

Rocks

Overview

Students will classify and categorize rocks, both sets provided by the teacher and rocks that students collect from the schoolyard. They will then read information to learn more about how the different types of rocks are formed.

Lesson Planner

Time Required	1 hour
Key Concepts/Terms	Sediment, Weathering, Erosion, Sedimentary Rocks, Igneous Rocks, Metamorphic Rocks
Prerequisites	<ul style="list-style-type: none">• Knowledge of expectations for outdoor classroom conduct.
Setting	<ul style="list-style-type: none">• 10-minute field study outside• Remainder of lesson inside

Standards

MD VSC 4th Grade Science

1.B.1.c. Review different explanations for the same set of observations and make more observations to resolve the differences.

2.A.2. Recognize and explain how physical weathering and erosion cause changes to the earth's surface.

Objectives

The students will classify and categorize rocks in order to identify the differences between sedimentary, igneous, and metamorphic rocks.

Materials Required

- Pencils
- Graphic Organizer
- Science textbook

Background Information

The students will have already created a graphic organizer they will use to classify and categorize their rocks.

Procedure

Follow the steps in the table below to conduct the activity. **Sentences in bold are suggestions for what teachers might say to students.** *Items in italics are possible teacher answers to questions.*

Phase	Step	Action
Engage	1	<p><u>Ten Minute Exercise:</u> Introduction to concept maps/outdoor learning.</p> <p>If students are unfamiliar with concept maps and/or using the schoolyard as a classroom, begin by creating a concept map together as a class to go over rules and expectations for learning outside.</p> <p>As you go through the concept map, think aloud for how you are choosing where to draw your bubbles to connect different concepts on the map. For instance,</p> <p>“I am going to write the idea first and then put a bubble around it to make sure my bubble isn’t too big or too small for my information.”</p> <p>Or</p> <p>“I am going to connect this idea to that one instead of the main topic since they are related.”</p> <p>Or</p> <p>“That’s a good idea! Where would you connect that idea on our concept map?”</p> <p>Have in mind some expectations for outdoor learning specific to your schoolyard that you want to be sure students include. For instance,</p> <ul style="list-style-type: none"> • <i>Regular school rules still apply (respect each other, listen to the speaker, follow directions, etc.)</i> • <i>No yelling, screaming, tapping on/waving into windows that will disrupt class learning inside the school building.</i> • <i>“Look, learn, and let go” when you see insects.</i>

		<u>Begin Classifying and Categorizing</u> (5 minutes)
	2	Pass out a variety of rocks to the students (either individually or in small groups). Students should classify and categorize these rocks using their organizer and according to the characteristics that they have already been introduced to.
Explore		<u>Directions</u> (2 minutes)
	3	“When outside, find two rocks to bring into the classroom that you will classify and categorize. Try to find two rocks that look somewhat different from each other.”
	4	<u>10-Minute Field Study</u> Bring students outside. Keep track of the time. Students should collect their rocks and return to the classroom.
	5	<u>Finish Classifying and Categorizing</u> (5 minutes) Students should classify and categorize their rocks. Discuss with students what types they found and why they think they belong in that category.
Explain	6	<u>Reading</u> (20 minutes) Students will read in the textbook about the three types of rocks. Direct students to take notes about these types on their same organizer they used to classify their rocks.
Evaluate	7	<u>Discussion</u> (10 minutes) Have students share what they learned about the three types of rocks. Discuss the types they found on the schoolyard. Have students hypothesize how/why these rocks got there.
Elaborate	8	Students can write a story about a rock moving through the rock cycle using key vocabulary terms. Or, have a discussion about fossils, how they appear in rocks, and how they help scientists understand Earth's history.

Vocabulary

Understanding of the following terms is required in this activity.

Term	Definition
Sediment	any earth material that has been moved from one place to another and laid down on the surface of Earth. It includes material moved by gravity, wind, water, ice, or animals and plants
Weathering	a gradual wearing away or changing of rock and soil caused by water, ice, temperature changes, wind, chemicals, or living things
Erosion	the moving of pieces of soil or rock by mechanisms including gravity, wind, water, ice, or plants or animals
Sedimentary Rocks	rock that forms when sediments are cemented together and harden
Igneous Rocks	Rock that forms from molten (melted) rock
Metamorphic Rocks	Rock that has changed as a result of heating and pressure

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