

Pollination – A Sticky Situation!

Bee puppet and Cheetos version

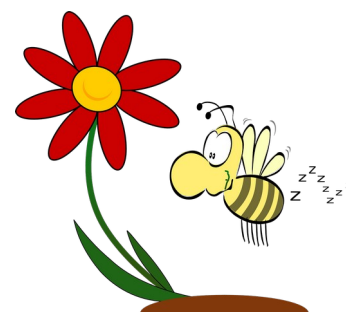
*A lesson from the New Jersey Agricultural Society
Learning Through Gardening program*

OVERVIEW: Pollination is a sticky situation. In this active lesson, students learn how pollination works by using Cheetos to simulate pollen. Students make bee finger puppets and insert two fingers for the feet. Then they eat Cheetos, trying very hard not to lick or wipe off the powder! Next, they take their bee puppets to visit one another's flower, leaving a sticky trail of pollen (Cheetos) behind.

GRADES: PreK-2

OBJECTIVES: The student will be able to:

- Explain what pollen is and the reason for pollination.
- Describe the process of pollination by bees.
- Explain why bees participate in the pollination process.



MATERIALS:

Bee finger puppet for each student
Flower and hive pictures for each student
Bees Really Get Around worksheet for each student
3/4-inch circle punch

Or materials to make finger puppets:

yellow and white cardstock paper
googly eyes
white string or yarn
red and black markers
glue

Cupcake papers

Cheetos or similar cheese snacks

(Check the ingredients to be sure none of your students are allergic to them.)

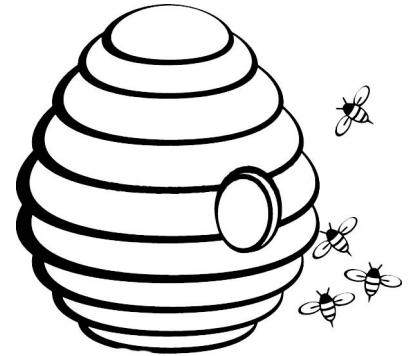
PREPARATION:

There are two ways to make the bee finger puppets for this lesson:

1. Copy a bee figure for each student. Punch two holes for fingers at the bottom of the bee figure. Let the students cut out and color the bee. *(Some teachers laminate the black and white bees to use again.)*

2. Have the students make the bee finger puppets using pre-cut shapes.
(Older students could trace and cut their own shapes.)

- The shapes you will need are: a 2 1/2-inch circle and a 3-inch circle from yellow cardstock, and two wing shapes from white cardstock.
- Ask the students to draw black stripes on the larger circle. Then use the 3/4-inch circle punch to cut out two holes at the bottom of it.
- Glue the smaller yellow circle onto the black-striped yellow circle, making sure the finger holes are at the bottom of the large circle. Then glue the white wings on the sides of the bee body.
- Glue the googly eyes onto the face and use the red marker to draw a smile.
- Fold the string in half to make a V and glue it onto the back of the bee head for antennae. You might want to add a piece of tape to help secure the antennae in place until the glue dries.



PROCEDURE:

Start a class discussion about flowers and bees. Ask students what they know about bees. Ask students why they think bees visit flowers.

Show the very amusing Stop Motion Science Animation for Kids Youtube video *Pollination Lesson*: www.youtube.com/watch?v=zy3r1zIC_IU.

Read and discuss a book about bees such as:

Are You A Bee? Judy Allen and Tudor Humphries

Honey in a Hive, Anne Rockwell

The Honey Makers, Gail Gibbons

The Flight of the Honey Bee, Raymond Huber.

Review pollination for the class: Flowers need to exchange pollen in order to be able to make seeds. Since flowers can't move, they need help from pollinators. Deep in their petals, flowers produce a sweet sugary nectar that pollinators like bees, birds, butterflies, and other insects love to eat. When pollinators visit the flowers, they brush up against the pollen, which is very sticky.

