



Marietta City Schools

District Unit Planner

Everything on the unit planner must be included on the unit curriculum approval statement.

Science Grade 6 Advanced Studies

Unit title	<i>Earth's Changing Landscapes Part 1 Plate Tectonics</i>	MYP year	1	Unit duration (hrs)	20 Hours
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Mastering Content and Skills through INQUIRY (Establishing the purpose of the Unit): *What will students learn?*

GSE Standards

Standards

S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.

c. Ask questions to identify and communicate, using graphs and maps, the composition, location, and subsurface topography of the world's oceans.

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, inner and outer core, including temperature, density, thickness, and composition.

f. Construct an explanation of how the movement of lithospheric plates, called plate tectonics, can cause major geologic events such as earthquakes and volcanic eruptions. (Clarification statement: Include convergent, divergent, and transform boundaries.)

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.

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

S5E1. Obtain, evaluate, and communicate information to identify surface features on the Earth caused by constructive and/or destructive processes.

a. Construct an argument supported by scientific evidence to identify surface features (examples could include deltas, sand dunes, mountains, volcanoes) as being caused by constructive and/or destructive processes (examples could include deposition, weathering, erosion, and impact of organisms).

b. Develop simple interactive models to collect data that illustrate how changes in surface features are/were caused by constructive and/or destructive processes.

c. Ask questions to obtain information on how technology is used to limit and/or predict the impact of constructive and destructive processes.

Concepts/Skills to be Mastered by Students

- Plate Tectonics
- Land Features
- Catastrophic Events

- Geologic Time Scale

Key Vocabulary: (KNOWLEDGE & SKILLS)

Earth's Layers	Tectonic Plates	Ocean Floor Features	Volcanoes	Earthquakes
Geosphere Crust Mantle Convection Current Inner Core Outer Core Asthenosphere Lithosphere	Lithospheric Plates or Tectonic plates -Oceanic plates -Continental plates Divergent boundary -Seafloor spreading Convergent boundary -Subduction Transform boundary History of Tectonic Plates: Pangaea Continental Drift	Subsurface Topography Continental shelf Continental slope Trench Abyssal plain Guyot Seamount Mid-ocean Ridge Rift Valley Volcano	Magma Lava Ring of Fire Hot Spot Geothermal Energy Igneous Rock	Richter scale Seismic waves Focus Epicenter Frequency Landslide Mass wasting Gravity Tsunami

Year-Long Anchoring Phenomena: (LEARNING PROCESS)

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

Unit Phenomena (LEARNING PROCESS)

Impossible Trailer - <https://www.youtube.com/watch?v=Bgw394ZKsis>

Trailer about the 2004 Indian Ocean earthquake and tsunami and a family's struggle to survive. Follow up with I notice I wonder using flipgrid.

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

- You can travel to the center of earth.
- Mountains, valleys, and all landforms have always been there and don't change.
- Everywhere on earth experiences earthquakes.
- The continents were never joined together.
- The ocean floor is flat.
- The floor of the ocean is only cold.

Key concept	Related concept(s)	Global context
<p style="text-align: center;">Connections</p> <p>Connections are links, bonds and relationships among people, objects, organisms or ideas.</p>	<p style="text-align: center;">Transformation (MYP) Energy (MYP/CCC)</p>	<p style="text-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

Scientific and technical innovations allow us to visualize, model, and explain changes to the Earth's surface.
 What causes major geologic events, such as earthquakes and volcanoes, and how do they impact Earth's surface? Why do we see major geologic events in the Ring of Fire?

Inquiry questions

Factual—

- What do fossils show scientists?
- What landforms are on the ocean floor?
- Why does the Earth have layers?

Conceptual—

How do the layers of earth compare?
How do plate movements change the shape of earth's surface?

Debatable-

Would you prefer to live near a volcano or a fault line?

MYP Objectives	Assessment Tasks	
<i>What specific MYP objectives will be addressed during this unit?</i>	<i>Relationship between summative assessment task(s) and statement of inquiry:</i>	<i>List of common formative and summative assessments.</i>
<p>Criterion A: Knowing and Understanding</p> <p>ii. Apply scientific knowledge and understanding to solve problems set in familiar situations and suggest solutions to problems set in unfamiliar situations</p> <p>iii. Interpret information to make scientifically supported judgments</p> <p>Criterion C: Processing and Evaluating</p> <p>i. present collected and transformed data</p> <p>ii. interpret data and outline results using scientific reasoning</p> <p>iii. discuss the validity of a prediction based on the outcome of the scientific investigation</p> <p>iv. discuss the validity of the method</p> <p>v. describe improvements or extensions to the method</p> <p>Criterion D: Reflecting on the Impacts of Science</p>	<p>Students will have a choice in demonstrating and explaining the significant role water plays in Earth processes. Students will also obtain, evaluate, and communicate information to show how Earth's surface is formed.</p>	<p>Formative Assessment(s):</p> <p>Common Formative Assessment 1</p> <p>Summative Assessment(s):</p> <p>Paper 1 (Common Multiple Choice Assessment)</p> <p>Paper 2 (Student-Choice Short Answer Assessment)</p>

iii. apply scientific language effectively outcome of the scientific investigation iv. discuss the validity of the method v. describe improvements or extensions to the method Criterion D: Reflecting on the Impacts of Science iii. apply scientific language effectively		
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Approaches to learning (ATL)

Category: Thinking

Cluster: Critical-Thinking

Skill Indicator: Use models and simulations to explore complex systems and issues. Gather and organize relevant information to formulate an argument.

Learning Experiences

Add additional rows below as needed.

Objective or Content	Learning Experiences	Personalized Learning and Differentiation
Lab Aid Activity: Geological Processes	Students will collaborate with partners to carefully examine Earth materials: sandstone, shale, sand, and clay using the magnifying lens to describe properties, collect data and make predictions.	<ul style="list-style-type: none"> ● Lab-Aids Experiences ● Capstone Connections ● Discovery Education High School Environmental Science Techbook ● Extensions – Enrichment Tasks/Projects ● NGSS Case Study 7: Gifted and Talented Students
Lab Aid Activity: Modeling Rock Layers	Students will develop models to identify the strengths and weaknesses of geological processes. Students will also compare and contrast sediments, collect and analyze data to predict the age of rock layers.	
Lab Aid Activity: Fossils Through Time	Students will explore fossil evidence to predict dates when events in Earth's history occurred. Students will observe peer similarities and differences and discuss reasoning.	

- Next Generation Science Standards: “All Standards, All Students”

Content Resources

GaDOE Earth’s Changing Landscape Instructional Segment

Discovery Education Grade 6 Science Techbook

Discovery Education High School Environmental Science Techbook

Lab Aids: Solar Systems and Beyond Equipment Package

Capstone Connections

Media Center Visit - Exploring Effective Scientific Research

Mercedes Benz Stadium Field Trip - Pre-Visit Sustainability Exploration Activity

Discovery Education Science Techbook - Energy in Earth Surfaces Simulation

