

Notes/Reflections:

2013 - 2014 © ArtsNOW
100 Edgewood Ave, Suite 100
Atlanta, GA 30303
Phone: 404.688.2480
Fax: 404.688.2424
www.artsnowlearning.org

Idea Contributed by Mary Gagliardi

Embodying Science • Types of Rocks •



Investigate types of rocks through personification!

In this lesson we will investigate the three types of rocks and personify the formation of each type with movement.

Essential Question: How are the various types of rocks formed, and how can we demonstrate this formation with our bodies?

Process

- Have students “find their own space.”
- Review and discuss the different types of rocks: igneous, sedimentary, and metamorphic.
- We will begin with igneous rock.
 - Discuss that igneous is from the Latin word “ignus” which means fire. Igneous is rock which is formed from molten magma from under the earth. The hot magma flows, then cools, and crystallizes into rocks. Sometimes the magma flows to the surface as lava before it cools.
 - When the music begins, we are all going to imagine that we are magma or lava flowing freely. We will keep our bodies moving without stopping. When you hear the music change and become stiffer and sharper, let your movement start to become more controlled as if you are cooling and crystallizing. Finally, stop and form a rock shape, either alone or with someone else. When the music begins, flow smoothly again, let your rock melt and become magma or lava once more.
- Now we will discuss sedimentary rock.
 - This comes from a latin word which means to settle. When the rock gets broken up by rain, running water, earthquakes or wind they form small pieces of rock called sediments. These sediments are carried – usually by moving water – and deposited in one place. Layer upon layer of particles build up and press against each other. Certain elements in the water form cement that joins the particles of sediment together until they are solid rock.
 - We will form our layers with only our arms so that no one gets hurt.
 - When the music begins you may move about the room as if you are particles of rock and minerals being carried by water. As you move, I will call out five people’s names. As I call their names, those five people will come to the center of the room and stop moving. They will hold out their arms and layer them on top of each other, imagining that their arms are sediment settling to the bottom of a river. Then I will call another five names and the five new people will settle their arms on top of the first five. Please remain standing and settle your arms very gently, so no one will be hurt.
 - Have groups form their layers. You may want to have several groups come together.
 - Now let’s imagine that lots of time has gone by, and these layers have become cemented together into one solid rock. See if you can find a way to join the layers so they are all connected. Perhaps you’ll intertwine your arms, or tighten your muscles to make your arms like a solid rock.

Materials

- MP3 player or CD Player, Music: “The Land of Nod” Peter Jones, “Red Wind” Roth, Gabrielle and the Mirrors, “Lucky Stiff” Eric Chappelle

Vocabulary

Igneous Rock

Rocks that were once melted rock but have cooled and hardened. One of the three main rock types, formed from the cooling and hardening of magma. Sometimes the magma cools deep within the earth, and other times it erupts onto the earth’s surface from volcanoes (in this case, it is called lava).

Metamorphic Rock

Rock that has been changed by heat and pressure. One of the three main rock types, formed deep within the earth, where rock material is subjected to intense heat and pressure (squeezing). The rocks that result from these processes often have ribbonlike layers and may have shiny crystals on their surface, formed by minerals growing slowly over time.

Sedimentary Rock

Rocks that form from materials that settle into layers and harden over time. One of the three main rock types, formed from particles of sand, shells, pebbles, and other fragments of material. Together, all these particles are called sediment. Gradually, the sediment accumulates in layers and over a long period of time hardens into rock. Generally, sedimentary rock is fairly soft and may break apart or crumble easily. You can often see sand, pebbles, or stones in the rock, and it is usually the only type that contains fossils.

Resource

Adapted from [Moving the Earth: Teaching Earth Science Through Movement for Grades 3-6](#), by Helen Landalf

- Now we will discuss metamorphic rock.
 - Metamorphosis is the process changing from one form to another, which is exactly what these rocks do. Heat and pressure causes changes in the atoms that make up the minerals in a rock. The rocks may also bend or fold into layers due to pressure.
 - Divide the class in half. Invite one group to come to the front.
 - Ask the group to imagine that they are atoms in a piece of metamorphic rock, and make a large shape together. Think about how you can relate to the other atoms in the shape – remember words like over, under, between, around, and through. The rest of us are going to be the heat and pressure. We’ll start at the edges of the room and move slowly toward the shape in the center, imagining that we’re pushing inward with very strong pressure. People in the center, see if you can slowly change your shape, level or position as we press toward you. We will stop when I call out “freeze”, before we actually touch anyone. Please find a place at the edge of the center and begin pressing when I turn on the music.
- Review the types of rocks and ask students to discuss which type they found most interesting and why.

Assessment

- Teachers should observe students, watching for involvement, engagement, and effort.
- Students should accurately identify rock types.
- Students should recognize physical attributes of rocks and minerals.
- Students should embody assigned rock using accurate physical attributes.

Georgia Performance Standards

SCIENCE

GRADE 3

S3CS8: Students will understand important features of the process of scientific inquiry.

S3E1: Students will investigate the physical attributes of rocks and soils.

- Explain the difference between a rock and a mineral.
- Recognize the physical attributes of rocks and minerals using observation (shape, color, texture), measurement, and simple tests (hardness).
- Determine how water and wind can change rocks and soil over time using observation and research.

THEATRE ARTS

GRADE 3

TAES3.3: Acting by developing, communicating, and sustaining roles within a variety of situations and environments

- Communicates thoughts, emotions, and actions of characters through movement
- Creates and portrays characters based on imagination
- Collaborates to create characters and to dramatize ideas
- Communicates relationships among characters
- Applies sensory elements in creating and portraying characters

TAES3.7: Integrating various art forms, other content areas, and life experiences to create theatre technology

- Develops dramatic pieces related to other content areas

National Standards

SCIENCE

NS.K-4.4: As a result of their activities in grades K-4, all students should develop an understanding of:

- Properties of earth materials

THEATRE ARTS

Standard 2: Acting by assuming roles and interacting in improvisations

Standard 5: Researching by finding information to support classroom dramatizations