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Excavating the Past:
An Archaeology Simulation for the Elementary Classroom

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Introduction

"X" marks the spot! Hidden treasures! Pirates! Lost civilizations! Adventure! and Danger! This is what excites students about archaeology. The idea of finding the unknown or a lost treasure is an excellent motivator when starting a lesson on archaeology. However, most notions students hold regarding archaeology are misconceptions brought on by Hollywood films like *Indiana Jones*, *The Mummy*, and *Tomb Raider*. Nonetheless, archaeology is important and interesting. Archaeology is a branch of anthropology that studies the material remains of past societies. Through the study of material remains archaeologists 1) obtain a chronology of the past, 2) reconstruct the many ways of life that no longer exist, and 3) give some understanding of why human culture has changed through time. The following three questions were posed to elementary students in an attempt to understand the evolution of human culture, society and technology. What is archaeology? What does an archaeologist do? Why is archaeology important?

Archaeology is commonly interwoven into history courses, but rarely highlighted as a separate area of study (Bender & Smith, 2000). Despite the lack of attention given to archaeology, historians would be at a loss without it. Archaeology related content and skills are important and should be discussed when teaching social studies according to the National Curriculum Standards for Social Studies (2010) created by the National Council for the Social Studies (NCSS). Of the ten thematic strands outlined in these standards, both *Culture* and *Time, Continuity and Change* illustrate how teaching archaeology related content and skills meet the pedagogical expectations outlined by NCSS. Within the strand of *Culture*, students are expected to understand how human culture may change and how humans differ between cultural groups. An archaeology dig simulation can help students accomplish this standard by providing hands on experience with the content. Moreover, *Time, Continuity and Change* require students to explore the following questions: what happened in the past? How do we know about the past? How was life in the past? These questions are the basis for archaeological digs and provide a clear need for the study of archaeology. In the event that a teacher needs additional justification for teaching archaeology related content and skills, individuals should check the approved curriculum frameworks of the state in which they teach.

Purpose

Taking elementary students to an excavation site is costly. Additionally, it may be difficult to find an archaeological site that will allow elementary-age students to participate in the dig. Therefore, the purpose of this article is to help educators explore and encourage the use of simulations and the teaching of archaeology related content and skills in the elementary classroom. More specifically, the purpose of this article is to provide educators with a classroom tested, practical, cost effective and hands-on archaeology dig simulation lesson activity for the elementary classroom.

Archaeology Dig Simulation

Archaeology can be incorporated into a variety of social studies units. Many common units that archaeology related content and skills are incorporated are units on Native Americans, Incas, Aztecs, Mayas, ancient Greece, ancient Rome, and/or ancient Egypt.

Archaeological research provides students with research skills and encourages higher order thinking skills such as analysis and synthesis. Additionally, students participate in reflective thinking as they analyze new discoveries (Gandy, 2007). Archaeological excavations encourage the scientific method and require students to formulate hypothesis, analyze data, formulate conclusions and keep detailed accounts of their findings (Geiger, 2004).

The archaeology dig simulation was developed to simulate an archaeological dig. Using simulations can actively engage students and help make the content more meaningful and relevant (Russell & Byford, 2006; Passe & Passe, 1985). This is important, because students often find it difficult to relate to historical related content because it seems irrelevant to their everyday lives (Russell, 2010).

This simulation was tested in an elementary classroom and is appropriate for elementary students. Moreover, this simulation could easily be adapted for the middle and secondary classroom. This simulation is not intended to be one lesson plan per se, but more of an activity that can be incorporated into a lesson plan to help gain students attention and make the lesson more meaningful. This activity should be tailored to fit the needs of students and individual classrooms. Teachers should make sure the material and how it is covered is age appropriate. Furthermore, teachers should refer to their respective state standards to discern how the content fits within those standards.

Materials

The essential materials for this simulation include shovels, hand shovels, brushes, artifacts (jugs, bowls, bones, etc…), note pads, pencils, and excavation site. To limit the cost of the simulation, I used house hold gardening tools, paint brushes, various clay pottery, and animals bones that I borrowed from a science teacher. Non-essential materials for this simulation include yellow caution tape and wood posts for roping off the archaeological excavation site. In addition, paint can be used to paint images and figures on the artifacts. While identifying a location for excavation, I suggest consulting with the principal for possible on school property.

