

ARTFUL CONNECTIONS WITH SCIENCE

Fossil Sculptures

4th Grade

1-2 Sessions –90 or 120 Minutes

Unit Theme:

Earth's Systems

Essential Questions:

- How do water, ice, wind, and vegetation sculpt landscapes?
- What factors affect how quickly landscapes change?
- How are landscape changes recorded by layers of rocks and fossils?

Lesson Objectives:

Students will be able to:

- Create fossil artwork with additive processes.
- Create a drawing of fossil sculpture using value and shading techniques.

Standards

Next Generation Science Standards (NGSS)

4-ESS1-1: Identify evidence from patterns in rock formations and fossils in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time.

4-ESS2-1: Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

4-ESS2-2: Analyze and interpret data from maps to describe patterns of Earth's features.

Disciplinary Core Ideas:

ESS2.A: Earth Materials and Systems - Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.

California Visual and Performing Arts Content Standards

1.5 Describe and analyze the elements of art (e.g., color, shape/form, line, texture, space, value), emphasizing form, as they are used in works of art and found in the environment.

2.3 Use additive and subtractive processes in making simple sculptural forms.
4.1 Describe how using the language of the visual arts helps to clarify personal responses to works of art.

Key Vocabulary and Core Concepts

Science:

Fossil, Erosion, Deposition, Weathering

Visual Arts:

Composition, texture, balance, organic, symmetrical, geometric

Session 1

Access Prior Knowledge:

- What is a fossil and what does fossil tell us?

Fossils – Background Info:

Fossils: Fossils usually only form in sedimentary rock because it builds on the fossil over time due to accumulation so it maintains its form as opposed to crushing it. Fossils can be found in casts, molds or permineralization. Casts or molds are created when an organism is buried and rots away. Permineralization is when an organism is buried and minerals from the ground seep into the organism and slowly replace the tissue.

Sample Questions: See attached artworks

- What's going on in this picture?
- What do you see that makes you say that?
- What more can we find?
- What colors can we see?
- What mood do the colors convey?
- How does art plays a role in reflecting life?
- What story do you think these artworks tell?

Materials:

- Clay Terracotta or Soldate (discard after use in casting process)
- Pebbles and sand (Optional)
- Plaster of Paris powder
- Buckets
- Paint Stick (to stir plaster)
- Water
- Plastic bowls (one per student – Smart and Final)
- Assorted organic and manmade forms (seed pods, leaves, plastic toys, Lego, etc)
- Watercolor or show polish (to apply color)

Fossil Instructions:

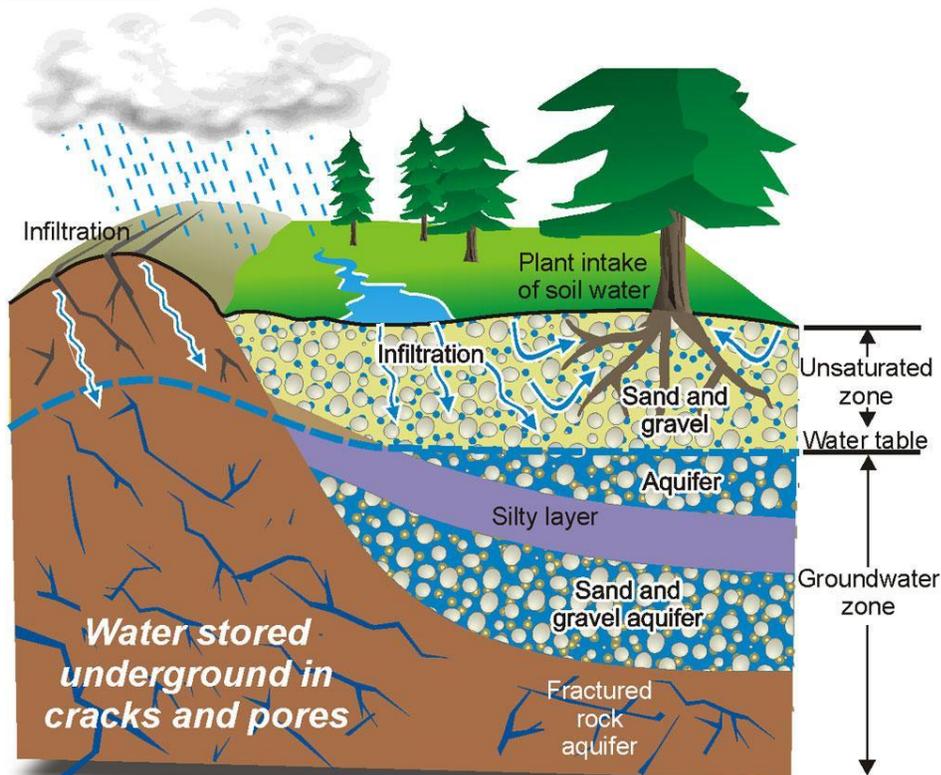
1. Distribute plastic bowls an sharpie
2. Write student name on bottom on bowl

