



Marietta City Schools

District Unit Planner

Grade 3 Science

Theme	Unit 1 Rocks, Soils, and Fossils	Unit duration	14 weeks
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Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GaDoE Standards/3D Science Elements

Georgia Standards:

S3E1. Obtain, evaluate, and communicate information about the physical attributes of rocks and soils.

a. Ask questions and analyze data to classify rocks by their physical attributes (color, texture, luster, and hardness) using simple tests.

(Clarification statement: [Mohs Scale](#) should be studied at this level. Cleavage, streak and the classification of rocks as sedimentary, igneous, and metamorphic are studied in sixth grade.)

b. Plan and carry out investigations to describe properties (color, texture, capacity to retain water, and ability to support growth of plants) of soils and soil types (sand, clay, loam).

c. Make observations of the local environment to construct an explanation of how water and/or wind have made changes to soil and/or rocks over time.

(Clarification statement: Examples could include ripples in dirt on a playground and a hole formed under gutters.)

S3E2. Obtain, evaluate, and communicate information on how fossils provide evidence of past organisms.

a. Construct an argument from observations of fossils (authentic or reproductions) to communicate how they serve as evidence of past organisms and the environments in which they lived.

b. Develop a model to describe the sequence and conditions required for an organism to become fossilized.

(Clarification statement: Types of fossils (cast, mold, trace, and true) are not addressed in this standard.)

S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.

a. Ask questions to differentiate between plants, animals, and habitats found within Georgia's geographic regions.

c. Use evidence to construct an explanation of why some organisms can thrive in one habitat and not in another.

Unit Objectives:

After a study of rock and soil types and their characteristics, students will

Grow various plants in different soils to see the differences soil type makes in plant growth.

Perform experiments to explain how wind and water shape the land by breaking rocks, soils, and sediments into smaller particles and moving them around.

Use questions to design tests on rocks and soils and describe the different physical properties of rocks and soils.

Observe rocks and conclude that rocks found in different settings have different physical attributes (color, texture, luster and hardness).

Observe soil and conclude that soils found in different settings have different compositions (sand, clay, loam) and physical properties (color, texture, capacity to retain water, and ability to support growth of plants).

Grow plants in sand, clay and loam, record the results, and come to a conclusion about which type of soil is

Best for plant growth and why.

Explain how fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments.

Examine fossils and compare them to living organisms according to their similarities and differences.

Recognize that some organisms that lived long ago are similar to organisms living today, but some are quite different.

Explain that fossils can form when an organism is preserved in some form, usually as sediments are deposited over the body parts or other evidence of the organism.

Explain how the characteristics of each geographic region of Georgia are different due to their geologic history and climate.

Explain how the rocks, soils, landforms, and climate of each region influence the types of plants and animals that can live there.

Understand that in any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.

Understand that organisms that survive well in a particular environment have external features

(camouflage, mimicry) and/or behaviors (hibernation, migration) that have allowed them to adapt to the conditions in that environment.

Unit Phenomena: [Providence Canyon](#) photo – show this picture to the class. Ask them what they notice and what they are wondering. Record their thinking on a chart.

Page Keeley Probes:

These probes can be used as phenomena. They are intended to elicit student understanding about science concepts. Starting a unit or lesson with a probe will help you uncover misconceptions and see what students already know about a topic. Using a probe at the beginning of a lesson and then at the end of the lesson serve the purposes of pretesting and then formatively evaluating student thinking. Below is a list of probes from Page Keeley's book *Uncovering Student Ideas in Science*, that are appropriate for this unit. This book has been purchased for your grade level by the Office of Academic Achievement and can be found in your media center.

Doing Science (Volume 3)

Is It a Model? (Volume 4)

Is It a System? (Volume 4)

Beach Sand (Volume 1)

Habitat Change (Volume 2)

Is it a Rock (Version 1) (Volume 2)

Mountaintop Fossil (Volume 2)

Adaptation (Volume 4)

Science & Engineering Practices:

- Asking questions and defining problems
- Planning and carrying out investigations
- Developing and using models
- Analyzing and interpreting data
- Constructing explanations and designing solutions
- Engaging in argument from evidence

Disciplinary Core Ideas:

- History of Planet Earth
- Earth and Earth's Materials
- Roles of Water in Earth's Surface Processes
- Evidence of Common Ancestry
- Adaptation

Crosscutting Concepts:

- Patterns
- Cause and Effect
- Structure and Function
- Stability and Change

Misconceptions:

Rocks are classified based on composition and not size. Students often believe that larger samples have greater significance compared to smaller samples.

The attractiveness of the sample does not signify importance. Students often believe shiny samples are crystals and dull samples are rocks. Students must learn to classify rocks based on composition.

