Earthworm

Life Science | Lesson Guide

Kindergarten

Photo Description

This image shows an earthworm on soil and grass. The earthworm has a long, thin, brownish body that looks like a tube. It moves by stretching and squeezing its body, and you can see the rings that cover its whole body.

Scientific Phenomena

Anchoring Phenomenon: How does an earthworm move without legs?

Earthworms move using peristalsis—a wave-like contraction of their circular and longitudinal muscles. They don't have bones or legs; instead, their body segments contract and relax in sequence, anchoring themselves with tiny bristles called setae. This allows them to wiggle forward through soil. This is an excellent phenomenon for Kindergarteners because it's observable, fascinating, and connects to how their own bodies work in different ways.

Core Science Concepts

* Living Things Have Different Body Parts
  Earthworms have bodies made of segments (rings) that help them move. Unlike humans with legs, earthworms use their stretchy body to travel.

* Organisms Live in Different Habitats
  Earthworms live in soil and decomposing matter. They need moist soil, darkness, and organic material to survive.

* Animals Move in Different Ways
  Not all animals move the same way. While humans walk on legs, earthworms wiggle and squirm to get around.

* Living Things Are Interconnected
  Earthworms help soil by breaking down dead plants and improving soil quality for other organisms to use.

Pedagogical Tip:

Use the phrase "stretchy and squeezy" when describing earthworm movement—it's concrete, memorable, and allows students to mimic the motion with their own bodies. This kinesthetic connection deepens understanding and engagement for young learners.

UDL Suggestions:

Provide multiple means of representation: Show the image, read a simple book aloud, and let students watch a short video of an earthworm moving. For engagement, allow students to move like earthworms on the floor. For expression, students can draw earthworms, use hand motions, or dictate observations to an adult.

Zoom In / Zoom Out

Zoom In: Inside the Earthworm's Body
Earthworms have tiny muscles all along their body that work together to make them move. Inside, they also have a simple heart (actually five of them!) that pumps blood through their body, and a long tube that goes through the middle where food travels. Even though we can't see these parts without special tools, they're all working hard to help the earthworm live, move, and eat soil!

Zoom Out: Earthworms in the Garden and Forest Ecosystem
Earthworms are like tiny workers in a big garden or forest! When they wiggle through the soil, they break down dead leaves and plants, turning them into food for new plants. Birds eat earthworms for lunch, and when earthworms poop in the soil, it makes the dirt richer and better for plants to grow. All of this—the plants, the worms, the birds, and the soil—works together as one big, connected system called an ecosystem.

Discussion Questions

1. "What do you notice about the earthworm's body? What parts do you see?" (Bloom's: Remember | DOK: 1)
2. "How is an earthworm's way of moving different from how you move? How is it the same?" (Bloom's: Compare | DOK: 2)
3. "Why do you think earthworms live in soil instead of in trees?" (Bloom's: Analyze | DOK: 2)
4. "If you were an earthworm, what would you need to be happy and healthy in the soil?" (Bloom's: Create | DOK: 3)

Potential Student Misconceptions

Misconception 1: "Earthworms are bugs/insects."
Clarification: Earthworms are not insects—they don't have six legs, wings, or a hard outer shell like bugs do. Earthworms are their own special kind of animal called a worm. Insects are a different group of animals.

Misconception 2: "Earthworms can be cut in half and become two worms."
Clarification: This is a common myth! If an earthworm is cut, it cannot grow back into two complete worms. The head end might survive and regrow a small tail, but the tail end cannot survive. We should always treat earthworms gently and carefully.

Misconception 3: "Earthworms come out of the ground because it rains and they're drowning."
Clarification: Earthworms don't actually drown in water—they breathe through their skin and need moisture to survive! They come to the surface when soil gets very wet because it's easier to move around and find new homes when the ground is soft and moist.

Extension Activities

1. Earthworm Movement Dance
   Play soft music and ask students to move across the classroom like earthworms—squirming, stretching, and contracting. Discuss how their muscles feel when they move this way. Ask: "Is it hard work to move like an earthworm?"

2. Build a Worm Habitat (Observational)
   With teacher guidance, layer soil, sand, and compost in a clear plastic container. Carefully add one or two earthworms and observe over 1-2 weeks (with proper care). Students can draw or describe what the worms do each day. Note: Release worms back outdoors after observation.

3. Earthworm Sensory Exploration
(If earthworms are available and with parental permission) Allow students to gently touch a moist earthworm to feel its segments and texture. Discuss sensory words: slimy, cool, wiggly, smooth.

Cross-Curricular Ideas

Ø=ÜÖ ELA Connection: Storytelling and Descriptive Writing
Read aloud Wonderful Worms by Linda Glaser, then have students dictate or draw a simple story about "A Day in the Life of Willy the Worm." Use sensory words from the book (wiggly, slimy, dark) and encourage students to describe what the worm sees, does, and eats underground.

Ø=Ý" Math Connection: Counting Segments
Display the earthworm photo and have students count the visible segments on the worm's body. Create a simple bar graph showing "How many segments did you count?" Students can compare their numbers and practice the concept of more/less/equal. You can also use yarn or string to represent earthworm lengths and compare which is "longer" or "shorter."

Ø<ß¨ Art Connection: Texture and Collage
Students create an earthworm collage using torn paper, yarn, corrugated cardboard, and bumpy materials to represent the earthworm's segmented, textured body. Discuss how the materials feel (rough, smooth, bumpy) while they create, connecting tactile experience to scientific observation.

Ø<ß Social Studies Connection: Community Helpers and Jobs
Introduce the idea that earthworms are nature's helpers—they help gardens and farms by making soil healthy. Connect this to other community helpers (gardeners, farmers, teachers) who help take care of people and our environment. Discuss: "How do earthworms help our community? How do other workers help us?"

STEM Career Connection

Ø<ß1 Soil Scientist / Agronomist
Soil scientists study dirt and earthworms to help farmers grow better food! They figure out what's in the soil, how earthworms help plants, and how to keep the ground healthy so we have yummy vegetables and fruits. They might spend time digging in gardens and using special tools to look at tiny things in soil.
Average Annual Salary: $65,000–$75,000 USD

Ø<ß Ecologist
Ecologists are scientists who study how animals like earthworms live with other plants and animals in nature. They explore forests, gardens, and meadows to watch earthworms and understand why every creature—big and small—is important. They help protect animals and their homes.
Average Annual Salary: $68,000–$80,000 USD

Ø<ßá Environmental Educator / Naturalist
Environmental educators teach people (like you!) about amazing animals like earthworms and why we need to take care of nature. They lead nature walks, run programs at nature centers, and help kids discover the outdoors. They love sharing the wonder of worms and other creatures!
Average Annual Salary: $42,000–$58,000 USD

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. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and eat.
- K-LS1.C: All animals need food in order to live and grow. They obtain their food from plants or from other animals. Plants need water and light to grow.

Crosscutting Concepts:
- Structure and Function: Earthworms' segmented bodies are structured to allow movement through soil.
- Patterns: Earthworms follow patterns—they move in waves and are found in moist soil environments.

Science Vocabulary

* Earthworm: A long, soft animal that lives in soil and helps break down dead plants.
* Segment: One of the ring-shaped sections that make up an earthworm's body.
* Soil: The dark, crumbly material in the ground where plants grow and earthworms live.
* Habitat: The place where an animal or plant lives and finds food and water.
* Wiggle: To move back and forth with small, quick movements (like an earthworm does).

External Resources

Children's Books:
- Elmer and the Lost Teddy by David McKee (includes soil/ground themes)
- The Worm Family by Tony Johnston
- Wonderful Worms by Linda Glaser