Rocks

Earth & Space Science | Lesson Guide

1st Grade

Photo Description

This picture shows a house with a big pile of rocks stacked up in front of it. The rocks are different sizes and colors. There are green plants growing around the rocks and trees hanging over the house.

Scientific Phenomena

The Anchoring Phenomenon is rock weathering and erosion creating different rock sizes and types. Over very long periods of time, big rocks break apart into smaller pieces through processes like freezing and thawing, wind, rain, and plant roots growing into cracks. This creates the variety of rock sizes, shapes, and colors we see in the pile - from large flat stones to small pebbles.

Core Science Concepts

1. Rocks come in different sizes, shapes, and colors - Natural processes create variety in Earth materials
2. Water changes rocks over time - Rain, ice, and flowing water can break rocks into smaller pieces
3. Plants and rocks interact - Plant roots can grow in soil made from broken-down rocks
4. Humans use Earth materials - People collect and stack rocks for building and decoration

Pedagogical Tip:

Have students sort a collection of different rocks by observable properties like size, color, and texture. This hands-on classification builds observation skills while connecting to the rock variety they see in the image.

UDL Suggestions:

Provide rocks for tactile exploration alongside visual observation. Some students learn better through touch and manipulation rather than just looking at pictures or listening to explanations.

Zoom In / Zoom Out

1. Zoom In: Inside rocks are tiny pieces called minerals that fit together like puzzle pieces. When water freezes in small cracks, it pushes the minerals apart and breaks the rock.

2. Zoom Out: These rocks are part of Earth's crust, which covers our whole planet. Rocks from mountains can travel far away through rivers and become part of new places.

Discussion Questions

1. What do you notice about how the rocks are different from each other? (Bloom's: Observe | DOK: 1)
2. Why do you think some rocks are bigger and some are smaller? (Bloom's: Analyze | DOK: 2)
3. What might happen to these rocks if it rains a lot? (Bloom's: Predict | DOK: 2)
4. How do you think people could use these different rocks? (Bloom's: Apply | DOK: 2)

Potential Student Misconceptions

1. Misconception: "Rocks never change - they stay the same forever"
   Clarification: Rocks change very slowly over long periods of time through weathering and erosion

2. Misconception: "All rocks are the same inside"
   Clarification: Rocks are made of different materials called minerals, which give them different colors and properties

3. Misconception: "Only big machines can break rocks"
   Clarification: Natural forces like water, ice, wind, and plant roots can break rocks apart over time

Cross-Curricular Ideas

1. Math - Sorting and Graphing: Collect rocks similar to those in the photo and have students sort them by size (small, medium, large) or color. Create a simple bar graph showing how many rocks are in each group. This builds classification and data skills.

2. ELA - Descriptive Writing: Have students use sensory words to describe rocks they've touched and observed. Create a word wall with adjectives like "bumpy," "smooth," "heavy," and "gray." Students can write or dictate simple sentences: "This rock is rough and brown."

3. Art - Rock Stacking and Sculpture: Students can stack and arrange rocks to create their own outdoor sculptures, just like in the photo. They can also paint rocks with designs and patterns, combining art with Earth science exploration.

4. Social Studies - How Humans Use Earth Materials: Discuss how people use rocks for building homes, making roads, and creating gardens. Take a neighborhood walk to find examples of rocks being used in the community (sidewalks, buildings, decorative landscaping).

STEM Career Connection

1. Geologist - A scientist who studies rocks, soil, and Earth. Geologists examine different types of rocks, understand how they form, and learn how Earth changes over time. They might work outside exploring mountains and riverbeds! Average Annual Salary: $93,000

2. Landscape Designer - A person who plans and creates beautiful outdoor spaces using rocks, plants, and other materials. They decide where to place rocks and plants to make yards and parks look nice and pretty. Average Annual Salary: $63,000

3. Construction Worker - A person who uses rocks, stones, and other materials to build houses, walls, and pathways. They might stack stones or lay foundations, similar to the rock pile in the photo. Average Annual Salary: $48,000

NGSS Connections

- Performance Expectation: 2-ESS1-1 - Use information from several sources to provide evidence that Earth events can occur quickly or slowly

- Disciplinary Core Idea: 2-ESS1.C - Some events happen very quickly; others occur very slowly, over a time period much longer than one can observe
- Crosscutting Concept: Patterns - Patterns in the natural world can be observed

Science Vocabulary

* Weathering: When rocks break apart into smaller pieces over time
* Erosion: When wind or water moves broken rock pieces to new places
* Minerals: The tiny pieces that rocks are made of
* Properties: How something looks, feels, or acts that makes it special

External Resources

Children's Books:
- Rocks Hard, Soft, Smooth, and Rough by Natalie Rosinsky
- Let's Go Rock Collecting by Roma Gans