

The Buzz about Bees

Emily Swinyer: Library Media Tech at SJHS, 6th Grade Earth Science, 6-8 Running Start STEM

Grade Level: 3rd

Time Required: Four 50-minute classes

In this lesson, students will learn about the importance of honeybees to the environment, The lesson explains how honey is made, and how plants and bees have a symbiotic relationship. The classroom teacher and the school library media specialist will provide background information on bees, their importance, and current issues with honeybee colonies.

Curriculum Addressed: Science, Literacy, Geography

Informational Text Standards

CCSS.ELA-LITERACY.RI.3.1

Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

CCSS.ELA-LITERACY.RI.3.2

Determine the main idea of a text; recount the key details and explain how they support the main idea.

CCSS.ELA-LITERACY.RI.3.3

Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

CCSS.ELA-LITERACY.RI.3.4

Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 3 topic or subject area*.

CCSS.ELA-LITERACY.RI.3.5

Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

CCSS.ELA-LITERACY.RI.3.6

Distinguish their own point of view from that of the author of a text.

CCSS.ELA-LITERACY.RI.3.7

Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

CCSS.ELA-LITERACY.RI.3.8

Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

CCSS.ELA-LITERACY.RI.3.9

Compare and contrast the most important points and key details presented in two texts on the same topic.

CCSS.ELA-LITERACY.RI.3.10

By the end of the year, read and comprehend informational texts, including history/social studies, science, and technical texts, at the high end of the grades 2-3 text complexity band independently and proficiently.

Content Standards

S.1 Students, through the inquiry process, demonstrate the ability to design, conduct, evaluate, and communicate the results and form reasonable conclusions of scientific investigations.

S.3 Students, through the inquiry process, demonstrate knowledge of characteristics, structures and function of living things, the process and diversity of life, and how living organisms interact with each other and their environment.

OBJECTIVE

Students learn what nectar, honey, and pollen are; where they come from; and how bees and flowers share a mutually beneficial relationship and are an essential part of pollination.

ESSENTIAL QUESTIONS

How is honey produced?

Why are bees important?

If bees went extinct, how would that affect people?

MATERIALS

Drone, Worker, Queen hive color cards (for sorting groups-red, green, blue, yellow)

State name labels for the food (color coded for groups-red, green, blue, yellow)

Jar of honeycomb

Jar of beeswax

Flower Seeds

U.S. Map of Flower/Bee Pollination

Diagram of local plants pollinated by honeybees

Informational text- books (see bibliography)

Chromebooks with internet access (10)

Anticipatory Set:

As students enter the room on day one, they are given a paper honeybee with a color (this assigns their hive (group) and a class (worker, drone, or queen)



Once each hive has settled into their group area, the day one lesson will begin.

LESSON OVERVIEW

Day One

Lesson Steps:

- What do we already know about bees and honey?
 - Ask students: Have you ever seen a honey bee? Where? (*Sitting on plants and flowers.*)
 - What do you think they're doing? Explain that **worker bees** have a long tube (called a **proboscis**) that they use to gather their food (called **nectar**), the sweet fluid produced by flowers. Worker bees store it in a part of their body called the **honey sac**.

- Tell students that in addition to nectar, bees collect **pollen**. Pollen is the yellow-green powder-like substance that comes from flowers. Bees returning to the hive often carry balls of pollen which stick to the stiff hairs on their legs (a bee body part called **pollen baskets**). Honey bees mix pollen with nectar to form **beebread**, a protein used to feed **larvae** (immature bees).
- Explain to students that after they collect nectar, honey bees store their food: The house bees mix the nectar with enzymes and deposit it into the honeycomb. Then they evaporate moisture from the nectar enzyme mixture by fanning the honeycomb cells with their wings. You now have **honey**! The bees then cap the honey cells with beeswax. *Show samples of beeswax and honeycomb and discuss.*
- Explain to students that bees and flowers have a relationship where both animal and plant benefit. In nature, this is called a **symbiotic** relationship. Ask students: Bees get nectar from flowers, but the flower gets something in return. Do you know what the flower gets? Explain that flowers trade sweet nectar and protein-rich pollen in return for pollination and reproduction of the plant species. Bees track pollen from flower to flower, which allows flowers to reproduce and grow.
- Look at the map of crops in the US that depend on bees for pollination. Each “hive” will have a copy of the map at their station.
http://www.scholastic.com/content/collateral_resources/pdf/b/bee_poster_version6.pdf
- Set up in front of the classroom will be a table with a variety of food items and crops from across the country including: sunflower seeds, sunflower oil, grapes, grape jelly, watermelon, cucumbers, jar of pickles, blueberries, apples, cantaloupes, cherries, alfalfa
- Each “hive” will work together to gather information from the map at their station. They will use their state names labels to label the foods with the states that grow them. Each hive will have different colored labels to match their hive color. This will help provide formative assessment for each group’s map reading and interpreting skills.

Day Two

- At each hive station will be a different non fiction books about bees. The CT and the LMS will assist students and groups with gathering information and prompting them to use the table of contents, index, and glossary
 - Allen, J., & Humphries, T. (2001). *Are you a bee?* New York: Kingfisher.

- Cole, J., & Degen, B. (1997). *The magic school bus inside a beehive*. London: Scholastic.
- Fuhr, U., & Sautai, R. (1993). *The bee*. London: Moonlight.
- Kenney, K. L., & Hedicker, L. (2011). *Buzz with the bees*. Edina, MN: Magic Wagon.
- Milton, J., & Mueller, P. (2003). *Honeybees*. New York: Grosset & Dunlap.
- Rockwell, A. F., & Schindler, S. D. (2005). *Honey in a hive*. New York, NY: HarperCollins.
- Stewart, M. (2014). *Zoom in on bees*. Berkeley Heights, NJ: Enslow.
- Woodward, J. (2010). *Bee*. New York: Chelsea Clubhouse.
- Students will work together to find more information about bees and life in the hive
 - they may use the available books and map at their “hive”
 - refer to handout 1
 - http://www.scholastic.com/content/collateral_resources/pdf/b/bee_rep3_act3_bee_types.pdf
(Piaget- Concrete Operational classification)

- Once handout 1 is completed and discussed, each “hive” will be given an envelope containing one of four topics. They will be given the remaining time during this classtime to discuss their given topic.

The four topics are:

- Parts of a hive
- Life stages of honeybees
- Honey and beeswax
- Colony Collapse Disorder

Day 3

The Library Media Specialist as well as the Classroom Teacher and paraprofessional will be working with students to gather information about their assigned bee topic. “Hives” will be expected to gather information from the provided books and use of the internet and present their findings to their classmates. This informal sharing of new knowledge will reinforce skills and engage classmates. Students will need to create some sort of visual aid (poster, model, etc).

This may end up taking two class periods, flexible time should be allowed

1. Task Definition- Students identify their group’s assigned topic

1.1 Define the information problem

1.2 Identify information needed

2. Information Seeking Strategies- determine whether one of the books provided will give the needed information OR if the group needs to use the internet for supplemental information and visual aids

2.1 Determine all possible sources

2.2 Select the best sources

3. Location and Access- Books about bees are located at each “hive” and there are 10 available Dell Chromebooks available to use throughout the room.

3.1 Locate sources (intellectually and physically)

3.2 Find information within sources. LMT, CT, and Para will identify struggling students or teams who need guidance to find needed information within the provided materials

4. Use of Information-students can read, watch videos, look at infographics and maps to gather their needed information. They need to work together to organize it in a way that they can easily present their findings to the class.

4.1 Engage (e.g., read, hear, view, touch)- create visual aid for assigned topic. Must be clear and easily read

4.2 Extract relevant information- what do they *really* need to find?

5. Synthesis- Present their findings to their classmates

5.1 Organize from multiple sources

5.2 Present the information (**this may take a full class period**)

6. Evaluation- Students will reflect anonymously on each group’s presentation AND their own group’s process and teamwork.

6.1 Judge the product (effectiveness)- was their information clear? do you understand?

6.2 Judge the process (efficiency)-Identify what worked and what needed improvement.



Day 4

- The students have learned that bees are not only interesting, but essential for pollination of food crops and flowers
- We will follow up with a quick youtube video about the importance of bees
<https://www.youtube.com/watch?v=JiYBVrFiLA>
- Go outside to school garden and plant zinnias, bee balm, and cosmos seeds in various designated areas within the garden. This will attract bees, provide nectar and pollen, encourage pollination of the school's garden vegetables



Resources

- Allen, J., & Humphries, T. (2001). *Are you a bee?* New York: Kingfisher.
- Cole, J., & Degen, B. (1997). *The magic school bus inside a beehive*. London: Scholastic.
- Fuhr, U., & Sautai, R. (1993). *The bee*. London: Moonlight.
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Stewart, M. (2014). *Zoom in on bees*. Berkeley Heights, NJ: Enslow.
Woodward, J. (2010). *Bee*. New York: Chelsea Clubhouse.

References

NovaList Database

Scholastic Teacher <http://www.scholastic.com/browse/unitplan.jsp?id=283>

Map http://www.scholastic.com/content/collateral_resources/pdf/b/bee_poster_version6.pdf

http://www.scholastic.com/content/collateral_resources/pdf/b/bee_rep3_act3_bee_types.pdf