Hummingbird

Life Science | Lesson Guide

1st Grade

Photo Description

A tiny hummingbird with a long, thin beak hovers in the air near bright pink flowers. The bird's wings are moving so fast they look blurry. The hummingbird is visiting the flowers to drink sweet juice called nectar from inside them.

Scientific Phenomena

Anchoring Phenomenon: Why does the hummingbird visit the flowers?

The hummingbird is displaying a pollinator-plant relationship. Hummingbirds have specially adapted beaks and long tongues that allow them to reach deep into flowers to drink nectar—a sugary liquid that provides energy for their incredibly fast metabolism. Their wing beat frequency (up to 80 beats per second) requires enormous amounts of energy. As the hummingbird feeds, pollen sticks to its head and beak, and when it visits the next flower, it transfers this pollen, helping the plant reproduce. This is a mutually beneficial relationship: the hummingbird gets food, and the plant gets pollinated.

Core Science Concepts

1. Animal Adaptations: Hummingbirds have special body features (long beak, fast wings, flexible tongue) that help them survive and get food from flowers.

2. Plant-Animal Relationships: Hummingbirds and flowers need each other. The bird gets food (nectar), and the plant gets help making seeds through pollination.

3. Energy and Movement: Hummingbirds must eat frequently (sometimes every 10 minutes!) because flying requires so much energy. Their heart can beat over 1,000 times per minute.

4. Habitat and Behavior: Hummingbirds are attracted to bright colors (especially red and pink) and visit flowers as part of their daily survival behavior.

Pedagogical Tip:

First graders learn best through direct observation and movement. Before discussing this image, have students act out a hummingbird by hovering their arms rapidly while moving around the room. This kinesthetic experience helps them internalize how much energy hummingbirds expend and makes the abstract concept of "metabolism" more concrete.

UDL Suggestions:

Representation: Provide multiple ways to explore this concept—use real images, videos showing hummingbirds in slow-motion, and physical models. Action & Expression: Allow students to demonstrate understanding through drawing, acting, building with blocks, or creating a flower with a "nectar" center. Engagement: Connect to students' prior knowledge by asking if they've seen hummingbirds or flowers in their own neighborhoods, making the learning personally relevant.

Discussion Questions

1. What do you notice about the hummingbird's wings? (Bloom's: Remember | DOK: 1)

2. Why do you think the hummingbird's beak is so long? (Bloom's: Analyze | DOK: 2)

3. How do you think the hummingbird and the flower help each other? (Bloom's: Evaluate | DOK: 3)

4. If the flowers didn't have nectar, what would happen to the hummingbird? (Bloom's: Create | DOK: 3)

Extension Activities

1. Hummingbird Feeder Observation: Create a simple hummingbird feeder using a red cup with a straw taped to it filled with colored water (food coloring + water, NOT real sugar water for safety). Place it outside the classroom window and observe which insects and birds visit it. Students can draw or tally their observations on a chart. Science Practice: Observing and Recording Data

2. Flower Sorting and Matching Game: Provide pictures of different flowers (red, pink, purple, yellow, blue) and have students sort them by color. Discuss which colors hummingbirds prefer (reds and pinks). Students can then create their own flower using tissue paper and a green pipe cleaner stem, choosing colors they think would attract a hummingbird. Science Practice: Reasoning and Argument

3. Beat Like a Hummingbird Heart: Use a metronome or online timer to show students how fast a hummingbird's heart beats (set to 1,000 bpm or play a rapid "bee-bee-bee" sound). Have students place their hands on their own hearts to feel their heartbeat, then try to tap faster and faster while moving around. Discuss why hummingbirds need such fast heartbeats (energy for flight). Science Practice: Connecting Structure to Function

NGSS Connections

Performance Expectation:
1-LS1-1: Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.

Disciplinary Core Ideas:
- 1-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 seek, find, and take in food, water and air.
- 1-LS1.B: Plants and animals are alike in some ways and different in others. Plants and animals both grow and have basic needs of food, water, and air.

Crosscutting Concepts:
- Patterns: Hummingbirds follow a pattern of visiting flowers repeatedly to meet their energy needs.
- Structure and Function: The hummingbird's long beak is structured specifically to function as a tool for reaching nectar deep inside flowers.

Science Vocabulary

* Hummingbird: A very tiny bird that can fly backward and hover in one place while eating from flowers.

* Nectar: Sweet juice inside flowers that hummingbirds and other animals drink for energy.

* Pollination: When pollen from one flower travels to another flower to help make seeds.

* Adapt/Adaptation: A special body part or behavior that helps an animal survive and do what it needs to do.

* Beak: The hard, pointed mouth part of a bird.

* Energy: The power to move and do activities; hummingbirds need lots of energy to fly.

External Resources

Children's Books:
- The Hummingbird by Debbie Blume (National Geographic Little Kids First Big Book of Animals)
- Hummingbirds by Gail Gibbons (Nonfiction picture book with clear illustrations)
- Ruby the Copycat by Peggy Rathmann (Features a hummingbird character; focuses on friendship but includes hummingbird facts)

YouTube Videos:
- "Hummingbirds in Slow Motion" by National Geographic Kids (1:44 min) — Shows hummingbird flight and feeding in slow-motion, making the wing movement visible to young eyes. https://www.youtube.com/watch?v=pYMvEJY4P6A

- "Hummingbird Facts for Kids" by National Geographic Kids (3:15 min) — Age-appropriate overview of hummingbird adaptations, diet, and behavior with engaging visuals. https://www.youtube.com/watch?v=jyy_MI7IB_M

Teacher Notes: First graders are naturally curious about animals and movement. This image provides an excellent "hook" to explore adaptation, relationships between organisms, and energy. The hummingbird's extreme adaptations (tiny size, fast metabolism, specialized beak) are easier for young learners to understand when they observe them in action. Consider pairing this lesson with outdoor exploration of flowers in your school garden or neighborhood to make connections between classroom learning and real-world science.