

Stackable Instructionally- embedded Portable Science (SIPS) Assessments

**Grade 5 Unit 3
Earth Systems and the Solution of Water Problems**

Storyline Overview

March 2023



Grade 5 Unit 3: Storyline, Phenomena, and Segments

Storyline Overview

Students make sense of the key disciplinary ideas of the way that matter and energy interact on the Earth in the geosphere, hydrosphere, biosphere, and atmosphere, including the issues associated with water and the need to design solutions for water use and management.

Anchor Phenomenon

In this unit, the anchor phenomenon is based on discovering the origin of a glass of water filled from a source within the school and investigating where the wastewater ends up. This leads to investigations related to water distribution on Earth.



Image: <https://www.nasa.gov/content/Earth-right-now-glass-of-water-maybe>

This image is an example of evidence that can support the argument that usable freshwater is in limited supply. Students will eventually develop an explanatory model based on water as an important part of Earth's four spheres.

Measurement Target

Students are able to apply Scientific and Engineering Practices with emphasis on using models, mathematical and computational thinking and obtaining, evaluating, and communicating information about the interactions of the geosphere, biosphere, hydrosphere, and/or atmosphere and to design and evaluate solutions to a water resource challenge.

Relationship to Prior and Subsequent Learning

Unit 3 engages students in learning about "Earth Systems and the Solution of Water Problems" and building knowledge of how different Earth system components interact. There is also an introduction of engineering, technology, and society PEs in a manner associated with creating design solutions to problems of water management. This builds on ideas related to the transformation and movement of matter and energy within ecosystems in Unit 2. Unit 4 focuses on the Earth as part of the solar system, including the way that this affects terrestrial phenomena such as the length of the day and influence of gravity.

Segment 1: Students explore distribution of water on the Earth. Students start with considering water found in their school, differences in (and the distribution of) fresh and salt water, and how water moves through glaciers and underneath the Earth.

Obtain information on where drinking water comes from and where wastewater goes.

Students investigate the use of water.

Model and collect data on the type and distribution of water in the Earth systems.

Students evaluate information on fresh water, its sources, and its use.

Students use and refine models based on water sources and their distribution.

Segment 2: Students obtain, evaluate, and communicate information about design solutions for water conservation and obtaining cleaner water in their community.

Specify a design that provides a solution to a limited supply of fresh water.

Investigate the way that pumping can be used to move water.

Design and refine plans to use water filters as a solution to water contamination.

Obtain and communicate information on the impacts of humans on the environment.

Model the role of natural and human-made water reservoirs in water management.

Segment 3: Students develop and use models for a design solution that incorporates positive and negative impacts of human activities on the environment.

Investigate the performance of their design solution under different conditions.

Refine and improve on a design prototype to provide a solution to a problem.

Explain the performance of their design under different conditions.

Refine the design solution to address possible negative impacts.

Present a final design that addresses success criteria and constraints.

Segment 4: Students obtain, evaluate, and communicate information about design solutions associated with the four major Earth systems.

Make observations of materials collected from different parts of nature.

Analyze data to classify different parts of the Earth systems.

Design and construct a terrarium that models the components of the Earth systems.

Use evidence to understand how different parts of the Earth's systems interact with one another.

Revise and present a model of the Earth systems and its different components.