



<i>Timeline -></i>	<u><i>Quarter Four</i></u>
<p><i>Guiding Questions</i></p>	<p><u><i>Science:</i></u> What are the steps of scientific inquiry and how can we use them to solve problems? What are the different spheres of the earth? Lithosphere? Hydrosphere? Atmosphere? Biosphere? How do 3-D images help us understand the various slow and fast processes that occur on the surface of the earth?</p> <p><u><i>Language Arts:</i></u> What can we learn about the Earth’s landforms and their creation and destruction by reading? How can we write to show the steps we have used in the scientific method? How can adjectives help our written science descriptions?</p> <p><u><i>Math:</i></u> How can we use charts and tables to develop an understanding about the similarities and differences of landforms created on the earth’s surface? How can we measure and translate geometric shapes from 2-D to 3-D structures? How are measurements used to gather and record data? How can we use addition, subtraction, multiplication, division and percentages to solve problems?</p> <p><u><i>Social Studies:</i></u> How can we use information geologic information to solve a societal problem?</p> <p><u><i>Art:</i></u> How can we draw/illustrate and label sketches for a science notebook? How can we create 3-D models to showcase our lithosphere?</p>
<p><i>General Learner Outcomes</i></p>	<p><u><i>GLO#1: Self-Directed Learner:</i></u> Students will utilize a variety of resources to develop an understanding of the various landforms formed on the lithosphere and how those structures are created and/or destroyed.</p> <p><u><i>GLO#2: Community Contributor:</i></u> Students will share the results of their charts, products and experiments with their peers.</p> <p><u><i>GLO#3: Complex Thinker:</i></u> Students will use their problem solving, math and writing skills to</p>



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	<p>investigate the lithosphere.</p> <p><u>GLO#4: Quality Producer:</u> Students will create a final product (poster/diorama/model) that illustrates the various earth landforms.</p> <p>Students will create math products (graphs, data tables, charts) that enhance science products.</p> <p><u>GLO#5: Effective Communicator:</u> Students will listen, discuss and record information from their different lessons through oral, written and math pieces that illustrate concepts they have learned about the lithosphere.</p> <p>Students will orally share with younger students their final products.</p>
<i>Assessments</i>	<p>Formative and summative textbook assessments.</p> <p>Constructed response (math, language arts, science) that is based on the unit ideas and concepts</p>



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Standards & Benchmarks

Strand	The Scientific Process		
Standard 1: The Scientific Process: SCIENTIFIC INVESTIGATION: Discover, invent, and investigate using the skills necessary to engage in the scientific process			
Topic	Scientific Inquiry		
Benchmark SC.5.1.1	Identify the variables in scientific investigations and recognize the importance of controlling variables in scientific experiments		
Sample Performance Assessment (SPA)	The student: Identifies variables in a scientific investigation and describes why the variables need to be controlled.		
Advanced	Proficient	Partially Proficient	Novice
Topic	Scientific Inquiry		
Benchmark SC.5.1.2	Formulate and defend conclusions based on evidence		
Sample Performance Assessment (SPA)	The student: Presents findings and conclusions to classmates and answers questions using evidence from the investigation.		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Formulate and defend conclusions that are supported by detailed evidence and make connections to the real world	Formulate and defend conclusions that are supported by evidence	Make conclusions that are partially supported by evidence	Make conclusions without evidence
Identify the variables in scientific investigations, explain why variables need to be controlled, and give examples of how to control variables in scientific experiments	Identify the variables in scientific investigations and recognize the importance of controlling variables in scientific experiments	Identify, with assistance, the variables in a scientific investigation or the importance of controlling the variables	Recognize, with much assistance, the variables in scientific investigations
Topic	Unifying Concepts and Themes		
Benchmark SC.5.2.1	Use models and/or simulations to represent and investigate features of objects, events, and processes in the real world		
Sample Performance Assessment (SPA)	The student: Uses geometric figures, number sequences, graphs, diagrams, sketches, number lines, maps, or stories as models to represent features of objects, events, or processes in the real world.		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Consistently select and use models and simulations to effectively represent and investigate features of objects, events, and processes in the real world	Use models and/or simulations to represent and investigate features of objects, events, and processes in the real world	With assistance, use models or simulations to represent features of objects, events, or processes in the real world	Recognize examples of models or simulations that can be used to represent features of objects, events, or processes
Topic	Forces that Shape the Earth		
Benchmark SC.4.8.1	Describe how slow processes sometimes shape and reshape the surface of the Earth		



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Sample Performance Assessment (SPA)	The student: Describes how the surface of the Earth is shaped and reshaped through slow processes (e.g., waves, wind, water, ice).		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Use evidence to explain how slow processes have shaped and reshaped the surface of the Earth	Describe how the shaping and reshaping of the Earth's land surface is sometimes due to slow processes	Provide examples of the shaping and reshaping of the Earth's land surface due to slow processes	Recognize that the shaping and reshaping of the Earth's land surface is sometimes due to slow processes
Topic	Forces that Shape the Earth		
Benchmark SC.4.8.2	Describe how fast processes (e.g., volcanoes, earthquakes) sometimes shape and reshape the surface of the Earth		
Sample Performance Assessment (SPA)	The student: Describes how fast processes have shaped and reshaped the Hawaiian Islands.		
Rubric			
Advanced	Proficient	Partially Proficient	Novice
Use evidence to explain how fast processes have shaped and reshaped the surface of the Earth	Describe how the shaping and reshaping of the Earth's land surface is sometimes due to fast processes	Provide examples of the shaping and reshaping of the Earth's land surface due to fast processes	Recognize that the shaping and reshaping of the Earth's land surface is sometimes due to fast processes



