Food Chain

Life Science | Lesson Guide

2nd Grade

Photo Description

This image shows a small lizard sitting on dirt and mulch. The lizard has a bumpy, gray-brown skin that helps it blend in with the ground. Around the lizard are pieces of wood, bark, leaves, and soil—all things you might find on the forest floor or in a garden.

Scientific Phenomena

Anchoring Phenomenon: A small animal (lizard) living in and using a soil and mulch habitat.

Why This Is Happening: Lizards are cold-blooded animals that need warm environments. They hide in soil, mulch, and leaf litter to stay warm, find food (like insects and worms), and hide from bigger animals that might eat them. The dirt and debris provide shelter, moisture, and hunting grounds—everything the lizard needs to survive. The lizard's bumpy, earth-colored skin helps it hide from predators by blending in with its surroundings (called camouflage). This is an example of how animals depend on their habitats to meet their basic needs.

Core Science Concepts

* Habitats provide homes and resources: Animals live in places that give them food, water, shelter, and the right temperature. This lizard's habitat (the soil and mulch area) gives it all these things.

* Animals have adaptations: The lizard's bumpy skin and brownish color help it survive in its habitat by hiding from predators and absorbing warmth from the sun.

* Camouflage and blending in: The lizard's color and texture match its environment, making it hard for other animals to see it.

* Decomposers and soil ecosystems: The mulch, wood chips, and decaying leaves in the soil are breaking down and returning nutrients to the earth, which helps plants and small creatures like insects and worms live there.

Pedagogical Tip:

Second graders benefit from direct, sensory observation. Rather than only looking at photos, bring in safe soil samples, leaf litter, and bark pieces to a science table. Let students carefully observe real habitats under a magnifying glass or hand lens. This connects abstract photo images to concrete, tactile learning and builds vocabulary through discovery.

UDL Suggestions:

Multiple Means of Representation: Provide both the photo AND real habitat materials (soil, leaves, bark) so visual learners, tactile learners, and kinesthetic learners all engage. Use a document camera to project close-up views of the materials while students touch and handle safe samples.

Multiple Means of Engagement: Some students may hesitate around live animals or bugs. Have alternative activities: observing the photo on a tablet, building a pretend habitat with craft materials, or drawing what animals might live in soil. This respects student comfort while maintaining learning goals.

Multiple Means of Expression: Allow students to show understanding by drawing, dictating, creating a habitat diorama, or acting out how a lizard moves and hides.

Zoom In / Zoom Out

Zoom In: Tiny Decomposers at Work
Deep in the soil and mulch, there are teeny-tiny creatures and germs (called decomposers) that we can't see without a microscope. These invisible workers break down dead leaves, wood, and bugs into smaller and smaller pieces. As they do this, they turn old, dead stuff into nutrients (like food) that go back into the soil. This makes the soil rich and healthy so plants can grow—and so the lizard can find bugs and worms to eat! The lizard depends on these invisible helpers, even though it will never see them.

Zoom Out: The Forest Floor Food Web
Now imagine zooming way, way out to see the whole forest or garden. The lizard is part of a big web of life. The sun gives energy to plants. Plants get nutrients from the decomposing leaves in the soil. Insects eat the plants and live in the mulch. The lizard eats the insects. A bigger animal (like a bird or snake) might eat the lizard. When the lizard dies, it becomes part of the soil and helps make nutrients for new plants. Everything is connected! The small pile of dirt and mulch in this photo is actually part of a giant, spinning cycle of life that connects to forests, gardens, and ecosystems all around the world.

Discussion Questions

1. Why do you think the lizard's skin is brown and bumpy instead of bright red and smooth? (Bloom's: Analyze | DOK: 2)
2. What do you see in this habitat that the lizard might eat or use? (Bloom's: Understand | DOK: 1)
3. If someone took away all the dirt, leaves, and mulch, what might happen to the lizard? (Bloom's: Evaluate | DOK: 3)
4. What other animals do you think might live in soil and mulch like this lizard does? (Bloom's: Create | DOK: 3)

Potential Student Misconceptions

Misconception 1: "The lizard lives inside the soil like it's made of solid rock."
- Clarification: Soil is actually loose and crumbly with tiny spaces between pieces. The lizard can move through soil, hide in gaps between rocks and roots, and burrow shallow tunnels. It's not trying to dig through cement—it's moving through loose, easy-to-move material that has room for small creatures.

Misconception 2: "The lizard doesn't need anything from the dirt—it just sits there."
- Clarification: The soil and mulch give the lizard everything it needs: shelter (hiding from bigger animals), moisture (so its skin doesn't dry out), warmth (from the sun heating the ground), and food (bugs, worms, and insects live in the soil). Without the soil and mulch, the lizard would have nowhere to live and nothing to eat.

Misconception 3: "All the stuff in the soil (rotting leaves, dead bugs, bark) is just garbage that doesn't matter."
- Clarification: Dead and decaying material is super important! It feeds decomposers, which break it down into nutrients. These nutrients help plants grow. And all those insects, worms, and small creatures living in the decaying stuff become food for the lizard. What looks like trash is actually treasure for the habitat!

