iScience
Readers

Pebbles, Sand, and Silt:
The Neighbor's Garden

by Emily Sohn and Diane Bair

Science Objective

Children learn that the ground under their feet is more than just soil. It may be composed of broken bits of rocks and pebbles, sand, or organic matter. Plants need soil to grow, and the soil must have air to keep it loose and hold the right amount of water. Worms contribute to soil by adding nutrients and breaking up the soil. Adding humus to soil improves its quality and its ability to grow flowers and plants we eat.

iScience Puzzle: Sprouting Sunflowers

The neighbor's garden referred to in the title of this book needs good soil to grow sunflowers. Children must choose the right soil. Will it be pebbles, sand, or dark soil? At the end of the book, children will know that the best kind of soil for sunflowers will be rich, loose, and damp.

Objectives ➤ Children will:

- compare and contrast the qualities of different types of soil.
- learn that all soil is made of Earth materials.
- understand why plants need loose soil that allows in air and water.
- learn how soil can be enriched with humus.

Materials

- containers of sand, pebbles, and rich soil
- potting soil
- sunflower seeds or other seeds

Lesson Plan

Before Reading

Investigation	Science Concepts
Pass around containers of sand, pebbles, and rich soil. Ask: *What do these materials feel like? Which one is rough? Which one is dry? Which one is damp?*	Sand, pebbles, and rich soil are Earth materials.
Invite children to tell what they think different types of soil are made of. Write their ideas on the board, and refer back to their answers as children read this book.	Scientific thinking processes help build explanations for scientific observations.

Explain that ground, or soil, is made of Earth materials. Components of soil vary, and may include broken rock, sand, clay, and organic material, such as leaves and worms. Some soil is better for growing plants than other soil. Plants need soil that is loose enough for roots to spread out through it. The soil must hold water so that roots can absorb it.

During Reading

Investigation	Science Concepts
pp. 6–8: Begin a three-column chart for the three types of soil: *Small Rocks, Sandy and Dry, Damp and Dark.* Tell children that they will add characteristics of each type as they read this book.	Soil can be separated into its components.
pp. 7–8: Discuss why a gardener might want to know how much water the soil can soak up.	Soil has properties of texture, hardness, and sizes of bits of rock that affect its ability to contain water. The amounts of clay and organic matter also affect how much water soil can hold.
pp. 9–10: Under the column head *Small Rocks,* add the words *hard, smooth, bigger, smaller.* Ask: *Are these good qualities for garden soil to have? Will small rocks help plants grow?*	Rocks and pebbles can be categorized according to hardness, texture, and size.
pp. 11–12: Under the column head *Sandy and Dry,* write *coarse, small,* and *minerals.* Ask: *Will dry, sandy soil hold water? Will it help plants grow?*	Sand is finely ground grains of rock that contain minerals.
p. 13: Remind children that worms break up soil and let air in. Ask: *Could a worm burrow through wet clay?*	Earth materials like clay can be used to make pottery and bricks.

During Reading (continued)

Investigation	Science Concepts
pp. 14–15: Under the column head *Damp and Dark,* write *dark, moist, nutrients, minerals.* Contrast the texture of humus and sand.	Ingredients of humus include decayed or decaying plant and animal matter.
pp. 16–19: Review the chart about types of soil. Discuss which type of soil is best for plants.	Plants need soil that lets in air and holds water.
pp. 20–21: Provide children with potting soil and seeds to plant. Discuss their answers to the questions on these pages.	Observation and hands-on learning are crucial to an understanding of science concepts.

After Reading

Restate the key ideas in this book. Pebbles, sand, and silt are all Earth materials. Each one has different properties of hardness and texture that affect how well it holds water. Sand is finely ground rock that is coarse and does not hold water well. Although it contains minerals, it is not a good choice for most plants. Clay becomes sticky when wet and limits the growth of plant roots. Soil that is loose and enriched with organic matter is best for most plants.

Investigation	Understanding Science
Provide sand, potting soil, pebbles, and humus and have children make their own soil. Ask them to explain how each component will help plants grow.	Adding pebbles, sand, and humus for drainage and nutrients can improve the quality of soil.