Centipede

Life Science | Lesson Guide

3rd Grade

Photo Description

This image shows a centipede on a piece of wood or bark. You can see its long, flat brown body made up of many segments lined up in a row, with legs sticking out from the sides of each segment. The centipede has a rounded head at the front with antennae and appears to be in a defensive posture.

Scientific Phenomena

Anchoring Phenomenon: Why does a centipede have so many legs?

Centipedes have evolved segmented bodies with paired legs on almost every segment as an adaptation for speed and maneuverability through soil, leaf litter, and tight spaces. Each body segment (called a somite) carries one pair of jointed legs, allowing the centipede to move quickly and navigate complex environments while hunting for small prey like insects. This body design is the result of millions of years of evolution that made centipedes successful predators in their ecosystems.

Core Science Concepts

* Body Segmentation: Centipedes have bodies divided into many similar sections (segments), and each segment has a pair of legs attached to it. This repeating pattern helps them move smoothly and bend easily.

* Adaptation and Survival: The centipede's many legs and flat body shape are special features that help it survive—they allow it to move quickly to catch food and escape danger, and to squeeze into tight spaces.

* Animal Classification: Centipedes are arthropods, a large group of animals with jointed legs, hard outer skeletons, and segmented bodies. They are different from insects because insects have six legs while centipedes have many more.

* Predator Behavior: Centipedes are carnivores (meat-eaters) that hunt small creatures like insects and spiders. Their speed, powered by their many legs, helps them be successful hunters.

Pedagogical Tip:

Third graders benefit from direct observation and comparison. Consider bringing in pictures of other arthropods (ants, beetles, spiders) so students can count legs and compare body structures. This concrete visual comparison builds understanding of why centipedes are different from six-legged insects.

UDL Suggestions:

To support diverse learners, provide multiple representations: use actual photos or videos of centipedes moving, diagrams labeling body parts, and tactile models students can handle. Allow students to express learning through drawings, written descriptions, or verbal explanations based on their strengths. For English learners, provide a vocabulary anchor chart with pictures.

Discussion Questions

1. How many legs do you think a centipede needs to move quickly through soil and leaves? (Bloom's: Evaluate | DOK: 3)

2. Why might having a long, flat body with many legs help a centipede hunt insects better than an animal with four legs? (Bloom's: Analyze | DOK: 2)

3. If a centipede lost one of its legs, how do you think it would still be able to move and hunt? (Bloom's: Apply | DOK: 2)

4. What other animals do centipedes look similar to, and how are they different? (Bloom's: Compare | DOK: 2)

Extension Activities

1. Centipede Movement Simulation: Have students use yarn, pipe cleaners, or string to create a model centipede with multiple segments and legs. Then have them move the model in a wave-like motion to understand how each leg works together. Students can compare this to how they walk on two legs and discuss why the centipede's design is more effective on uneven ground.

2. Arthropod Comparison Chart: Provide pictures of different arthropods (ant, beetle, spider, centipede, crab). Have students create a chart or Venn diagram comparing the number of legs, body shape, and habitats. This builds classification skills and deepens understanding of why centipedes are unique.

3. Habitat Exploration (Outdoor or Video-Based): If safe and feasible, take students to a garden or wooded area to search for centipedes under logs, rocks, and leaf litter (handling only with permission and care). Alternatively, watch a short nature video of centipedes in their habitat. Students can sketch and describe what they observe about where centipedes live and what they might be hunting.

NGSS Connections

Performance Expectation: 3-LS1-1 Develop models to describe that organisms have unique and diverse life structures that aid in growth, survival, and reproduction.

Disciplinary Core Ideas:
- 3-LS1.A—Structure and Function: Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction.

Crosscutting Concepts:
- Structure and Function—The way an organism is shaped and structured relates directly to what it can do and how it survives.
- Patterns—Repeating patterns in body segments and leg pairs show us how centipedes are organized.

Science Vocabulary

* Segment: One of the many sections that make up a centipede's body, each with its own pair of legs.

* Arthropod: A large group of animals with jointed legs, a hard outer skeleton, and segmented bodies (like centipedes, insects, and spiders).

* Predator: An animal that hunts other animals for food.

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

* Antennae: Long, thin feelers on an animal's head that help it sense its surroundings.

External Resources

Children's Books:
- The Centipede and Millipede by Elaine Landau (simple, photo-rich exploration of these arthropods)
- Bugs and Other Insects by DK Findout (includes centipedes in context of larger arthropod group)
- Are You a Butterfly? by Judy Allen (not centipede-specific but excellent for insect comparison)

YouTube Videos:
- "Centipedes: Nature's Fast Hunters" by National Geographic Kids — A short, engaging video showing centipedes moving, hunting, and living in nature. Age-appropriate narration and stunning close-up footage. https://www.youtube.com/results?search_query=centipedes+national+geographic+kids

- "All About Centipedes" by Crash Course Kids — An informative, colorful animated video that explains centipede anatomy, why they have so many legs, and how they fit into ecosystems. Engaging for Third Grade audiences. https://www.youtube.com/results?search_query=crash+course+kids+centipedes