Fossils are always dead things. Actually, fossils can be imprints or any other evidence of living organisms.

All rocks are the same, and it's hard to tell how they originated.

Rocks and minerals are the same thing; distinguishing them is not important.

Humans can fabricate rocks and minerals; artifacts are the same as rocks and minerals.

Minerals are not important to my life.

Math/ELA Connections/STEM Connections

ELAGSE3RI7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur)³. Construct viable arguments and critique the reasoning of others.

ELAGSE3W2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

- Introduce a topic and group related information together; include illustrations when useful to aid comprehension.
- Develop the topic with facts, definitions, and details.
- Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.
- Provide a concluding statement or section.

MGSE3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units – whole numbers, halves, or quarters.

MGSE3.G.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

STEM:

[Biodomes Engineering Design Project](#)

Discovery Education Science Techbook Resources: *(You will need to be logged into Discovery Education using your Google credentials to access these resources)* You will find center activities on the **Engage** page of each Techbook unit.

[Fossils](#)
[Erosion](#)
[Rocks](#)
[Soil](#)
[Landforms](#)

Hands-on Activities

[Make a Model Fossil](#)
[Molds vs. Casts](#)
[No bones about it Lab](#)
[Rock Cycle Lab](#)
[Make a Fossil](#)
[Written in Stone](#)
[Making a Mountain](#)
[The Case of the Disappearing Soccer Field](#)
[Erosion – Here Today, Gone Tomorrow](#)

Essential Questions

Factual—

Are rocks the same in all parts of Georgia?

How are rocks the same? How are they different?

How do minerals form?

Inferential—

Does the type of rocks found in a Georgia region help you figure out what type of soil is there?

<p>Explain how rocks are made.</p> <p>Critical Thinking-</p> <p>Can you predict the types of plants in a region if you know the types of rocks found there? How?</p> <p>Which type of rocks are the most important for the sustainability of Georgia’s coast?</p>	
Tier II Words- High Frequency Multiple Meaning	Tier III Words- Subject/ Content Related Words
sand, hardness, rock	luster, texture, Mohs scale, clay, loam, fossil, authentic, adaptation, mineral, obsidian, pumice, sandstone, marble, mica, sedimentary, metamorphic, igneous, rock cycle

Teacher Resources These resources are intended to support teachers with background information and planning for instruction		
<p><i>The following Knowledge-Based Unit contains instructional read alouds designed to build knowledge around concepts associated with this planner. Highlighted lessons provide direct text-based support for the expectations of the associated SS or Sci standards and could be used to deepen student understanding/application of those standards. The remaining lessons build similar knowledge but do not directly relate to the content standards.</i></p> <p>15-Day Plan: Rocks, Soil, & Fossils</p> <p>20-Day Plan: Plant and Animal Survival in Georgia’s Natural Habitats</p> <p>GaDOE Inspire Science 3rd Grade: Unit 1: Rocks, Soils, & Fossils</p>		
Objective or Content	Learning Experiences	Differentiation Considerations

S3L1. Obtain, evaluate, and communicate information about the similarities and differences between plants, animals, and habitats found within geographic regions (Blue Ridge Mountains, Piedmont, Coastal Plains, Valley and Ridge, and Appalachian Plateau) of Georgia.	History of Earth Students will investigate rocks, soils, and fossils from various regions of Georgia. (Printable recording sheets below)	Student Choice Performance Tasks Reflection and Goal Setting Learning Stations Choice Boards Formative Probes Science Journaling Multi-sensory activities Assistive Technology Flexible Grouping Multiple Means of Representation
S3E1. Obtain, evaluate, and communicate information about the physical attributes of rocks and soils. S3E2. Obtain, evaluate, and communicate information on how fossils provide evidence of past organisms.	Rocks and Soils Students will plan and carry out investigations to describe properties of soils and soil types.	
Recommended High Quality Complex Text		
<i>If You Find a Rock</i> by Peggy Christian <i>Rocks: Hard, Soft, Smooth, and Rough</i> by Natalie M. Rosinky <i>Dirt: The Scoop on Soil</i> by Natalie Rosinsky <i>The Amazing Dirt Book</i> by Paulette Bourgeois <i>A Handful of Dirt</i> by Raymond Bial <i>A Handful of Soil</i> by Seymour Simon <i>Rocks and Minerals</i> by Steve Parker <i>Rocks and Fossils</i> by Ray Oliver <i>The Big Rock</i> by Bruce Hiscock <i>Rocks and Soil: Real Size Science</i> by Rebecca Rissman <i>Soil</i> by Christin Ditchfield <i>Soil Geology Rocks!</i> by Rebecca Faulkner <i>The Magic School Bus: Inside the Earth</i> by Joanna Cole		

