

The Amazing Honeybee!



Five 15-30 minute activities

Grades K-2

Purpose

Students will complete several activities to investigate honeybees. They will learn to recognize the three types of honeybees in a colony and identify their roles. Students will also practice pre-reading and pre-writing skills as well as letter recognition within the theme of honeybees. Students will also recognize honeybees as part of a community that works together.

Academic Content Standards

MN K-12 Academic Standards and Benchmarks

Science

- 0.1.1.2.1** Use observations to develop an accurate description of a natural phenomenon and compare one's observations and descriptions with those of others.
- 0.4.1.1.2** Identify the external parts of a variety of plants and animals including humans. For example: Heads, legs, eyes and ears on humans and animals, flowers, stems and roots on many plants.
- 1.1.1.1.1** When asked "How do You Know?", students support their answer with observations. For example: Use observations to tell why a squirrel is a living thing.
- 1.4.3.1.1** Demonstrate an understanding that animals pass through life cycles that include a beginning, development into adults, reproduction, and eventually death.

Common Core Connections

Speaking and Listening

CCSS.ELA-LITERACY.SL.1.2

Ask and answer questions about key details in a text read aloud or information presented orally or through other media.

CCSS.ELA-LITERACY.SL.1.3

Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.



CCSS.ELA-LITERACY.SL.1.5

Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings

Language

CCSS.ELA-LITERACY.L.1.2.

Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.

National Agricultural Literacy Outcomes

Agriculture and the Environment

- Identify natural resources. **(T1.K-2 c)**

Culture, Society, Economy & Geography

- Identify plants and animals grown or raised locally that are used for food, clothing, shelter, and landscapes. **(T5.K-2 d)**
- Identify farm practices for plant protection (e.g., using a pesticide, integrated pest management, cultural practices) and the harvest of safe products for consumers. **(T2.6-8 c)**

Background - Agricultural Connections

Honeybees are extremely important to humans. Bees are pollinators. They collect pollen and nectar from flowering trees and plants and transfer pollen from flower to flower. Bees pollinate 95 different crops, helping to create nearly one-third of the world's food supply. Honeybees use the nectar they gather from flowers to make honey, which is the only commercial food produced by insects that is eaten by humans on a wide scale. Honeybees also produce beeswax, which is used to make candles, artists' materials, lubricants, polishes, and cosmetics. Bee venom, pollen, royal jelly, and propolis are other bee-made products used in manufacturing, and for nutritional and medical purposes.

Honeybees live in large groups called colonies. There are three types of honeybees—queen, worker, and drone.

The **queen** bee is a female that lays eggs. Each colony has only one queen bee. The queen can live up to four years and can lay over one million eggs in her lifetime. She can lay close to one egg per minute and between 1,000-2,000 eggs a day.

Worker bees are female bees who perform many of the jobs for the colony, including feeding the larvae;

Materials

Activity 1:

- KWL Chart
- *Buzz-Buzz, Busy Bees* by Dawn Bentley
- Honeybee Worksheet
- Letter Recognition Sheet
- Play-Doh

Activity 2:

- Amazing Bees Online Poster - accessible at: <https://minnesota.agclassroom.org/educator/sclb.cfm>

Activity 3:

- *The Beeman* by Laurie Krebs (Author), Valeria Cis (Illustrator)
- *The Bee Tree* by Patricia Polacco
- *The Magic School Bus: Inside a Beehive* by Joanna Cole

Assessment:

- Dry erase board for each student
- Dry erase markers



Vocabulary

Adult – fully formed, mature honeybee

Apiary – the name given to a bee colony or collection of hives

Beebread – a mixture of nectar and pollen

Brood – the offspring produced by the colony (eggs and larvae)

Cell – a hexagonal chamber built of beeswax for brood rearing and storage of honey and pollen

Drone – a male honeybee that is produced from an unfertilized egg

Egg – laid by a queen bee, this is the first stage in the life of a honeybee

Hive – a container for housing honeybees, a colony of bees

Larva – hatched from the egg the queen bee lays, the larva will become a pupa and eventually turn into an adult insect

