Sculpting with Erosion

Grade 7

Subject: earth science

Time: 2+ class periods

Description

In this lesson, students will create a small sculpture and let the natural powers of weathering and erosion add the finishing touches. Using a rock that they have found as a base, students will construct a sculpture out of air dry clay. After letting their sculpture dry, students will leave it to the elements to weather and erode, or simulate the process of weathering and erosion themselves. Either way, students will experience firsthand the forces that create works of art in the natural world.



State Standards

7-ESS2-2 : Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.

Learning Objectives

Students will be able to design a sculpture that works with natural geoscience processes and critique its effectiveness.

Students will be able to explain how weathering and erosion gradually alter the surface of rocks and landforms.

Students will be able to analyze how the composition and condition of a rock or mineral affects its rate of weathering.

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Materials

Required:

- Crayola air dry clay
- Rocks *(about the size of your palm)*
- Plastic utensils *(forks & spoons)*
- Toothpicks
- Rulers
- Mini plastic cups
- Parchment paper
- Painters tape
- Plastic shopping bags
- Wet wipes
- Newspaper or cardboard

Additional:

- Shallow pans
- Large plastic buckets
- Clay tools



(Your set up might look something like this)

Assessment Questions

What parts of your sculpture eroded off? What factors do you think could have played a part in this?

How many "rainstorms" did it take for any big changes to happen to your clay sculpture?

Based on your experience with this activity, how long do you think it takes for weathering and erosion to change a landscape?

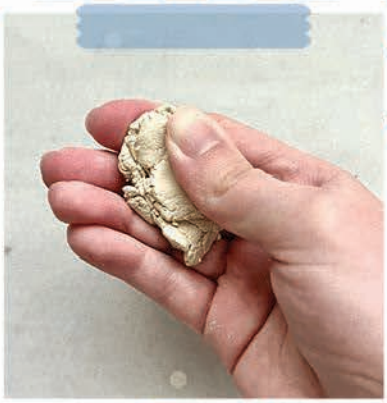
Instructions



1 Before class, set up work areas with the needed supplies. The air dry clay will stick to surfaces, so make sure to cover desks /tables with some parchment paper, and tape it down.



2 Once the students arrive, instruct them on how to make a substance called slip, which is what we'll use to stick our clay together securely. First, put some tiny chunks of your clay in a plastic cup along with a few drops of water, and mix them together with a toothpick. Keep on mixing, adding more clay or water as needed until you have a thick, yogurt - like paste with a few chunks, as shown in the picture.



3 Have your students grab a chunk of clay from the tub, and knead it like bread dough for a little bit. To knead, press the chunk of clay flat and keep on folding it over on itself. *(Tip: make sure to keep the clay tub closed to prevent the clay from drying out. I recommend covering the clay tub with a plastic bag to help with this.)*



4 After kneading the clay, have students press their clay flat. The students will then look at the rock that they brought to class and, using the side of a ruler , cut out a piece of clay about the same size as one side of their rock.

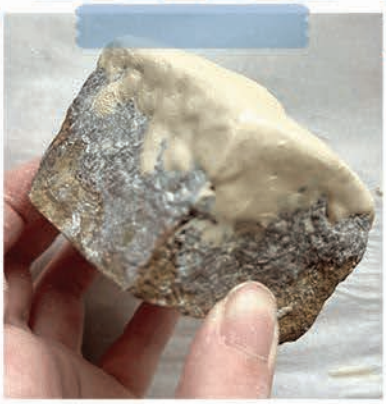
Instructions



5 Once students have cut out a flat piece of clay they will use a plastic fork to score the clay as shown in the picture. Scoring is done to increase the surface area and therefore strengthen the bond when sticking clay onto something.



6 Next , have students scoop up some of the slip they mixed earlier and spread it on the scored clay piece. They should cover the clay piece fully in slip before pressing it to the rock.



7 If their piece of clay is a bit too big, students can dip one of their fingers in their cup of water, and smear the overhanging clay downwards.



8 Repeat steps 3 - 6 until all of the rock is covered. Remind students to score and slip all areas where two pieces of clay meet.

Instructions



9 Once the rock is fully encased in clay, students can finish their clay sculptures by adding clay to the rock base and carving decorations on the surface using the tools given to them. Place the sculptures somewhere safe in the classroom to dry for a day or two. *(Tip: To prevent the sculptures from cracking while drying, place a plastic bag over them. However, this will also increase the drying time, extending the length of this activity.)*



10 The sculptures should turn mostly to fully white when properly dried. Now, we can finally move on to the most important part of this process: eroding our artworks. This can be done two different ways.



11 Option 1 is to have students place their clay sculptures in a safe area outside to erode naturally for about a week, which I did for the sculpture pictured. If you want to do this method, it is best to place the sculptures outside on a week that is forecasted to be fairly rainy. Make sure your students check on their sculptures every day to record any potential weathering or erosion that has happened.



12 Option 2 is to have students simulate natural erosion themselves by pouring small amounts of water over their sculptures repeatedly. Give your students a plastic cup and take them outside. Have them fill up their cup with water and splash it on their sculptures until they start to see noticeable changes. Along with this, make sure students are keeping track of how many times they have to refill their cup and what parts of their sculpture are being eroded away. *(Tip: Bring a large bucket of water outside to refill cups.)*

Instructions



13 If your class is unable to go outside , you can get a pan/tub, fill it partially with water, place a couple of the sculptures in it, and simulate wa - ves. This will easily erode the bottom halves of the students' sculptures quickly and efficiently. Just make sure not to tilt or shake the pan/tub so violently that it makes a mess, and dispose of the dirty water outside and not down the drain to prevent clogging.



14 Whichever way you choose, carefully pick up the eroded sculptures, placing them on some spare newspaper or cardboard to transport them safely. Let them dry for one to two days before returning them to students. And there you have it - a mini sculpture that was made with the collaboration of human hands and natural forces!

Art History

While many people think that art is always displayed in a gallery or a museum, this is simply not the case. There are many artw - orks that are designed for a specific place, such as a certain field, mountaintop, or shore - line. During the Earthworks art movement , many artists traveled to distant locations and created monumental works out of the natural resources found around them. Since many Earthworks are made of natural materials (or are constantly exposed to the elements), they are prone to weathering and erosion. This is the case with one of the most famous Earth - works, *Spiral Jetty* by Robert Smithson.

Spiral Jetty takes the form of a nearly 1,500 ft spiral made out of rocks and mud, that projects outward from the shore of the Great Salt Lake. Over the course of its existence, *Spiral Jetty* has been completely submerged many times, slowly being transformed by nat - ural forces. Similarly in this lesson, students create and expose their own sculptures to the power of weathering and erosion. In essence , students produce a temporal work of art , which they can appreciate for the time they have with it.



Spiral Jetty, Robert Smithson, 1970



Example of students' eroded sculptures