Rocks Rock!

Overview

This week you get to be a geologist: a scientist who studies rocks and minerals. From a can of soda, to the fortified cereal that we ate for breakfast, to gas in our cars, to the money we use at the store: we use rocks & minerals every day. This week, you are about to find out just how much planet Earth rocks!

Background Information

If you go outside and look around, you will see rocks everywhere. Some are smooth. Some are rough. Some are light. Some are heavy. They come in different colors and shapes. Rocks appear and feel the way they do because they are made up of different minerals. Some rocks are made up of a single mineral and others are made up of many different kinds of minerals. Geologists, scientists who study rocks, have found over 4,000 different types of minerals on our planet. The outside shell of the Earth, the crust, is made up of rock and soil.

Geologists place rocks in three different groups: igneous, sedimentary, or metamorphic. Igneous rocks are formed when lava cools down. Most rocks are igneous. Sediment is small pieces of rock that crumble away because of rain or wind. Sediment collects and sometimes sticks together and forms sedimentary rock. Sedimentary rock is made up of lots of little pieces of rock stuck together. Metamorphic rock is rock that has changed because it was heated up or squeezed.

The Earth is a huge rock factory. Old rocks are disintegrating and new rocks are being formed all the time. We call this process the rock cycle. Fossils can often be found in sedimentary rock. A fossil is a piece of plant or animal that died, was buried in the sediment, and hardened into a rock over time.

We use minerals in many different ways. Some minerals (like iron and calcium) we eat and they help us stay healthy. Gemstones are rare, beautiful minerals that are often used in jewelry.

Main Ideas

- Rocks are made up of different minerals.
- Geologists study rocks and minerals.
- Rocks are categorized as igneous, sedimentary, or metamorphic.
- The rock cycle describes the constant process of old rocks turning into new rocks.
- A fossil is a piece of plant or animal that died, was buried in the sediment, and hardened into a rock over time.
- Humans use rocks and minerals in many different ways.

Materials Needed

- *If You Find A Rock?* by Peggy Christian
- Paper Plates with Labels
- Blanket – to spread over a carpet if you do the rock sorting exercise inside
- *A Rock is Lively* by Diane Hutts Aston & Sylvia Long
- Paper Bag Activity – Contains Different Uses of Rocks & Minerals
- Lots of Rocks – Have students collect them on their rock scavenger hunt.
- Optional: Art Supplies (Please use your own classroom supplies.)

Preparation

1. Read “Background Information” to become more familiar with the properties of rocks and minerals.
2. Read through *If You Find A Rock?* by Peggy Christian. Prepare questions that you can ask along the way.
3. Read *A Rock is Lively* by Diane Hutts Aston & Sylvia Long.
4. Make sure that you have all the supplies that you will need for decorating/painting the rocks.

Opening

This week you get to be a geologist: a scientist who studies rocks and minerals. From a can of soda, to the fortified cereal that we ate for breakfast, to gas in our cars, to the money we use at the store: we use rocks & minerals every day. This week, you are about to find out just how much planet Earth rocks!

Rock Scavenger Hunt

Weather permitting; begin this unit by explaining to students that they are going to be geologists this week: searching for rocks and studying them. Take students on a rock scavenger hunt. You can be holding a container. Have students bring the rocks they find to you to store in the container. Tell students of all the rocks they find, to hold on to their favorite rock.

End the scavenger hunt by calling the students back together. Sitting in a circle, have students go one by one, showing the group their rock and explaining why it is their favorite. After everybody has had a chance to share, explain to students that in some ways rocks are like people. Every single one is different and unique. We are going to be talking about some of these differences this week.

Further Exploration

Read through *If You Find A Rock?* by Peggy Christian. Today we are going to put rocks into group based on their different characteristics.

Sorting Rocks by their Properties

Place out the different labeled paper plates. Working in groups, have some students sort a pile of rocks by their color: light, medium, and dark. Have another group sort a pile of rocks by their weight: light, medium, and heavy. Have another group sort a pile of rocks by their size: small, medium, and large. (You could also have students sort rocks by their texture, particle size and/or layering).

Explain to students that geologists, scientists who study rocks and minerals, also categorize rocks. They look at their color and weight. They look at the color streak the rock makes when it is rubbed against paper. They perform all these tests and then group rocks into three basic types: igneous, sedimentary and metamorphic rocks.