Important teachers' note: Most pollinators that visit flowers eat the nectar the flowers produce in their petals. The nectar is the lure to encourage pollinators to visit the flowers. A few pollinators, like beetles or mites, will eat pollen, but most don't. Honey bees collect both nectar and pollen, but pollen is only used as food for their young. Nectar is what is used to make honey.

Think about stepping in wet, sticky mud. Your mother doesn't want you to walk in the house in those muddy shoes, because with each step, some of that mud will fall off. That's the way pollination works. Pollinators visit a flower and get covered with sticky pollen. Then when they visit the next flower, some of that sticky pollen falls off. This is pollination,

which allows the flower to make a new seed. Some insects do eat pollen. Honey bees take pollen back to their hives and mix it with nectar to feed to their young (larva).

Tell students that today they are going to act out pollination. Give each student a picture of a flower and a hive. Set a cupcake paper in the middle of the flower and fill it with Cheetos. Tell students to put on their bee puppets and then eat the Cheetos. Tell the students to be sure NOT to brush or lick the Cheetos crumbs from their hands!

When they are finished eating, the students hands – the bee's feet – should be sticky with Cheetos crumbs. Tell the students that their bees need to gather pollen from the flowers near their hive. They should fly around the classroom, landing on other students' flowers with their sticky bee legs and then return to their hive. When the students land on the flowers, they should be leaving a trail of pollen behind. Tell students to make four or five trips to different flowers and back to their hive.

Tell students that after their last trip from flower to hive, they can wash their hands. Then ask them to complete the *Bees Really Get Around* worksheet. When everyone has made their last trip from flower to hive, discuss with the students what they observed.

EVALUATION:

Completed *Bees Really Get Around* sheet

Students draw a sequence of pictures or write a sequence of sentences that explain how bees pollinate flowers.

EXTENSIONS:

Share the background sheet *The Buzz About Bees* to teach students more about honey bees.

Investigate the life cycle of bees in the hive – from larva, to pupa, to adult bee.

Compare honey bees to other pollinators such as butterflies or hummingbirds.

New Jersey Learning Standards

Science: PreK: 5.2.1, 5.3.1 K: LS1.C 1:LS1.A 2:LS2.A



The Buzz About Bees

Fun facts about honey bees

Honey bees live in hives. There are three types of bees in the hive:

1) Queen: One queen runs the whole hive. Her only job is to lay the eggs that will become the hive's next generation of bees. A queen can lay up to 1,500 eggs every day.

2) Drones: These are the male bees. They mate with queen.

3) Workers: Workers are all female bees. Their job is to find food (pollen and nectar from flowers) for the hive. They also clean the hive, make the honey, take care of the offspring, and groom and feed the queen. Workers are the only bees most people ever see flying outside the hive.



Bees collect two things from flowers:

1) Nectar is food for honey bees and other pollinators such as flies, wasps, butterflies, hummingbirds, and bats. Honey bees take nectar back to their hives and use it to make honey. Nectar is a very sweet, sugary liquid that is made by the flowers to attract pollinators. The nectar is deep inside the flower petals, so that pollinators will have to brush up against the flower parts that hold the pollen. Flowers need pollinators to move the pollen from the male part to the female part before they can make seeds.

2) Honey bees also collect pollen. They mix it with nectar to form beebread, which they feed to their larva (baby bees).

Collecting food is a big job. The worker bees must gather enough food to feed the hive in warm weather and to store food for cold weather when there are no flowers. A honey bee hive uses 50 to 75 pounds of pollen each year. Worker bees must visit two million flowers to make one pound of honey. Bees are such great workers that they produce two or three times more honey than the hive needs. That's why people can harvest honey and eat it too. To share information about the best food sources, when a worker returns to the hive it performs dances to show others how to find flowers.

Bees Really Get Around!

Scientist

When my bee
landed on a flower...

What I saw today...

Bees need
pollen to...

*What I learned
today...*

Flowers need
to share pollen
so they can...

