BEES

LESSON SUMMARY

In this lesson, students discuss bees and the important role of pollinators. They then catch and observe bees in the garden.

CALIFORNIA STATE STANDARDS

Grade 7 Focus on Life Sciences: Genetics

2.0 A typical cell of any organism contains genetic instructions that specify its traits. Those traits may be modified by environmental influences. As a basis for understanding this concept.

2.a Students know the differences between the life cycles and reproduction methods of sexual and asexual organisms.

COMMON CORE STANDARDS

Grade 7 English Language Arts: Speaking & Listening

Comprehension and Collaboration

SL.7.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 7 topics, texts, and issues, building on others' ideas and expressing their own clearly.

SL.7.2 Analyze the main ideas and supporting details presented in diverse media and formats (e.g., visually, quantitatively, orally) and explain how the ideas clarify a topic, text, or issue under study.

LESSON OBJECTIVES

Students will be able to:

1. State at least two facts about bees and pose a relevant question. Terms may include honeybee, native bee, and pollination.
2. Describe the process of pollination and how it relates to plant reproduction and food production.
3. Execute catching and releasing a bee safely in the garden.
4. Explain the role that bees play in the garden and exhibit appropriate behavior around bees.

ASSESSMENTS

Students will:

1. Correctly identify the parts of bees that collect pollen and explain how bees transfer pollen from one flower to another.
2. Define the terms honeybee, native bee, and pollination.
3. Name two foods that rely on insect pollination.
4. Follow teacher instructions and demonstrate proper use of tools in catching and releasing bees.
5. Share one new piece of information and/or pose a relevant question about bees and pollination.
6. Demonstrate appropriate behavior around bees that reflects an understanding of when bees sting.

MATERIALS

Opening circle
-Laminated pictures of bees
-Laminated pictures of fruits and vegetables

Field
-Nets

Closing circle
-Chocolate and almonds for tasting

BEFORE YOU BEGIN

1. Familiarize yourself with facts about bees, as well as how to safely catch and release them.
2. Check the weather forecast. (Bees are most active in warm, sunny weather.)
3. Make sure to leave at least 10 minutes for bee catching following the discussion.

PROCEDURES

At the opening circle:

1. Introduce the lesson and let students know that the agenda for the day includes a discussion of bees and pollination followed by a bee catching activity.
2. Invite students to share something they already know or think they know about bees and pollination.
3. Share laminated cards of fruits and vegetables and ask what they all have in \ common.
4. Explain that 35% of our food crops require pollination.
5. Pass around pictures of bees and pose questions (e.g., Where do bees carry pollen? What do bees want from a flower? What is pollen? Where can you find pollen on the plant?).

6. Clarify the different kinds of bees and share the laminated cards depicting the different life cycles of native bees and honeybees.
7. Explain the habits and behaviors of bees.
8. Clarify when and why bees sting and review the warning signs before they sting.
9. Demonstrate the correct use of nets and methods for catching and releasing bees.
10. Divide into groups of three or four and pass out nets.

In the field:

1. Have students catch, observe, and release bees.

At the closing circle:

1. Have each student share one new fact and ask a question about bees and pollination. Encourage students not to repeat each other and to use specific terms.
2. Ask students to reflect on what would happen to the garden if there were no bees.
3. Pass out tastes of chocolate and almonds, and explain that both of these foods require insect pollination in order to exist.

RESOURCES

How to Safely Catch and Release a Bee With an Insect Net

1. Slowly approach a bee perched on a flower.
2. With the net in hand, swipe sideways as if with a tennis racket, then flick your wrist like the conductor of an orchestra so that the net folds closed.
3. To observe the bee, hold the open side of the net facing the ground with one hand. With the other hand, stretch the very tip of the net upwards. The bee won't fly down, so it will remain caught in the net.
4. To release the bee, hold the open side of the net facing upwards. The bee will fly up and escape.

Cool Facts About Bees

1. 35% of our food crops require pollination. Some favorites are strawberries, peaches, kiwis, apples, watermelon, pomegranate, cucumbers, and pumpkins.
2. Honeybees live in groups in hives and are originally from Europe.
3. Bees native to the Bay Area are solitary and nest in the ground. After laying their eggs, they then seal their nests. New bees emerge from the ground after they hatch. Native bees don't live in these holes—they only lay their eggs there.
4. There are 85 species of bees in Berkeley, 1,600 in California, and between 20,000 and 40,000 in the world.
5. Bees have three major interests: pollen, nectar, and reproduction. They are not inclined to bother or sting people, as they only eat nectar and pollen.
6. Wasps are carnivorous and are not major pollinators.
7. Only female bees can sting. A bee's stinger is its oviduct, from which eggs are released. Male bees don't have stingers.

8. A bee's first reaction when it is scared is to fly away, its second reaction is to buzz loudly, and its last resort is to sting.
9. Male bees are not pollinators—they only serve for reproduction.
10. Female bees have fuzzy bellies and legs that are ideal for collecting pollen. You can sometimes see the pollen sacs on the hind legs of the female bee. Female bees collect pollen and nectar to feed themselves and their young. Pollination happens by accident.
11. Honey is nectar that honeybees have swallowed and regurgitated in the hive. Bees flap their wings on the regurgitated liquid, causing evaporation and creating honey.
12. A queen honeybee can live for two to five years. A female worker bee lives one to four months, and a male drone lives 40-50 days.
13. Honeybees can fly up to 15 miles per hour.
14. Bees don't fly down very well. They usually fly up.
15. Bees see blue better than any other color. When you're looking for bees in the garden, look on the blue flowers first.