Rock Formation Game

Have students sit in a circle for a rock game. Tell them that you are looking for someone sitting up straight and being a good listener to be "it" first. The three basic types of rocks (igneous, sedimentary and metamorphic) are placed into groups based on how those rocks were formed. This game is going to help us remember the three ways rocks can be formed.

- Igneous rocks are formed when lava cools down. What is lava? (Students will probably remember that lava comes out of volcanoes) That is correct. The earth is the shape of a ball. The outside crust is made out of rock, but the inside of the Earth contains lots of hot lava. When that lava comes into contact with cool air, it hardens into rock. Most rocks are igneous. In our game, the sign for igneous rock is this (Make a mountain with your hands and then have it “explode” like a volcano. Let students practice doing this hand gesture over and over.)

- Sediment is small pieces of rock that crumble away because of rain or wind. Sediment collects and sometimes sticks together and forms sedimentary rock. Sedimentary rock is made up of lots of little pieces of rock stuck together. In our game, the symbol for sedimentary rock is this. (Rub the fingers of one hand together like sand is pouring through it.)

- Metamorphic rock is rock that has changed because it was heated up or squeezed. (Squeeze your two hands together over and over.)

Review the 3 gestures. Now, it is time to play our rock formation game. Send one person out of the circle, to close their eyes. Then, pick one student in the circle to be the leader. The leader does one of the 3 signs and everybody else follows. The leader can change to different signs whenever they want. The person who was outside the circle comes and stands in the middle of the circle. They get 3 guesses to try and pick out which student is the leader. Whether they correctly guess the leader or not, they sit down and the leader then becomes the person outside the circle. You point to a new student to be the leader. As the game goes on, every time the leader change signs, I remind students what the sign represents. “Now we are back on igneous rock: rock that is formed when lave cools down.”

Read *A Rock is Lively* by Diane Hutts Aston & Sylvia Long.
Have students review the 3 ways that rocks are formed, how geologists group rocks.

Wrap Up

How We Use Rocks & Minerals Every Day

Discuss with students some common uses of rocks and minerals. Pull different uses of rocks and minerals out of the paper bag. Discuss them with students.

Rock Art

Have students select one rock each. Have them paint/decorate the rock and allow them to take it home. This week, we have studied all about rocks and minerals. If you take the time to look carefully, rocks can be pretty amazing! Be on the lookout as you are outside this spring and summer for cool and unique rocks. Take this rock home and hopefully it will be the start of your very own rock collection.

Signs of Success

The student will…

- Demonstrate engagement and curiosity while discovering different properties of rocks.
- Describe what they have seen or done, explain what they still want to try, and make predictions for outcomes for new ideas.
- Be able to explain to a friend the difference between: igneous, sedimentary and metamorphic rocks.
- Students will be able to point to at least 5 uses of rocks and minerals in their own school building.

Other Books to Explore

Everybody Needs a Rock. **Byrd Baylor. 1985. Picture book.**

Let's Go Rock Collecting **(Let's Read and Find Out About Science series). Roma Gans. 1997.**

Let's Look at Rocks. **Jeri Cipriano. 2004.**

Rocks **(Early Bird Earth Science series). Sally M. Walker. 2007.**

Rock Basics. **Carol K. Lindeen. 2008. Nonfiction easy reader.**

The Magic School Bus: Inside the Earth. **Cole, Joanna.**

Pennsylvania Educational Standards

Reading 1.2.3 A, D, E
1.6.3 A, B
1.8.3 A, B

NRC National Science Educational Standards
Content Standard A: Science as Inquiry
Content Standard B: Physical Science

AAAS Benchmarks for Science Literacy
12A Values and Attitudes
12D Communication Skills

Sample Schedule For Making It A Week Long Unit

Day 1:

Introduce the idea of rocks and geologists, scientists who study rocks.
Go for a rock scavenger hunt with your students, collecting rocks to use over the course of the week.

Day 2:

Read through *If You Find A Rock?* by Peggy Christian.
Sort rocks by their different properties.

Day 3:

Have students review the concepts of geologists and different ways that you can sort rocks.
Play the Rock Formation Game.

Day 4:

Have students review the 3 ways that rocks are formed, how geologists group rocks.
Discuss with students every day uses of rocks and minerals.
Read *A Rock is Lively* by Diane Hutts Aston & Sylvia Long.

Day 5:

Have students review what we have learned this week about rocks and minerals.

Rock Art – Have students decorate a rock to take home, as the start of their own rock collection.