

BIOLOGY OF PLANTS

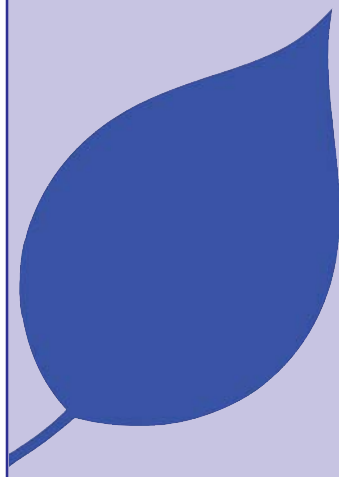
WHAT IS POLLINATION? (A STICKY QUESTION) Activities

CREATE A FLOWER

Students apply what they have learned about flower shape and structure to create flower models.

Materials:

1. Construction paper
2. Colored cellophane or tissue paper
3. Nut cups (portion cups)
4. Paper strips or pipe cleaners
5. String
6. Stapler
7. Hole punch
8. Crayons or markers



Preparation:

1. Assemble one flower of each type before class:
 - a. Hummingbird: Make a tube from orange or red construction paper. Students may fringe the end of their tubular flower. Have them insert one straw or pipe cleaner (pistil) and 2–5 pipe cleaners or paper strips (stamens). Staple the base of the flower closed.
 - b. Insect: Have white, pale pink, pale blue, and pale yellow paper available. Cut out a five-petalled shape around a circular center. Students may draw bee guides on petals leading to the center. Punch one hole in center. Put one pipe cleaner or paper strip and two or three doubled pipe cleaners through hole for pistil and stamens.
 - c. Wind-pollinated flower: Color nut or portion cup green, brown, or pale pink. Punch a hole in base of cup. Cut two pieces of string about 8" long. Knot them together in the center. Pull the knot in the string and one end of a pipe cleaner through the base of the cup, leaving the long stamens and pistil sticking out of flower. Fasten.

Procedure:

1. Show your class the model flowers. Review with the class the features of flowers pollinated by insects, birds, and wind. Which of the flowers is pollinated in each way? Tell them that today they will have a chance to make a flower pollinated in one of these three ways.
2. Have class make their flowers without patterns.
3. Display the flowers, labelling each flower with its pollinator's name.

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HAND POLLINATION

Students will transfer pollen from flowers on one plant to another. Students will observe the formation of seeds in the pollinated flowers.

Materials:

1. Readily available potted flowers for each group (such as amaryllis, tulips, gloxinia, gladiolas, lilies; all groups must have the same type of plant)
2. Pencils with good erasers or paintbrushes
3. Labels
4. Marker for labels

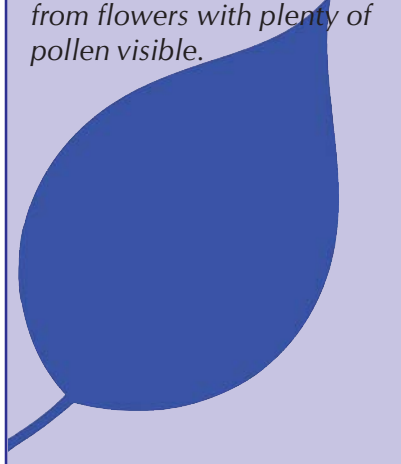
Note:

Purchase plants a day or two before the activity. Purchase plants with some blossoms open, with pollen visible on stamens. Keep the plants in appropriate light to ensure that you will have many blossoms with pollen. Only collect pollen from flowers with plenty of pollen visible.

Procedure:

1. Introduce the activity by reviewing the parts of the flower involved in pollinating using a model or cut flowers. Then explain that the class will pollinate flowers.
2. As you demonstrate how to pollinate the flowers, ask students: Where do pollinators collect pollen? (From the stamen.) Use your pencil's eraser to collect pollen from the stamen. Hold it in the air and ask: Where do pollinators deliver pollen? (To the pistil.) Gently roll your eraser across the pistil to deposit the pollen.
3. Have only one student in each group collect pollen at a time. Then have the pollinator walk to the next group's flower to deposit it. Repeat until all students have had a chance to pollinate a flower.
4. Label each group's pot with their names. Continue to care for the plant for the next two to three weeks. Watch what happens to the flowers which gave and received pollen.

The seeds which your flowers produce may not be fertile. Hybrids are frequently unable to produce viable seed. If you want your students to follow the whole life cycle, ask a good nurseryman about your plants before buying them.



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WHAT IS POLLINATION? (A STICKY QUESTION) Activities

PETAL/POLLINATOR SORT

Students will classify flowers by the types of pollinators they would attract.

Materials:

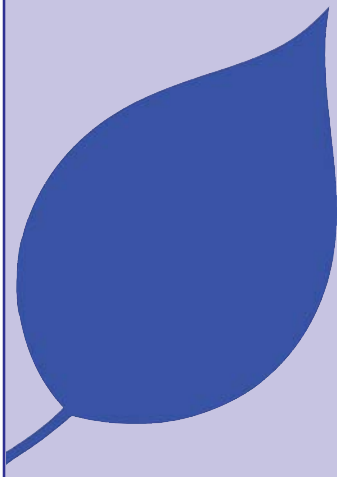
1. Flowers growing in a garden or cut flowers such as gladiolas, freesia, lilies, tulips, petunias, gloxinia, honeysuckle
2. Paper and pencil for notes
3. Hand lenses

Preparation:

This activity will work best in late spring, when some grasses or trees are also in flower. Scout the area before your group visits to assure that there are some insect- and bird-pollinated flowers in bloom as well as wind-pollinated ones.

Procedure:

1. Introduce the activity by reviewing pollinators and flower structure with students. Which kinds of flowers do insects visit? Birds? Which kinds use wind for pollination? Announce that they will look for flowers for each type of pollinator.
2. Equip each student with hand lens, paper, and pencil.
3. Explain that they may look at any flowers in the area. For each flower students visit, they will inspect and record: the scent/absence of scent; the color of the flower; the shape of the flower; the identity of any animals on the flower. Demonstrate how to record the information for one flower.
4. After all the students have recorded information on at least 5 flowers, assemble the group and share your results. Predict what will pollinate each of the flowers. Go back and watch for pollinators (at least 15 feet away if you seek birds).
5. If you cannot visit a garden, you can bring some cut flowers into the classroom. Some florists give teachers left over cut flowers that they did not sell.



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WHAT IS POLLINATION? (A STICKY QUESTION) Activities

FLORAL DIVERSITY

Students will count flower parts and use these to classify flowers.

Materials:

1. Cut flowers such as gladiolas, freesia, lilies, tulips, petunias, gloxinia, honeysuckle (Need at least 6 different kinds)
2. Paper and pencils
3. Hand lenses

Procedure:

1. Introduce the activity by reviewing the parts of a flower. Where are the petals? Where are the stamens? What is in the center of the flower?
2. Discuss the great variety of flowers. One way botanists can separate them is by the number of parts they have.
3. Equip each student with hand lens, paper, and pencil.
4. Have students work in small groups. Give each group one flower to examine at a time. As the students count and observe parts, have them record observations: number of stamens, number of petals, number of pistils, symmetry/asymmetry of flower. Give each group enough time to look at three or four flowers of different kinds.
5. Collect the class. Record the information from all the flowers on the board. Then sort the flowers by the number of petals. Sort by the number of stamens within the group with the same number of petals. Do these flowers look the same in other ways? What ways?
6. It is not important for students to learn the names of the families in which we classify flowers at this point. Your students may be able to sort flowers into groups with: parts in multiples of 3, parts in multiples of 4 or 5; composite flowers with ray and disk flowers on the head; asymmetrical flowers.

