

Land and Water Concept Storyline

Unifying Concept

Earth materials have unique properties and are parts of living and nonliving systems. Interactions within and among these systems cause changes in matter and energy.

Unit Concept

The landscape is a result of the long-term integration of a variety of natural processes that act on the surface of the earth.

Grade-Level Concept

Water has an important role in shaping the land, and land forms may change the direction and flow of water. Humans can affect these processes.

Subconcept 1

Different elements of earth systems interact to characterize the land and water landscape.

Lesson 1: Pre-Unit Assessment: Thinking about Land and Water
Students discuss what they know and would like to know about land and water.

Subconcept 2

Water evaporates, rises, condenses, and falls to earth, where it collects in lakes, oceans, rivers, and soil and rocks, in a process known as the water cycle.

Lesson 2: The Water Cycle: Modeling Land and Water
Students build model stream tables and use them to study the water cycle.

Subconcept 3

Streams and rivers slowly reshape the earth's land surface by eroding and carrying soil and rock.

Lesson 3: Modeling Rain on Land
Students model the effects of rain on their stream tables and observe soil erosion.

Lesson 4: Investigating Streams
Students pour water on their models and observe the formation of streams.

Subconcept 4

The properties of soils and the flow characteristics of water determine the nature of erosion and deposition.

Lesson 5: Examining Earth Materials
Students analyze four soil components and describe their properties.

Lesson 6: Where Does the Water Go? Looking at Ground Water and Runoff
Students discover that different types of soil have differing capacities to retain water.

Lesson 7: Where Does the Soil Go? Looking at Erosion and Deposition
Students observe the factors that affect how water erodes and deposits sediment.

Subconcept 5

The interactions among the elements of the earth and circulating water change the landscape.

Lesson 8: Bird's-Eye View: Looking at the Parts of a Stream
Students identify the common parts of the stream.

Lesson 9: When Streams Join: Modeling Tributaries
Students model the formation of a larger stream or river that has multiple sources.

Lesson 10: Rushing Rivers: Exploring Flow
Students use their models to compare the effects of fast- and slow-flowing water.

Lesson 11: Hills and Rocks: How Nature Changes the Direction and Flow of Water
Students investigate how the shape of the land affects the direction and flow of water.

Lesson 13: Exploring Slope
Students explore the effects of slope on stream formation.

Subconcept 6

Humans interact with natural elements to effect changes in the landscape.

Lesson 12: Dams: How Humans Change the Direction and Flow of Water
Students design and construct dams in their stream tables and test their effects.

Lesson 14: Plants: Protecting Sloped Land from Erosion
Students predict and model how plants affect water flow and erosion.

Lesson 15: Planning Our Homesites: Designing and Building a Landscape
Students design landscapes in their models, predict how runoff will affect these landscapes, and use these predictions to select a safe homesite.

Lesson 16: Protecting Our Homesites: Testing the Interactions of Land and Water
Students test the effectiveness of the placement of their homesites.

Lesson 17: Post-Unit Assessment: Sharing What We Know about Land and Water
Students reflect on and discuss what they have learned.