Scales

Life Science | Lesson Guide

1st Grade

Photo Description

This image shows a small crocodilian (likely a young alligator) being held gently in a person's hand. You can see the animal's bumpy skin covered with hard scales, its eye, and its long tail. The scales look like little tiles that protect the reptile's body.

Scientific Phenomena

Anchoring Phenomenon: Why do some animals have bumpy, scaly skin instead of smooth skin like ours?

Scientific Explanation: Reptiles like alligators and crocodiles have evolved specialized skin covered in scales made of keratin—the same material as our fingernails. These scales overlap like roof shingles and serve critical functions: they protect the animal from injury, help prevent water loss, and provide camouflage in their natural environment. The bumpy texture you see is actually the edges of individual scales. This is an example of how different animals have different body structures that help them survive in their habitats.

Core Science Concepts

* Animal Body Coverings: Different animals have different types of skin and coverings (scales, fur, feathers, smooth skin) that help protect them and help us identify what kind of animal they are.

* Adaptation and Survival: Scales help reptiles survive by protecting their bodies, keeping moisture in, and helping them blend into their surroundings.

* Observable Features: We can use our senses (especially sight and touch) to observe and describe the characteristics of animals, like texture, color, and shape.

* Reptile Characteristics: Reptiles are a group of cold-blooded animals that have scales, lay eggs, and breathe air with lungs.

Pedagogical Tip:

First graders learn best through direct observation and tactile exploration. While live reptiles require specialized care and handling, consider using reptile-themed manipulatives, high-quality photographs, or safe classroom items with similar textures (pinecones, textured fabric) to help students understand "scaly" without overwhelming them. Always prioritize student comfort and safety—some children may have anxiety around reptiles.

UDL Suggestions:

Multiple Means of Representation: Provide images, physical texture samples, and video clips of reptiles in their habitats. Some students may benefit from large, tactile cards with scale-like textures they can touch. Multiple Means of Action/Expression: Allow students to draw, build with clay, or create a texture collage to represent scales rather than requiring only written responses. Multiple Means of Engagement: Connect to student interests (dinosaurs, adventure, nature exploration) and emphasize that learning about scales helps us understand how animals are perfectly designed for where they live.

Discussion Questions

1. What do you notice about the bumpy skin on this animal? How is it different from your skin? (Bloom's: Remember/ Understand | DOK: 1)

2. Why do you think this animal needs tough, scaly skin? What could the scales protect it from? (Bloom's: Analyze | DOK: 2)

3. If you were going to design a skin covering for an animal that lives in a swamp, what would you make it like? Why? (Bloom's: Create | DOK: 3)

4. How do you think having scales helps this animal survive in places where it lives? (Bloom's: Evaluate | DOK: 3)

Extension Activities

Activity 1: Texture Exploration Station
Set up a sensory station where students safely explore different textures (pinecone, tree bark, sandpaper, smooth stone, corrugated cardboard) that represent different animal coverings. Have them sort items into categories like "bumpy," "smooth," or "scaly" and discuss which textures might protect animals best.

Activity 2: Create a Reptile with Scales
Provide students with paper plates, colored tissue paper, and glue to create their own reptile covered in "scales." They can tear or cut tissue paper into scale shapes and layer them on their animal. Display their creations and have them explain what their reptile's scales look like and what habitat it might live in.

Activity 3: Reptile Homes Diorama
In small groups, have students create a simple habitat diorama (using a shoe box, sand, rocks, and drawn/printed plants) for a reptile. Include a picture or model of a reptile and have students explain why their habitat has the things the animal needs to survive, including how their scales help them in that environment.

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.A - All organisms have external parts that help them survive, grow, and meet their needs.
- K-ESA1.A - Different plants and animals live in different places called habitats.

Crosscutting Concepts:
- Structure and Function — The scales on a reptile's body have a structure (bumpy, overlapping) that serves the function of protection and water retention.
- Patterns — We can observe patterns in how different animals' body coverings match their environments.

Science Vocabulary

* Scales: Hard, flat pieces that cover a reptile's skin and protect its body (like tiny shields).
* Reptile: An animal with scaly skin, cold blood, and that lays eggs (like snakes, lizards, and alligators).
* Texture: How something feels when you touch it—bumpy, smooth, rough, or soft.
* Adapt or Adaptation: A special body part or behavior that helps an animal survive where it lives.

* Habitat: The place where an animal naturally lives and finds food, water, and shelter.

External Resources

Children's Books:
- Reptiles Are Funky by Gladys Rosa-Mendoza (introduces students to various reptiles and their characteristics)
- Who Has a Tail? by Kit Clutson (simple observation book about animal body parts)
- Exploring Reptiles by Margaret Hall (NGSS-aligned informational text for early readers)

YouTube Videos:
- "What Do Reptiles Need to Survive?" — National Geographic Kids — A 3-minute video showing different reptiles and their adaptations. https://www.youtube.com/watch?v=TZBQKv6Yduc

- "Reptiles 101" — Crash Course Kids — An age-appropriate introduction to reptile characteristics, habitats, and scales. https://www.youtube.com/watch?v=GnPkQBu_PgI