Insect Characteristics

Life Science | Lesson Guide

Kindergarten

Photo Description

This image shows a green grasshopper sitting on a bright green leaf. You can see the grasshopper has long back legs, antennae on its head, and a body that is similar in color to the leaf it's standing on. The grasshopper is a type of insect that lives in gardens and fields.

Scientific Phenomena

Anchoring Phenomenon: Why does the grasshopper look similar in color to the leaf?

This image represents camouflage, a survival strategy where animals blend into their environment. The grasshopper's green coloring matches the plant leaf, making it harder for predators (like birds) to see it. This happens through natural selection over many generations—grasshoppers with colors matching their habitat survive longer and have more offspring. Grasshoppers also use this camouflage to sneak up on food sources and to rest safely on plants during the day.

Core Science Concepts

- Insect Body Parts: All insects have three main body sections (head, thorax, abdomen), six legs, and often antennae and wings. In this photo, students can clearly observe the grasshopper's long antennae, powerful back legs, and segmented body.

- Adaptations for Survival: The grasshopper's green color, strong jumping legs, and long antennae are all adaptations—special features that help it survive in its environment. The long legs help it jump away from danger, while antennae help it sense its surroundings.

- Habitats and Food Chains: Grasshoppers live on plants because that is where they find food (eating leaves and grass) and shelter. They are prey animals for birds, snakes, and other predators.

- Life Cycles: Grasshoppers go through different life stages, starting as eggs and growing into adults. Understanding insects helps children see that all living things change over time.

Pedagogical Tip:

Use this image to introduce the "I notice, I wonder, I think" protocol. Have students share: "I notice the grasshopper is green. I wonder why. I think it helps it hide." This builds observational skills while scaffolding scientific thinking without requiring advanced reading or writing.

UDL Suggestions:

Provide multiple means of representation by offering both visual observation of the photo AND tactile experiences: allow students to touch real leaves, hop like grasshoppers, or feel pictures with textured materials. For students with visual impairments, describe the grasshopper's body parts in detail and allow them to explore model insects or three-dimensional manipulatives. Offer the vocabulary in both English and students' home languages on a visual word wall.

Zoom In / Zoom Out

Zoom In: The Grasshopper's Skin (Microscopic Level)
If we could look at the grasshopper's skin under a super powerful magnifying glass (a microscope), we would see that it's made of tiny, tiny bumps and ridges. These aren't smooth like our skin! The grasshopper's exoskeleton (hard outer shell) is made of a special material called chitin. The bumpy texture helps light bounce off the grasshopper in a way that makes its green color even better at hiding. The color itself comes from special pigments (like tiny paint particles) in the skin that absorb some colors of light and reflect back the green light that our eyes see.

Zoom Out: The Grasshopper in the Garden Ecosystem
When we zoom out, we see the grasshopper as one small part of a much bigger system. The grasshopper eats the green plant (producer). A bird might eat the grasshopper (consumer). When the bird or grasshopper dies, decomposers (like fungi and bacteria in the soil) break them down and return nutrients to the soil, which feeds the plant again. The sun provides energy for the plant to grow, which feeds the grasshopper, which feeds the bird. This whole cycle—from sun to plant to grasshopper to bird to soil—is the ecosystem. The grasshopper's green color helps it survive in this system by keeping it safe from the bird predator, so it gets more chances to eat plants and have babies.

Discussion Questions

1. What do you notice about the grasshopper's color? Why might it be green like the leaf? (Bloom's: Remember & Understand | DOK: 1-2)

2. What parts of the grasshopper's body help it survive? Can you show me with your own body? (Bloom's: Understand & Apply | DOK: 2)

3. What do you think the grasshopper eats, and why is it sitting on this plant? (Bloom's: Analyze | DOK: 2)

4. How would the grasshopper's life be different if it were red instead of green? (Bloom's: Evaluate & Create | DOK: 3)

Potential Student Misconceptions

Misconception 1: "Grasshoppers are bugs and bugs are bad."
Clarification: While all grasshoppers are insects (which are sometimes called "bugs"), not all insects are bad! Grasshoppers are actually helpful in nature. They eat plants and help spread seeds. When birds and other animals eat grasshoppers, it helps those animals survive. Grasshoppers are an important part of nature's food chain.

Misconception 2: "The grasshopper turned green to hide, like it's trying really hard."
Clarification: The grasshopper didn't choose to be green or change its color on purpose. Grasshoppers are born green because their parents were green. Over a very, very long time, grasshoppers that happened to be green survived better and had more babies, so now most grasshoppers are green. It's nature's way, not the grasshopper's choice!

Misconception 3: "Grasshoppers live on leaves because they're stuck there or because the leaf is their house like a apartment."
Clarification: Grasshoppers live on plants because that's where their food is! They eat the leaves and grass. The plant is like a restaurant and a hiding place all in one. The grasshopper can jump away to find other plants if it needs to.

