

GRADES K-2

TIME

45-60 minutes

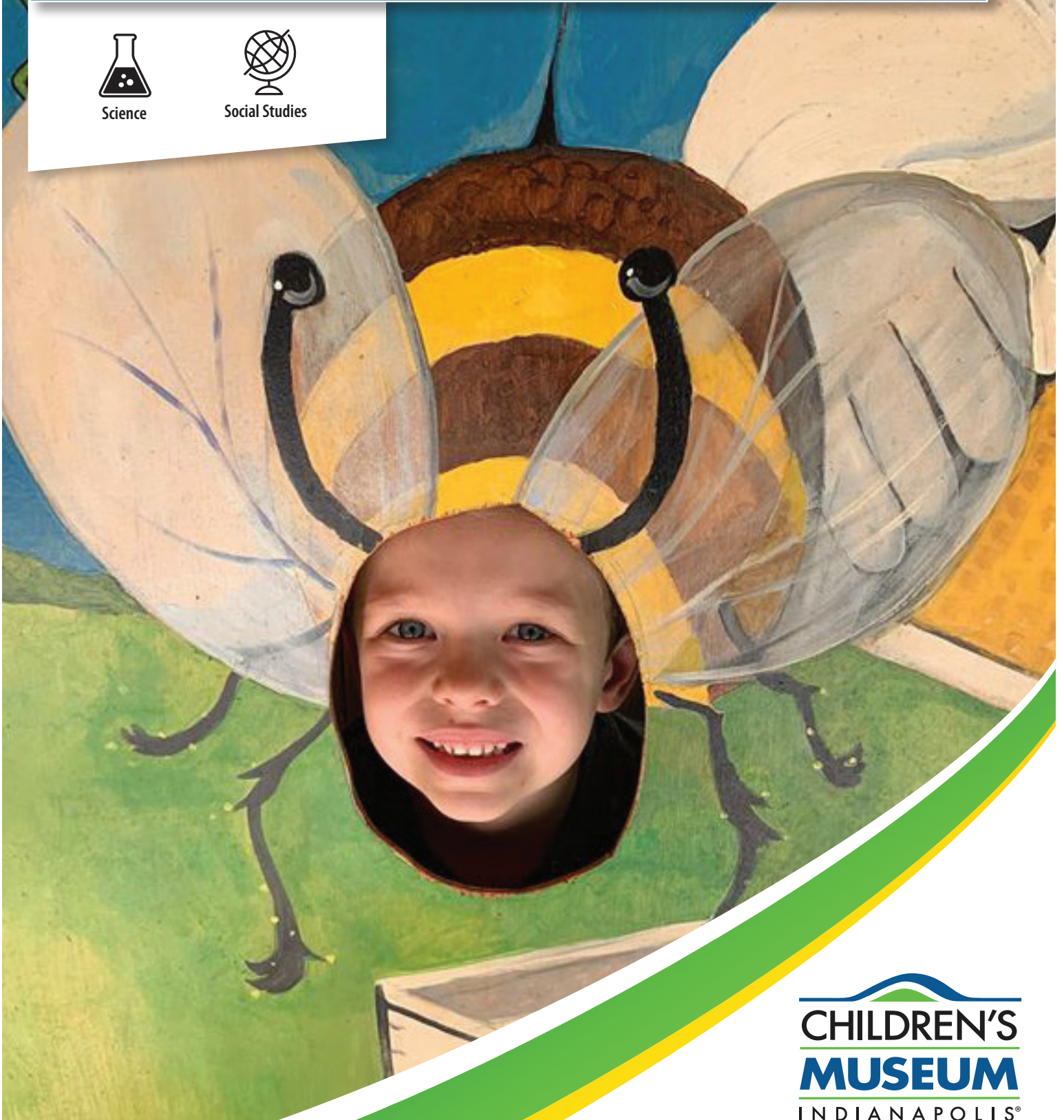
CRAWLIN WITH POLLEN



Science



Social Studies



CRAWLIN WITH POLLEN

The Children's Museum's lessons are designed to weave classroom experiences and museum education together. All lessons are interdisciplinary and can be used as individual classroom experiences or in combination to create a cohesive unit. Lessons are optimized when used in connection with museum field trips.

The frenetic buzzing of bees, insects, and birds around flowers is pleasant to the eyes, but many do not know that this busy activity is vital to human survival. Simply put, the human race and all of earth's terrestrial ecosystems would not sustain without these special pollinators. In this lesson, students will discover the importance of pollinators and their role in helping plants produce nourishing food and oxygen-producing trees. These little helpers are truly amazing superheroes!

FOCUS QUESTIONS

- How are plants pollinated?
- Why is the pollination of plants important?
- How do insects help with plant reproduction?
- How are insects important to ecosystems?



