Grade 5: Earth's Systems

Stage 1 Desired Results

ESTABLISHED GOALS:

Competencies:

Nature of Science and Engineering

- ***Students will demonstrate the ability to work collaboratively and individually to generate testable questions or define problems, plan and conduct investigations using a variety of research methods in various settings, analyze and interpret data, reason with evidence to construct explanations in light of existing theory and previous research, and effectively communicate the research processes and conclusions.***

Systems and System Models

- ***Students will demonstrate the ability to investigate and analyze a natural or human designed system in terms of its boundaries, inputs, outputs, interactions, and behaviors and use this information to develop a system model that can be used to understand and empirically evaluate the accuracy of models in terms of representing the underlying system.***

Scale, Proportion, and Quantity

- ***Students will demonstrate the ability to describe and represent the significance of changes in observable and non-observable phenomena in terms of relative scale, proportion, and quantity.***

Content Standards:

- .5-ESS2-1. Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
- 5-ESS2-2. Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
- 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

Transfer

*Students will be able to independently use their learning to **use systems thinking as a method for describing interactions**.*

Meaning

ENDURING UNDERSTANDINGS

Students will understand that…

- standard units are used to measure and describe physical quantities such as weight,and volume.
- a system can be described in terms of its components and their interactions.
- science findings are limited to questions that can be answered with empirical evidence.

ESSENTIAL QUESTIONS

- Which one of Earth's major systems has the greatest ability to affect life on our planet?

Acquisition

Students will know…

- *that Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans).*
- *that these systems interact in multiple ways to affect Earth's surface materials and processes.*
- *that the ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate.*
- *that winds and clouds in the atmosphere interact with the landforms to determine patterns of weather.*
- *that nearly all of Earth's available water is in the ocean.*
- *that most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.*
- *that human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.*

Students will be skilled at…

- *developing a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.*
- *describing and graphing the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.*
- *obtaining and combining information about ways individual communities use science ideas to protect the Earth's resources and environment.*

	<u>vocabulary:</u> geosphere, hydrosphere, atmosphere, biosphere, ecosystems, organism, landform, climate, wetlands, agriculture, industry, system, landforms, glacier	
Content Area Literacy Standards		***21st Century Skills***
not applicable		• *communicate clearly* • *make judgments and decisions* • *use systems thinking* • *collaborate with others*

Stage 2 - Evidence

Evaluative Criteria	***Assessment Evidence***
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

Stage 3 – Learning Plan

Summary of Key Learning Events and Instruction

Language Arts Integration	***Mathematics Integration***
• *RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.* • *RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.* • *RI.5.9 Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably.* • *W.5.8 Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.* • *W.5.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.* • SL.5.5 Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes.	• *MP.2 Reason abstractly and quantitatively.* • *MP.4 Model with mathematics.* • *5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.*
Technology Integration	***District Materials***