Excavation Site Preparation

Once an excavation site is located, you will need to place the artifacts in the ground so that they may be excavated by students. The soil context is a significant part of any archaeological dig. The various layers found in the ground provide archaeologist with information necessary to predict the age of the artifact. It is recommended for authenticity and to help students to understand geological aspects of archaeology that you prepare the site with different layers of soil. Using different types of materials. Archaeological simulations or dig boxes often utilize sand, mulch, peat moss, and kitty litter (Chisholm, Leone, & Bentley, 2007) to simulate the various layers of the ground. This provides various textures and visually differences which more closely simulate what is actually in the ground.

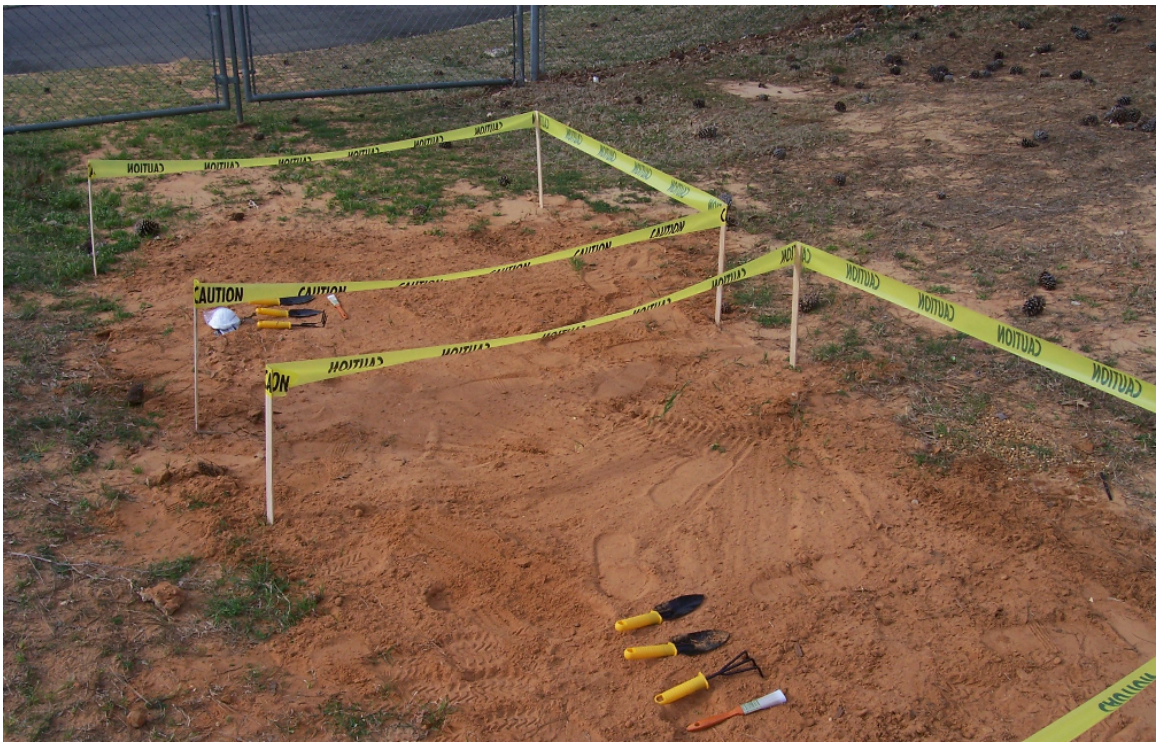


Figure 1: Dig Site

Teaching Methodology

This simulation was tested in an elementary classroom at a public elementary school in the southeastern part of the United States. The lesson is deemed appropriate for an elementary classroom, but could easily be adapted for a middle or high school classrooms. This simulation is formatted to occupy approximately two hours of class time. The primary focus is twofold: 1) the exploration of historical artifacts, and 2) the interpretation of the artifacts once found. Student groups will employ archaeological and historical thinking skills recording the artifacts discovered and making informed interpretations of the artifacts. The lesson will culminate with students being evaluated using a rubric (See Evaluation Section).

NCSS Curriculum Standards

Standard I: Culture

Students understand the effect the societal wide influences have on culture.

Standard II: Time, Continuity & Change

Students understand the development of the human experience and their place in time.

Essential Question:

When there is no written history, how does one learn about the past?

Whole Group Introduction

For the initial phase of the lesson, known as the whole group introduction, the teacher introduces the simulation and explains the simulation protocol. The teacher should ask students "Have you ever found something in the ground?" Ask them, "If so, how did you know what is was? How did it get there? Where do you think it came from?" List their answers on the board.

