

## Photo Description



This image shows a spider resting on a human hand. The spider has long, thin legs and a brownish body with darker markings. You can see all eight of the spider's legs clearly, and the spider appears calm and curious as it explores the person's skin.

## Scientific Phenomena

**Anchoring Phenomenon:** Why do spiders have such long legs, and what are spiders doing when they crawl on us?

**Scientific Explanation:** This spider (likely an orb weaver) has long, jointed legs that help it move quickly across surfaces, climb, and hunt for insects. Spiders are not trying to hurt us when they crawl on our skin—they are exploring their environment looking for food (tiny insects) or a safe place to rest. The long legs give spiders excellent sensory information, allowing them to detect vibrations and movement through the air and on surfaces. This adaptation helps them survive by catching prey and avoiding predators.

## Core Science Concepts

- \* **Body Structure:** Spiders have eight jointed legs (unlike insects, which have six), a body divided into two main parts (cephalothorax and abdomen), and multiple eyes. These structures help them move, sense, and hunt.
- \* **Adaptation and Survival:** The spider's long legs are an adaptation—a special feature that helps it survive. Long legs allow the spider to move quickly, reach across gaps, and sense danger through vibrations in the air and ground.
- \* **Sensory Abilities:** Spiders use their legs as sensory organs. Special hairs on their legs detect movement, temperature, and chemicals in the air. This helps them locate food and detect predators.
- \* **Predator-Prey Relationships:** Spiders are predators that hunt insects. Understanding that spiders eat other small creatures helps students see how different animals depend on each other in nature.

### Pedagogical Tip:

Fourth graders often fear spiders due to misconceptions. Create a "spider myth-busting" anchor chart together as a class. Compare what students think spiders do (bite people, are aggressive) versus what spiders actually do (hunt insects, mind their own business, are beneficial). This builds scientific thinking and reduces anxiety around the topic.

### UDL Suggestions:

Provide multiple ways for students to engage with spider content: some students can observe live spiders (in sealed containers), others can examine high-quality photos or videos, and others can read age-appropriate texts. Allow students to show their learning through drawings, diagrams, written descriptions, or verbal explanations. This honors different learning preferences and sensory sensitivities regarding arachnids.

### Discussion Questions

1. What do you think the spider's long legs help it do? (Bloom's: Remember | DOK: 1)
2. Why might a spider crawl on a person's hand instead of running away? (Bloom's: Infer | DOK: 2)
3. How is a spider different from an insect like a bee or ant? (Bloom's: Compare | DOK: 2)
4. If spiders didn't hunt insects, what might happen to the number of insects in our neighborhood? (Bloom's: Evaluate | DOK: 3)

### Extension Activities

1. Spider Observation Journal: Provide students with magnifying glasses and direct them to safely observe spiders in their natural habitats (gardens, under eaves, in corners). Have them sketch the spider, count its legs, note its colors, and write observations about what it's doing. Students can compare observations and create a class poster titled "Real Spiders in Our School/Community."
2. Build a Model Spider: Using pipe cleaners, pom-poms, googly eyes, and craft supplies, students construct 3D spider models. As they build, discuss how each part (legs for moving, body for organs, eyes for sensing). Students can label their models with vocabulary and explain to a partner what each part does.
3. Food Web Investigation: Create a simple food web diagram showing: Plant !' Insect !' Spider !' Bird. Discuss how removing one organism (like spiders) would affect the others. Have students draw or write about what would happen if there were no spiders to eat insects.

### NGSS Connections

Performance Expectation:

4-LS1-1: Construct an argument that plants get the energy they need to grow chiefly from water and air. (Note: While this PE focuses on plants, the broader concept of energy transfer connects to food webs where spiders play a role.)

More Directly Aligned PE:

K-LS1-1: Use observations to describe patterns of what plants and animals need to survive.

Relevant Disciplinary Core Ideas:

- \* 4-LS1.A – Energy and matter in organisms
- \* 4-LS1.D – Information processing (sensory receptors)
- \* 3-LS4.B – Adaptation (structures help organisms survive)

Crosscutting Concepts:

- \* Structure and Function – The spider's leg structure supports its survival function
- \* Cause and Effect – Long legs cause the spider to move quickly; vibration detection causes the spider to locate prey
- \* Patterns – Spiders follow patterns of hunting and web-building

### Science Vocabulary

- \* Adaptation: A special body part or behavior that helps an animal survive in its environment.
- \* Predator: An animal that hunts and eats other animals.
- \* Prey: An animal that is hunted and eaten by other animals.

- \* Jointed Legs: Legs that bend at certain points, like our knees and ankles, allowing them to move easily.
- \* Sensory: Related to the five senses (sight, hearing, smell, touch, taste) or how animals detect things in their environment.
- \* Vibration: A rapid back-and-forth shaking movement that travels through air or through objects.

### External Resources

#### Children's Books:

- The Spider and the Fly\* by Mary Howitt (classic poem, beautifully illustrated)
- Anansi the Spider: A Tale from the Ashanti\* by Erica Silverman (folklore that celebrates spiders)
- Are You a Spider?\* by Judy Allen and Tudor Humphries (realistic, engaging picture book)

#### YouTube Videos:

- \* "Life Cycle of a Spider" - Amoeba Sisters, 4:30 minutes | Clear, animated explanation of how spiders grow and change. <https://www.youtube.com/watch?v=Aw6P4ZwXD84>
- \* "10 Fascinating Spider Facts" - National Geographic Kids, 3:15 minutes | Engaging, kid-friendly facts with real footage showing spiders' amazing abilities. <https://www.youtube.com/watch?v=6Y8-7uNtdSU>