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RESOURCE AREA FOR TEACHING

STEAM
SCIENCE TECHNOLOGY ENGINEERING ARTS MATHEMATICS

LEARNING ACTIVITY

Bee A Pollinator

It is a Honey of a Job with Fringe Benefits!

Flowers and bees are like friends who help each other. The bees obtain nectar and pollen from the flowers. The flowers will have their pollen carried to other flowers by the bees. By carrying pollen, bees become pollinators for the flowers. Pollination is a key part of the process for creating a flower's seeds.

Activity Challenge

Design and build a tool that can collect a pollen-like substance and move the "pollen" from one "flower" to another. The tool can be handheld, but the pollen and flower are not to be touched.

Preparation

1. Define workspace and collect materials. To make cleanup easier, spread newspaper or equal over the work surface.
2. From the paper cut two flower shapes. Use the pattern on the next page or have students make their own pattern. Color the flower shapes.
3. Set the flowers next to each other and place a small amount of the selected "pollen" powder onto the center of one of the flowers.

To Do

1. If possible, research how bees carry pollen.
2. Using the materials gathered, review the Activity Challenge and think about how to design a tool to collect, lift, and move the pollen from one flower to another.
3. Draw a few possible designs.
4. Use the drawings to build a tool.
5. Place a small amount of the selected "pollen" powder into the center of one of the flowers.
6. Test the tool by gently placing an end into the "pollen" powder. Then move the end over to the other flower and gently press the tool onto the center of the other flower.
7. How much pollen was moved from one flower to another?
8. Experiment with the tool design to see if more pollen can be moved.

Materials Needed

- Paper
- A chopstick, craft stick, tongue depressor, small stick, straw or other object to serve as a handle.
- Cotton balls/swabs, chenille stems, erasers, adhesive foam, napkins, paper towels, pom-poms and or other material that could to hold "pollen"
- Corn starch, pepper, confectioners' sugar, baking soda/powder or other powdery substance to be the "pollen"
- Tape or glue

Grade Range

K-2 (With supervision)
3-5

Topics/Skills

Science: Ecosystems; Engineering Design

Learning Standards

NGSS: Interdependent Relationships in Ecosystems

Duration

15-20 minutes

Prep Time

10 minutes

Observations

- If possible, test out a variety of materials to see which material can hold more pollen.
- When outside look about for bees and other pollinators. Are they searching for flowers? Are they around flowers? Can you observe anything about how they collect pollen?

Extensions

- When pollinators are not present, gardeners will try to pollinate their plants on their own. Could they use the tool you designed? Try your newly designed hand pollinating tool on real flowers. Does it work? Do you notice any pollen on the tool?
- Investigate the different ways pollinators carry pollen?
- Why is pollen an import food source for bees? What does pollen contain that bees need?
- What is a symbiotic relationship? Are all symbiotic relationships mutually beneficial?

The Content behind the Activity

Pollen is a yellowish powder that carries half of the genetic material (DNA) that the plant needs to make seeds. Pollen is produced by one part of a flower and must move to different part of a flower on a different plant, usually. Pollen can be carried by the wind and by pollinators. Pollinators are animals like birds and insects that transport pollen from flower to flower. Some pollinators, like bees, collect pollen for their own use, but shed some of the pollen in going from flower to flower. For bees it is important to collect as much pollen as they can carry and still fly.

Other pollinators, in trying to collect the flower's nectar, will end up with their bodies becoming partly coated with pollen. That pollen will rub off as they go from flower to flower. However, they do not use the pollen as a food source.

Many, if not most, of the fruits and nuts we eat could not be grown without pollinators as both contain seeds. Bees are particularly energetic pollinators ("busy as a bee"). Many species of bees have specialized ways of carrying pollen such as tightly woven and sticky hairs.

See the following RAFT Learning Activities for more activities on this topic:
A Flower for Every Pollinator