3. Distribute clay (can be used clay)
4. Press clay into plastic bowl to line the bottom
5. Distribute a variety of objects to students (manmade toys, leaves, twigs, things with texture that will leave a distinct impression)
6. Press object into clay such that an impress is visible – remove objects
7. Prepare plaster (Assistant or Teaching Artist) Recipe: In a gallon sized ziplock bag put 5 cups of plaster and 2 ½ cups of water. With all the air out of the bag, close the bag. Knead the bag with your hands. For easy pouring, cut a small piece from the bottom corner of the bag (not too big).
8. Place bowls in a line and pour plaster, in batches, to the rim of bowl
9. Place wire (or paperclip) in wet plaster to use a hook to hang artwork once cured
10. Finish with watercolor or shoe polish once set and dried.
11. Demonstrate how to draw the finished fossil with value and shading technique.

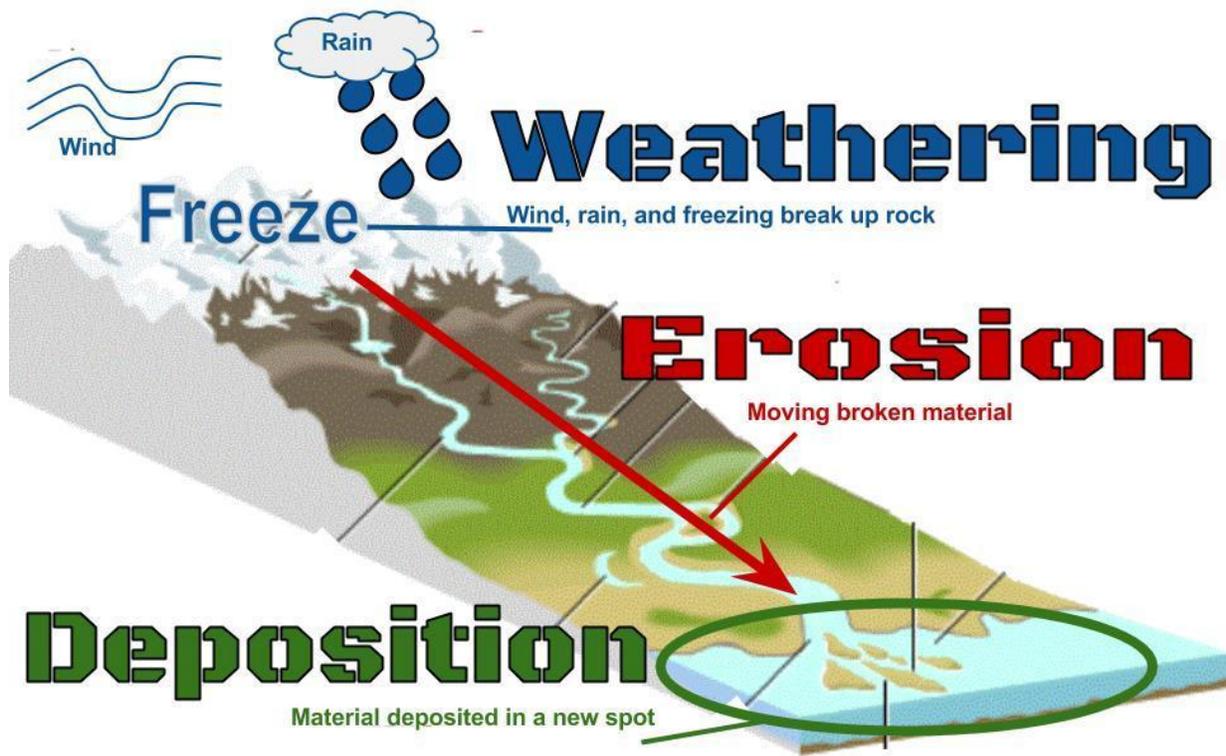
Closure:

- Share out on the experience of making Fossil Sculpture.
- Discuss the choices and placement of objects in fossil sculpture with focus on forms that are *Geometric, Symmetrical, Organic*

Resources:



In this image where do we see evident of weathering, infiltration, vegetation and groundwater?



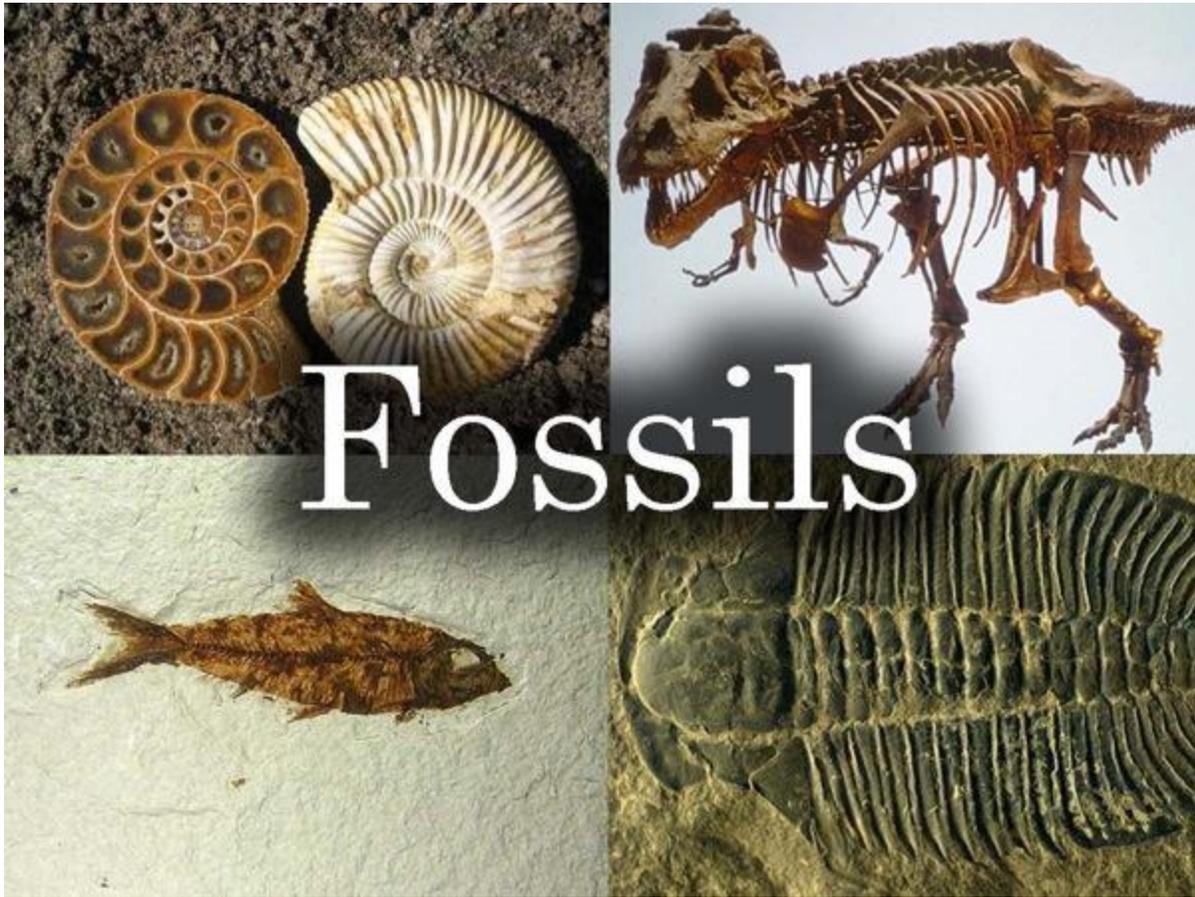
Weathering, erosions and deposition diagram.



