Archaeology STEM Activity: Rotting Here?

Type of Teacher Tool: Small Group
Targeted Grade Level(s): 5-8
Targeted Curriculum Areas: Archaeology

Learning Objectives:
The learner will:

1. understand what happens to vegetable matter under different conditions and how that affects preservation of materials.
2. keep data showing changes in vegetable matter and draw conclusions from what happens.

Featured National Standards:

1. MS-LS1-2 Develop and use a model to describe phenomena.
2. MS-LS1-1 Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.
3. MS-LS1-5,MS-LS1-6 Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.

Additional State and National Standards related to the content of our videos listed below for this lesson are also provided on the Educate.Today page where you find the video.

Resources/Materials Needed:

1. 5 clear plastic cups for each group, 1 apple cut into 5 equal pieces per group, plastic wrap, clay, heat lamp, and small gravel, freezer
2. Archaeology 1: Explore! Archaeology
3. Archaeology 2: The Science Behind Archaeology
4. Archaeology 3 and 5: Working at an Archaeology Dig 1 and 2

Teacher Instructions:

1. Depending on the grade level, appropriateness, and time available for your students, select either Archaeology 1 or Archaeology 2 as a video for the class to watch as an entire class or in the small group they will be working in for the activity.
2. Have students share what they learned in the videos and discuss important aspects of archaeology you want to make sure students understand.

3. Then discuss specifically how the climate conditions may affect archaeological dig sites. As part of this discussion view videos Archaeology 3 and 5 and ask "What type of environments may preserve artifacts the best or might contribute to increasing decomposition?
4. Have students offer answers to the question and write their answers done for future reference.
5. Set up areas in the room that will be cool and warm, under a heat lamp, and in a freezer.
6. Instruct each group to make 5 cups: **Wet Clay**—put damp clay around the apple and wrap it with plastic wrap (airtight). Put 3 cm of gravel in the cup and fill the cup with water just to the top of the gravel. Place the clay apple on top of the gravel and seal the cup with plastic wrap and rubber bands. Place this in a cool area. **Frozen—**Surround the apple with gravel but make sure the fruit can be seen through the side. Fill with water and place in the freezer. **Dry—**Fill the bottom of the cup with 4 cm of gravel and put the fruit on top. Place under a heat lamp. **Humid—**Fill the cup with 4 cm of gravel and place the fruit on top. Add water until it touches the apple. Place plastic wrap and rubber bands on top. Place in a warm area. **Under Water**—Place the apple in a cup surrounded by gravel and water. Keep in a cool area but not the freezer.
7. Groups should make a data table to check the conditions of the apple for four weeks. Looking at the color, shape, and size, and anything else noticed.
8. After four weeks, the groups should discuss their results and draw conclusions about what condition was best for preservation.
9. Have students compare their data to their answer from step 4 above.

Extension Activity Options:

1. Students could try the experiment with a piece of wood or pottery.

Assessment/Evaluation Options:

1. Groups should fairly complete the test.
2. Groups should draw conclusions that the wet clay and frozen apple remain almost the same, the dry fruit should shrivel up, the humid fruit and underwater fruit should rot.
3. The students should conclude that this simulates what happens to materials on an archaeological site and realize that environmental conditions will affect what happens to artifacts.