

Beehive Lesson 1: Beehive Treasures



Students learn about what bees produce in the hive — honey, beeswax, propolis, and more — and how humans have used these products over time.

Guiding Ideas

This project was developed with the American Beekeeping Federation's Kids and Bees program. Explore a new Minecraft world, created by Lifeboat, and use new lessons to introduce students to bees' dynamic and fascinating roles in their own hives and in broader ecosystems. Beehive Treasures is Lesson 1 of 5 for the Beehive.

Learning Objectives

- NGSS Crosscutting Concepts: Systems and System Models, Cause and Effect
- NGSS Science and Engineering Practices: Analyzing and Interpreting Data
- NGSS Disciplinary Core Ideas: LS1.C: Organization for Matter and Energy Flow In Organisms; ESS3.A: Natural Resources
- Recognize a honeybee hive as a dynamic, complex system
- Acknowledge that honeybees do much more than make honey and sting: they produce a wide range of products for their own use that humans can also utilize

Performance Expectations

Students will be able to:

- Define a "hive product"
- Describe how and why bees create different hive products
- Summarize the relationship between honeybees and humans

Skills

Collaboration, Communication, Critical Thinking

Total time needed

40-55 minutes

Materials needed for classroom activities

One printed copy per student of the Beehive Treasures worksheet

Introductory questions

- What do people use that comes from a honey bee hive?
- Do you think bees make those products for humans? Or for themselves?

Student Activities

Introduction (whole class) 5 minutes

Let students know that today, they'll explore lots of different things that bees make in their hives. They'll also learn about how bees use those products themselves, and how humans collect and use those products outside of the hive. Introduce students to the concept of products of the beehive, and the human and honey bee relationship, by leading a discussion using the introductory questions above.

Minecraft Beehive (explore as individuals) 20-30 minutes

Students will meet a scientist in a lab outside of the beehive. The scientist will instruct the students to gather a bee costume, a camera, and a quill and paper from the chest. Students will transport to the hive and meet the NPC Bee Girl outside the hive and receive a welcome and introduction to the beehive. Direct students to explore the different levels of the hive where honey bees are doing their jobs, completing quizzes and taking notes and pictures along the way. In this lesson, students will interact with these specific bee NPCs:

⬡ Holly, Imani, and Tara teach the students about how bees use pollen, as will ask for their help making bee bread (on the same level as the queen)

⬡ Sophia and Jasmine teach the students about royal jelly (one level above the queen)

⬡ Jenna, Valentina, and Kiara direct the students to fill holes and cracks in the hive with propolis (one level below the queen)

Please note that other bee NPCs exist in the Beehive; students will interact with them in other lessons. Also note that many of the NPCs have videos to share, so make sure students have headphones. If the students are having difficulty finding the sections of the hive, they can just ask the queen to send them to where they need to go!

In-Class Exercise and Discussion (whole class) 15-20 minutes

Ask students to review their notes and photos, and then to share with a partner one new thing they learned about beehive products.

Hand out a copy of the [Beehive Treasures Worksheet](#) to each student.

Break students into small groups, and assign each group a specific hive product. Ask the small groups to discuss the functions of their assigned beehive product, using these questions as a guide: Recap how bees make your product, what bees use it for, and what humans use it for. What would happen if the hive didn't have this product? Would the hive still function? Ask students to record their group's notes on the appropriate line of the worksheet table, and have each group choose one spokesperson who will share out a summary of their notes for the whole class.

Bring the whole class together and have one student from each group share out a summary of what their group discussed: the notes they used to fill in their row, and a one-sentence description of what would happen to a hive without their particular product. Ask all students to fill in their own charts as they listen to their peers' summaries.

Invite students to answer the final two questions on the worksheet, and ask students to use their new found awareness for hive products, and see if they can spot honey, beeswax, pollen (bee bread), propolis, or royal jelly the next time they are in the store with their parents/adults.

External Resources

[Minecraft Beehive File](#) - Download Beehive and open with Minecraft: Education Edition. You'll find this resource in your Templates, under Create New.

[Honey Benefits](#) - This resource from the National Honey Board includes nutritional information about honey, tips for substituting honey in recipes, and more.

[Gene Brandi, Beekeeper](#) - In this 2-minute video, Gene describes the process bees go through to make honey.

[Beehive Treasures Worksheet](#) - Students will use this data table to collect and organize information about what types of products bees make in their hive.

Vocabulary

propolis: resins collected from plants by bees and used to line the inside of a hive, and reduce the hive entrance(s)

bee bread: a combination of pollen, nectar, and honey that nurse bees eat in order to produce food (worker jelly) for the young larvae; bee bread is also balled up and fed to older larvae

royal jelly: a thick and nutritious mixture used to feed the developing queen

Further Study

[How a Bee Becomes Queen](#) - This 4-minute video explains how queen bees become queen bees, and how queen bees' roles and responsibilities differ from those of worker bees.