

Gr. 4 – Understanding Earth & Space Systems

Rocks and Minerals

Making Fossils/Lasting Records

Specific Expectations:

2.1 Follow established safety procedures for outdoor activities and for working with tools, materials, and equipment.

2.2 Use a variety of tests to identify the physical properties of minerals.

2.4 Use scientific inquiry/research skills to investigate how rocks and minerals are used, recycled, and disposed of in everyday life.

3.1 Describe the difference between rocks and minerals and explain how these differences determine how they are used.

3.2 Describe the properties that are used to identify minerals.

3.3 Describe how igneous, sedimentary, and metamorphic rocks are formed.

3.4 Describe the characteristics of the three classes of rocks and explain how their characteristics are related to their origin.

Big Idea (for lesson):

Students will explore the properties of rocks and minerals, and investigate how fossils can give us clues about age, properties, and origin of a rock.

Accommodations:

- Increase time
- Visual Aids
- Manipulatives
- Chunking
- Step-by-Step
- Scaffolding
- Copy of Notes
- Student Grouping

Differentiated Instruction:

- Content: Use demo to show the content as you offer verbal descriptions.
- Process: Have students work in pairs and support each other if physical impediments exist.
- Product: Students may show their final product in pairs, and communicate their findings either verbally, visually, or through written means.
- Other: _____

Bloom's Taxonomy:

- Knowledge
- Comprehension
- Application
- Analysis
- Synthesis
- Evaluation

Multiple Intelligence:

- Verbal/Linguistic
- Logical/Mathematical
- Visual/Spatial
- Bodily/Kinesthetic
- Naturalist
- Musical/Rhythmic
- Interpersonal
- Intrapersonal

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Delivering The Lesson:

Portion & Timing	Grouping:			Introduction:	Materials
Minds On: 10 mins	W <input checked="" type="checkbox"/>	S <input type="checkbox"/>	I <input type="checkbox"/>	Teacher can do a demonstration to introduce the topic of soils and minerals for the lesson. As an alternative, they could also show the video. Show them the similar procedure of getting sand wet. Tell students that substances tend to be either hydrophobic (water-fearing) or hydrophilic. Ask the students some questions about the demo: -What is the “magic sand”? (<i>Answer: Hydrophobic, since it will not mix with the water.</i>) -What is the real sand? (<i>Answer: Hydrophilic, since the sand particles mix in with the water molecules.</i>) -Why do you think it’s important for soils to be hydrophilic in real life? (<i>Answer: So that soils can contain water for plants and as a means for them to get their nutrients.</i>)	Making Fossils & Lasting Records – Magic Sand – Sand That Is Always Dry!.mp4 Steve Spangler Magic Sand Sand Bowl of Water
Action: 15 mins	W <input checked="" type="checkbox"/>	S <input checked="" type="checkbox"/>	I <input checked="" type="checkbox"/>	Have students make their own lasting records according to the instructions on the handout. Teacher can circulate and ask questions of the different groups: -Why do we use plaster to make casts for fossils? (<i>Answer: It’s relatively quick-drying and a very solid rock.</i>) -Why do you think it’s important that fossils become rock-like as they form? (<i>Answer: a lot of the “softer” parts of organisms will decompose, but the “harder” parts become rock-like through different transformations, allowing them to last long into history and for scientists to locate them!</i>) -What type of rock do you think that fossils are usually found in? (<i>Answer:</i>	Making Fossils & Lasting Records Handout (Materials listed)

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				<i>Sedimentary, since organisms are usually buried by winds and leaves when they die, they become a part of the sediment layer.)</i>	
Consolidate: 10 mins – Next Day's Topic	W <input checked="" type="checkbox"/>	S <input checked="" type="checkbox"/>	I <input type="checkbox"/>	<p>This lesson serves as a good introduction to the different rock types, with the interesting twist of investigating fossils.</p> <p>If available, obtain a set of different types of rocks from your science office. You can introduce the idea of having to do different tests on rocks and minerals to tell what they are, and what properties they have. Show the rocks to the students and give them a list of names, asking them to sort them without any background knowledge. Then during the next period, introduce the different rock/mineral tests (hardness, streak, magnetism, acid, weight) and have students see if they guessed right!</p>	<p>-Rock sets: "Amazing Rock Set", "Crack Open Geodes and Bag", and "Everyday Rock & Mineral Set" by Steve Spangler Science™</p> <p>-Tests: "Mineral Test Kit" http://www.hometrainingtools.com/mineral-test-kit/p/RM-TESTKIT/</p>