Underwater Archaeology – Cookie Dig
Pre-Lesson

Time Allotment
30 minutes

Materials
Per person:
- One chocolate chip cookie (chunky works best)
- Toothbrush or small brush
- Toothpick
- Napkin
- Graph paper
- Pencil
- Ruler

Advance Preparation
Conduct a sample cookie excavation including measurements and graphing to show students. Have paper towels, cookies, measurement tools and brushes handy.

Lesson Objectives
Students will:
- Define archaeology and excavation and advance their understanding of archaeology.
- Recognize the skills required to perform an excavation.
- Practice and advance skills in measuring and graphing.

Sunshine State Standards for Middle School
Category:
SC.7.N.1.3, MA.7.A.1.6
SC.8.N.1.6, MA.8.A.1.3

Vocabulary
Archaeology
Artifact
Biofact
Culture

In situ
Observation
Paleontology
Excavation

Background Information
Archaeology is the study of human past through its material remains (artifacts). Not to be confused with paleontology, the study of prehistoric life and their interactions with each other. Although both artifacts and biofacts can be found within the same “dig site,” there is a distinct difference between the two. An artifact is any tool, implement, or object manufactured or modified by humans. A biofact is material from a once-living organism that has not been worked by humans. The objectives of archaeology are to construct cultural history, reconstruct past life ways, and study cultural processes. Culture is a shared set of beliefs and behaviors that help mold one’s responses to different situations. By studying artifacts, we can learn about the people who made and used those artifacts.

Archaeologists look for more than just the artifacts themselves. They analyze the artifacts based on size, shape, materials, etc., as well as the context the artifacts were found in (depth, what is nearby, etc.) in order to recreate a story about where and how the artifact was created or used. Context gives artifacts their meanings. It is not the individual object or feature that tells the story. It is the whole process of how it came to be buried in that location.

The archaeological process often includes: site location, site excavation, artifact identification/examination, interpretation of findings, preservation of artifacts and site, and sharing information with others. In situ
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original place. Often, an archaeologist will do the opposite and excavate artifacts. **Excavation** is the method that archaeologists use to extract artifacts out of the ground. The work is very difficult and has to be detailed since the archaeologist could destroy the very thing they are trying to study. It is impossible to know what is underground, so archaeologists have to be careful not to damage artifacts they cannot see while excavating.

So why do archaeologists measure, graph, and excavate sites? Because studying past cultures allows us to paint a picture of how people survived and altered their lifestyle to fit the changing environment.

**Initial Discussion**
1. Discuss the importance of archaeology and how it differs from paleontology.
2. Explain the process of careful excavation.
3. Individually, have the students examine their site, also known as “the cookie.” Look for any artifact, also known as “the chocolate chip.”

**Hands-On Activity**
1. Each individual student should receive a cookie, brush, toothpick, graph paper and ruler. First measure the site, which is the cookie, and any visible artifacts, chocolate chips. The first step will be to draw a map of the site, if you feel that your students will start breaking up the cookie, do not hand out the brush and toothpick until they finish their map.
2. Using the measurements, draw a map of the site onto the graph paper. Depending on the size of the “cookie site” the students may need to assign a scale in order to understand their map. For example every centimeter of the “cookie site” equals one inch on the graph paper.
3. Measure out each of the visible chocolate chips and place them onto the map in the correct location. Remember to always keep the cookie in the same location and measure the distance between chocolate chips. The final map should be a scaled two-dimensional map that looks like the cookie.
4. Next have the students begin the excavation process. Have them carefully use the toothpick and brush to remove each of the chocolate chip artifacts. Remember the goal is to not damage the artifact.
5. For extra practice have the students measure a few of the chocolate chips.
6. After checking on the different maps allow the students to eat their cookie!

**Relate Activity to Concept**
1. The purpose of the activity is to allow students to become an archaeologist and conduct a site study.
2. By measuring and excavating students will have a better understanding of what true archaeologist do while practicing effective measuring and graphing skills.

**Assessment**
Consider a simple competition where each student reports on the number of whole chocolate chip artifacts that they were able to remove without damaging the artifact.

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Ask them to report which method of excavation worked best for them. Did they find excavation to be a challenge?

Extension Activity

In small groups, provide the students with three or four common random items (for example: pencil, coke can, plastic bottle, eraser, or rubber band). Tell them that they are archaeologists that have located an unusual site where certain items have been excavated. Using the items have the students tell a story about that previous culture.

Thinkfinity

Go to http://www.thinkfinity.org/

Additional lesson plans can be found at Thinkfinity. Use the following lessons to expand students understanding of archaeology.

Key Word - Excavation

The Science of Digging Up Dinosaurs

6 - 8 | Lesson

Key Word - Archaeology

The Scientific Method in Undersea Archaeology

9 - 12 | Lesson

Exploring Human History E-Sheet

9 - 12 | Interactive

What Do Scientists Do?

6 - 8 | Lesson