Jedidiah Ceasar, Geode, Mixed media, 2012



Elyse Graham, Void #8, Latex, urethane, plaster, sand, 8.5"x5"x5.5", 2011



Fossils

Fossils



Made up on Navajo Sandstone, The Wave is composed of cyclic and rhythmic grain flow. Differential erosion, cyclic grain flow, and wind-ripple laminae result in the ribbing and ridges that can be seen within The Wave. Confirming the age of the site are the many different Dinosaur tracks and fossils that have been found throughout the Wave. It is a site that has evolved over millions of years, and is expected to continue to evolve as time goes by.



Fingal's Cave is located on the uninhabited rock island of Staffa, off the West coast of Scotland. This fascinating cave is formed from hexagon shaped basalt columns. The basalt formed into hexagonal columns when a lava flow cooled in the ocean. The lava flow that created Fingal's Cave also created the amazing Giant's Causeway rock formation in Scotland.



Lewisian Gneiss Formation – gneiss with granite and dolerite in Scotland.

Examples of student work:



Examples of painted fossil sculptures made by students of Teaching Artist, Rebecca Bennett Duke.



Examples of painted and unpainted fossil sculptures made by students of Teaching Artist, Rebecca Bennett Duke.



Examples of painted fossil sculpture necklaces, made by students of Teaching Artist, Tracy Nakayama

Date:

Student Name:

Classroom Teacher Name:

Armory Teaching Artist Name:

Criteria	1 Does not meet Expectations	2 Approaching Expectations	3 Meets Expectations	4 Exceeds Expectations	TOTAL
Textural Relief	No textural relief is evident on the plaster cast.	Partial textural relief is evident on part of the plaster cast.	Textural relief is evident on several areas on the plaster cast.	Textural relief is evident with a range of sizes and a variations on multiple surfaces of the plaster cast.	
Color (watercolor or shoe polish)	Color is not applied to the artwork.	Color is applied to cover most of artwork.	Color is applied to cover all of the artwork.	Color is applied with detailed variation that completely covers the artwork.	
Balanced Composition	No natural or man-made objects are imprinted in the artwork.	Only one natural or man-made object is evident in the artwork.	A few natural and man-made objects are evident and are placed in a balanced way in the artwork.	Several natural and man-made objects are evident in artwork with placement that creates a dynamic and balanced composition.	
Overall Artistic Expression					
TOTAL SCORE					

*Please mark N/A if criteria do not apply (i.e. Color).

Student Assessment Highlights:

Question: Patterns in _____ formations are usually the result of weathering and erosion sculpting over time. (Earth's place in the universe 4-ESS1-1).

Answer: Patterns in **rock** formations are usually the result of weathering and erosion sculpting over time.

Question: Draw the shapes and forms to match the words below. (Artist Expression 1.2)

Answer: **Geometric, Symmetrical, Organic** (Model through drawings and example)

Question: _____ found in rock layers are preserved remains of traces of ancient life. (Earth's place in the universe 4-ESS1-1).

Answer: **Fossils** found in rock layers are preserved remains of traces of ancient life.

Question: _____ happens when broken rocks and sediments are picked up and moved to another place water or wind. (Earth's Systems 4-ESS2-)

Answer: **Erosion** happens when broken rocks and sediments are picked up and moved to another place water or wind.

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