

Birds, Bees, and Dandelion Seeds

A virtual field trip for second
graders.



ADKINS ARBORETUM

Birds, Bees, and Dandelion Seeds

Virtual Field Trip to Adkins Arboretum

Grade Level: Second

Unit: Life Science

Length: Five 30- to 45-minute lesson plans

NGSStandard: 2-LS2-2

Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

Learning Target:

Develop and describe a model that shows how plants are pollinated.

Develop and describe a model that shows how seeds are dispersed.

Success Criteria:

The student will be able to

- Define pollination
- Give examples of animal pollinators
- List seed parts and describe their functions
- Explain the four methods of seed dispersal and give examples
- Identify bee anatomy
- Name five bees that are native to Maryland
- Explain why bees are important to humans and how we can help them

Disciplinary Core Ideas:

LS2.A: Biodiversity and Humans

- Plants depend on light and water to grow.
- Plants depend on animals for pollination or to move their seeds.

Science and Engineering Practices:

- Asking Questions
- Constructing Explanations
- Arguing from Evidence
- Obtaining, Evaluating, and Communicating Information
- Developing and Using Models

Crosscutting Concepts:

- Patterns
- Structure and Function
- Cause and Effect

Lesson 1: Pollinator Power

Materials for Teachers:

Day 1 video clip: <https://youtu.be/0am022YtaSU>

Materials for Students:

Journal or paper

Pollinator bingo game (resource section)

Crayons, markers, or colored pencils

Pollinator matching activity

(https://www.chicagobotanic.org/sites/default/files/images/titan/Pollinator_matchup.pdf)

or

Flower/pollinator matching games (pg. 6–13 of

<https://www.watsonvillewetlandswatch.org/images/lessons/lesson-8-pollinators-and-wildflowers.pdf>)

Procedure:

1. Tell students that they are about to begin a five-day virtual field trip to Adkins Arboretum! Normally, they would visit the Arboretum in person. Instead, they'll be doing activities in their classroom/at home. Each day, Miss Jenny, their Arboretum teacher, will share new nature facts by video. Let's meet Miss Jenny!

2. Play Day 1 video clip. In this clip, Jenny will:

- Introduce Adkins Arboretum
- Explain pollination
- Pull toy pollinators from a bag and ask students to name
- Describe how plants and pollinators have evolved together over time

3. Tell students that they will try to match flowers with their animal pollinators based on descriptions of both. Have students complete pollinator/flower matching sheet found at https://www.chicagobotanic.org/sites/default/files/images/titan/Pollinator_matchup.pdf.

or

Have students cut out matching cards from pg 6–13 of

<https://www.watsonvillewetlandswatch.org/images/lessons/lesson-8-pollinators-and-wildflowers.pdf>. Tell students to scramble the cards, then try to match the flowers with their pollinators.

Review correct answers as a class.



4. Have students draw and color a picture of a flower in their journal or on a piece of paper. The flower can be real or made up. Then have them create, draw, and color an animal that could pollinate their flower. Students should think about how the animal's body is specially made to pollinate the flower. For example, if the flower is

bell-shaped, the animal might have a long tongue to reach nectar. If the petals are slippery, the animal might have sticky feet.

Evaluation:

Call on students to share their journal entries/drawing with the class. Make sure they explain how their pollinator and flower have adapted to benefit each other (ex: “My pollinator has a long beak to reach deep inside the flower for nectar.”)

Extension Activity:

Encourage students to take a nature walk and complete the pollinator bingo game.

Lesson 2: What’s in a Seed?

Materials for Teacher:

Day 2 video clip: <https://youtu.be/DDDI8wvNp2E>

YouTube SciShow video “How Does a Seed Become a Plant?”
(<https://www.youtube.com/watch?v=tkFPyue5X3Q>.)

Materials for students:

Seed parts diagram (<https://superstarworksheets.com/wp-content/uploads/2020/02/SeedLabel.pdf>)

Crayons, markers, or colored pencils

Procedure:

1. Tell students that it’s time for the second part of their virtual field trip to Adkins Arboretum. Play Day 2 Video Clip with Miss Jenny. In the video, Miss Jenny will:

- Explain how seeds are formed
- Teach the parts of a seed (seed coat, endosperm, embryo—roots, shoot)
- Dissect a seed

2. Teach words and gestures for seed parts chant:

Seed coat, (wrap arms around self like a coat)

endosperm, (hold out arms to show two parts)

Embryo. (jazz hands)

Plant a seed (mime planting a seed)

and watch it grow. (jump up to show plant growing)

3. How do seeds grow into plants? Show SciShow youtube video:

<https://www.youtube.com/watch?v=tkFPyue5X3Q>.

