



2nd Grade: Bee Heroes Lesson Plan

Unit Driving Question:

What do desert bees need to survive, why are they essential and how can humans protect them?

Background: This unit is about learning that there are hundreds of native bees in Arizona and that the Sonoran Desert is considered a bee capital because of its diverse population of bees. This unit is a chance to learn about Carpenter, Cactus, and Leafcutter bees in addition to many more. It focuses on their needs for survival (specifically what/where they eat and where they live/nest), why we need them, and how to BEE a Hero to protect them. Please see Teacher Background Folder for additional information about these amazing creatures!

Standard(s):

- 2.L2U1.9 Obtain, analyze, and communicate evidence that organisms need a source of energy, air, water, and certain temperature conditions to survive.

- 2.L2U1.10 Develop a model representing how life on Earth depends on energy from the Sun and energy from other organisms. (Partial)
- 2.E1U3.7 Construct an argument from evidence regarding positive and negative changes in water and land systems that impact humans and the environment. (Partial)

Materials:

- Bee Heroes Journal (printed front to back, flipped on long edge)
- Gallery Walk Plants/Flowers/Landscape photo cards
- Gallery Walk bee cards (printed front and back)
- Poster paper (optional)
- Markers, crayons and/or colored pencils
- *Beatriz the Builder Bee* by Robin Kropp (book)
- Vocabulary Cards
- Post-It notes

Bee House Materials (optional extension):

- Construction paper, printer paper (without any ink), or parchment paper
- Paper straws (NOT plastic)
- Masking tape, NO GLUE

- Clean coffee can, wood block or thick cardboard tubing
- Pencil (used to roll paper into tubes)

Probe: *Time: 10-15 minutes*

Introduce students to the driving question: What do desert bees need to survive, why are they essential and how can humans protect them? First, find out what students already know about bees. Use the Slide Deck and Bee Heroes Journal to get started. (The slide deck walks you through every step of this lesson and what to do on each Journal page.) On page 1 of Journal, invite students to draw a picture of a bee and what they need to survive. They can color and include labels. Give students a chance to turn and talk about their picture and what they know about bees.

*Use this information to see what misconceptions your students may have! You might come back to this page and have students re-do this activity at the end of the unit to see how their knowledge changes their picture!

Phenomena: *Time: 20 minutes*

Review the driving question: What do desert bees need to survive, why are they essential and how can humans protect them? Emphasize that this unit will be focusing on

Desert Bees. Have students watch the video (Link on slide 5) of desert bees and record what they notice and wonder (on page 6 of Bee Heroes Journal) while watching. It is okay to watch once with no journal and then again, ready to record notices and wonders. It is recommended to pause video on certain pictures to stop and share. (For example on the leaf with parts cut out, green bee, or bee in a flower)

Solo/Pair/Team: Students should write down ideas individually, then share with one person, and last with their team. During this time it is ok to listen to others and record their notices and wonders if they become yours.

If time, discuss whole group with students:

*What do you wonder about what you saw in the video?

*What do you notice about what you saw in the video?

*It is ok for students to listen to each other during discussion and add to their Journal.

*Optional: Write down students' ideas on a chart paper/Wonder Wall to refer to while learning about desert bees throughout the unit.

Engage: *Time: 30 minutes*

Starting on slide 7 of the teacher slidedeck and page 3 of the student Bee Heroes Journal, help the students review their knowledge about the different parts of a bee by filling in only the top portion of the bee image on page 3 of the

journal. (The bottom section will be completed at the end of the picture slides.) Continue through the teacher slidedeck and show the images on slides 9-12. As the students are looking at pictures of bees, help them hold a discussion about what they think bees need to survive, using the photos as picture clues. Give them time to look-pause-partner before asking the following questions. Ask:

*What are the bees doing? What are they eating? Where are they sleeping? What do you think the temperature is in these pictures?

Students record their ideas on the bottom of page 3 in their Bee Heroes Journal.

Explore: *30 minutes*

Slide 15- Gallery Walk with Matching Activity

Before the lesson, have 2 of each bee ready for each group. For example, one carpenter bee card with yellow food source highlighted and one carpenter bee with green shelter highlighted. Also, post the Gallery Walk pictures of the plants/flowers/landscape around your classroom on the walls.

Part 1: Have small groups take one of each bee and use the yellow description to match the bee to the food source they think that bee needs to survive.

Part 2: Have the students match their second card (of the same bee) with a shelter description highlighted green.

By the end: Students will have worked in partnerships or small groups to match the bee cards to their food source and also to their nesting locations.

**See the answer key in Bee Heroes Journal Answer Key for the possible places the students could place the bees. Note that there could be more than one place for them to put their bee cards. (Ex: Carpenter bees are considered “generalists” meaning they visit more than one type of flower like a saguaro flower and a palo verde tree.)

**Leave the Gallery Walk matches up on the wall to revisit during the explain portion.

For now, to wrap up this activity, Use Bee Heroes Journal page 4. Students can work with their group to complete this page and then you can check/discuss as a class. *It is okay for groups to get up and use the Gallery Walk/Matching around the room to record where/what each of the 4 bees eat and where they live/nest. Use the Bee Heroes Answer Key! You can also provide a word bank with words like nectar, flowers, ground, wood.

Explain: *Time: 60 minutes, but could be split into two 30 minute sessions*

1. Go over vocabulary cards using the teacher slidedeck (slides 17-21) and/or the printed set.

2. Have the students try to fill out page 5 in their Bee Heroes Journal (without help) by either writing in their answers or cutting, but not pasting the vocabulary words from the word bank on page 5 of the Bee Heroes Journal. (You will go over the answers after the read aloud and the students will have a chance to edit their answers.)

3. Read aloud *Beatriz the Builder Bee* by Robin Kropp, *if you do not have access to the physical book, use the embedded link to a video of the read aloud. (In progress. While the book awaits final art and publication, you can read the PDF of the story draft, found in the Unit Materials, to your students on screen.)*

4. Have the students use a think-pair-share structure to tell about the following bees and write down facts about each one (where they live and what they eat) on page 5 of the Bee Heroes Journal:

- Carpenter bee (pages 3, 7, & 10)
- Leaf-cutter bee (pages 13 & 14)
- Globe Mallow bee (pages 12, 14, & 16)
- Cactus bee (pages 12 & 14)
- Sweat bee (pages 12 & 14)
- Fairy bee (pages 12 & 14)

Go back to certain pages listed to help with this and reread aloud the pages that give details about each bee. Then ask: What do bees need to survive? Why do humans need bees to survive?

5. Go back to Explore activity on page 5 of the Bee Heroes Journal and move cards around if needed. If students do not need to move their word cards around, you can have them defend their answers to others. When ready, have them glue in their answers.

Elaborate: *Time: Two sessions of 20-25 minutes*

Brainstorm ways to save or protect bees. Start with ways from the *Beatriz the Builder Bee* and then have students think individually or with a partner about more ways to help bees. Record ways on post-its for a Sticky Sort. Group ideas that go together on a poster, then record on page 7 in Bee Heroes Journal. Discuss how life would be different without bees and all that they do for our world. (See Answer Key for ideas if students are stuck.) Students should design a poster of how we can help bees and why on page 8 of Journal. We suggest that they create a rough draft in the Journal with pencil and then a final draft on construction paper with color to post around the school. If time allows, students can present to their small group, whole class or another class at the school.

Evaluate: *Time: 30-60 minutes*

Allow students to draw a model of a bee house on page 9 of their bee journal. Encourage them to think about where their water source will be, what their food source will be, how big the house will be, what it will be made up of, and where in the yard they would place it. They should use labels to detail their picture. Use the back of the page to draw a location map of their bee house. They also need to think about temperature and how they will control that. (Ex: place the house in the shade.)

****If time allows, have the students build a model of their bee house using the drawing to help them design it. Possible constraints to provide can be: no glue, no plastic, must hang 3-feet or higher, unable to move, out of direct sunlight and protected from the rain. Pictures of sample bee houses are located in the materials folder for reference.**

Optional Extensions (located in the extension folder):

- Students can choose one of the bees from the unit to do research on. They could find the specifics of what that bee eats, how they get their food, and where/how they make their nest.

- Teachers or families can plan a trip to the pollinator gardens at Arizona-Sonora Desert Museum.
- Students can write their own fictional story about a nesting bee they have learned about. Have the students brainstorm the characters, problem/solution, a few facts about the bee to incorporate, and an accurate setting.
- Students can play Bee Bingo at home with their family. They will use the Bingo card provided and try to identify different types of bees in their community.
- Students can play the Headbands Game with bees and habitat/food source pictures. They can use the cards from the Gallery walk to play this game. One student will pick up a bee or plant/flower card without looking at it and hold it to their forehead. Their partner will give them clues to help them try and guess which bee, plant or flower they are. (Example: I'm holding a carpenter bee card on my forehead and my partner tells me that I have big, strong mandibles and like to chew through wood.)
- Give the students materials to make a pipe-cleaner Globe Mallow Bee. Follow the instructions with them on the instructions provided in the materials folder.

