Backyard Landscape

Life Science | Lesson Guide

1st Grade

Photo Description

This backyard garden has many colorful flowers. There are orange flowers and white flowers growing in the dirt. Green grass grows in one part of the yard.

Scientific Phenomena

The Anchoring Phenomenon is plant growth and diversity in a garden ecosystem. Plants are growing because they have what they need to survive: sunlight, water, air, and nutrients from soil. Different types of plants grow in different parts of the garden because they have different needs. Some plants need more water, some need more sun, and some grow better in certain types of soil. This creates a diverse garden community where many different living things can thrive together.

Core Science Concepts

1. Living vs. Non-Living Things: Plants are living things that grow, need water and sunlight, and can make new plants. Rocks and soil are non-living but help plants grow.

2. Plant Needs: All plants need sunlight, water, air, and nutrients from soil to survive and grow. Without these things, plants will not stay healthy.

3. Plant Diversity: Different types of plants have different shapes, sizes, and colors. This helps them survive in different places and conditions.

4. Habitats: A garden is a habitat where plants and animals live together. Each living thing has what it needs to survive in this space.

Pedagogical Tip:

Use the "See, Think, Wonder" routine with this image. Have students observe what they see, share what they think is happening, and ask questions about what they wonder. This builds scientific thinking skills.

UDL Suggestions:

Provide multiple ways for students to share observations: drawing, verbal sharing, or using simple science vocabulary cards with pictures. This supports all learners in expressing their scientific thinking.

Zoom In / Zoom Out

1. Zoom In: Inside the plant roots, tiny root hairs are absorbing water and nutrients from the soil. The plant's cells are using sunlight to make food through photosynthesis, even though we cannot see this process happening.

2. Zoom Out: This garden is part of a larger neighborhood ecosystem. Birds, bees, and other animals visit this garden for food and shelter. The plants here are connected to the bigger food web in the area.

Discussion Questions

1. What do you notice about the different plants in this garden? (Bloom's: Observe | DOK: 1)

2. Why do you think some flowers are orange and others are white? (Bloom's: Analyze | DOK: 2)

3. What would happen to these plants if they didn't get water for many days? (Bloom's: Predict | DOK: 2)

4. How is this garden like a home for plants and animals? (Bloom's: Compare | DOK: 3)

Potential Student Misconceptions

1. Misconception: Plants eat soil like animals eat food.
   Clarification: Plants make their own food using sunlight, water, and air. They get nutrients from soil, but soil is not their food.

2. Misconception: All plants need the same amount of water and sunlight.
   Clarification: Different plants have different needs. Some need lots of water, others need less. Some need full sun, others grow better in shade.

3. Misconception: Plants don't need air.
   Clarification: Plants need air (carbon dioxide) to make their food, just like animals need air (oxygen) to breathe.

Cross-Curricular Ideas

1. Math + Science: Count the flowers by color. Make a simple bar graph showing how many orange flowers, white flowers, and purple flowers are in the garden. Students can practice one-to-one correspondence and data representation while observing real plants.

2. ELA + Science: Read From Seed to Plant by Gail Gibbons, then have students draw and label the parts of a plant (roots, stem, leaves, flowers). Students can write or dictate simple sentences about what each part does using the garden photo as a reference.

3. Art + Science: Create a garden mural or collage using tissue paper, paint, or colored paper to represent the different flowers in the photo. Students can discuss which colors they see and arrange their flowers in patterns, combining artistic expression with observation skills.

4. Social Studies + Science: Discuss how gardens help people in the community. Talk about farmers markets, community gardens, and how people work together to grow food and beautiful plants. Connect to the idea of caring for shared spaces.

STEM Career Connection

1. Botanist (Plant Scientist): A botanist is a scientist who studies plants and how they grow. They learn about different types of plants, what they need to be healthy, and how plants help animals and people. Botanists might work in gardens, forests, or laboratories. They help us understand nature better and grow better plants for food and flowers. Average Annual Salary: $63,000

2. Gardener/Horticulturist: A gardener is someone who plants, waters, and takes care of gardens and flowers. They know which plants grow best in different places and how to help plants stay healthy and beautiful. Gardeners work in parks, backyards, farms, and public gardens, making the world more green and colorful. Average Annual Salary: $35,000

3. Environmental Scientist: An environmental scientist studies how plants, animals, soil, and water work together in nature. They help protect gardens and natural areas so that all living things can survive and grow. They might design gardens that help bees and butterflies, or help clean up soil so plants can grow strong. Average Annual Salary: $71,000

NGSS Connections

- Performance Expectation: 1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
- Disciplinary Core Idea: 1-LS1.A - All organisms have external parts that they use to perform daily functions.
- Crosscutting Concept: Structure and Function - The shape and stability of structures of natural objects are related to their function.

Science Vocabulary

* Habitat: A place where plants and animals live and get what they need to survive
* Nutrients: Special things in soil that help plants grow strong and healthy
* Roots: The parts of plants that grow underground and take in water
* Survive: To stay alive by getting food, water, and shelter
* Diversity: Having many different types of living things in one place

External Resources

Children's Books:
- From Seed to Plant by Gail Gibbons
- The Tiny Seed by Eric Carle
- Plants Can't Sit Still by Rebecca E. Hirsch