Typically, only a small number of students have found something significant in the ground, but many have a family member who has found something. An interesting class discussion regarding experiences and what was found often during this activity. For example, one student found an arrowhead when she was helping her grandparents in the garden.

After the discussion, explain to the class that they are going to participate in archaeological excavation. Explain that they have the opportunity to participate in an archaeological dig and potentially find an artifact and try to figure what the artifact is, how it got there, and where it came from.

Role of the Student - Small Group Procedures

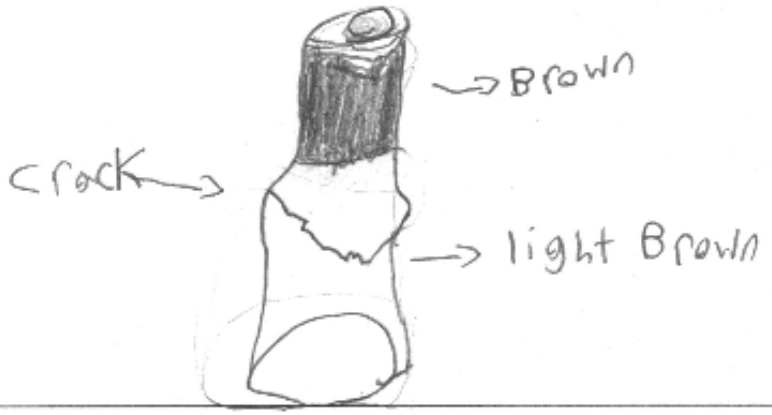
1) After the whole class discussion, break students into archaeological teams of three. Each student will have a different job. Each team will have the following: 1) Digger (this student digs for the artifacts), 2) Recorder (this student takes note in the group's field log, makes sketches of the artifacts, take measurements, and labels the artifacts), and 3) Examiner (this student identifies and cleans the artifacts. Students should rotate jobs, so that all students have the opportunity to participate in all aspects of the simulation.
2) Lead students to the archaeological excavation site. Review the jobs for each archaeological team member and how each excavation tool should be used. Reiterate the importance of the soil context and how that helps identify the age of the artifact.
3) Have students begin excavation. As students find artifacts ensure that each team member is following protocol. Each artifact should be cataloged by the recorder in their field log (see appendix A).
4) Once the site has been excavated, have students discuss their findings amongst each archeological team. Each team should then catalog their findings in their field log. Each team should provide an artifact number, description, possible time period/s, and possible ideas/uses.

Field Log

Excavation Team Member: CARson

Artifact	Artifact Number
Bottle	3

Artifact Sketch:



Artifact Notes:

Bottle has crack found in

Artifact	Artifact Number
Bowl Piece	4

Artifact Sketch:

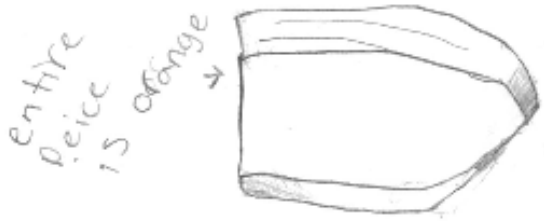
Artifact Notes:

Bowl Piece has ridge

Figure 2: *Example #1 of Field Log*

Field Log

Excavation Team Member: _____

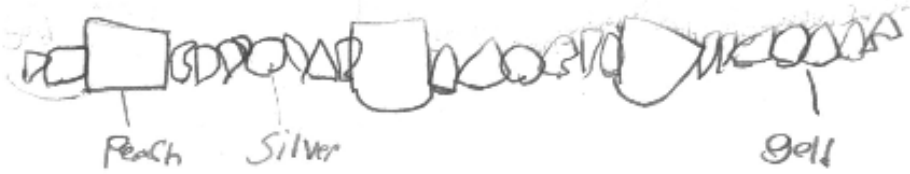
Artifact bowl Peice	**Artifact Number** 1
Artifact Sketch: 	
Artifact Notes: First layer Looks like a Peice of a Pot.	

Artifact A bowl	**Artifact Number** 2
Artifact Sketch: 	
Artifact Notes: A bowl, Red and brown.	

