

San Marcos Explorers Lesson Plan

April 2023

DATE: Monday, April 3, 2023

LOCATION: Crockett Elementary School (Makerspace room) – 1300 Girard St, San Marcos, TX 78666

TIME: 7:55 am – 8:50 am

PARTNERSHIPS (*if any*): Rachel Miller, Crockett Elementary School Librarian

PROMOTION PLAN: outreach to 5th grade teachers by Ms. Miller

TOPIC: The Things We Leave Behind: Archaeology for Beginners

GENERAL DESCRIPTION OF WORKSHOP & GOALS: Introduce archaeology as a science and encourage students to think about their relationship with material culture and waste

MATERIALS & COSTS:

<ul style="list-style-type: none"> ● 16 cup transparent food storage container x4 ● Potting soil ● Sand ● projectile point replicas x4 ● shell ● pottery sherds ● charcoal ● beads ● textile ● paper clips ● soda tabs ● coins ● plastic confetti/scraps ● sifters ● plastic spoons ● paper plates, 6 per group ● printed lab worksheet x4 ● Water cup or mister 	<ul style="list-style-type: none"> ● \$3.97/container at Walmart ● \$5.38 for 8 quarts, \$8.98 for 8 quarts at Lowe’s ● \$5.08 for 44 lb bag, Lowe’s ● Borrow from anthropology dept (Dr. Kilby) ● can be foraged or 2lbs for \$7.99 at Michael’s ● reuse old planters, smash and sand ● found in charcoal grill ● deconstruct old jewelry or use new beads ● use fabric or ribbon scraps ● use existing office supplies ● source from recycling bin ● - ● source from recycling bin ● \$9.65 for set of 4 at Walmart ● \$1.98 for 48 at Walmart ● \$3.49 for 20 compostable plates at Walmart ● \$.02/sheet with TXST SendnPrint ● -
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LESSON PLAN ELEMENT CHECKLIST:

<u>Element</u>	<u>Application</u>
<p>Discussion: meeting students where they are. Formulate questions that will get them to talk about what they already know about the topic, or what they currently associate it with. Ex: Where have you seen ? Who has heard of ?</p>	<p>What is archaeology? Have you heard this word before? Where have you seen it? What do archaeologists do?</p>
<p>Background: Lay the foundational knowledge that is essential for students to know to understand the topic at hand. Ex: explaining basics of the water cycle</p>	<p>State the basics of the Law of Superposition.</p>

<p>Local Context: Bring the broader topic close to home by teaching about how it relates to their region/community. Ex: explaining what the Edwards Aquifer is</p>	<p>Discussing how litter presents itself in their community. Have they ever littered? Where have they seen the most litter? Would you want to see litter in the river or parks when you go?</p>
<p>Food for Thought: Have another short discussion about how the students' new knowledge compares to what they knew before, or previously thought. Ex: How do you feel about ____ now that you know how it works? What are you going to do differently now?</p>	<p>Have students think about what things they leave behind, and what traces of their activities might be left on a landscape after they are gone. Ask about their everyday activities and if they will change any of their behavior now that they know what they know.</p>
<p>Call to Action: A challenge or tangible action that students can do to apply their new knowledge. Ex: visit a museum, pick up litter, talk to their family, etc</p>	<p>Suggestions include picking up litter the next time they see it on the ground, visiting an archaeology museum, and switching to eco-friendly alternative to single-use products.</p>
<p>Activity: A hands-on or out-of-seat activity that helps students apply their new knowledge or engage with the material. Ex: Craft, competition/quiz, presentation, dance, science experiment/lab, etc.</p>	<p>Dig boxes</p>

LESSON PLAN BREAKDOWN:

PREP (Before Lesson): Print 4 lab worksheet packets and prepare dig boxes.

1. In one container, spread a thin layer of potting soil. Place on it one projectile point, 1-2 pottery sherds, and a few shell fragments. Cover with more potting soil so that the side view of the dig box then has a layer of potting soil ½-1 inch thick. Mist with water to settle soil.
2. Pour a thin layer of sand on top of potting soil, enough to cover it up so that no soil is seen. In the sand, disperse a piece of charcoal, some beads, some shell fragments, and scraps of textile. Cover with more sand so that the layer is ½-1 inch thick. Misting more often might be necessary to settle sand.
3. Pour a thin layer of soil on top of sand until no sand is seen. Disperse in soil a soda tab, paper clips, pieces of plastic, and a coin. Cover with soil ½-1 inch thick and mist to settle the final layer. Repeat with the other 3 boxes and close. Label each numbers 1-4 and store them in a place where they will not be moved or disturbed until lesson.