Extension Activities

1. Grasshopper Hoppers Craft: Students create paper grasshoppers with folded paper that can actually jump when you press and release the bottom. As they fold and assemble, discuss the grasshopper's powerful back legs and why it needs them. This builds fine motor skills while reinforcing structure-function relationships.

2. Camouflage Hunt: Hide pictures or cutouts of various colored insects (green, red, yellow, brown) on a bulletin board surrounded by matching colored paper and non-matching paper. Have students find and match the insects to their habitats. Discuss why some animals are easier to find than others, connecting to the grasshopper's green coloring.

3. Leaf Detective Walk: Take students on a supervised outdoor walk to look for insects on plants (or show photos if outdoors is unavailable). Students use clipboards to draw or point to insects they find. Ask: "Why are insects living on plants?" and "Do the insects look like the plants?" This grounds learning in real-world observation.

Cross-Curricular Ideas

Math Connection: Measuring and Counting Grasshopper Legs
Have students count the grasshopper's six legs and compare them to other insects (ants, beetles) in pictures. Create a simple bar graph showing "How many legs?" for different insects. Students can also measure paper strips to show how far a grasshopper can jump compared to how far they can jump or hop. This builds counting, comparison, and early graphing skills.

ELA Connection: Storytelling and Descriptive Language
Read Grasshopper on the Road by Arnold Lobel and have students retell the story using a sequence of pictures (beginning, middle, end). Create a word wall with describing words: "bumpy," "green," "spotted," "jumping," "tiny." Students can draw their own grasshopper and label it with these descriptive words, building vocabulary and narrative skills.

Art Connection: Camouflage Collage and Color Mixing
Provide green paper scraps, leaves, and other natural materials. Students create a collage with a grasshopper cutout hidden among green leaves and plants. Discuss how hard it is to spot the grasshopper and why. Students can also experiment with mixing green paint using blue and yellow to explore how many shades of green exist in nature—some grasshoppers are darker, some lighter!

Social Studies Connection: Where Grasshoppers Live Around the World
Show pictures or a map of different habitats where grasshoppers live (grasslands, deserts, rainforests, gardens). Discuss that grasshoppers live on every continent except Antarctica. Talk about how grasshoppers in deserts might be a different color (more brown) and grasshoppers in rainforests might be darker green—all adapted to their homes. This builds geography awareness and understanding that the same animal can live in different places and look different based on where it lives.

STEM Career Connection

Entomologist (Insect Scientist)
An entomologist is a scientist who studies insects like grasshoppers! They observe bugs, learn about how they live, what they eat, and how they help or hurt plants. Some entomologists work in labs looking at insects under microscopes. Others work outside in nature watching and collecting insects. They might help farmers protect crops from harmful insects or help protect insects that are in danger. Average Annual Salary: $65,000

Garden Designer or Landscaper

A landscape designer plans and creates beautiful gardens and outdoor spaces. They know a lot about plants and the animals that live on them, like grasshoppers! They choose which plants to grow and where to put them. They understand that gardens are homes for insects and that grasshoppers help gardens stay healthy by eating certain plants. If you love nature and want to create pretty outdoor spaces, this could be your job! Average Annual Salary: $48,000

Wildlife Photographer
A wildlife photographer takes beautiful pictures of animals like grasshoppers in nature. They need special cameras and lenses to get super close-up photos so people can see how amazing insects are! Wildlife photographers work outside a lot, finding insects and animals and taking photos that teach other people about nature. Their pictures appear in books, magazines, and on websites that help kids learn about the natural world. Average Annual Salary: $42,000

NGSS Connections

Performance Expectation: K-LS1-1 Use observations to describe patterns of what plants and animals (including humans) need to survive.

Disciplinary Core Ideas:
- K-LS1.A All organisms have structures that serve different functions in growth, survival, and reproduction. (The grasshopper's legs, antennae, and body)
- K-LS1.B Animals need food, water, and air to grow. (Grasshoppers need plants for food)

Crosscutting Concepts:
- Structure and Function (Body parts help the grasshopper survive)
- Patterns (The green color pattern matches the green leaf)

Science Vocabulary

- Insect: A small animal with six legs, three body parts, and usually wings.
- Adaptation: A special body part or behavior that helps an animal survive in its home.
- Camouflage: Colors or patterns that help an animal hide by looking like its surroundings.
- Antennae: Long, thin feelers on an insect's head that help it sense things around it.
- Habitat: The place where an animal lives and finds food and shelter.
- Predator: An animal that hunts other animals for food.

External Resources

Children's Books:
- Grasshopper on the Road by Arnold Lobel (a classic story featuring a grasshopper character that introduces the insect in a relatable way)
- The Grasshopper & the Ant (traditional fable; many illustrated versions available, such as by Amy Lowry Poole)
- Hopping with Grasshoppers by Kate Riggs (National Geographic Little Kids First Big Book of Animals series; features real photographs)

Teacher Tip: This lesson works best when paired with direct observation of real insects (safely caught and released) or high-quality close-up photos. Kindergarteners learn through sensory engagement, so incorporate movement activities (hopping, reaching like antennae) to deepen understanding of insect adaptations.