Sunflower

Life Science | Lesson Guide

1st Grade

Photo Description

A small green plant is growing up from the ground. The plant has a seed shell on top of its green leaves. There is another seed shell sitting on the dirt next to the plant.

Scientific Phenomena

This image shows seed germination - the anchoring phenomenon where a seed begins to grow into a new plant. The seed absorbs water, swells, and the embryo inside starts growing. The green shoot (called a hypocotyl) pushes upward through the soil toward sunlight, carrying the seed coat with it. The cotyledons (seed leaves) emerge and provide initial nutrients for the young plant until it can make its own food 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 water, air, and warmth to grow - Seeds must have these basic needs met before they will sprout
3. Plants grow toward light - The green shoot naturally grows upward to find sunlight for making food
4. Seeds provide food for new plants - The seed contains stored nutrients that feed the plant until it can make its own food

Pedagogical Tip:

Have students compare this sprouting seed to a baby animal - both need food, water, and care to grow. This analogy helps make the abstract concept of plant needs more concrete and relatable.

UDL Suggestions:

Provide multiple ways for students to observe germination: real seeds in clear containers, time-lapse videos, and detailed photographs. Some students learn better through visual observation, others through hands-on manipulation, and others through digital media.

Zoom In / Zoom Out

1. Zoom In: Inside the seed, tiny root cells are dividing and growing longer, pushing through the seed coat. Water moves into these cells, making them swell and grow.

2. Zoom Out: This single sprouting seed is part of how plants spread across the Earth. Animals eat fruits, carry seeds to new places, and new plants grow there, creating forests and meadows.

Discussion Questions

1. What do you think this seed needed to start growing? (Bloom's: Analyze | DOK: 2)
2. How is this baby plant like a human baby? (Bloom's: Analyze | DOK: 2)
3. What do you predict will happen to this plant in one week? (Bloom's: Evaluate | DOK: 3)
4. Where do you think the seed shell will go as the plant grows bigger? (Bloom's: Apply | DOK: 2)

Potential Student Misconceptions

1. Misconception: Seeds are dead until they start growing
   Reality: Seeds are alive but dormant - they're waiting for the right conditions to begin growing

2. Misconception: The plant comes from the soil
   Reality: The plant grows from the embryo inside the seed; soil provides support and nutrients but not the actual plant

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

NGSS Connections

- Performance Expectation: K-LS1-1 - Use observations to describe patterns of what plants need to survive
- Disciplinary Core Idea: K-LS1.C - Organization for Matter and Energy Flow in Organisms
- Crosscutting Concept: Patterns - Patterns in the natural world can be observed and used as evidence

Science Vocabulary

* Seed: A tiny package that contains a baby plant and food for it to grow
* Sprout: When a seed begins to grow into a plant
* Roots: The parts of a plant that grow down into the soil to get water
* Shoot: The green part of a young plant that grows up toward the sun
* Germination: The process when a seed starts to grow into a plant

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

YouTube Videos:
- "Seed Germination Time Lapse" - Shows beans sprouting over several days in fast motion: https://www.youtube.com/watch?v=w77zPAtVTuI
- "How Do Seeds Grow? | Science for Kids" - Simple explanation of what seeds need to grow with animations: https://www.youtube.com/watch?v=tkFPyDSLH40