Lessons Summary

Lesson Day #	Lesson Title	What students will be able to know, do & understand
Project 3D View	Lesson 1 – Spheres of the Earth	Big ideas – there are 4 spheres of the earth ENGAGE: We use our observation skills to know about these spheres. <ul style="list-style-type: none"> - mini-video about the spheres - students chart observations EXPLORE: what does the earth look like? <ul style="list-style-type: none"> - Use 3-D spheres tool to look at with 3-D glasses EXPLAIN: what are examples from what you saw that belong to the four spheres? <ul style="list-style-type: none"> - Students chart their observations ELABORATE: think about the complexity of the spheres and their interactions, as well as how energy is the connector between spheres EVALUATE: <ul style="list-style-type: none"> - 3-D glasses to see different sphere stereophotographs - students fill in compare/contract chart with interactions between spheres and energy
MSP	Lesson Plan Options for Lesson 1	What Are the Four Spheres of the Earth? Earth’s Spheres
Project 3-D View	Lesson 2	What is 3-D? OPTIONAL
MSP	Lesson Plan Options for Lesson two	What is 3-D?
	Pretest	Harcourt – Chapter 9 “Changes to the Earth’s Surface”
Project 3-D View	Lesson 1 – The Dynamic Earth: Lithosphere	E: view 3-D animation of eruption E: look for evidence of energy transfer from other eruptions E: record observations/questions about volcanoes E: observe 3-d of sunset crater E: why is asking questions important in studying phenomena
Harcourt Text	Chapter 9 Lesson 3	What are some of the Earth’s Landforms? Read pp. 271-277 Lesson Quick Study RS 55-56 Integrate geography and Google Earth (John)
Harcourt Text	Lesson 2:	What Causes Changes to the Earth’s Landforms? Read pp. 280-287



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		Lesson Quick Study RS 57-58
Harcourt Text	Lesson 3	How Do Movements of the Crust Change Earth? Read pp. 288-297 Lesson Quick Study RS59-60
Project 3-D View	Lesson 2 OPTIONAL	The Earth <i>Is</i> All It’s Cracked Up To Be
Project 3-D View	Lesson 5 OPTIONAL	The Rock Record
Project 3-D View	Lesson 9 OPTIONAL	Tsunami
Project 3-D View	Lesson 10: Investigating Lava Flow	E: view videos about lava flow E: investigate viscosity of various liquids E: relate liquids to lava flows E: watch two animations of lava flow E: why viscosity results in explosive volcanoes
Harcourt Text	Post-test	Chapter 9 – Changes to Earth’s Surface
Project 3-D View OPT: Look at the sections on the 3-D view stuff on your computer	Lessons 11-13 - Missions OPTIONAL	E: where in the world? E: 3-D flyby/exploration Explain & Elaborate: visit stations on the volcano and collect data about the volcano (ie: types of volcanic products, lava flows, where on tectonic plates, gasses, viscosity, tsunamis, living near the volcano EVALUATE: risks and benefits of living near the volcano
Project 3-D View OPTIONAL	LESSSON 14 – Comparing volcano types	Once done with the three types, LESSSON 14 – Comparing volcano types is used to collate information and data – great way to consolidate information on the three types In addition, a help for the last project where they are comparing the two types of volcano areas. is used to have students apply knowledge about volcano types to classify new volcanoes
Project 3-D View OPTIONAL	Lesson 15 – Name that Volcano! – OPTIONAL	In addition, a help for the last project where they are comparing the two types of volcano areas. is used to have students apply knowledge about volcano types to classify new volcanoes
Project 3-D View	Lesson 16 – 18 Scenario: Student Background Research into	<ul style="list-style-type: none"> - Students are presented with the real-life scenario of building a community near an active volcano. - Students conduct background research using fact sheets about eruption history and potential eruption hazards - Students will explore in 3D, use hazard maps and



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	<p>Kilauea and Mount Rainier</p> <p>OPTIONAL</p>	<p>analyze primary source documents to decide whether it is safe to build a new community in the area.</p> <ul style="list-style-type: none"> - Students will participate in a mock Town Hall Meeting by using the perspectives of others to solidify their point of view - Student will compare and contrast the risks and benefits of building a new community near each volcano (group assignment) and draw final conclusions about the scenario problem
<p>Project 3-D View</p>	<p>Lesson 18 – Scenario Presentations and Conclusions:</p> <p>OPTIONAL</p>	<p>Students will present their volcano scenario, the risks and benefits associated with the assigned volcano and their conclusions about building a community in the area. The other groups will build their graphic organizer about the volcano that is being presented.</p>
<p>Project 3-D View</p> <p>OPTIONAL</p>	<p>Final Unit Review:</p> <p>SUMMATIVE ASSESSMENT (we can build a rubric together for this if you like☺)</p>	<p>students can work individually or in pairs to: Create a poster, comic strip, presentation or brochure (a product) that explains why there are volcanoes and tsunamis on Earth... <i>This is the one provided by 3D VIEW...it doesn't match what you did...</i></p> <p>OPTIONAL</p>

Resources:

Harcourt Textbook

www.harcourtschool.com/menus/science/grade5_nl.html

Smartboard Lessons – skool.com, education.smarttech.com

A+ Learning System (school-wide curriculum program which came with the science bundle)