3. Have students color and label the diagram of a seed and its parts

(<https://superstarworksheets.com/wp-content/uploads/2020/02/SeedLabel.pdf>.)

Evaluation:

Name and ask students to point to each part of the plant on their diagram: seed coat, endosperm, embryo, root, shoot.

Extension Activity:

Encourage students to look outside or in their kitchen for a seed that they can dissect. Kitchen examples include dried beans (soak overnight before dissecting), canned beans, orange or apple seeds, or peanuts in the shell. Examples from outside include maple wings and acorns. Tell students to try and find each part of their seed: coat, cotyledon, and embryo. Ask them to snap a photo of their dissected seed and email it.

Lesson 3: Seeds on the Move**Materials for Teacher:**

Day 3 video clip: <https://youtu.be/VD1XZjnwujw>
Seed dispersal visuals (resource section)

Materials for Students:

Seed experiment lab sheet (resource section)
Journal or piece of paper
Crayons, markers, or colored pencils

Procedure:

1. “Yesterday, we learned about the parts of a seed when we dissected seeds. But why do plants need seeds? To grow new plants! Did you know that seeds can move? Miss Jenny is going to tell us more!”

2. Play Day 3 Video Clip with Miss Jenny. In this video, Jenny will:

- Explain the four methods of seed dispersal (air, wind, animals and water)
- Model an experiment to see which seeds float and which don’t. As she does this, students can complete the experiment lab sheet.

3. Stop video. Ask students: how do seeds move? Tell students to hold out their fist and unbend fingers one by one as they chant:

Wind

Water

Air

Mechanical dispersion!

Do this faster and faster!



4. Have students design and color an imaginary seed in their journal or on a sheet of paper and write a sentence about how their seed moves. Maybe their seed can move in more than one way! Ask students to share their imaginary seeds with the class.

Evaluation:

Hold up each of the four seed dispersal visuals and ask students to name how the seed moves.

Extension Activity:

Encourage students to take a nature walk and gather seeds. Once home, students should try to sort their seeds by how they move. (Example: dandelion seed—air, prickly seeds—animals, etc.) Students can test their hypotheses (predictions) by floating their seeds in a bowl of water, dropping it from a high place, pressing the seed to their sock to see if it sticks, etc. After they finished, students use their seeds to make an art project.

Day 4: The Bee's Knees**Materials for Teacher:**

Toy bee or image of bee (resource section)

Day 4 video clip: https://youtu.be/1Q_WDD3jDvM

Bee anatomy visual (<http://2dh8s42c4g0b4fkujgfp4w7a-wpengine.netdna-ssl.com/wp-content/uploads/2014/01/honey-bee-anatomy.pdf>)

Materials for Students:

Salt dough recipe

Bee anatomy worksheet (<http://2dh8s42c4g0b4fkujgfp4w7a-wpengine.netdna-ssl.com/wp-content/uploads/2014/01/honey-bee-anatomy.pdf>)

salt dough, play do, clay, flour, or sugar (optional)

Procedure:

1. Hold up a toy bee or picture of a bee. "What insect is this? Do you like bees? Why or why not? Today, Miss Jenny will be teaching us more about bees."
2. Play Day 4 video clip. In this video, Miss Jenny will:
 - explain that honeybees are not native
 - tell students that there are 20,000 bee species in the world and 400 in MD
 - explain why bees are important for pollination
 - teach bee anatomy
3. Stop video. Tell students that they are going to review bee parts with a song to the tune of "Head, Shoulders, Knees and Toes." Teach and sing:
Head, thorax, abdomen, abdomen
Head, thorax abdomen, abdomen.
Six legs, 4 wings and an exoskeleton
Head, thorax, abdomen, abdomen.

Head, thorax, abdomen, abdomen
Head, thorax abdomen, abdomen.

Big eyes, small size, and two antennae
Head, thorax, abdomen, abdomen.

4. Review bee anatomy with visual. Have students complete the bee anatomy worksheet. Check.

Evaluation:

Do a thumbs up/thumbs down review with these statements:

- Bees are important (thumbs up)
- When we see a bee, we should squish it (thumbs down)
- Compound eyes help a bee see brightly colored flowers (thumbs up)
- Honeybees are native to MD (thumbs down)
- Bees are important pollinators (thumbs up)
- All bees have exoskeletons (thumbs up)

Extension Activity:

Encourage students to “build a bee” using salt dough (recipe in resource section), play dough, or clay. They can also sprinkle flour or sugar on a baking pan and draw a bee with their finger. Students should include all of the parts of a bee in their sculptures/drawings. Ask students to snap a picture of their bee and send it to you.

