Sunflower

Life Science | Lesson Guide

Kindergarten

Photo Description

A small green plant is growing up from the ground. The plant has two green leaves at the top. There is a brown seed shell still on one of the leaves.

Scientific Phenomena

This image shows seed germination - the anchoring phenomenon where a seed begins to grow into a new plant. The brown shell is the original seed coat that protected the baby plant inside. When the seed gets water, warmth, and air, the tiny plant (embryo) inside starts to grow. It pushes up through the soil toward sunlight, and the first leaves emerge to begin making food for the growing plant through photosynthesis.

Core Science Concepts

1. Seeds contain baby plants - Inside every seed is a tiny plant waiting to grow when conditions are right
2. Plants need basic things to survive - Seeds need water, warmth, air, and eventually sunlight to germinate and grow
3. Plants grow in predictable patterns - Seeds typically sprout roots down and shoots up toward light
4. Living things change over time - The seed transforms from a dormant state into an actively growing plant

Pedagogical Tip:

Use real seeds and clear containers so students can observe the germination process over several days. Lima beans or sunflower seeds work well because they're large enough for kindergarteners to handle and observe easily.

UDL Suggestions:

Provide multiple ways for students to document plant growth - drawing pictures, using measurement tools, taking photos, or acting out the growth process with their bodies to support different learning styles and abilities.

Zoom In / Zoom Out

1. Zoom In: Inside the seed, there are special parts called the embryo (baby plant), cotyledons (food storage), and seed coat (protective shell). When water enters the seed, it activates enzymes that break down stored food to give energy for growth.

2. Zoom Out: This single germinating seed is part of a larger plant life cycle that includes flowering, pollination, seed formation, and dispersal. Many animals depend on seeds for food, and plants depend on animals for seed dispersal, creating interconnected ecosystems.

Discussion Questions

1. "What do you think this seed needed to start growing?" (Bloom's: Apply | DOK: 2)
2. "How is this baby plant the same or different from a big plant?" (Bloom's: Analyze | DOK: 2)
3. "What do you predict will happen to this plant next?" (Bloom's: Evaluate | DOK: 3)
4. "Where do you think this seed came from?" (Bloom's: Remember | DOK: 1)

Potential Student Misconceptions

1. Misconception: "Seeds are not alive until they start growing"
   Reality: Seeds are living but dormant - they're in a resting state waiting for the right conditions

2. Misconception: "Plants eat dirt to grow"
   Reality: Plants make their own food using sunlight, water, and air; they get nutrients from soil but don't "eat" it

3. Misconception: "All seeds look the same inside"
   Reality: Different plants have different types of seeds, but all contain a baby plant and stored food

Cross-Curricular Ideas

1. Math - Measurement & Counting: Have students measure their seedlings with non-standard units (paper clips, blocks, fingers) each day and create a simple bar graph or chart showing growth over time. Students can also count how many leaves or sprouts have appeared.

2. ELA - Story & Sequencing: Read The Tiny Seed by Eric Carle and have students retell the story in order using pictures or act out the stages of seed growth (seed !' sprout !' plant !' flower !' new seeds). Students can dictate or draw their own "seed story."

3. Art - Nature Collage: Create a mixed-media collage using real seeds, soil, leaves, and green paper to show a growing seedling. Students can paint or color their backgrounds and arrange natural materials to represent different parts of the plant.

4. Social Studies - Where Food Comes From: Connect seed growth to gardening and food production. Discuss how farmers plant seeds to grow vegetables and fruits we eat. Take a virtual or real garden tour, or invite a local gardener to visit the classroom.

STEM Career Connection

1. Farmer/Gardener: Farmers and gardeners grow plants from seeds to make food and beautiful flowers. They water plants, pull weeds, and harvest fruits and vegetables. They use their knowledge of seeds and soil to help plants grow big and healthy. Average Annual Salary: $28,000 - $35,000

2. Plant Scientist (Botanist): Plant scientists study how seeds grow and how to help plants be healthier and stronger. They work in laboratories and gardens, observing seeds, testing soil, and discovering new ways to grow better plants. Average Annual Salary: $62,000 - $75,000

3. Farmer's Market Vendor/Food Grower: These workers grow plants from seeds and sell fresh vegetables, herbs, and flowers at farmers' markets or directly to families. They care for seeds every day and share their love of plants with their community. Average Annual Salary: $24,000 - $45,000

NGSS Connections

- Performance Expectation: K-LS1-1 Use observations to describe patterns of what plants and animals need to survive
- Disciplinary Core Ideas: K-LS1.C - Organization for Matter and Energy Flow in Organisms
- Crosscutting Concepts: Patterns and Structure and Function

Science Vocabulary

* Seed: A small part of a plant that can grow into a new plant
* Germinate: When a seed starts to grow and sprout
* Sprout: The first green shoot that grows from a seed
* Seedling: A very young plant that just started growing from a seed

External Resources

Children's Books:
- From Seed to Plant by Gail Gibbons
- The Tiny Seed by Eric Carle
- A Seed Is Sleepy by Dianna Hutts Aston