



Marietta City Schools

District Unit Planner

Science Grade 6

Unit title	<i>Earth's Changing Landscapes - Part II Rocks and Minerals & Human Energy Needs</i>	MYP year	1	Unit duration (hrs)	22.5 Hours
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GSE Standards

Standard

S6E5. Obtain, evaluate, and communicate information to show how Earth's surface is formed.

- b. Plan and investigate the characteristics of minerals and how minerals contribute to rock composition.
- c. Construct an explanation of how to classify rocks by their formation and how rocks change through geologic processes in the rock cycle.
- d. Ask questions to identify types of weathering, agents of erosion and transportation, and environments of deposition. (Clarification statement: Environments of deposition include deltas, barrier islands, beaches, marshes, and rivers.)
- e. Develop a model to demonstrate how natural processes (weathering, erosion, and deposition) and human activity change rocks and the surface of the Earth.
- g. Construct an argument using maps and data collected to support a claim of how fossils show evidence of the changing surface and climate of the Earth
- h. Plan and carry out an investigation to provide evidence that soil is composed of layers of weathered rocks and decomposed organic material

S6E6. Obtain, evaluate, and communicate information about the uses and conservation of various natural resources and how they impact the Earth.

- a. Ask questions to determine the differences between renewable/sustainable energy resources (examples: hydro, solar, wind, geothermal, tidal, biomass) and nonrenewable energy resources (examples: nuclear: uranium, fossil fuels: oil, coal, and natural gas), and how they are used in our everyday lives.

GSE Sixth grade clarifications

Prior Student Knowledge: (REFLECTION – PRIOR TO TEACHING THE UNIT)

- 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.)
- S6E5.** Obtain, evaluate, and communicate information to show how Earth's surface is formed.
a. Ask questions to compare and contrast the Earth's crust, mantle, and inner and outer core, including temperature, density, thickness, and composition.

Concepts/Skills to be Mastered by Students

- Mineral Formation
- Rock Cycle
- Weathering
- Erosion
- Land Features
- Soil Conservation
- Soil
- Deposition

Key Vocabulary: (KNOWLEDGE & SKILLS)

Minerals, Rocks, Igneous (Intrusive, Extrusive), Magma, Lava, Sedimentary, Compaction, Cementation, Metamorphic, Pressure, Heat, Rock Cycle, Weathering, Physical/Mechanical (Ice wedging, Abrasion, Pressure release (exfoliation), Plant root growth, Animal burrowing), Chemical (Oxidation (rust), acid rain, Lichen), Erosion (Mass wasting, V and U valley), Deposition (deltas, barrier islands, beaches, rivers, marshes), Formation, Sediment, Humus, Soil Horizon, Soil Profile, Topsoil, Chemical pollutants, Conservation (Terracing, Windbreaks, Contour plowing, Crop rotation, Conservation tillage)

Year-Long Anchoring Phenomena: (LEARNING PROCESS)

Earth is the only planet in our solar system that can support life.

Unit Phenomena (LEARNING PROCESS)

What drives weathering, erosion, and deposition, and how do these processes impact Earth's surface?

Possible Preconceptions/Misconceptions: (REFLECTION – PRIOR TO TEACHING THE UNIT)

- Students may think that shiny objects are all minerals and dull ones are rocks.
- Students may classify all rocks or minerals using only physical characteristics (color, weight, shape)
- Students may believe that rocks and minerals are the same thing.
- Students may not realize how much they use and need minerals and rocks.
- Students may think that all rocks are the same and made by the same process.

Key concept	Related concept(s)	Global context
<p align="center">Change</p> <p>Change is a conversion, transformation, or movement from one form, state, or value to another. Inquiry into change involves understanding and evaluating causes, processes, and consequences.</p>	<p>Transformation (MYP) Energy (MYP/CCC)</p>	<p align="center">Scientific and Technical Innovation</p> <p>Students will explore the natural world and its laws, the interaction between people and the natural world, how humans use their understanding of scientific principles, the impact of scientific and technological advances on communities and environments, the impact of environments on human activity, how humans adapt environments to their needs.</p>
Statement of Inquiry		
<p align="center">Scientific and technical innovations allow us to visualize, model, and explain changes to the Earth’s surface.</p>		
Inquiry questions		
<p>Factual—</p> <p>What are the characteristics of rocks and minerals? What is soil made of?</p> <p>Conceptual—</p> <p>How do rocks change?</p> <p>Debatable-</p> <p>Should farmers be held responsible for damage related to soil erosion?</p>		
MYP Objectives	Assessment Tasks	
<p><i>What specific MYP objectives will be addressed during this unit?</i></p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p>	<p><i>List of common formative and summative assessments.</i></p>

Sciences	MYP B - Students will develop a model of weathering, erosion, and deposition using a stream table.	<p><u>Formative Assessment(s):</u></p> <p><u>Common Formative Assessment:</u> Rock Cycle, Weathering, Erosion, Deposition, and Soil</p> <p><u>Summative Assessment(s):</u> Unit 3 ECL Part II Assessment</p>
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Approaches to Learning (ATL)

Category: Communication
Skill Indicator: Make inferences and draw conclusions; exercise leadership and take on a variety of roles within groups

Learning Experiences

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
B. Plan and investigate the characteristics of minerals and how minerals contribute to rock composition.	Be a Geologist: Students will categorize rocks and mineral samples by their characteristics. (Some samples will be from 6th-grade SS countries (European countries and Australia)	Scaffold notes and peer support for special education and ESOL
C. Construct an explanation of how to classify rocks by their formation and how rocks change through geologic processes in the rock cycle.	Students will construct an explanation while experimenting, such as an edible rock cycle lab on classifying rocks by their formation and rock cycle.	Scaffold notes and peer support for special education and ESOL
e. Develop a model to demonstrate how natural processes (weathering, erosion, and deposition) and human activity change rocks and the surface of the Earth.	Observation and Inquiry Activity: Students will explore the school grounds to identify examples of weathering, erosion, deposition and ask questions about their observations. Students will also explain how to build a model to demonstrate the natural processes.	Scaffold notes and peer support for special education and ESOL

Content Resources

Discovery Education Science Techbook - Unit 3 Rock Cycle, Unit 4 Weathering and Erosion, Unit 5 Natural Resources, Unit 1 Earth's History, Edpuzzle