Insect

Life Science | Lesson Guide

5th Grade

Photo Description

A small insect with orange and black coloring sits on a white daisy flower with a bright yellow center. The insect has long, thin antennae and six legs, and appears to be feeding on or exploring the flower's nectar and pollen.

Scientific Phenomena

This image captures the Anchoring Phenomenon of pollination - a mutualistic relationship between insects and flowering plants. The insect is attracted to the flower's nectar as a food source, and while feeding, pollen grains stick to its body. When the insect visits other flowers, it transfers pollen between plants, enabling reproduction. This phenomenon occurs because flowers have evolved colorful petals, sweet nectar, and accessible pollen to attract pollinators, while insects have developed specialized body parts and behaviors to efficiently collect these food resources.

Core Science Concepts

1. Mutualistic Relationships: Both the insect and flower benefit from their interaction - the insect gets food while the flower gets pollination services for reproduction.

2. Plant Reproduction: Flowers are the reproductive organs of plants, containing male parts (stamens with pollen) and female parts (pistils) that need pollen transfer to create seeds.

3. Animal Adaptations: The insect has specific body features like fuzzy body parts, long antennae for sensing, and appropriate size to effectively gather nectar and pollen.

4. Ecosystem Interdependence: This relationship demonstrates how different organisms depend on each other for survival and reproduction in their environment.

Pedagogical Tip:

Use the "Think-Pair-Share" strategy when introducing pollination. Have students first observe the image individually, then discuss with a partner what they notice, and finally share observations as a class. This builds from concrete observations to abstract concepts.

UDL Suggestions:

Provide multiple means of representation by offering both visual (this photo) and tactile experiences (artificial flowers with removable pollen, insect models) alongside verbal explanations to support diverse learning needs.

Discussion Questions

1. What evidence do you see that suggests this insect and flower help each other survive? (Bloom's: Analyze | DOK: 2)

2. How might this daisy's reproduction be affected if no insects visited it? (Bloom's: Evaluate | DOK: 3)

3. What specific body parts does this insect have that make it good at collecting food from flowers? (Bloom's: Apply | DOK: 2)

4. If you were designing a robot pollinator, what features from this insect would you copy and why? (Bloom's: Create | DOK: 4)

Extension Activities

1. Pollinator Garden Planning: Students design a school garden layout choosing flowers that bloom at different times to support pollinators throughout the growing season, researching native plants and creating seasonal bloom calendars.

2. Build a Bee: Using craft materials, students construct model pollinators with fuzzy pipe cleaners, cotton balls, and other materials, then test how well different textures pick up "pollen" (colored powder) from artificial flowers.

3. Pollination Simulation: Students role-play as different pollinators moving between flower stations (desks with different colored chalk dust), tracking how "pollen" transfers and observing cross-pollination patterns.

NGSS Connections

- Performance Expectation: 5-LS2-1 - Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment
- Disciplinary Core Ideas: 5-LS2.A Interdependent Relationships in Ecosystems
- Crosscutting Concepts: Systems and System Models, Cause and Effect

Science Vocabulary

* Pollination: The process of moving pollen from one flower part to another to help plants make seeds
* Nectar: Sweet liquid inside flowers that attracts insects and provides them with energy
* Mutualism: A relationship where two different living things help each other survive
* Adaptation: Special body parts or behaviors that help an organism survive in its environment
* Reproduction: The process by which living things create offspring or babies

External Resources

Children's Books:
- The Magic School Bus Meets the Rot Squad by Joanna Cole
- The Reason for a Flower by Ruth Heller
- Flowers Are Calling by Rita Gray

YouTube Videos:
- "Pollination Explained" by SciShow Kids - Simple explanation of how pollination works with animated examples (https://www.youtube.com/watch?v=2UxGrde1NDA)
- "Why Do We Need Bees?" by National Geographic Kids - Explores the importance of pollinators in ecosystems (https://www.youtube.com/watch?v=GqA42M4RtxE)