

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.

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 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.