

ROCKS AND MINERALS Unit



BY: GINGER WATKINS

Pacing: 14 days

Unit essential question: How do you classify rocks, minerals, and fossils?

Unit Standard 3-3: Identify Earth's composition and the changes that occur to the features of Earth's surface.

Indicators

3-3.1 Classify rocks (including sedimentary, igneous, and metamorphic) and soils (including humus, clay, sand, and silt) on the basis of their properties.

3-3.2 Identify common minerals on the basis of their properties by using a minerals identification key.

3-3.3 Recognize types of fossils (including molds, casts, and preserved parts of plants and animals).

3-3.4 Infer ideas about Earth's early environments from fossils of plants and animals that lived long ago.

3-3.7 Exemplify Earth materials that are used as fuel, as a resource for building materials, and as a medium for growing plants.

Literature

Everybody Needs a Rock by Byrd Baylor

Let's Go Rock Collecting by Roma Gans

The Magic School Bus Inside the Earth by Joanna Cole

Dave's Down to Earth Rock Shop by Stuart Murphy

Rocks by Natalie Rosinsky

The Missing Fossil Mystery by Emily Herman

Prehistoric Life by William Lindsay

Curious George and the Dinosaur by Margaret Rey and Allen J.

Internet Sites

<http://www.yourgemologist.com/Kids/Making%20Salt/makingsalt.html> (Growing salt crystals)

<http://www.kidsgeo.com/geology-games/rocks-game.php> (Identify the rock game)

<http://www.chariho.k12.ri.us/curriculum/MISmart/rocks/edible.html> (Edible rocks recipes)

<http://geologyonline.museum.state.il.us/tools/lessons/4.1/webquest/> (Museum Adventure WebQuest)

<http://geologyonline.museum.state.il.us/tools/lessons/> (Lessons)

<http://www.yourgemologist.com/teacherspage.html> (classroom demonstrations)

Vocabulary

Mineral	Rock	Fossil
Property	Hardness	Luster
Streak	Texture	Cleavage
Igneous	Sedimentary	Metamorphic
Rock cycle	Geology	Geologist
Mineral identification key	Mining	Imprint
Preserved Part	Mold	Cast

Unit Essential Questions

How can you classify rocks?

What are the three types of rocks?

How are rocks formed?

What are minerals?

What are the properties of minerals?

How do you identify minerals?

What is a fossil and what can we learn from them?

What are the three types of fossils?

What are the different types of soils?

How can you classify soils?

What are some examples of Earth's natural materials?

How do we use Earth's materials?

Unit activating strategy: What are rocks and their properties?

To introduce the unit, show the class a T-chart labeled with "What do you know about rocks," "Where do you find rocks," and "How are rocks used?" SW discuss and record answers in notebooks. Record responses on class chart. Pass out a pink granite and basalt rock to each student to observe with a magnifying glass. SW sketch their rocks and then write down their observable properties in their science notebooks. The class will then discuss observations about the rocks. Guide students to see that the rocks were made of smaller particles called minerals.

Abbreviations:

SW – Students will	AS: Activating Strategy
CW – Class will	TS: Teaching Strategy
TW – Teacher will	SS: Summarizing Strategy

***Before completing lesson 1, have students bring in 2-3 rocks from home. Ask students to try to find ones that look different.**

EQ: How can you classify rocks?

Standard: 3-3.1, 3-1.1

Interactive Read Aloud: "Let's Go Rock Collecting," or "Everybody Needs a Rock." (I have one of each.)

*Before you begin the lesson, have students set up their science notebooks for the lesson.

Title: Classifying Rocks

AS: To help students understand what it means to classify, have students sort themselves based on their clothing, hair, eye color, etc. Explain that these are all called properties.

Each person has different properties of qualities that make them unique. This is just like rocks. Rocks can be classified by their properties, just like people.

TS: SW get out the rocks they brought from home. SW observe the rocks with a magnifying glass and describe each in their science notebook charts. SW then write down how they feel and how they smell and record those observations in their journals. CW share some of the descriptions of their rocks and add to class chart. Discuss the different ways we can describe the rocks (color, smell, texture, luster, size, hardness.) Explain that these are all ways we classify rocks.

SS: CW work with their tables now to sort the rocks into groups at their tables according to the properties we discussed as a class. Students tell a partner two ways we can classify rocks.

EQ: What are the three types of rocks?

Standard: 3-3.1

*Before the lesson, have students tape in the graphic organizer for the note-taking.

AS: Introduce the lesson with the "Rock Cycle" song ppt.

TS: View the Three Types of Rocks flipchart and have students take notes on each kind on the graphic in their science notebooks. Give students a candy bar that demonstrates each type of rock. (Kit Kat-sedimentary, Musketeers-Igneous, Snickers-Metamorphic.)

SS: Answer the Activ questions in the flipchart as a closing.

EQ: How are rocks formed?

Standard: 3-1.1

* Before lesson begins, students tape in the note sheet into their science notebooks.

AS: Review the "Rock Cycle" song.

TS: TW guide students in using play doh to model the formation of the different types of rocks. Sedimentary rock: SW make three layers of play doh and then press together.

