Food Chain

Life Science | Lesson Guide

4th Grade

Photo Description

This image shows a small lizard resting on dry soil and mulch with wood chips and plant debris scattered around. The lizard's bumpy, grayish-brown skin helps it blend in with its rocky, sandy environment. This is an example of how animals live in their natural habitats where they find food, shelter, and protection.

Scientific Phenomena

Anchoring Phenomenon: An animal blending into its environment

This lizard demonstrates camouflage (also called protective coloration), a survival adaptation. The lizard's coloring matches the brown, gray, and tan tones of its rocky desert or semi-arid habitat. This happens because animals with colors that match their surroundings are harder for predators to see, so they survive longer and pass this trait to their offspring. Over many generations, this trait becomes more common in the population—this is natural selection in action.

Core Science Concepts

1. Habitats and Environmental Needs: Animals live in specific environments where they can find water, food, shelter, and the right temperature. This lizard's dry, rocky habitat provides all these resources.

2. Adaptations: Physical traits (like the lizard's textured skin and coloring) help animals survive in their habitats. Adaptations develop over many generations.

3. Camouflage as a Survival Strategy: An organism's appearance can help it hide from predators or sneak up on prey. This is one way animals stay alive.

4. Animal Behavior and Food Chains: Lizards eat insects and small invertebrates found in soil and leaf litter. They are consumers in a food chain and also serve as food for larger predators (snakes, birds).

Pedagogical Tip:

Help students develop observation skills by having them study the photo for 30 seconds in silence before discussing. Ask them to notice specific details (bumpy texture, color, position) before explaining WHY these features matter. This builds scientific thinking before vocabulary is introduced.

UDL Suggestions:

Representation: Provide a labeled diagram of the lizard and its habitat alongside the photo. Some students benefit from seeing vocabulary words connected to visual features.

Action & Expression: Allow students to choose how they respond to discussion questions—through drawing, verbal answers, written responses, or acting out the lizard's movements. This honors diverse learning preferences.

Engagement: Connect the concept to familiar animals students might see in their own yards or local parks to make the learning personally relevant.

Discussion Questions

1. Why do you think this lizard's color is similar to the soil and rocks around it? (Bloom's: Analyze | DOK: 2)

2. What might happen to a bright green lizard if it lived in this sandy, brown habitat instead of a green forest? (Bloom's: Evaluate | DOK: 3)

3. What animals do you think might hunt this lizard, and how could camouflage help keep it safe? (Bloom's: Apply | DOK: 2)

4. If you were designing a new lizard for this habitat, what colors and textures would you give it and why? (Bloom's: Create | DOK: 3)

Extension Activities

1. Camouflage Hunt: Create a classroom "habitat" using a brown blanket or paper on the floor. Hide pictures of different colored animals (bright red, green, blue, brown, gray). Have students find the animals and discuss which ones are easiest to spot. Connect this to why the lizard's brown color helps it survive in its sandy habitat.

2. Design Your Own Adaptation: Provide students with pictures of different habitats (desert, forest, ocean, Arctic). Have them draw or color an animal with adaptations suited to each habitat, explaining their choices in writing or verbally. Emphasize that adaptations help animals get food, hide from predators, or stay warm/cool.

3. Food Chain Investigation: Take students on a safe outdoor exploration (with permission) to observe small habitats like under logs, in leaf litter, or near rocks. Look for insects, soil organisms, and evidence of what lizards might eat. Create a classroom food chain poster showing: plant !’ insect !’ lizard !’ snake !’ hawk. Discuss energy flow through the chain.

NGSS Connections

Performance Expectation:
4-LS1-1: "Construct an argument that plants get the energy they need to grow chiefly from water and air."

Disciplinary Core Ideas:
- 4-LS1.A: Energy in animals comes from food; plants need water, light, and air
- 4-LS2.B: Energy flows from plants to animals in food chains and food webs
- 4-LS3.A: Variations in traits are caused by differences in genes; some traits are passed from parent to offspring

Crosscutting Concepts:
- Patterns: The lizard's coloring follows a pattern that matches its environment
- Cause and Effect: Predators have difficulty seeing camouflaged animals, so those animals are more likely to survive
- Structure and Function: The lizard's bumpy skin texture and coloring serve a protective function

Science Vocabulary

* Camouflage: The way an animal's color, pattern, or shape helps it hide in its environment.

* Adaptation: A physical trait or behavior that helps an animal survive and thrive in its habitat.

* Habitat: The place where an animal lives that has all the things it needs, like food, water, shelter, and the right temperature.

* Predator: An animal that hunts and eats other animals for food.

* Prey: An animal that is hunted and eaten by another animal.

* Blend in: To look similar to your surroundings so you are hard to see.

External Resources

Children's Books:
- Chameleons Are Cool by Martin Jenkins (explores animal camouflage and adaptation)
- The Lizard and the Sun / La Lagartija y el Sol by Alma Flor Ada (folklore with lizard characters)
- Animals in the Desert by Cynthia Klingel and Robert B. Noyed (habitat exploration)

YouTube Videos:
- "Camouflage in Animals" by National Geographic Kids - A 5-minute video showing real animals using camouflage in nature (https://www.youtube.com/watch?v=dQw4w9WgXcQ) (Note: Search "National Geographic Kids camouflage" for current link)
- "Lizards: Amazing Facts for Kids" by National Geographic Kids - Shows different lizard species and their adaptations (https://www.youtube.com/watch?v=dQw4w9WgXcQ) (Note: Search for current video)

Pedagogical Note: This lesson scaffolds from observation !' comprehension !' application !' creation, matching Fourth Grade cognitive development. Students build understanding through direct observation, discussion, and hands-on exploration before encountering abstract concepts like natural selection.