Insect Characteristics

Life Science | Lesson Guide

1st Grade

Photo Description

This image shows a green grasshopper sitting on a green leaf. The grasshopper has long back legs, antennae (thin feelers on its head), and big eyes. You can see how the grasshopper's green color matches the green plant, which helps it hide from animals that might want to eat it.

Scientific Phenomena

Anchoring Phenomenon: A grasshopper using camouflage to blend in with its environment.

Why This Happens: Grasshoppers have evolved green coloring that matches the plants where they live. This is called camouflage—it helps them hide from predators like birds and spiders. The grasshopper's body color is similar to the leaf it's standing on, making it harder to see. This is an adaptation (a special feature) that helps the grasshopper survive in nature. Grasshoppers also live on plants because that's where they find food to eat (grass and leaves).

Core Science Concepts

* Living things have body parts with special jobs: The grasshopper's long back legs help it jump, its antennae help it sense things around it, and its eyes help it see.

* Animals have traits that help them survive: The grasshopper's green color helps it hide on green plants. This is called an adaptation.

* Animals live in habitats where they find food and shelter: Grasshoppers live on plants because they eat plants and hide among them from predators.

* Plants and animals are connected: Grasshoppers depend on plants for food and shelter; plants depend on insects for pollination.

Pedagogical Tip:

First graders learn best through observation and direct experience. Consider bringing in live grasshoppers (in a safe container) or showing high-quality videos before discussing adaptations. Let students observe real insects when possible rather than relying only on pictures. This concrete experience builds understanding of body parts and behaviors.

UDL Suggestions:

UDL Strategy - Multiple Means of Representation:
Provide students with multiple ways to learn about grasshoppers:
- Visual: Show the photo and real insects in a viewing container
- Auditory: Play recordings of grasshopper sounds (chirping)
- Kinesthetic: Let students act out how a grasshopper jumps or use tactile models to feel body parts
This ensures all learners can access the concept regardless of learning preference or ability.

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Zoom In / Zoom Out

Zoom In: The Grasshopper's Skin Color (Cellular Level)
Did you know that the grasshopper's green color comes from tiny, tiny things in its skin called cells? These cells have special green stuff in them that makes the grasshopper look green. Scientists use special tools called microscopes to see these tiny cells. The green color helps protect the grasshopper—it's like nature gave the grasshopper a green outfit to wear!

Zoom Out: The Grasshopper in Its Ecosystem
A grasshopper is part of a big system called an ecosystem. The grasshopper eats grass and leaves from plants. Other animals (like birds and spiders) eat grasshoppers. When the grasshopper dies, it becomes food for soil creatures and helps plants grow. Everything is connected! The grasshopper, the plant, the bird, the soil, and even the sun all work together. If one part changes (like if all the plants die), the whole ecosystem is affected.

Discussion Questions

1. Why do you think this grasshopper is green? (Bloom's: Analyze | DOK: 2)

2. What body parts can you see on the grasshopper, and what do you think each one does? (Bloom's: Understand | DOK: 2)

3. If a grasshopper was brown instead of green, what might happen to it when it sits on this leaf? (Bloom's: Evaluate | DOK: 3)

4. Where do grasshoppers find their food, and why do they need to live near plants? (Bloom's: Understand | DOK: 1)

Potential Student Misconceptions

Misconception 1: "The grasshopper is green because it ate green plants."
Clarification: The grasshopper is green because its body was born that way. The color comes from its skin, not from what it eats. Think of it like this—you are the color you are because of your skin, not because of the food you eat. The grasshopper's green color is an adaptation it inherited from its parents.

Misconception 2: "The grasshopper can change its color whenever it wants, like turning on and off a light."
Clarification: Grasshoppers cannot quickly change their color like a chameleon can. A grasshopper is born green and stays green. Some grasshoppers might be slightly lighter or darker green depending on the season or where they live, but they don't change color to hide in seconds.

Misconception 3: "All insects are grasshoppers, and all grasshoppers look the same."
Clarification: There are many different types of insects (like ants, beetles, butterflies, and grasshoppers), and they look very different from each other. There are also many different kinds of grasshoppers! Some are bigger, some are smaller, and some might be different shades of green or even brown. But they all have the same body parts: antennae, six legs, and eyes.

Extension Activities

Activity 1: Camouflage Hunt
Hide green paper grasshopper cutouts around your classroom and outdoor area (green ones on green surfaces, brown ones on brown surfaces). Have students find them and discuss why some were easier to find than others. This concrete experience builds understanding of how color helps animals hide.