INDIANA ACADEMIC STANDARDS

Science: 1.LS.2, 1.LS.3, 1.LS.4

Social Studies: 1.3.9, 1.3.6

OBJECTIVES

Students will:

- Understand the importance of the pollination of plants
- Discover how insects help plants pollinate
- Learn about various types of pollinators and their roles in helping plants grow
- Recognize how threats against pollinators affect our ecosystem



MATERIALS

- Small candies
- Cheese puffs- any puff-style snacks with flavor coating
- Two large bowls
- A white flower that is real or fake (tissues or marshmallows can be a substitute)
- Nature journal for observation

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Pollinating Flowers

PROCEDURES

1. Before the procedure, tell students a little about pollination and pollinators.
2. Show students a picture of a flower with visible pollen and ask them what they observe. Point out the pollen in the flower and explain that it is a powdery substance, specifically found in male flowers that bees and insects carry to help other flowers reproduce.
3. Explain that plants of all kinds, including trees and flowers, need pollinators to help them grow each year and produce food.
4. Share with students that pollinators are animals that move pollen from male structures of flowers to the female structures of the same kind of flower. Without pollinators, most of all of the food in stores would not exist.
5. Instruct students that they will do an activity that will demonstrate how pollinators help pollenate flowers.



- 1** Place small candies in one bowl and completely cover with cheese puffs. Then, place flowers in a second bowl.



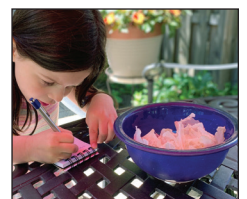
- 5** Look at your hand again after placing the candies in the second bowl; is the same amount of residue on it? What happened to the residue?



- 2** Using clean hands, take out as many of the candies as possible that are under the cheese puffs.



- 6** Make observations about how much pollen has transferred onto the flower when the candies were transferred from the large bowl.



- 3** Once all candies are taken out of the bowl with the cheese puffs, look at your hands; what do you see on them? What would happen if you touched something?



- 7** Make the following observations in your nature journal:



- 4** Take out the extracted candies and place them at the bottom of the second bowl under the flowers. Make sure A. The flowers are covering the candies and B. hands are not wash it in-between retrieving the candies and placing them in the bowl with flowers.



1. Draw a picture of the flowers.
2. Write what color your hand was after you got the candies from the bowl.
3. What words describe how the flower looked after you put the candies in it?
4. Write some adjectives that describe pollinators.

Pollen's Secret Surprise

Insects, such as honeybees, need pollen to survive. Pollen is an important ingredient to nurture baby bees (larvae) and worker bees because it is packed with the nutrients such as fatty acids and protein. When a forager bee gathers pollen, it licks its back legs with its long tongue to make them wet and sticky. It then brushes all of the pollen that coated its body from when it was inside the flower onto its hind legs. The pollen is then packed into a little ball for safe transfer back to the hive on the outside of the hind legs. Not all of the pollen is scraped off of the body and the little hairs on the bee's body collect the residual pollen and it is sluffed off as they travel from one flower to the next. Forager bees gather the pollen and bring it back to the hive where the worker bees pack it into small hollow spaces (cells) with their heads.

Prolific Pollinators



BUMBLEBEE

The champion of all pollinators! Bees perform 80% of the world's pollination



BUTTERFLY

Oddly hanging flowers are no match for the Orange-Barred Sulfur butterfly, who can maneuver around the tricky openings to get at the pollen inside.



BATS

Who pollinates flowers that only open at night (such as the flowers on the *Kigelia pinnata* tree)? Bats, of course!



HUMMINGBIRDS

Their thin beak and long tongue offers access to flowers that are too narrow for other pollinators.

VOCABULARY

- Pollen
- Ecosystem
- Pollinator
- Reproduce



HELPING HANDS

Pollinators are amazing creatures that are intrinsically connected to plants' well-being. Sadly, they are threatened by changing climates, man-made pesticides, and predators. Humans can help, though, by taking small steps that make a big difference. Here is a list of things anyone can do to help pollinators thrive!

- Plant a garden with flowers that pollinators like to visit. It is best to plant flowers that are native to the area. Remember, just as there are insects that are helpful to pollination, there are also insects that are important to keep out of the garden! For example, little bugs called aphids eat plant leaves zapping their nutrients and potentially killing the plant. Ladybugs are a helpful helper, as they eat aphids and do not harm pollinators or plants. Another example of a helpful helpers are spiders. Some see the spiders as scary and want them to go away, but our pollinators need them! They eat aphids and pesky mosquitos.
- Take a trip to a beehive or butterfly garden! Even in large cities, many places have areas for hives or gardens that are specifically for butterflies. Call the local parks and recreation centers to inquire about these locations and offerings like nature talks, literature, or resources.
- Research and learn more about pollinators. Some pollinators are scary to young children. Bats are wonderful pollinators but can seem scary or threatening to children. Learning more about them and their friendly demeanor can put minds at ease and encourage peaceful coexistence and deeper appreciation of these misunderstood creatures. Check out: <https://www.pollinator.org/>; <https://www.fs.fed.us/wildflowers/pollinators/>; <https://www.fws.gov/>