Extension Activities

1. Build a Habitat Diorama: Students create a shoebox habitat with soil, leaves, twigs, and small rocks. They can draw or paste pictures of animals (like lizards, worms, beetles) that live in that habitat. Students label the food and shelter items in their diorama.

2. Soil Safari: Take students outside to a safe, supervised area (garden, mulch pile, or wooded spot). Using small containers or magnifying glasses, students carefully observe and sketch small creatures and habitat materials they find. Back in class, discuss what they discovered and why those animals live there.

3. Camouflage Hunt: Hide pictures or cutouts of colorful animals in a natural area with soil, mulch, and leaves. Students search for the pictures. Afterward, discuss which colors were easiest to find and which animals would be hardest for predators to spot. Connect this to why the lizard is brown like its environment.

Cross-Curricular Ideas

Math Connection: Measuring and Counting
Have students measure the length of their own index finger, then compare it to the size of the lizard in the photo. Ask: "How many fingers long do you think this lizard is?" Students can use non-standard measurement (finger lengths, hand spans) or estimate distances using a ruler. Create a classroom chart showing "Animals and How Long They Are" with the lizard, a worm, a beetle, and other small creatures.

ELA Connection: Habitat Story Writing
Students write or dictate a short story from the lizard's point of view: "A Day in My Home." Prompt: "Where do you hide? What do you eat? What are you afraid of? Why do you like living in the dirt?" This builds narrative skills while deepening understanding of the lizard's needs and behaviors. Students can illustrate their stories and create a class book titled "Life Under the Leaves."

Art Connection: Camouflage Craft
Give students a piece of brown construction paper with a simple lizard shape drawn on it. Students tear or cut pieces of real mulch, bark, leaves, and soil (collected safely and sealed in bags) and glue them onto the lizard and surrounding paper to create a textured, camouflaged artwork. Display in the classroom and discuss: "Can you see the lizard? Why or why not?" This makes camouflage tactile and visible.

Social Studies Connection: Community Habitats
Expand the idea of "habitat" to human communities. Ask students: "What does your community provide for you, like the soil provides for the lizard?" (homes, food stores, schools, parks, playgrounds). Create a Venn diagram comparing a lizard's habitat needs to human neighborhood needs. This builds social-emotional learning while reinforcing that all living things—including humans—need shelter, food, and safe spaces.

STEM Career Connection

Wildlife Biologist / Herpetologist
A herpetologist is a scientist who studies reptiles like lizards, snakes, and turtles. They watch where lizards live, what they eat, how they hide, and how they have babies. They might work in forests, deserts, or zoos to learn about lizards and help protect them. Some herpetologists write books or make videos to teach people about these cool creatures!
Average Annual Salary: $65,000–$75,000 USD

Soil Scientist / Pedologist
A soil scientist studies dirt! They figure out what's in soil, how it helps plants and animals, and how to keep soil healthy. They might dig up soil samples, look at it under a microscope, and test it in a lab. They help farmers grow better crops and help protect habitats where animals like lizards live.
Average Annual Salary: $62,000–$72,000 USD

Environmental Educator / Nature Center Specialist

An environmental educator teaches kids and families about nature, habitats, and animals—sometimes right at a nature center or outdoor classroom! They might lead "soil safaris," help students build habitats, show kids how to find and observe lizards safely, and answer questions about how nature works. They help people (especially young people) fall in love with the outdoors.
Average Annual Salary: $35,000–$50,000 USD

NGSS Connections

Performance Expectation:
2-LS2-1: Plan and conduct investigations to provide evidence that plants get the energy they need to grow chiefly from light, and that plants get materials they need to grow chiefly from water and air.

Disciplinary Core Ideas:
- 2-LS1.A How do organisms get the energy and materials they need to grow and survive?
- 2-LS2.A Plants depend on animals for pollination or seed dispersal, and animals depend on plants for food and shelter.
- 2-LS4.A Different plants and animals live in different habitats; they have different structures that help them survive.

Crosscutting Concepts:
- Systems and System Models (The habitat is a system with interconnected parts)
- Structure and Function (The lizard's bumpy skin and color are structures that help it function and survive)
- Cause and Effect (The lizard hides because predators hunt it; it stays in mulch because it provides shelter and food)

Science Vocabulary

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

* Camouflage: Colors or patterns on an animal's body that help it hide by blending in with its surroundings.

* Adaptation: A special feature on an animal's body that helps it survive in its habitat.

* Mulch: Pieces of wood, bark, and leaves that break down on the ground and help soil stay moist and healthy.

* Soil: The dark brown material on the ground made of broken-down rocks, dead plants, and animals, and living creatures.

* Shelter: A safe place where an animal can hide from danger and stay protected.

External Resources

Children's Books:
- The Tiny Seed by Eric Carle (shows plant growth and habitat)
- Are You a Butterfly? by Judy Allen (explores habitats and camouflage)
- In the Tall, Tall Grass by Denise Fleming (introduces ground-level creatures and habitats)

Teacher Notes: This lesson connects Second Graders' natural curiosity about small creatures to foundational ecology concepts. Emphasize that every animal needs a home with the things it needs to survive, and that habitats are like "neighborhoods" for plants and animals. Safe, direct observation is key at this grade level!