Parts of a Plant

Life Science | Lesson Guide

1st Grade

Photo Description

A seed is growing into a plant. The seed has a long green stem and two small green leaves. There are white roots growing from the seed too.

Scientific Phenomena

This image shows germination - the process where a seed begins to grow into a new plant. The seed has absorbed water and warmth, causing it to "wake up" and start growing. The stored food inside the seed provides energy for the first leaves and roots to develop. This is the beginning of a plant's life cycle, where the embryo inside the seed transforms into a seedling with visible roots, stem, and cotyledons (first leaves).

Core Science Concepts

1. Seed Germination: Seeds contain everything needed to start a new plant, including a tiny plant (embryo) and stored food
2. Plant Parts: Plants have roots (grow down to get water), stems (grow up toward light), and leaves (make food from sunlight)
3. Plant Needs: Plants need water, air, warmth, and light to grow and survive
4. Life Cycles: Plants go through stages - seed, seedling, adult plant, then make new seeds

Pedagogical Tip:

Use real seeds and clear containers so students can observe germination happening over several days. Bean seeds work exceptionally well because they're large and germinate quickly.

UDL Suggestions:

Provide multiple ways for students to document observations - drawing pictures, using simple words, taking photos, or verbal descriptions to accommodate different learning styles and abilities.

Zoom In / Zoom Out

1. Zoom In: Inside the seed, tiny cells are dividing and growing rapidly. The stored starch is being converted to sugar to feed the growing plant parts.

2. Zoom Out: This single germinating seed is part of nature's cycle where plants grow, reproduce, and create new seeds that will grow into the next generation of plants, supporting entire ecosystems.

Discussion Questions

1. What do you think this seed needs to keep growing? (Bloom's: Apply | DOK: 2)
2. How are the roots different from the leaves? (Bloom's: Analyze | DOK: 2)
3. What do you predict will happen to this plant in one week? (Bloom's: Evaluate | DOK: 3)
4. Why do you think the roots grow down instead of up? (Bloom's: Analyze | DOK: 3)

Potential Student Misconceptions

1. Misconception: "Plants eat dirt for food"
   Reality: Plants make their own food using sunlight, air, and water. Soil provides support and some nutrients, but not food.

2. Misconception: "Seeds are not alive"
   Reality: Seeds are living but dormant (sleeping) until conditions are right for them to grow.

3. Misconception: "Roots grow up and stems grow down"
   Reality: Roots naturally grow downward toward water and nutrients, while stems grow upward toward light.

Cross-Curricular Ideas

1. Math - Measurement & Growth Tracking: Have students measure the height of their germinating seeds using paper clips or blocks as non-standard units. Create a simple bar graph showing how much each seed grew each day. This connects to measurement skills and data representation.

2. ELA - Sequencing & Storytelling: Students can draw pictures and dictate or write simple sentences about the "life story" of a seed in order: seed !' water added !' roots grow !' leaves appear !' bigger plant. This practices sequencing vocabulary (first, next, then, last) and narrative skills.

3. Art - Observation Drawing: Students sketch or paint their germinating seed at different stages, focusing on the colors and shapes they observe (green stems, tiny leaves, white roots). This develops fine motor skills and scientific observation through creative expression.

4. Social Studies - Where Food Comes From: Connect seed germination to gardening and farming. Discuss how farmers plant seeds to grow food we eat. Take a virtual garden tour or invite a local gardener to share how they grow plants from seeds.

STEM Career Connection

1. Botanist - Plant Scientist: A botanist is a scientist who studies plants and how they grow. Botanists observe seeds, measure plant growth, and figure out what plants need to be healthy. They might work in gardens, parks, or laboratories. Average Annual Salary: $63,000

2. Farmer or Gardener: Farmers and gardeners plant seeds and help them grow into food and beautiful plants. They know exactly what each plant needs - the right amount of water, sunlight, and soil - to grow strong and healthy. Average Annual Salary: $48,000

3. Environmental Scientist: Environmental scientists study nature and plants to keep our Earth healthy. They might work on growing new plants in forests or protecting wild plants. They help plants and animals live together in nature. Average Annual Salary: $68,000

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
- Crosscutting Concept: Structure and Function

Science Vocabulary

* Seed: A small part of a plant that can grow into a new plant
* Germination: When a seed starts to grow into a plant
* Roots: The parts of a plant that grow down to get water
* Stem: The part of a plant that holds it up and moves water to the leaves
* 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