Fungi01

Life Science | Lesson Guide

Kindergarten

Photo Description

A mushroom grows from the ground with a brown cap and tan stem. The mushroom has thin lines under its cap called gills. More mushrooms grow nearby in the green grass.

Scientific Phenomena

The Anchoring Phenomenon is fungal fruiting body development and spore dispersal. This mushroom represents the reproductive structure of a fungus that lives underground. The fungus grows thread-like structures called hyphae through the soil, breaking down dead plant material for food. When conditions are right (proper moisture and temperature), the fungus produces the mushroom we see above ground to release spores for reproduction. The gills visible under the cap contain millions of microscopic spores that will be released into the air to start new fungal colonies.

Core Science Concepts

1. Living vs. Non-living Classification: Mushrooms are living things that grow, need food, and reproduce, even though they don't move like animals or make their own food like plants.

2. Basic Needs of Living Things: Fungi need water, air, food (dead plant material), and proper temperature to survive and grow.

3. Life Cycles: The mushroom is just one stage in the fungus life cycle - it grows from underground parts we cannot see.

4. Decomposition Role: Fungi help break down dead leaves and plants, recycling nutrients back into the soil for other living things to use.

Pedagogical Tip:

Use concrete manipulatives like felt pieces or picture cards to help kindergarteners sort living and non-living things, including fungi alongside familiar plants and animals.

UDL Suggestions:

Provide multiple ways to explore fungi concepts through sensory experiences - let students feel different textures (safe materials), observe real mushrooms through magnifying glasses, and use movement activities to act out mushroom growth.

Zoom In / Zoom Out

1. Zoom In: Microscopic spores are being released from the gills under the mushroom cap. These tiny reproductive cells are invisible to our eyes but float through the air to land in new places and grow into new fungi.

2. Zoom Out: This mushroom is part of a forest ecosystem where fungi, plants, and animals all depend on each other. The fungus helps dead plants decompose, which makes rich soil for new plants to grow, which provides food and shelter for animals.

Discussion Questions

1. What do you notice about how this mushroom looks similar to or different from plants in your yard? (Bloom's: Analyze | DOK: 2)

2. Where do you think this mushroom came from, and what do you think it needs to grow? (Bloom's: Apply | DOK: 2)

3. How might this mushroom help other living things in the forest? (Bloom's: Evaluate | DOK: 3)

4. What questions do you have about mushrooms after looking at this picture? (Bloom's: Create | DOK: 2)

Potential Student Misconceptions

1. Misconception: "Mushrooms are plants because they grow from the ground."
   Clarification: Mushrooms are fungi, which are different from plants. Unlike plants, fungi cannot make their own food from sunlight and must eat dead plant material.

2. Misconception: "All mushrooms are safe to touch and eat."
   Clarification: Many mushrooms can be harmful, so we should never touch or eat wild mushrooms. Only grown-ups who know about mushrooms should handle them.

3. Misconception: "The mushroom is the whole organism."
   Clarification: The mushroom is just the part we see above ground, like a flower on a plant. Most of the fungus lives underground in tiny threads we cannot see.

Cross-Curricular Ideas

1. Math - Counting & Patterns: Count the mushrooms visible in the photo and create a graph showing how many mushrooms grew in different spots. Look for patterns in where mushrooms appear (near trees, in wet grass, etc.). Students can also sort mushrooms by size - big, medium, small.

2. ELA - Descriptive Writing & Storytelling: Have students dictate or draw stories about "A Day in the Life of a Mushroom." Read fungus-themed picture books together and act out the mushroom life cycle as a group. Create a class "Mushroom Discovery Journal" where students draw and label what they observe about fungi in their own yards or parks.

3. Art - Nature Collage & Texture Exploration: Create mushroom art using brown and tan paper, fabric scraps, and textured materials to represent the gills. Make mushroom stamps with paint to create patterns. Collect safe natural materials (leaves, twigs, grass) to build 3D mushroom sculptures or dioramas showing a forest ecosystem.

4. Social Studies - Community Helpers & Sustainability: Discuss how gardeners, farmers, and park rangers use knowledge about fungi to help plants grow healthy. Talk about how decomposers like fungi help care for our Earth by recycling nutrients. Take a nature walk to observe fungi in your community and discuss how to respect natural areas.

STEM Career Connection

1. Mycologist (Fungus Scientist): A mycologist is a scientist who studies fungi like mushrooms. They observe how mushrooms grow, learn what makes them healthy or sick, and discover new types of fungi. Some mycologists help farms grow food by understanding how fungi help soil, while others work in hospitals learning about fungi that make people sick. Average Salary: $45,000 - $70,000 USD

2. Forest Ranger or Park Manager: Forest rangers take care of forests and parks where mushrooms and other living things grow. They observe the forest ecosystem, help visitors learn about nature (including fungi), and make sure the forest stays healthy and safe. Rangers need to understand how all living things like fungi, plants, and animals work together. Average Salary: $38,000 - $65,000 USD

3. Environmental Scientist: Environmental scientists study how living things like fungi help keep our Earth healthy and clean. They might research how fungi break down pollution or help plants grow better in damaged soil. These scientists help solve problems to make our planet a better place for all living things. Average Salary: $50,000 - $85,000 USD

NGSS Connections

- Performance Expectation: K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.
- Disciplinary Core Ideas: K-LS1.C Organization for Matter and Energy Flow in Organisms
- Crosscutting Concepts: Patterns - Students observe patterns in how living things meet their needs

Science Vocabulary

* Mushroom: The part of a fungus that grows above ground and makes spores
* Fungus: A living thing that is not a plant or animal and eats dead things
* Gills: The thin lines under a mushroom cap that hold tiny spores
* Spores: Very tiny seeds that fungi use to make new fungi
* Decompose: When dead plants and animals break down into soil

External Resources

Children's Books:
- Mushrooms by Gail Gibbons
- The Magic School Bus Meets the Rot Squad by Joanna Cole
- Fungus Is Among Us! by Rebecca Hirsch