space and time to find the future. 📖

Notes:

1. Brian Fagan, *Time Detectives: How Archaeologists Use Technology to Recapture the Past* (New York: Simon & Schuster, 1995).

2. Nancy Carolyn Whiting, "Archaeology and Intercultural Education in the Elementary Grades: An Example from Minnesota," *Social Studies* 89 no. 6 (1998): 256.
3. Rachel Hallett, "They Dig It!" *Science and Children* 42 no. 8 (2005): 23.
4. Mary Black, "Using Archaeology to Explore Cultures of North America through Time," *Social Studies and the Young Learner* 11 no. 1 (1998): 11.
5. Gail William Brown, "Teaching Archaeology," (ED440920 ERIC Digest, 2000): 2.
6. The Society for American Archaeology, www.saa.org.
7. Connie Nobles, *Adventures in Classroom Archaeology* (Baton Rouge, La.: Division of Archaeology, 1992): 10-12.
8. Nancy Hawkins, *Classroom Archaeology* (Baton Rouge, La.: Division of Archaeology, 1999): 5-6.
9. Jane McIntosh, *Archaeology: Eyewitness Book* (Dorling Kindersley, 1998): 12.
10. Hallett, 22.
11. *Poverty Point Earthworks: Evolutionary Milestones of the Americas*, Louisiana Public Broadcasting documentary, www.lpb.org/programs/povertypoint/pp_transcript.html.
12. Greg Grambo, "Digging into Archaeology Projects," *Gifted Child Today* 19 no. 3 (1996): 12.
13. Richard Panchyk, *Archaeology for Kids: Uncovering the Mysteries of our Past*, (Chicago: Chicago Review Press, 2003): 30.
14. The National Association of State Archaeologists, www.uiowa.edu/~osa/nasa.
15. Grambo, 12.
16. Hallett, 23.
17. *Ibid.*, 23, 24.
18. Cathy Welsh, "Digging through History," *Gifted Child Today* 17, no. 1 (1994): 18-20, 42.
19. Alice Robinson, "Can You Dig It?" *School Library Journal* 51, no. 3 (2005): 2.
20. Hawkins, 33.
21. Panchyk, 12.
22. Grambo, 13.
23. Jared Berrett and Jennifer Bjornstead, "We're Digging It: Setting up Your Own Archeological Dig for the Classroom," *Technology and Children*, (2005): 4, 5.
24. *Ibid.*
25. Meg Greene, *Buttons, Bones, and the Organ Grinder's Monkey: Tales of Historical Archaeology*, (North Haven, Conn.: Linnet Books, 2001): 9-12.
26. Kate Duke, *Archaeologists Dig for Clues* (New York: HarperCollins Children's Books, 1997).
27. Jackie Posner, *Magic School Bus Shows and Tells: A Book about Archaeology* (New York: Scholastic Inc, 1997).
28. Judith Cochran, *Archaeology: Digging Deeper to Learn About the Past*, (Nashville, Tenn.: Incentive Publications, Inc., 1999): 97.
29. Black, 13.

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TIME CAPSULE *from page 266*

language arts. Students would be called on to read about the history of the organization, to interview employees and take accurate notes, to write narratives about various aspects of the establishment, and to hold discussions on what to include in the time capsule. Just as the Ridgedale students were asked to reflect on their school and community, helping build a time capsule about a local business would call for reflection and decision making.

Students can also develop time capsules after interviewing older members of the family, perhaps beginning with grandparents (or parents, if grandparents are not alive) and collect narratives and artifacts from "Grandma and Grandpa's younger days" down through the current generation. Students can also develop time capsules of their own lives, collecting information such as magazine cut-outs of different hairstyles over a 10- or 12-year period, pictures of their favorite athletes, pictures of pets owned, photographs of automobiles during a time-capsule period, and other memorabilia that represent a distinct period of time in the life of a student. One Indiana teacher buried her personal time capsule developed for a reunion of her 1960s graduating class and assigned her students, equipped with maps, to find it in the schoolyard. Imagination on the part of teachers can lead to any number of ideas for encouraging students to develop time capsules.¹¹

Conclusion

Time capsules help students understand the nature of events and the relationships of events in a segment of history. It is up to teachers to find ways to make time capsule projects meaningful to students. Teachers must help students see (1) that history is personal, (2) that history affects real people, and (3) that history is about events in students' lives as well as the lives of others. The time capsule project described in this article embraces these concepts relating to history and integrates them in an interactive, engaging learning experience. Developing time capsules can indeed put a "special buzz in the air" at

any school while teaching students the real meaning of history. 

Notes

1. David Elkind, *The Hurried Child: Growing Up Too Fast, Too Soon*, (Reading, Mass.: Addison Wesley, 1981).
2. M. Gail Hickey, *Personalizing Social Studies for Young Children*, Professional Development Monograph Series (Glenview, Ill.: Scott Foresman, 2001); Linda Levstik and Keith Barton, *Doing History*, 2nd ed. (Mahwah, N.J.: Lawrence Erlbaum, 2001).
3. National Council for the Social Studies, *Expectations of Excellence: Curriculum Standards for Social Studies*, Bulletin no. 89 (Washington, D.C.: National Task Force for Standards in Social Studies, 1994); National Center for History in the Schools, *National Standards for History: Exploring Children's World in Time and Space*. (Los Angeles: University of California Press, 1994); National Center for History in the Schools, *National Standards for History*, basic edition, (1996); National Council for the Social Studies (1994), 22.
4. Karen L. Jorgensen, *History Workshop: Reconstructing the Past with Elementary Students* (Portsmouth, N. H.: Heinemann, 1993).
5. National Center for History in the Schools (1996).
6. Cynthia S. Sunal and Mary E. Haas, *Social Studies for the Elementary and Middle School Grades: A Constructivist Approach*. (Boston, Mass.: Allyn & Bacon, 2005).
7. A. T. Leigh and T. O. Reynolds, "Little Windows to the Past," *Social Education* 61, no. 1 (1997): 45-47; Jere Brophy and Janet Alleman, *Powerful Social Studies for Elementary Students* (Fort Worth, Tex.: Harcourt Brace College Publishers, 1996); Levstik and Barton, 2001; Dorothy Hennings, Grant Hennings and S. F. Bannich, *Today's Elementary Social Studies*, 2nd ed. (New York: Harper & Row, 1989); Linda Levstik, "Teaching History: A Definitional and Developmental Dilemma" in *Elementary School Social Studies: Research as a Guide to Practice*, Bulletin no. 79, ed. Virginia Atwood (Washington, D.C.: National Task Force for Standards in Social Studies, 1986); D. Shemilt, Evaluation Study: Schools Council History 13-16 Project. (Edinburgh: Holmes McDougall, 1980).
8. Hickey, *Bringing History Home* (Boston, Mass.: Allyn & Bacon, 1999), 15, 29, 64.
9. See, for example, Walter C. Parker, *Social Studies in Elementary Education*, 12th ed. (Prentice Hall, 2005), and George W. Maxim, *Dynamic Social Studies for Constructivist Classrooms*, 8th ed. (Upper Saddle River, N.J.: Merrill, 2006).
10. Thomas N. Turner, "Putting Time in a Bottle—Or a Box!" *The Social Studies* (1989): 124-125.
11. Hickey, *Bringing History Home*, 81-82.

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