Figure 3: *Example #2 of Field Log*

Field Log

Excavation Team Member: _____

Artifact Jewerly	**Artifact Number** 8
Artifact Sketch: 	
Artifact Notes: Broclete different color not same size	

Artifact	**Artifact Number**
Artifact Sketch:	
Artifact Notes:	

Figure 4: *Example #3 of Field Log*

Field Log

Excavation Team Member: Madison

Artifact	**Artifact Number**
Shell	12

Artifact Sketch:

Artifact Notes:

A Shell, striped, Red and White.

Artifact	**Artifact Number**

Artifact Sketch:

Artifact Notes:

Figure 5: *Example #4 of Field Log*

Role of the Teacher

The classroom teacher should expect to act as an advisor for students during the simulation. Often times, students will be unfamiliar with the simulation and will require some assistance. During the simulation, the teacher should be helping students as needed. Refocusing and redirecting students toward the objective, as needed. The teacher should be playing the role of facilitator and supporter. It is crucial that the teacher uses proximity to control behavior issues and ensure students stay on task, but the teacher should also be sure not to over assist and complete the simulation for students.

Evaluation

Evaluating an archaeological excavation can be difficult because the dig emphasizes knowledge and skills that are not measured typically with a formative assessment. Instead, teachers should utilize a checklist, rubric, and/or series of discussion questions about the dig to assess student understanding. No matter the evaluation technique students should be assessed based on their collaborative teamwork, analysis of artifacts, and attention to detail. For the purposes of this simulation, the following criteria were utilized to evaluate the archaeological dig simulation (see figure 6).

Excavation Team Members:		
Evaluation The Excavation Team Member exhibited the following criteria to the degree noted: 10 = Excellent 8 = Above Average 6 = Average 4 = Below Average 2 = Unacceptable		
Criteria	**Score**	**Comments**
Excavation • Student was engaged in the excavation process • Student actively participated in all excavation jobs (digger, recorder, and examiner). • Student demonstrated responsibility and respect for the archaeological site, artifacts, tools, and team members.		
Field Log • Included artifact sketches and notes • Artifact Sketches were detailed and carefully drawn • Artifact Notes were detailed and provided rich information about the		

artifact		
Cooperation • Worked well with team members.		
Total points:		**out of 30**

Figure 6: *Archaeological Dig Simulation Rubric*

Discussion

This simulation was implemented in an elementary classroom and was found to be very effective. Students articulated that they were fairly comfortable using shovels and other tools to dig in the dirt, but expressed disbelief that finding objects in the ground could be used to learn about history. As the simulation was introduced to the class, one excited female student wearing a white lab coat (her personal lab coat) shared with the class that she had "never done a simulation" and that it sound interesting to learn while "digging for old stuff in the ground." Other students expressed similar comments and most could not wait until the simulation started.

The procedures were followed closely throughout the implementation of the simulation. Teacher questions were successfully used to generate student-focused conversation. Most students were genuinely interested in trying to work together. What was also clear was that students were heavily engaged and never observed off-task during the simulation. As students were digging, examining, and recording findings, an observing teacher was amazed at how well students were working and how well they were behaving. She stated, "It is rare for me to see so many students so engaged for so long." A male student with a brief attention span and who was full of energy explained that "he wanted to do this every day." Another student explained that "there is a lot of cool stuff in the ground" and that he did not know that so much information could be learned from a bone or an old bowl in the ground, until he participated in the dig. The students were engaged, were motivated to learn and demonstrated very few behavioral issues during the simulation. In addition to the positive student and teacher comments and reactions, a school administrator was amazed by how engaged and on task the students were. Overall, the Archaeology Dig simulation was very effective and students, teachers, and administrator comments and reactions were very encouraging.

Conclusion

Elementary teachers are consistently attempting to make social studies engaging and relevant to elementary students. So often, students explain that social studies is dull

and boring (Chiodo & Byford, 2004). This archaeological dig simulation is interesting and engaging. Furthermore, using simulations can make the content more interesting and provide students with a great understanding and appreciation for the content. The purpose of this article was to provide educators with a successful and classroom tested archaeological dig simulation. The Archaeological Dig simulation will actively engage students and promote interest in archaeological related content and skills. In sum, the simulation activity was a success. Based on student feedback and observations, students enjoyed the hands-on simulation and better understood archaeology and the role archaeologist play in the interrupting the past.

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Appendix A
Field Log

Excavation Team Members:_____

Artifact	**Artifact Number**
Artifact Sketch:	
Artifact Notes:	