

# Soils Concept Storyline

## Unifying Concept

Our world is made up of materials that can be identified by their unique properties and that can be organized into interconnected systems.

## Unit Concept

Soils provide a structural base for plant growth and the medium through which water and nutrients are transferred among the atmosphere, earth, and plants.

## Grade-Level Concept

Soil is made up of different components with different properties. These properties affect plant and root growth.

### Subconcept 1

**Soils contain plants, animals, and their decayed remains, and other rock and mineral particles of varying sizes.**

Lesson 1: Pre-Unit Assessment: What Is in Soil?

*Students examine a sample of soil and share what they know and would like to know about soils.*

Lesson 2: Where Do Dead Plants Go?

*Student teams create two compost bags—one with worms and one without worms. They predict what changes will occur in the bags.*

Lesson 13: Opening the Compost Bags

*Students analyze and discuss the contents of their compost bags and discuss the results of composting.*

### Subconcept 2

**Sand, clay, and humus are three basic components of soil and have unique properties. These properties may be identified using simple tests.**

Lesson 3: Introducing Sand, Clay, and Humus

*Students examine samples of sand, clay, and humus using their senses.*

Lesson 4: When Soils Get Wet  
*Students compare the characteristics of wet and dry soils.*

Lesson 5: More about Wet Soils  
*Students conduct smear tests and compare wet and dry clay balls.*

Lesson 6: How Quickly Do Soils Settle in Water?

*Students predict what will happen when soil components settle out of water, and they perform a settling test.*

Lesson 7: More Settling a Few Days Later

*Students continue to examine how soil particles settle in water.*

Lesson 8: What Is Your Mystery Mixture?

*Students apply their knowledge and skills to identify the components of an unknown soil mixture.*

### Subconcept 3

**Plants gain their nutrition and moisture through root systems that penetrate the soil.**

Lesson 9: Growing Plants in Different Soils

*Students plant seeds in four types of soil and create a log to watch the plants' growth.*

Lesson 10: Why Do Plants Have Roots in Soils?

*Students plant seeds in glass tubes and examine the formation of roots.*

### Subconcept 4

**Different soils absorb and retain water at different rates.**

Lesson 11: Can Soil Hold Water?

*Students examine how water moves through and is absorbed by soil.*

Lesson 12: How Water Moves through Sand and Clay

*Students compare the rate at which water moves through sand versus clay.*

### Subconcept 5

**All soils can be characterized by using simple tests.**

Lesson 14: Exploring Your Local Soil

*Students conduct tests on their local soil.*

Lesson 15: More about Your Local Soil

*Students conduct additional tests on local soil and discuss their findings.*

### Subconcept 6

**Soils are part of a system that integrates the organic world of plant growth and decay with the physical world of rocks, minerals, and hydrology.**

Lesson 16: What Is Your Local Soil?

*Students summarize their investigation of local soil and compare plant growth in sand, clay, humus, and local soil. They complete their plant logbooks.*

Lesson 17: Post-Unit Assessment: Sharing What We Know about Soils

*Students discuss and reflect on what they have learned.*