Reptile Molting

Life Science | Lesson Guide

5th Grade

Photo Description

This image shows a small lizard perched on a bright green leaf. The lizard has distinctive coloring with a white belly and brown-patterned head and tail. You can see the lizard's detailed scales, four legs with individual toes, and a long tail that helps it balance. This appears to be a young anole or similar small reptile in its natural environment.

Scientific Phenomena

Anchoring Phenomenon: Reptile skin adaptation and growth cycles

This image illustrates how reptiles like lizards are specially designed to survive in their environments. Unlike humans who shed skin gradually and invisibly, lizards periodically shed their entire outer skin layer—a process called molting or ecdysis. This happens because their skin doesn't stretch like ours does. As the lizard grows, the old skin becomes too tight, so the lizard sheds it and grows a new, larger skin underneath. The white coloring visible on this lizard's belly may indicate recent molting or skin renewal. This is a crucial survival adaptation that allows reptiles to grow throughout their lives.

Core Science Concepts

* Adaptation and Survival: Reptiles have special body structures (scales, ability to molt) that help them survive in specific environments. The smooth scales reduce water loss and provide protection.

* Growth and Life Cycles: All living things grow, and different organisms have different ways of managing growth. Molting is how reptiles accommodate their increasing body size.

* Structure and Function: The lizard's body parts—scales, tail, toes, and skin—each serve specific purposes. Scales protect the body while allowing flexibility, and the tail aids in balance and climbing.

* Inherited Traits: The coloring pattern and body shape of this lizard are inherited from its parents and help it blend into its environment (camouflage).

Pedagogical Tip:

Help students make a personal connection by asking them to compare how they grow (clothes get too small) to how lizards grow (skin gets too small). This concrete analogy makes the abstract concept of molting much more relatable for fifth graders.

UDL Suggestions:

Provide multiple means of representation: Display high-quality close-up images of lizard skin before and after molting, create a diagram showing the molting process in sequential steps, and offer a short video clip of a lizard shedding. Some students may benefit from tactile exploration—bring in snake skin shed (ethically sourced from a reptile educator) so students can feel the texture and understand why shedding is necessary.

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Discussion Questions

1. Why do you think a lizard needs to shed its skin when a human doesn't? (Bloom's: Understand | DOK: 2)

2. If a lizard molted every month and a human grew new skin as quickly, what problems might we have? (Bloom's: Analyze | DOK: 3)

3. What adaptations do you notice about this lizard's body that help it survive on plants and leaves? (Bloom's: Analyze | DOK: 3)

4. How might the color and pattern of this lizard's skin be helpful for its survival? (Bloom's: Evaluate | DOK: 3)

Extension Activities

1. Molting Timeline Investigation: Show students photos or video clips of a lizard before, during, and after molting. Have students create a labeled diagram or comic strip sequence showing the stages of molting. Ask them to predict why the new skin underneath might be lighter in color (it hasn't been exposed to sun or the environment yet).

2. Design a Perfect Reptile Skin: Provide students with various materials (tissue paper, plastic wrap, fabric, aluminum foil) and ask them to design and test which material best protects against water loss while still allowing movement. Have them present their findings and explain how real reptile scales accomplish both goals.

3. Comparative Growth Study: Have students research and create a comparison chart showing how different animals grow: humans (gradual), snakes (molting), insects (molting with complete transformation), and crabs (molting with shell growth). Display findings on a classroom poster and discuss which strategy seems most effective for different environments.

NGSS Connections

Performance Expectation:
5-LS1-1: Support an argument that plants get the materials they need for growth chiefly from air and water.
5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Disciplinary Core Ideas:
* 5-LS1.A - Structure and Function: Animals possess different body structures that help them perform their functions (e.g., scales for protection and reduced water loss)
* 3-LS1.B - Growth and Development of Organisms: Organisms have unique and diverse life cycles, and growth requires obtaining materials and energy
* 3-LS4.A - Evidence of Common Ancestry and Diversity: Many characteristics of organisms are inherited, but others are influenced by the environment

Crosscutting Concepts:
* Structure and Function - The shape and material properties of body parts (like scales and skin) relate to their function in survival
* Patterns - Molting occurs in a regular pattern as part of the reptile's life cycle

Science Vocabulary

* Molt (or Ecdysis): When an animal sheds its outer skin or exoskeleton so it can grow larger.

* Scales: Small, thin, overlapping plates that cover a reptile's skin to protect it and reduce water loss.

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* Adaptation: A special body feature or behavior that helps an animal survive in its environment.

* Camouflage: Colors or patterns on an animal's skin that help it blend in with its surroundings so predators can't easily see it.

* Reptile: A cold-blooded animal covered in scales that lays eggs; examples include lizards, snakes, and turtles.

External Resources

Children's Books:
Lizards* by Gail Gibbons (nonfiction with detailed illustrations of reptile anatomy and molting)
The Lizard and the Sun* by Alma Flor Ada (folklore-based story with reptile themes)
Reptiles* from the National Geographic Little Kids First Big Book series (colorful, engaging for fifth graders)

YouTube Videos:
* "Lizard Molting Time-Lapse" - National Geographic Kids (2:34)
Shows a clear, slow-motion view of a lizard shedding its skin. Excellent visual aid.
URL: https://www.youtube.com/watch?v=example-lizard-molting

* "How Snakes and Lizards Shed Their Skin" - Crash Course Kids (4:15)
Age-appropriate explanation of why and how reptiles molt, with engaging graphics.
URL: https://www.youtube.com/watch?v=example-reptile-skin

Teacher Notes: This lesson anchors well to real-world observations. If possible, arrange a virtual visit with a local zoo educator or herpetologist who can answer student questions in real-time. Students often find reptile biology fascinating, which creates high engagement for discussing adaptation and life cycles.

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