Turtles

Life Science | Lesson Guide

1st Grade

Photo Description

Two turtles are sitting on a log by the water. One turtle is small and one turtle is big. The big turtle has green stuff growing on its shell. Both turtles have dark shells with some red and yellow colors.

Scientific Phenomena

The Anchoring Phenomenon shown here is symbiosis and adaptation in aquatic habitats. The larger turtle displays algae growth on its shell, which occurs when turtles spend extended time in nutrient-rich water environments. This creates a mutually beneficial relationship where algae receive a mobile surface for sunlight exposure while providing camouflage for the turtle. The turtles are also demonstrating thermoregulation behavior by basking on the log to absorb heat from sunlight, as they are cold-blooded animals that cannot generate their own body heat.

Core Science Concepts

1. Animal Needs and Habitats: Turtles need water, food, shelter, and warmth to survive in their pond habitat
2. Life Cycles and Growth: The image shows turtles of different sizes, representing different life stages
3. Animal Adaptations: Turtle shells provide protection, and basking behavior helps regulate body temperature
4. Living vs. Non-living Interactions: Turtles interact with living elements (algae, plants) and non-living elements (water, sun, log)

Pedagogical Tip:

Use the size difference between the turtles to introduce measurement concepts and comparative language (bigger/smaller, older/younger) while reinforcing that animals grow and change over time.

UDL Suggestions:

Provide multiple ways for students to express their observations by offering drawing materials, simple recording sheets with pictures, and opportunities for verbal sharing. Consider having students act out turtle movements and basking behaviors to engage kinesthetic learners.

Zoom In / Zoom Out

1. Zoom In: At the microscopic level, algae cells are using photosynthesis to make their own food using sunlight, carbon dioxide, and water while living on the turtle's shell
2. Zoom Out: This pond ecosystem is part of a larger watershed where turtles play important roles as both predators (eating plants, insects, small fish) and prey (for larger animals like birds and mammals)

Discussion Questions

1. What do you notice about how the two turtles are different from each other? (Bloom's: Analyze | DOK: 2)
2. Why do you think the turtles chose to sit on this log instead of staying in the water? (Bloom's: Evaluate | DOK: 3)
3. How does a turtle's shell help it survive in its habitat? (Bloom's: Apply | DOK: 2)
4. What other animals might live in this same pond habitat with the turtles? (Bloom's: Create | DOK: 2)

Potential Student Misconceptions

1. Misconception: "The green stuff on the turtle's shell means the turtle is sick"
   Clarification: The algae growth is natural and doesn't hurt the turtle - it's like having a green coat that helps it hide
2. Misconception: "Turtles are always slow"
   Clarification: While turtles move slowly on land, they can swim quite fast in water when they need to escape danger
3. Misconception: "All turtles live in water all the time"
   Clarification: Turtles need both water and land - they swim in water but come on land to rest, warm up, and lay eggs

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 Ideas: 1-LS1.A - All organisms have external parts that they use to perform daily functions
- Crosscutting Concepts: Structure and Function - The shape and stability of structures of natural objects are related to their function

Science Vocabulary

* Habitat: The place where an animal lives and finds everything it needs to survive
* Shell: The hard covering that protects a turtle's soft body parts
* Algae: Tiny green plants that grow in water and on wet surfaces
* Basking: When cold-blooded animals sit in the sun to warm their bodies
* Adaptation: Special body parts or behaviors that help animals survive in their homes

External Resources

Children's Books:
- Box Turtle at Long Pond by William T. George
- Turtle, Turtle, Watch Out! by April Pulley Sayre
- Red-Eyed Tree Frog by Joy Cowley

YouTube Videos:
- "Turtle Facts for Kids" - Educational video showing turtle adaptations and life cycle basics: https://www.youtube.com/watch?v=FJW6nSR0H1I
- "Pond Habitat Animals" - Explores various animals that live in pond ecosystems including turtles: https://www.youtube.com/watch?v=rFXvGT-H3g4