Anole

Life Science | Lesson Guide

5th Grade

Photo Description

This brown lizard sits on a tree branch, showing detailed scales covering its body and a long, thin tail. The lizard has a golden eye and mottled brown coloring that helps it blend in with the bark of the tree.

Scientific Phenomena

The anchoring phenomenon shown here is camouflage and structural adaptation. This lizard displays protective coloration where its brown, patterned skin closely matches the tree bark texture and color. This adaptation occurs because over many generations, lizards with better camouflage were more likely to survive predator attacks and reproduce, passing these beneficial traits to their offspring through natural selection.

Core Science Concepts

1. Structural Adaptations: The lizard's scales, coloring, and body shape are physical features that help it survive in its environment
2. Camouflage: The lizard's brown coloration and patterns help it blend with tree bark to avoid predators
3. Habitat Requirements: Lizards need specific environmental conditions including warmth, shelter, and food sources
4. Animal Classification: Reptiles like lizards are cold-blooded vertebrates with scaly skin that lay eggs

Pedagogical Tip:

Use the "Notice and Wonder" strategy by having students observe the image for 2 minutes, then share what they notice about the lizard's features before introducing scientific vocabulary.

UDL Suggestions:

Provide tactile experiences by bringing in tree bark samples and fabric with different textures so students can feel how camouflage works through touch, supporting kinesthetic learners.

Zoom In / Zoom Out

1. Zoom In: At the cellular level, specialized cells called chromatophores contain pigments that create the lizard's brown coloration patterns, while keratin proteins form the protective scales
2. Zoom Out: This lizard is part of a larger forest ecosystem where it serves as both predator (eating insects) and prey (for birds and mammals), helping maintain ecological balance

Discussion Questions

1. How does the lizard's coloring help it survive in its environment? (Bloom's: Analyze | DOK: 2)
2. What would happen to this lizard population if all the trees were cut down? (Bloom's: Evaluate | DOK: 3)
3. What other animals use camouflage as a survival strategy? (Bloom's: Apply | DOK: 2)
4. How might this lizard's adaptations be different if it lived in a desert instead of a forest? (Bloom's: Synthesize | DOK: 3)

Potential Student Misconceptions

1. Misconception: Lizards can change their color on purpose like chameleons
   Clarification: Most lizards cannot change color - their camouflage coloring is permanent and developed over many generations

2. Misconception: All reptiles are dangerous or poisonous
   Clarification: Most lizards are harmless to humans and play important roles in controlling insect populations

3. Misconception: Lizards are slimy like frogs
   Clarification: Lizards have dry, scaly skin that helps prevent water loss, unlike amphibians

Cross-Curricular Ideas

1. Math - Measurement & Ratios: Have students measure the length of different lizards (or pictures of lizards) and create bar graphs comparing their sizes. They could also calculate the ratio of tail length to body length, discovering that many lizards have tails 2-3 times longer than their bodies.

2. ELA - Descriptive Writing: Students write detailed descriptions of the lizard using sensory words (rough scales, mottled brown, golden eye) without naming the animal, then read their descriptions aloud for classmates to guess what creature is being described. This builds vocabulary and descriptive writing skills.

3. Art - Camouflage Collage: Students create their own camouflaged animal artwork by cutting colored paper to match a background environment, or paint an animal using colors that blend with a painted landscape. This reinforces understanding of how adaptations function while developing artistic skills.

4. Social Studies - Ecosystem & Conservation: Research where different lizard species live around the world, marking their habitats on a map. Discuss how deforestation and habitat loss threaten lizard populations, connecting to broader environmental and conservation topics.

STEM Career Connection

1. Herpetologist: A herpetologist is a scientist who studies reptiles and amphibians like lizards, snakes, and frogs. They observe animals in nature, conduct research to learn how these creatures survive, and work to protect endangered species. Herpetologists might work in zoos, museums, universities, or wildlife organizations. Average Salary: $45,000-$65,000 per year

2. Wildlife Photographer: Wildlife photographers take pictures of animals in their natural habitats, like the lizard in this photo. Their images are used in magazines, books, documentaries, and educational materials to help people learn about and appreciate nature. This job requires knowledge of animal behavior, patience, and photography skills. Average Salary: $35,000-$60,000 per year

3. Ecologist: An ecologist studies how animals interact with their environment and each other. They investigate questions like: "How do lizards affect the insects in a forest?" and "What happens to an ecosystem when a species disappears?" Ecologists use this knowledge to help protect natural areas and wildlife. Average Salary: $50,000-$75,000 per year

NGSS Connections

- Performance Expectation: 5-LS2-1 - Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment
- Disciplinary Core Ideas: 5-LS2.A - The food of almost any kind of animal can be traced back to plants
- Disciplinary Core Ideas: 3-LS4.C - The environment also affects the traits that an organism develops
- Crosscutting Concepts: Structure and Function - The way an object is shaped or structured determines many of its properties
- Crosscutting Concepts: Patterns - Similarities and differences in patterns can be used to sort and classify natural phenomena

Science Vocabulary

* Adaptation: A special feature that helps an animal survive in its environment
* Camouflage: Colors or patterns that help an animal blend in with its surroundings
* Reptile: A cold-blooded animal with scaly skin that lays eggs on land
* Predator: An animal that hunts and eats other animals
* Habitat: The natural place where an animal lives and finds everything it needs
* Scales: Small, hard plates that cover and protect a reptile's skin

External Resources

Children's Books:
- Lizards by Gail Gibbons
- A Lizard's Tale by Jose Aruego
- What Is a Reptile? by Bobbie Kalman