7:20-7:55 PREP (at Crockett): Arrange tables and chairs to accommodate seating four groups of five students (max) each. At each group place one dig box, one sifter, 4-5 pencils, 4-5 spoons, 1 lab worksheet packet, and 6 paper plates. With a marker, label 2 paper plates with a 1, 2 with a 2, and 2 with a 3 in large lettering. Ensure that students do not disturb materials until instructed to do so as they begin entering the room.

7:55-8:00 INTRO/DISCUSSION: Welcome students and introduce the word “archaeology” for a short discussion period. Ask questions like- *Have you heard this word before? Where have you seen examples of it? What do you think archaeologists do?* Perhaps mention Indiana Jones to create a basis of understanding (but establish that real archaeology is much different from movies).

8:00-8:05 SCIENTIFIC METHOD: Define archaeology as “the study of past human behavior based on the things people leave behind.” Can be compared to the work of a detective (but on an ancient timescale) to give students an easy frame of

reference. Explain how because archaeology is a science, it uses the **scientific method** to answer questions about past human behavior. Provide examples of research questions- *Why was this city abandoned? How did ancient people use this tool? How was this pottery made?* Explain that a **hypothesis** is a prediction based on what is already known, and that archaeologists can test a hypothesis in many ways, among them through excavation, which can tell archaeologists how people used to live and behave, what the environment used to be like, and information on ancient plants and animals.

8:05-8:10 DATING: Raise the question- *How can archaeologists tell how old something is when they dig it up?* Depending on timing, invite students to guess. Answer the question by introducing the **Law of Superposition**, and ask students to repeat the phrase back to you together. Explain how it seems like a hard topic but all it means is how layers of earth that are deeper are generally older than layers of earth that are more shallow. State that these layers are called strata and use graphic in slideshow to cement in oldest to youngest idea.

8:10-8:12 GROUP QUIZ: Utilize graphic to quiz students on this new knowledge, asking them to first order strata from oldest to youngest then the artifacts within the layers from oldest to youngest. Reveal the answers after a class consensus has been reached/guesses have been made. Explain that this is what they will be doing in their lab. Conclude presentation by asking them to think about how much of what archaeologists study is “trash” ancient people have left behind, and encourage them to ponder on what materials they leave behind on a daily basis and what that might say about their own lives.

8:12-8:55 LAB: Begin lab by asking students to look through packet with you, and ensure that they do not touch materials unless instructed to do so. Ask them to complete questions 1-3 on the worksheet, which ask them to make predictions about what they will find and also draw the **stratigraphy** of their dig box. Once all students are finished with this part of the lab, deliver instructions for hands-on aspect, hitting key points below:

- Using spoons and hands if necessary, carefully excavate the top layer of soil, being careful to remove only the soil and not mix sediments together. Place all artifacts found in this layer on one of the plates labeled 1, and place all backdirt from this layer on the other plate labeled 1. Use a sifter as needed.
- Document on the chart provided in the worksheet what artifacts were found in this layer. Ensure that all soil is completely removed to the best of your ability before moving on to excavate the second layer.
- Repeat the same process for the sand layer, excavating with spoons, sifters, and hands and placing artifacts and backdirt on corresponding paper plates labeled 2. Document what is found on the chart for Layer 2.
- Repeat for the third layer of soil until all artifacts are recovered and documented on the lab worksheet.

Walk around the room and supervise students to ensure that they are following instructions, working together, and making good time/progress. Answer student questions and ask them questions in return, encouraging them to voice the observations they are making about how materials are changing from older to newer layers.

As students finish the activity, ask them to complete questions 8-9 of the worksheet, in which they document **results** of the excavation and draw **conclusions** based on what they found. State that this is the final part of the scientific process, in which archaeologists must report their findings and think about what they find might mean. Conclude by asking that students think about what kinds of things they leave behind on a daily basis, and how they can reduce the amount of waste they create.