Day 5: Maryland’s Bees

Materials for Teacher:

Bee anatomy visual (<http://2dh8s42c4g0b4fkuigfp4w7a-wpengine.netdna-ssl.com/wp-content/uploads/2014/01/honey-bee-anatomy.pdf>)

Day 5 video clip: <https://youtu.be/Oz9US28OASA>

bowl, water, rocks

flower seeds, soil, planting container

Materials for Students:

“Bee Kind!” project directions (resource section)

paper, crayons, colored pencils, etc.

Procedure:

1. Review the parts of a bee using bee anatomy visual. Tell students that today Miss Jenny will be introducing them to some of Maryland’s bees.

2. Play Day 5 video clip. In this video, Miss Jenny will:

- Hold up pictures of bees and have students guess whether or not they think each picture is a bee based on their knowledge of bee anatomy
- Talk about five of Maryland’s bees
- Spotlight the Arboretum’s bee house and insect inn
- Explain how bees are in trouble and what we can do to help

3. Stop video. “Bees, like all animals, need water. One way to help bees is by making a bee bath at home!” Demonstrate filling a shallow bowl with an inch of water and some pebbles. Place the bowl outside for bees. “You can also help bees by planting flowers that they like.” Demonstrate how to start marigold/zinnia seeds in paper cups or egg cartons (late Feb through mid-March.) Tell students that they will be able to transplant their flowers outside once the frost date has past (April 15th.) Local Dollar Tree stores sell seed packets for a quarter each.

4. “Another way we can help bees is by telling other people about them. It’s time to share what you’ve learned this week in a *Bee Kind!* project.”

4. Pass out directions for the “Bee Kind!” project. Call on students to read directions aloud. Students will have the choice of creating a poster, designing a t-shirt, or writing a letter to tell others about the importance of bees and how they can help bees. Students should be prepared to share their project with the class on Monday.

Evaluation:

Students will share what they learned about the importance of bees in their “Bee Kind!” projects. Invite students to visit Adkins Arboretum to see the bee house, insect inn, and many beautiful plants that bees and other pollinators enjoy. To learn more, their grownups can visit www.adkinsarboretum.org.

Extension Activities:

Encourage students to make bee baths or plant seeds.

Resources



Seed Dispersal Images

Animals (squirrel)



Water (coconut)



Mechanical Dispersion (jewelweed)



Wind (milkweed)



Seed Experiment: Does It Float?

Write the name of each seed in the first column of the chart below. If you're not sure of its name, draw a picture! In the second column, make an educated guess (hypothesis) and write whether or not you think the seed will float. Test your hypothesis by placing the seed in the bowl of water and observing it for about 30 seconds. Write whether or not the seed actually floated in the last column.

Type of Seed	Hypothesis: Do you think the seed will float? Yes/no	Results: Did the seed float? Yes/no
sweetgum ball		
acorn		
walnut		
milkweed pod		
holly berries		

POLLINATOR BINGO!

CAN YOU FIND THREE IN A ROW ON YOUR NATURE WALK?
TOO EASY? TRY FINDING ALL OF THE POLLINATORS!



ADKINS ARBORETUM

The "Bee Kind" Project!

It's time to share what you've learned about bees! Choose one of the following projects:

- Design a "Save the Bees" t-shirt for your friends
- Write a letter about bees to your family
- Create a bee poster

Whichever you choose, your project should include:

- At least two illustrations of bees that are found in Maryland. Your illustrations must be in color and labeled!
- At least two reasons why bees are important and at least two ways we can help bees (complete sentences, please!)

Your project will be shared with the class. You will be graded on your information, spelling, neatness, and creativity.

Due Date: _____



Three Ingredient Salt Dough Recipe

Prep Time: 5 minutes

Ingredients:

- 2 cups all-purpose flour
- 1 cup salt
- 1 cup water

Instructions:

1. In a large mixing bowl, stir together the flour and salt.
2. Gradually add water while stirring and mixing to form a dough with a Play-Doh like consistency.
3. Form the dough into a ball and knead for approximately 5 minutes, adding a bit more flour if the dough is too sticky or a bit more water if it's too dry.

Notes:

Cover your work/play area with an inexpensive tablecloth to make cleanup easier!

How Long To Bake Salt Dough:

If you want to bake your salt dough crafts, place them on a baking sheet in a 150-degree oven. Turn them frequently so that they dry out evenly. Baking time will vary depending on the size and thickness of your crafts, so just keep a close eye on them.

*Gluten-Free Salt Dough

If you or a student has a gluten sensitivity, substituting gluten-free flour one for one will work well in this recipe.

