Fall/Spring - Outdoor | 30 minute lesson

Buzzy As a Bee

Connected Next Generation Science Standards

K-ESS3-1 Use a model to represent the relationship between the needs of different plants or animals (including humans) and the places they live.

Featured Science and Engineering Practices

Developing and Using Models

Featured Cross-Cutting Concepts

Systems and System Models

Materials

- Teacher - small whiteboard, or chalkboard and marker
- Garden journals or paper
- pencils
- Real or fake flower (or other objet to represent the bee's food source)

Overview

Students are often scared of bees but this lesson is all about getting to know these important insects. Students will observe examples of nonverbal communication and then explore how honeybees use a dance to communicate with one another to find food.

Students will

- Understand that honeybees use nonverbal communication
- Search for evidence of bees.
- Model the waggle dance to show how bees interact

Teacher Preparation

- Walk through the garden to familiarize yourself with the space, noticing if there are many bees present.

Guiding Question - How do honey bees communicate?

Buzzy As a Bee

Settings

- School garden or pollinator garden
- Can be taught at any time of year but more bees will be around in the spring and fall

Explore

- Ask students, How do you share your feelings without words? Turn to a partner and demonstrate an angry/excited/sad face without making any noises.
- Living things also communicate using body language or signs. What are some ways animals may send messages to each other without making noise? Popcorn student response and add additional examples, if needed. Familiar examples include a dog wagging its tail when happy, a cat flattening its ear when scared, or a fish hiding when scared.
- Give students a few minutes to explore the garden, looking for examples of animal communication. Encourage students to find one animal and observe it for a few minutes.
- Draw two columns on a board and write down observed animal communication. On the left side write the animal and action, and on the right side write the emotion or message expressed by the action (e.g. a snake hisses - scared, a squirrel stands upright- looking for food).
- Brainstorm and add other garden animal communication the class did not see today

Digging Deeper

- Bees are an important part of the garden and communicate in many different ways.
- Has anyone ever seen a bee in the garden? What did you notice they were doing? (buzzing, flying)
- Bees are an important part of the garden and communicate in many different ways.

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Honeybees are not native to Missouri but now live all over the midwest. You may wish to mention other native bees that students see in the garden, such as bumble bees or squash bees.

The honeybee waggle dance involves a figure-8 motion, but it may be easier for younger students to do a circle.

Depending on students' ages, add in more **pollination** background when introducing bees. **Pollen** is the fine, powder produced by a plant and needed in order to reproduce. Many bees eat pollen as a source of protein. **Nectar** is a sweet liquid produced by flowers that bees eat as a sugary snack.

- When a **honeybee** finds a flower with lots of food, it will gather all it can, then fly back to the hive. It will communicate this message to other bees through a special dance!
- Tell students they are going to learn the honeybee dance, known as the **waggle dance**. They are going to practice and model how honeybees communicate.
- As you explain the dance, demonstrate the movements and have the students practice with you. The dance has two parts to it, the **motion**, which tells the direction of the food, and the **waggle**, that tells bees how far the food is.
- Start the dance by moving your hips in a figure-8 or a circular motion (see side note). Emphasize the direction your body is moving (left or right) when going towards the student to indicate the direction of the food. Let the students practice a few times until they understand they must dance, or circle, in the direction that points toward the food.
- Call on a few students to demonstrate their motion and have others guess what direction the food would be.
- Then demonstrate the waggle. Honeybees waggle, by shaking the lower part of their bodies back and forth. The closer the food source, the faster they shake. Model shaking your hips very fast, slowly, and in the middle. Have students practice a few times.
- Call on a few students to demonstrate their waggle and have other students guess if the food is close, in the middle, or far away.

Buzzy As a Bee

Take pictures and identify garden bees. Use the iNaturalist app (www.inaturalist.org) or check out the St. Louis Zoo's Center for Native Pollinator Conservation for identification and other resources (www.stlzoo.org/conservation).

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Making Connections

- Now practice putting the entire dance together.
- Either divide students into small groups or keep the class as one large group.
- In each group, one student is the dancing bee. Using a fake flower or other object to represent the bee's food, they hide the "food" somewhere in the garden area.
- Now have the student do the waggle dance using circling motions and waggles to hint to the other foraging worker bees (the rest of the class or group) where the "food" is. The other students then walk through the garden and try to find the food source based on the dance. The student that finds the food source gets to be the dancing bee for the rest of the class.
- Repeat a few times, allowing different students to model the dancing bee.
- Bring the class back together. What was easy or difficult about finding food based on the bee dance?
- Can you think of another dance that might demonstrate a message? Allow students a few minutes to make their own dances and messages.