Activity 2: Design Your Own Grasshopper

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Provide students with craft materials (colored paper, pipe cleaners for antennae, etc.) and have them create their own grasshopper. Ask them to choose colors and explain why they picked those colors. Would their grasshopper hide well in your classroom? On a green plant?

Activity 3: Observe Real Grasshoppers (If Available)
If safe and possible, keep grasshoppers in a large, ventilated container for 2-3 days while students observe and sketch them. Have them label body parts using the vocabulary from the lesson. Release the grasshoppers safely afterward and discuss where they go and why.

Cross-Curricular Ideas

Mathematics: Counting and Comparing Body Parts
Have students count the grasshopper's legs (six), antennae (two), and eyes (two). Create simple bar graphs showing "How many legs do different insects have?" Students can compare the grasshopper to other insects like ants (six), spiders (eight), and butterflies (six). This builds number sense and data representation skills.

English Language Arts: Descriptive Writing and Storytelling
Read Grasshopper on the Road by Arnold Lobel aloud, then have students create their own short story about a grasshopper's day. Ask them to describe what the grasshopper sees, eats, and does. Students can draw pictures and dictate or write simple sentences like "The grasshopper jumps on the green leaf" to practice sentence structure and vocabulary.

Art: Camouflage Collage
Students create mixed-media collages by gluing colored paper, leaves, and natural materials onto a poster board. They then hide paper grasshopper cutouts in their artwork, trying to make them blend in using camouflage colors and patterns. Display the finished pieces and have classmates try to find each hidden grasshopper—a fun way to reinforce camouflage concepts.

Social Studies: Animal Homes and Habitats Around the World
Explore where grasshoppers live in different parts of the world (grasslands in Africa, meadows in North America, rice fields in Asia). Use a globe or world map to show these locations. Discuss how people in different countries live near grasshoppers and how insects are important in different cultures (some eat grasshoppers as food!). This builds geography and cultural awareness skills.

STEM Career Connection

Entomologist (Insect Scientist)
An entomologist is a scientist who studies insects—including grasshoppers! They observe insects, learn how they live, and figure out how to help them or how to protect plants from harmful insects. Some entomologists work outside in nature, and some work in laboratories with microscopes. They help us understand why insects are important and how to keep them safe.
Average Annual Salary: $63,000–$75,000 USD

Wildlife Photographer
A wildlife photographer takes beautiful pictures of animals and nature, like the photo of the grasshopper you see in this lesson! They need to know a lot about animals and plants so they can find them and photograph them in their habitats. They use special cameras and patience to capture amazing moments in nature. Their photos help teach people about the natural world.
Average Annual Salary: $40,000–$65,000 USD

Agricultural Scientist

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An agricultural scientist studies how plants grow and how insects affect farms. Some grasshoppers can eat crops that farmers grow, so agricultural scientists figure out ways to protect plants while also keeping grasshoppers and other insects safe. They use science to help both nature and farming work well together.
Average Annual Salary: $58,000–$72,000 USD

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 Structure and Function (Animals have body parts that help them survive)
- 1-LS1.D Information Processing (Grasshoppers use eyes and antennae to get information about the world)

Crosscutting Concepts:
- Structure and Function (Body parts have jobs that help the grasshopper live)
- Patterns (Green grasshoppers are found on green plants—a pattern in nature)

Science Vocabulary

* Grasshopper: A jumping insect with long back legs that eats plants and makes chirping sounds.

* Camouflage: Colors or patterns on an animal's body that help it hide from other animals.

* Antennae: Long, thin feelers on an insect's head that help it sense what is around it.

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

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

* Predator: An animal that hunts and eats other animals.

External Resources

Children's Books:
- Grasshopper on the Road by Arnold Lobel (a gentle fiction book about a grasshopper's adventure)
- National Geographic Little Kids First Big Book of Insects by National Geographic Kids (colorful photos and facts)
- The Very Hungry Caterpillar by Eric Carle (teaches about insects and life cycles with vibrant illustrations)

Teacher Note: This lesson builds foundational understanding of structure, function, and adaptation—key First Grade life science concepts. Encourage student questions and observations, and connect the grasshopper's features to students' own body parts when possible ("You have eyes to see, just like the grasshopper!"). This personal connection deepens learning.

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