Pollinators in the Garden

Goals
Students will review the parts of a flower, understand how plants are pollinated, and why people depend upon pollinators for food.

Objectives
Students will observe pollinators in action in the garden and dissect a flower in order to draw and label the parts.

Materials
- Variety of garden flowers
- Paper
- Pencil
- Knife
- Magnifying glass
- Diagram of a flower
- Journals

Time: 30 minutes

Background Information
Pollination is vital to the well being of humans. The most obvious example of our link to pollination is agriculture. Pollination, by managed honeybees and wild pollinators, is a key factor in the productivity of the seed, fruit and fiber crops that we depend upon. Almost all fruit and grain crops require successful pollination in order to produce the harvested crop. While it is true that some very important agricultural crops, such as rice, corn and wheat, are self or wind-pollinated, the majority requires the services of pollinators. Over 150 food crops in the United States depend on pollinators—among them apples, alfalfa, almonds, blueberries, cranberries, kiwis, melons, pears, plums and squash. Thirty percent of the food we eat is dependent upon pollinators for production.

Some of the most active pollinators in the garden are peaceful dwarf carpenter bees, mason bees and leaf cutters, which like to make their homes in the pithy stems of sunflowers. To make sure they have warm winter lodgings, nail a clean coffee can to a mountain board and stuff it with stalks. Attach the board to a sheltered spot in the garden. For more activity ideas, see: http://www.kidsgardening.org/pollinator/curriculum/index.php.

Introduction (5 min)
Review flower parts with the students by drawing a flower, including important parts, or provide students with a diagram of a flower. Have students label, independently, in small groups or as a large group, the flower parts.

Activity Steps (20 min)

1. Give the students an introductory discussion about pollination. Pollination is central to successful reproduction in most plants. Simply stated, it is the transfer of pollen grains from the stamen (male) of one flower to the stigma (female) of the same or another flower. Some plants are self-pollinated or wind-pollinated, but most depend on insects, birds, bats and other organisms, collectively referred to as pollinators, to transport the pollen for them.
2. Talk about how the evolution of pollinators and the pollination process is one of nature's unique solutions to the dilemma of sexual reproduction among stationary plant organisms. Plants have developed scents, colors, and shapes that make them attractive to pollinators who, in turn, have developed physical characteristics that allow them to gather and transport pollen as they seek food. Ask the students to give examples of these characteristics.
3. Have each student select a colorful flower in the garden. Spend five minutes quietly sitting near the flower, observing and recording (in their journals) the insects visiting that flower. Did pollination occur? What colors are attractive to bees, butterflies, moths, beetles, etc.?
4. Have each student choose a different flower in the garden and repeat the process. Suggestions include sunflowers, sweet peas, nasturtiums, and poppies. Gourd, squash, and pumpkin flowers are also good choices.
5. Have the students select a pollinated flower and cut it in half so the seed-forming stage may be observed from the inside. Supply them with magnifying glasses to facilitate their observations. Students should draw and label the parts of the flower in their journals. Students may also enjoy coloring their flower drawings.
6. Ask these questions to elicit reflection:
    a. What pollinated this flower? Bees? Wind? Hummingbirds? Other insects?
    b. How could a person pollinate this flower?
    c. How are new species of plants created?
7. Other pollination activities include:
    a. With a magnifying glass, search under sunflower leaves for tiny butterfly eggs. Tie a ribbon near the clusters and visit them until the caterpillars hatch.
    b. Shake a cornstalk until the pollen from the male tassels reaches the female silks. Ears form from the pollinated silks.
    c. Examine the squash vines as they begin to flower. The blossoms with bulb-shaped fruit are the females that turn into squash.

Conclusion (5 min)

Have students reflect on what they know about pollination, pollinators, and flowers in their journals.

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