Metamorphosis – the four stages of transformation in the life of a honeybee

Nectar – a sweet liquid secreted by flowers of various plants

Pollen – the fine, powder-like material produced by the anthers of flowering plants

Pupa – the third stage in a bee's life, during which the larva's body changes into that of an adult

Queen – a female bee that lays eggs

Royal Jelly – a milky, yellow syrup that is very high in protein, that young worker bees secrete from glands inside their heads and feed to larvae

Smoker – a tool that gives off smoke that is used to calm bees.

Workers – female bees who build and guard the hive, look after the queen and gather food.

cleaning the hive; creating wax and using it to make new cells; grooming and feeding the queen; guarding and protecting the hive; and leaving the hive to collect pollen, nectar, and water. Worker bees live for about six weeks in the summer and longer in the winter months when they are less active.

Drones are male bees responsible only for mating with the queen. They do not work. There are about 100 drones in each colony. They live for about eight weeks in the summer, and are then expelled from the colony and die in the fall.

The size of a honeybee's body depends on its caste and the task it performs. The queen bee is the largest, and the worker bee is the smallest. Honeybees, like all insects, have three main body regions—head, thorax, and abdomen.

Interest Approach - Engagement

To spark student interest and gauge prior knowledge, begin by writing the word "bee" on the whiteboard. From there, create a list, mind-map or wordle that will keep the kids thinking about the connections bees have to food, plants, agriculture, and how they can relate to a community. This can be a great tool to refer back to throughout these lessons.

Then, if possible, have students taste a sample of honey on a cracker or spoon. Give students time to **describe** the taste and sweetness that they are experiencing. This will encourage them to learn about **adjectives**-words that describe and the importance of their 5 senses.

Lastly, discuss how they think honey is made and where it comes from. This will lead into Activity 1.



Activity 1

Procedures:

1. Begin with the KWL chart. The KWL chart will be used to record what students know (K) about a particular subject, what they Want (W) to know about it, and at the end of the unit, what they have Learned (L) about the topic. Facilitate a brief discussion to find out what the students Know and Want to know. Include this in the KWL chart as a class or have students record their thoughts independently.
2. Read *Buzz-Buzz, Busy Bees*. Discuss the roles of the three types of honeybees and use the Honeybee worksheet to record students thoughts. This will help to reinforce the learning of facts presented in the book.
3. Next, provide students an opportunity to identify the letters M, m, T, t, F, f, H, h, N, and n in *Buzz-Buzz, Busy Bees*. The vocabulary words relating to these letters will be referred to a number of times throughout the day's activities. To accomplish this, teachers should write an uppercase letter on the wing of each bee on page 1 of the *Letter Recognition Worksheet* and a matching lowercase letter on the wings on page 2. Letters may be written by the teacher on the worksheet prior to making copies. It may also be shown on the whiteboard or overhead transparency. Teachers can copy these pages and provide each student with page 1 and page 2. Students should then cut out the wings with lowercase letters (page 2). Students can match these lowercase letter wings with the corresponding uppercase letter bees to show letter recognition.
4. Next, students will be given Play-Doh and taught how to make the shapes of the letters showing that they understand and identify the difference between an uppercase letter and a matching lowercase letter.



Activity 2

1. Lead a classroom discussions that continues to focus on the roles of honeybees and how they work together in a colony, just as students work together in a class. Use the online Amazing Bees Poster (accessible at <https://minnesota.agclassroom.org/educator/scib.cfm>) to help students see the similarities between the bees in a hive and students in our class. This is important because it addresses the importance of community. It also helps children to become more cooperative members of the group, or "classroom community."