Igneous rock: Discuss what happens to play-doh if left out of container over night.

Metamorphic rock: SW make two rocks with play doh and then press them together. SW sketch their play doh creations in their science notebooks. SW make a tableau illustrating the three types of rocks. One student narrates. (A Tableau is a frozen picture with your body. SW get two minutes to plan their tableau. Then they make their pictures.

SS: Rock Quiz

EQ: What are minerals?

Standard: 3-3.2

* Before lesson begins, students tape in the note sheet into their science notebooks.

AS: Tell students that you have something special for them to see today. Give each student a small amount of salt in their hands. Allow them to observe the substance for one minute (Remind them they can smell, touch, and look at the substance). Ask if they know what it is?

TS: Guide students through mineral flipchart to discuss what we already know and want to know about minerals, learn what a mineral is (discuss non examples of minerals – living things), introduce properties for identifying minerals, uses for minerals, and watch the embedded video.

SS: Students complete the magnet word activity for mineral with their table. (1. On an index card, write the magnet word – mineral. 2. Think about what we have learned about minerals and write key words or phrases around the magnet word. 3. Write a definition of the magnet word with the key words and phrases.)

EQ: What are the properties of minerals?

Standard: 3-3.2, 3-1.1

* Before lesson begins, students tape in the note sheet into their science notebooks.

AS: Guess the Covered Word about the properties of minerals. Remind students about the lesson on rocks and how they can be classified by their properties. Explain that minerals can be classified in special ways as well.

TS: Teach the properties of minerals song to the tune of Row, Row, Row Your Boat. View the flipchart about the properties of minerals. Students list properties of identifying minerals in their science notebooks. Have students observe three minerals and list their properties.

SS: Properties of Minerals Hollywood Squares.

EQ: How can you identify minerals?

Standard: 3-3.2, 3-1.1

* Before lesson begins, students tape in the note sheet into their science notebooks.

AS: Tell students that they use minerals every day and they might not even realize it. Ask them to guess some things they use every morning that are full of minerals. (toothpaste, cereal, soap, vitamins) Review song.

TS: Review what minerals are and how we can classify them. Introduce mineral key and how we use it to identify minerals. Pass out a set of minerals and hand lens to each group. Model how to use the key and then guide students in using the mineral key to identify the type of mineral. Play, “Identify That Mineral!” Call out a property and groups must decide what the secret mineral is.

SS: Minerals Quiz

EQ: What is a fossil?

Standard: 3-3.3

AS: View “What are Fossils,” united streaming segment.

TS: Guide students in completing the [Fossil Scavenger Hunt](#).

SS: In the science journal, have students answer the essential question.

EQ: What are the three types of fossils?

Standard: 3-3.3

* Before the lesson, have a picture of each type of fossil on chart paper around the room. (Don't have the name of the fossil type on each chart paper) Also, have students set up their science notebooks before the lesson.

AS: SW carousel around the room to each picture writing down their thoughts or wonderings about each type of fossil. Give students 2-3 minutes responding to each fossil type.

TS: Discuss what students wrote down about each type of fossil. Use what students wrote to guide your discussion about each type of fossil. Use flipchart to give information about each and students take notes in their science notebook. View examples in the flipchart. Have them use the play doh to form the types of fossils (cast, mold, preserved part).

Answer questions in flipchart.

SS: SW come up with a hand motion for each fossil type. Using the hand motions students created, play Fossil Simon Says. Call out a type of fossil. "Simon Says cast fossil." Students must perform the correct hand motion and perform on Simon Says or they must sit down.

EQ: What can you learn from studying fossils?

Standard: 3-3.4

* Have students set up their science notebooks before the lesson.

AS: View Bill Nye the Science Guy video on fossils.

TS: View flipchart about how you can learn about Earth from studying fossils. Visit http://www.e-learningforkids.org/Courses/EN/S0701/_Shell/index.html to discover more about where fossils are found and what they can tell us about Earth's past.

SS: Fossil Quiz in flipchart.

EQ: What are the different types of soils?

Standard: 3-3.1

AS: View "Getting to Know Soil," United Streaming Segment. SW write down three facts about soil from the video.

TS: SW take notes on the four types of soils.

SS: SW do a matching activity sheet as a minor grade.

EQ: How can you classify soils?

Standard: 3-3.1, 3-1.1

AS: Guide class in making a **can, is, needs** tree map with the information. (Without soil, plants couldn't grow and we wouldn't have food to eat, houses to live in, cotton for clothing, or many medicines we use today.)

TS: Give students samples of each type of soil to observe. (Humus, clay, sand, and silt) Students fill out the graphic organizer in their Science Notebooks describing and comparing each type of soil.

SS: Add to tree map. Show students picture of different soils. SW identify and classify the soil based on its properties.

Unit Culminating Activity

Give each student a term or vocabulary word from the unit. Have the student write a few sentences about their term on an index card using their textbooks. Have the students practice reading their lines. Discuss reading with expression and using punctuation to help with fluency. Record each student reading their lines and make a movie!