Frog

Life Science | Lesson Guide

1st Grade

Photo Description

A small green frog sits on a big green leaf. The frog has red eyes and tiny toes that help it hold on. Its smooth, wet skin looks shiny in the light.

Scientific Phenomena

This image represents the Anchoring Phenomenon of animal adaptation for survival in specific habitats. The frog's green coloration provides camouflage that helps it blend with plant leaves, making it harder for predators to spot. The specialized toe pads contain microscopic structures that create adhesion, allowing the frog to grip smooth surfaces like leaves. The moist skin is essential for the frog's respiratory system, as amphibians can absorb oxygen directly through their skin when it stays wet.

Core Science Concepts

1. Animal Body Parts and Functions - Frogs have special body parts like sticky toe pads for climbing and smooth skin for breathing underwater and on land.

2. Camouflage as Protection - The frog's green color helps it hide from animals that might want to eat it by blending in with leaves and plants.

3. Habitat Requirements - Frogs need to live near water and plants because their skin must stay wet to help them breathe.

4. Life Cycles - Frogs start as eggs in water, become tadpoles with tails, then grow legs and lose their tails to become adult frogs.

Pedagogical Tip:

Use hand lenses or magnifying glasses to help students examine frog pictures closely. This develops their observation skills and helps them notice details like toe pads and skin texture that they might miss with just their eyes.

UDL Suggestions:

Provide multiple ways for students to demonstrate their learning about frogs - they could draw and label frog body parts, act out frog movements, or create a simple frog life cycle using playdough or cut-out shapes.

Zoom In / Zoom Out

1. Zoom In: The frog's toe pads contain millions of tiny hairs called setae that use molecular forces to stick to surfaces, similar to how gecko feet work. The skin cells allow gas exchange for breathing.

2. Zoom Out: This frog is part of a larger wetland ecosystem where it helps control insect populations by eating mosquitoes and flies, while also serving as food for birds, snakes, and fish in the food web.

Discussion Questions

1. What body parts help this frog survive on the leaf? (Bloom's: Analyze | DOK: 2)

2. How might a frog's green color help keep it safe? (Bloom's: Apply | DOK: 2)

3. What would happen if a frog's skin dried out completely? (Bloom's: Evaluate | DOK: 3)

4. How are a frog's feet different from your feet, and why? (Bloom's: Compare | DOK: 2)

Potential Student Misconceptions

1. Misconception: "Frogs are slimy and yucky."
   Reality: Frog skin feels smooth and moist, not slimy. The moisture helps them breathe and is perfectly clean.

2. Misconception: "All frogs are green."
   Reality: Frogs come in many colors including brown, yellow, red, and even blue. Their colors help them hide in different places.

3. Misconception: "Frogs live only in water."
   Reality: Adult frogs can live on land and in water, but they need to stay near water to keep their skin moist.

Cross-Curricular Ideas

1. Math - Counting and Patterns: Have students count frog body parts (eyes, legs, toes) in pictures. Create patterns using frog colors (green, green, blue, green, green, blue) or arrange toy frogs by size from smallest to largest.

2. ELA - Story Writing and Sequencing: Students can write or dictate simple sentences about what a frog does during the day: "The frog sits on a leaf. The frog eats a bug. The frog jumps to the water." Create a story sequence using picture cards of the frog's daily activities.

3. Art - Mixed Media Collage: Students create frogs using torn green paper, paint, and natural materials like leaves and twigs. They can add details with markers and create a classroom wetland habitat display showing frogs on leaves and in water.

4. Social Studies - Animal Habitats Around the World: Explore where different frogs live on a world map. Discuss how people in different countries might see frogs in their gardens or near their homes, connecting to communities and environments worldwide.

STEM Career Connection

1. Biologist/Nature Scientist: Biologists study animals like frogs to learn how they live, what they eat, and how they change. They go outside, observe frogs, take notes, and help protect frogs and their homes. They might work in forests, zoos, or museums. Average Salary: $68,000 USD per year.

2. Zookeeper: Zookeepers take care of frogs and other animals at zoos and aquariums. They feed the frogs, keep their habitats clean and wet, and teach visitors about how frogs survive. Average Salary: $34,000 USD per year.

3. Environmental Educator: Environmental educators teach children and families about nature and animals like frogs through programs at nature centers, parks, and schools. They lead nature walks, do hands-on activities, and help people understand why frogs are important. Average Salary: $39,000 USD per year.

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 help them survive in their environment.
- Crosscutting Concept: Structure and Function - The shape and stability of structures are related to their function.

Science Vocabulary

* Camouflage: When an animal's colors or patterns help it blend in and hide from other animals.
* Adaptation: Special body parts or behaviors that help animals survive in their homes.
* Amphibian: An animal that can live both in water and on land, like frogs and salamanders.
* Habitat: The place where an animal lives and finds everything it needs to survive.
* Predator: An animal that hunts and eats other animals for food.

External Resources

Children's Books:
- From Tadpole to Frog by Wendy Pfeffer
- Red-Eyed Tree Frog by Joy Cowley
- Frogs by Gail Gibbons