Activity 3

1. Read *The Bee Tree*, *Magic School Bus: Inside a Bee Hive* or *The Beeman*. Discuss the roles of the bees, as well as these terms: **nectar**, **pollen**, **hive**, **colony**, **cells**, **eggs**, **larva**, and **pollination**. These terms are explained in the book, and will help children recall the important facts about honeybees.
2. Practice acting out the honey-making process. Repetition will make the process more concrete for the students, because they are directly involved in it.

Activity 4

1. Reread *The Beeman* (plus any other bee-related book or video clip that might help with comprehension).
2. Students will then discuss and/or write about where they would fly and what they would do if they were honeybees. This will require students to recall what they have learned about honeybees, and then infer what a honeybee's day might be like.
3. Continue to add to the KWL chart under "L" what has been learned about bees. This activity helps to bring the children full circle in the learning process by validating what they knew about bees, and also what they wanted to learn during these activities.
4. Lastly, discuss how honeybees affect the environment and why they are important. This will help children understand that there is a purpose for pollinators and how without them, our food supply would be seriously affected.

Activity 5

Assessment

Students will be assessed in small groups. The students will have their own individual dry-erase markers and marker boards on which to write their answers. As the teacher reads each question aloud, the students will write the corresponding letter of their chosen answer on their marker boards. The teacher will read each question while walking around the classroom to assist in recording their answers.

- | | |
|---|--|
| <p>1. The name of the place where a bee lives is called a:</p> <p>A. hole</p> <p>B. hive</p> <p>C. house</p> <p>D. cave</p> <p>Answer: B</p> | <p>2. Which of these is NOT one of the three types of bees we learned about?</p> <p>A. a drone</p> <p>B. a worker</p> <p>C. a sweeper</p> <p>D. a queen</p> <p>Answer: C</p> |
| <p>3. When a baby bee is growing and it looks like a worm, it is called a:</p> <p>A. larva</p> <p>B. pupa</p> <p>C. caterpillar</p> <p>D. snake</p> <p>Answer: A</p> | <p>4. When a baby bee is growing its eyes, legs, and wings, and has not hatched yet, it is called a:</p> <p>A. worker</p> <p>B. pupa</p> <p>C. queen</p> <p>D. larva</p> <p>Answer: B</p> |

Verbal Response – This will be asked to students individually.

Explain one way honeybees change the environment around which they live.

Did you know?

- Did you know that a honeybee can fly around 15 mph?
- The bees gather 10 pounds of nectar to make one pound of honey.
- A foraging honeybee can carry 80% of their weight in pollen or nectar.
- Honeybees make up 80% of all pollinators.
- Honeybees use several dances in the hive to communicate the location of nectar and water to other bees. One well known dance is called the **waggle** dance.
- There is only one queen per colony. More than one queen will fight and only one will survive.
- The queen honey bee lays between 1,000-3,000 eggs per day!



Enriching Activities

- A honey tasting party which includes various foods that contain honey.
- Acting out the Waggle Dance of the honeybee

Sources/Credits

Some of the materials contained in this lesson plan were drawn and adapted from the following sources:

- National Honey Board <https://www.honey.com/>
- National Ag in the Classroom <https://www.agclassroom.org/>
- Honeybee Trivia Facts <http://www.honeybeesonline.com/>
- Encyclopedia Britannica <https://www.britannica.com/>
- Scholastic Books <https://www.scholastic.com/teachers/home/>



Name

The Amazing Honeybee

KWL Chart

Know	Want to Know	Learned

Honeybee Worksheet

What Do Bees Do?

The queen, workers and drones look very different and have different jobs in the hive. Identify each bee (queen, worker or drone) pictured below and then list the jobs of each bee.



Which Bee?	Which Bee?	Which Bee?
Job?	Job?	Job?

Letter Recognition

Teachers should write an uppercase letter on the wing of each bee on page 1 and a matching lowercase letter on the wings on page 2. Teachers can copy these pages and provide each student with page 1 and page 2. Students should then cut out the wings with lowercase letters (page 2). Students can match these lowercase letter wings with the corresponding uppercase letter bees to show letter recognition.



Name

Letter Recognition

Wings Images:

