

Pollination Simulation Activity

Presented by:



In partnership with:



Students will simulate pollination to learn about the parts of a flower and how plants and animals depend on each other.

Simulation Method #1

Each partner pair of students needs the following materials:

- 1 cotton swab
- 2 different colors of washable colored powder
- 2 cotton balls
- 2 cupcake liners

Instructions

1. Explain to students that they are going to simulate pollination using the materials to represent the stamen, pistil, pollen, and animal. **Do not tell students which materials represent which parts of the flower.**
2. Model for students the simulation by following these steps:
 - a. Place two cotton balls in the center of each filter.
 - b. Sprinkle a different colored powder over each cotton ball.
 - c. Rub the cotton swab in a circular motion on the first powdered cotton ball.
 - d. Use the **SAME** end of the cotton swab to rub on the remaining powdered cotton ball.
3. Now, divide the classroom into pairs of two students. Give each pair of students two cupcake liners, two cotton balls, one cotton swab, and a small amount of the washable colored powder in two different colors.
4. Have students conduct the simulation with a partner and record their observations.
5. Have students repeat the simulation twice, using the **other end** of the cotton swab the second time.
6. Ask students to describe to their partner what each vocabulary word means and what they think each material represents in the simulation.
7. Discuss the simulation with the whole class after each partner pair has completed the simulation twice.

Questions to ask for further understanding...

- What happened to the powder during the simulation?
- How do you think the simulation represents pollination?
- List and describe the parts of a flower. How do these parts contribute to the flower's survival?
- Describe how animals rely on plants and how plants rely on animals. Describe the spread of pollen. Explain how pollination helps plants and animals.

Simulation Method #2

Materials

- cupcake liners
- washable colored powder
- cotton swabs

Instructions

1. Start by dividing the classroom into two groups of students. One group will be the plants and the other group will be the pollinators.
2. Give each student in the plant group a cotton ball and a small amount of "pollen" (washable colored powder) in a cupcake liner.

3. Now, ask each student in the pollinator group to visit a student in the plant group and dip a finger into the “pollen”.
4. Ask the class to name the part of the plant that the pollinators touched (the stamen, which consists of the anther and the filament) to get the pollen on their fingers. Have them determine whether it is a male or female part.
5. Ask the students what parts of the pollinators' "bodies" (represented by their finger) touched the stamen that could carry the pollen to the next plant.
6. Ask what they were looking for when they got to the plant (nectar) and what appendage they used to get it (proboscis).
7. Have each member of the plant group hold a cotton ball up in the air.
8. Explain that the pollinators have just visited one plant and will now move on to another plant of the same species.
9. Instruct the pollinators to visit a different student in the plant group and rub some of the “pollen” they are carrying onto that plant's cotton ball.
10. Ask the students what part of the flower the swab represents (stigma) and whether it is a male or female part.
11. Have each group meet separately to discuss its specific role as a pollination partner and how it benefitted from the pollination process. Have each group select a spokesperson who will take notes and report the findings to the class.

What science is at work?

Pollen is an important powdery substance created by most plants. Pollination happens when pollen gets spread around. In fact, without pollen spreading from flower to flower many plants wouldn't be able to reproduce.

Some plants spread their pollen through the wind, but more plants require pollinators, animals that land on plants to feed on nectar. While they're feeding, the powdery pollen rubs off and sticks to them, and when they move to another plant, some of it falls off to pollinate the new plant. There are over 200,000 varieties of pollinators living in the wild, most of which are insects. Other animals such as birds, small mammals, and bats can also help with pollination.

As pollinators reach for the nectar in flowers, they rub against the pollen and it often sticks to them. As they move between flowers, the pollinator brushes off onto other flowers. This is a strategy plants use for pollen to travel and fertilization to occur since plants are rooted in place.

Pollination plays an important role in our everyday lives. It has a particularly great effect on the variety of food that we have available to us—apples, berries, chocolate, and peanut butter are all by-products of the work that pollinators do. Over 80% of the living flowering plants rely on pollinators for their survival.

Key Terms

- **Pollination:** the process of male cells being transported to female cells in a flower.
- **Stamen:** the male cells of a flower
- **Pistil:** the female cells of a flower.
- **Nectar:** a sweet liquid inside flowers
- **Pollen:** a powdery material located in the stamen.

Tennessee Science Curriculum Standards addressed:

6.LS2.1, 6.LS2.2, 6.LS2.3, 6.LS2.6, 6.LS2.7, 6.LS4.1, 6.LS4.2, 6.ESS3.3, 6.ETS1.1, 7.LS1.3, 7.LS1.6, 7.LS3.1, 8.LS4.2, 8.LS4.3, 8.LS4.4