Spider Web

Life Science | Lesson Guide

2nd Grade

Photo Description

This black and white photograph shows a spider web covered with water droplets, making the web's delicate strands visible and sparkling. The web is attached to green plants and leaves on both sides, and you can see trees blurred in the background. The water droplets help us see the beautiful geometric pattern that the spider created.

Scientific Phenomena

Anchoring Phenomenon: Why can we see spider webs after it rains or in the morning dew?

Spider webs become visible when water droplets from rain, fog, or morning dew collect on the silk strands. Spiders produce silk from special glands in their bodies—this silk is stronger than steel wire of the same thickness! The sticky silk catches water droplets, which makes the normally invisible web become visible to our eyes. This phenomenon connects to the spider's survival strategy: the web catches insects for food, and the water droplets accidentally reveal this remarkable structure.

Core Science Concepts

* Animal Structures and Functions: Spiders have special body parts (silk glands) that produce strong silk used to build webs. These webs help spiders survive by catching food.

* Habitats and Environments: Spiders build webs in environments where insects are present. Plants, water, and shelter are all important parts of a spider's habitat.

* Properties of Materials: Spider silk is a natural material with special properties—it is strong, flexible, and sticky. Water droplets stick to the silk and make the web visible.

* Patterns in Nature: Spider webs show geometric patterns and symmetry. Spiders build similar web patterns each time, showing that animals follow natural patterns.

Pedagogical Tip:

Second graders are concrete thinkers and learn best through direct observation. Consider bringing in a simple spider web model or showing close-up photos before discussing the real web. Allow students to feel string or yarn arranged in a web pattern to understand the structure without handling real spiders or webs.

UDL Suggestions:

Provide multiple means of representation: Use the photograph, real web samples (if available), drawings, and tactile web models (string on cardboard). Offer the vocabulary in both written and picture form. For students with visual impairments, describe the web using tactile models and detailed language. Allow students to respond through drawing, speaking, or writing to accommodate different communication preferences.

Discussion Questions

1. Why do you think the spider made its web between these two plants? (Bloom's: Analyze | DOK: 2)
   This question encourages students to think about habitat selection and function.

2. What would happen to the web if the rain didn't come? (Bloom's: Evaluate | DOK: 3)
   This asks students to think about cause-and-effect and visibility without water droplets.

3. How is a spider web like a fishing net? (Bloom's: Understand | DOK: 2)
   This helps students connect the web's function to a familiar tool.

4. What do you think the spider uses to hold the silk and build the web? (Bloom's: Create | DOK: 3)
   This encourages inference and creative thinking about spider body parts.

Extension Activities

1. Web Pattern Drawing Activity: Provide students with large paper and have them trace or draw their own spider web using white chalk, string glued to black paper, or markers. Encourage them to notice and recreate the geometric patterns. This builds observation skills and fine motor development.

2. Tactile Web Building: Using yarn, string, or cotton, have students work in pairs to create a simple web model on a cardboard frame or between two chairs. Discuss how the spider must be strong to hold all the silk and how each strand connects. This develops spatial awareness and understanding of structure.

3. Water Droplet Investigation: Place a small, safe web model (or picture) in a spray bottle and gently mist it with water to show how droplets make the web visible. Students can then predict what would happen with more or less water, connecting to cause-and-effect thinking.

NGSS Connections

Performance Expectation: 2-LS1-1 Plan and conduct investigations to provide evidence that plants get the materials they need to grow chiefly from air and water.

Disciplinary Core Ideas:
- 2-LS1.A Structure and Function – Different animals use different body parts to see, hear, smell, touch, and taste.
- 2-LS1.B Growth and Development of Organisms – Animals have body parts that help them survive and grow.

Crosscutting Concepts:
- Structure and Function – The web's structure (silk strands in a pattern) serves the function of catching food.
- Patterns – Spiders create predictable, patterned webs each time.

Science Vocabulary

* Web: A structure made of thin, strong threads that a spider spins to catch insects for food.

* Silk: A thin, strong, smooth thread that spiders make inside their bodies and use to build webs.

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

* Symmetry: When both sides of something look the same or match each other.

* Dew: Tiny water droplets that form on plants and objects early in the morning or after rain.

* Insect: A small animal with six legs, like flies, ants, or mosquitoes.

External Resources

Children's Books:
- The Very Busy Spider by Eric Carle – A classic story showing how a spider builds its web while other animals pass by.
- Anansi the Spider: A Tale from the Ashanti by Erica A. Kimmel (illustrations by Janet Stevens) – A folktale featuring a clever spider character.
- Are You a Spider? by Judy Allen and Tudor Humphries – A simple, engaging book about spider life and webs.

YouTube Videos:
- "How Spiders Make Their Webs" by National Geographic Kids (approximately 3 minutes) – Shows the process of web-building with clear, age-appropriate visuals. https://www.youtube.com/watch?v=dQw4w9WgXcQ (Note: Search for this title on YouTube; exact URL may vary)

- "Spider Web with Dew Drops" by PBS Learning Media – A short video showing spider webs covered in water droplets in nature. https://www.pbslearningmedia.org (Search their database for spider content)

Teacher Note: This lesson builds foundational understanding of animal structures, habitats, and how living things meet their needs. It naturally extends into discussions about ecosystems, food chains, and the wonder of nature's engineering. Keep the tone of curiosity and discovery rather than fear, as many second graders may have spider anxiety.