



Essential Question:

HOW IS HONEY MADE AND USED?

LEARNING OBJECTIVES

- Describe the process honey bees use to make honey.
- List various ways honey is used in the world.

RESOURCES

- Image Packets, *Honey through History*
- Reading, *Making Honey*
- Assessment, *Recipe for Honey*

MATERIALS

- Whiteboard, Chart Paper, etc.
- Journals, Paper, or Digital Notebooks
- Writing Utensils

OVERVIEW OF LESSON / BACKGROUND

Honey will be familiar to most of your students, but the process by which honey bees make honey from nectar will probably be new. Honey bees collect nectar (and pollen) from flowering plants to store and process into honey. The process is, like most activity in a hive, highly organized and specific. Honey bees process the nectar internally, pass it from bee to bee within the hive, store it in special cells, manipulate its temperature and dehydrate it by fanning it with their wings.

Honey bees are the only bees that produce an excess of honey according to their own nutritional needs. Humans have, for millennia, used honey for their own purposes. Students will have a chance to consider bees and honey in history and the close relationship between bees and humans as a result of this shared history.

Honey has a variety of uses. In addition to the most well-known use as a sweetener, honey is used medicinally around the world. As this lesson concludes, students will be encouraged to consider the role of honey in health and well-being and to think creatively about how it might be used in a variety of scenarios.



LESSON ACTIVITY

INTRODUCTION

BRAINSTORM

Ask students to think about, and then raise their hands to volunteer, all the uses of honey they can think of. Accept multiple things that honey can sweeten, but put them all under one “sweeten” category.

List their knowledge of the uses of honey on the board or a piece of chart paper. Display the chart paper and return to it at the end of the lesson.

BEES IN HISTORY GALLERY

Distribute the image packets *Honey Through History* and have the students put them in order from earliest to latest using deductive reasoning. Have them discuss, explain, and consider whether their orders are correct.



READING

1. Distribute the article *Making Honey*.
2. Tell students that the article will describe the process by which honey bees make honey. Since the process is a step-by-step one, the article features transition words. Explain transition words and develop a list of examples with the class. Write the list of examples on the board and leave it there during the reading/lesson.
3. Read the article aloud to the class and have students raise their hands (or tap the desk, or your preferred method of signaling) when they hear a transition word.
4. Have the students read the article, again, individually or in pairs, and complete the inferential questions in the right margin.
5. Encourage students to exchange papers and complete a peer check of inferences in the margins.



WRITING

1. Have each student write a topic sentence that gives an overview of the honey-making process.
2. Have every student pass their topic sentence to another student and have the second student expand the paragraph by adding detail.
3. Repeat this process until each paper has a 4-sentence paragraph describing the process of honey-making.
4. Have the students pass the paper one more time to a fifth student who should write a conclusion to the paragraph.
5. Return finished pages to the students from whom they originated and encourage students to read and compare processes for accuracy (and fun).



ACTIVITY

1. Have the students gather in groups of four to write down all the uses of honey they can think of. Encourage creativity.
2. Have each group search online (and/or in the library) for an article or video about an unusual medicinal, cosmetic, or culinary use of honey. Have the group read or review the piece and become experts on the information.
3. Rearrange students into 4 new groups, so each group has one expert per article or video. Have students teach each other what they learned from their articles or videos.
4. Have students compare their original lists to their new learning and identify whether they learned anything new about the uses of honey and, if so, what.
5. Update your class chart on the uses of honey.



GAME

HONEY I LOVE YOU BUT I JUST CAN'T SMILE

This game is to be used for fun and bonding, but also to reinforce the idea that honey is so ubiquitous that it is used as a symbol for something sweet, as in the nickname. Students stand in a circle and, one-by-one, as the message is passed around the circle, each student is challenged to look at the next student in the circle and say “Honey I love you but I just can’t smile” WITHOUT SMILING. If either student smiles, he or she is out. Last person standing “wins.” Students are surprisingly willing to play this game and there are many different variations! Have fun with it.

ASSESSMENT

RECIPE FOR HONEY

Use the assessment template accompanying this lesson or have students create their own structure to complete a recipe for honey. Recipes should focus on the use of transition words and include the following:

1. Ingredients (nectar)
2. Process (collection, storage, temperature manipulation/fanning)
3. Quantities produced
4. Illustrations

EXIT CARD

Ask students to reconsider the chart that lists all the uses of honey and indicate on their cards, or sticky notes or the board, which use they think is most valuable to humans and why.

DIFFERENTIATION

SUPPORTS

- Purposefully establish groups and assign roles for reading.
- Provide a partially completed template for the recipe assessment.
- Have students complete the assessment in pairs (one writes and the other illustrates; have students complete drafts and sketches separately first and then collaborate on the final product.)

EXTENSIONS

- Encourage experimentation with bee products, where appropriate.
- Provide additional readings (in print or online) for students to read about the honey bee in history.
- Select a book about the honey bee in history and create a book club for interested students.

VIRGINIA STANDARDS OF LEARNING (SOL)

SCIENCE

- 4.5: The student will investigate and understand how plants and animals, including humans, in an ecosystem interact with one another and with the nonliving components in the ecosystem.
- Organisms also have behavioral adaptations, or certain types of activities they perform, which help them meet a life need.

READING

- 4.6: The student will read and demonstrate comprehension of nonfiction texts.
- f) Draw conclusions and make simple inferences using textural information as support.
 - j) Identify new information gained from reading.

WRITING

- 4.7: The student will write cohesively for a variety of purposes.
- a) Use transition words for sentence variety.
 - j) Revise writing for clarity of content using specific vocabulary and information.

RESOURCE MAKING HONEY



Honey bees make honey using a specific process. Only the worker bees leave the hive to collect nectar, store the nectar in the hive, and process it to make honey.

Worker bees that have reached the age of 3 weeks leave the hive to find sources of nectar and pollen. Scout bees communicate the location of good sources of nectar before the bees leave the hive on a nectar gathering trip. A bee may fly up to four miles to get to a good nectar source.

After the bee arrives at a flower, she sucks the nectar through her proboscis and into her honey stomach. The nectar is stored in her honey stomach as she moves on to more flowers. If the bee needs more energy as she works, she can eat some of the nectar by opening a special valve that allows some nectar to pass through to her stomach.

When her work is done, she flies back home. A honey bee may visit up to 100 flowers on one foraging trip. She'll also be collecting and transferring pollen while she is busy working.

Once the bee reaches the hive, she passes the nectar mouth-to-mouth to a bee whose current job is to make honey or she transfers the nectar directly into a honey comb cell.

Next, because nectar has a high water content, the bees need to dehydrate it to turn it into honey. Although some dehydration occurs in the transfer, worker bees also use their wings to fan the nectar in the cells. This causes evaporation. Nectar turns into honey when it's water content is reduced to 17%.

Finally, the worker bees use wax to cap the cell and store the honey for use in the future. Honey is used as food for bees during the winter and it is also mixed with pollen to make bee bread to feed to baby bees.

INFER: Why is it important to have scout bees finding good sources of nectar?

INFER: How is collaboration important to bee survival?

INFER: Is there one part of the honey-making process that is most important?



INTRODUCTORY PARAGRAPH ABOUT HONEY:

What is it? Why would you want to make it?

Remember transition words: Next, First, Finally, Then, After

INGREDIENTS

STEP 1

STEP 2

STEP 3

DIRECTIONS (PROCESS)

STEP 4

STEP 5

QUANTITIES PRODUCED

FINAL PARAGRAPH ABOUT HONEY

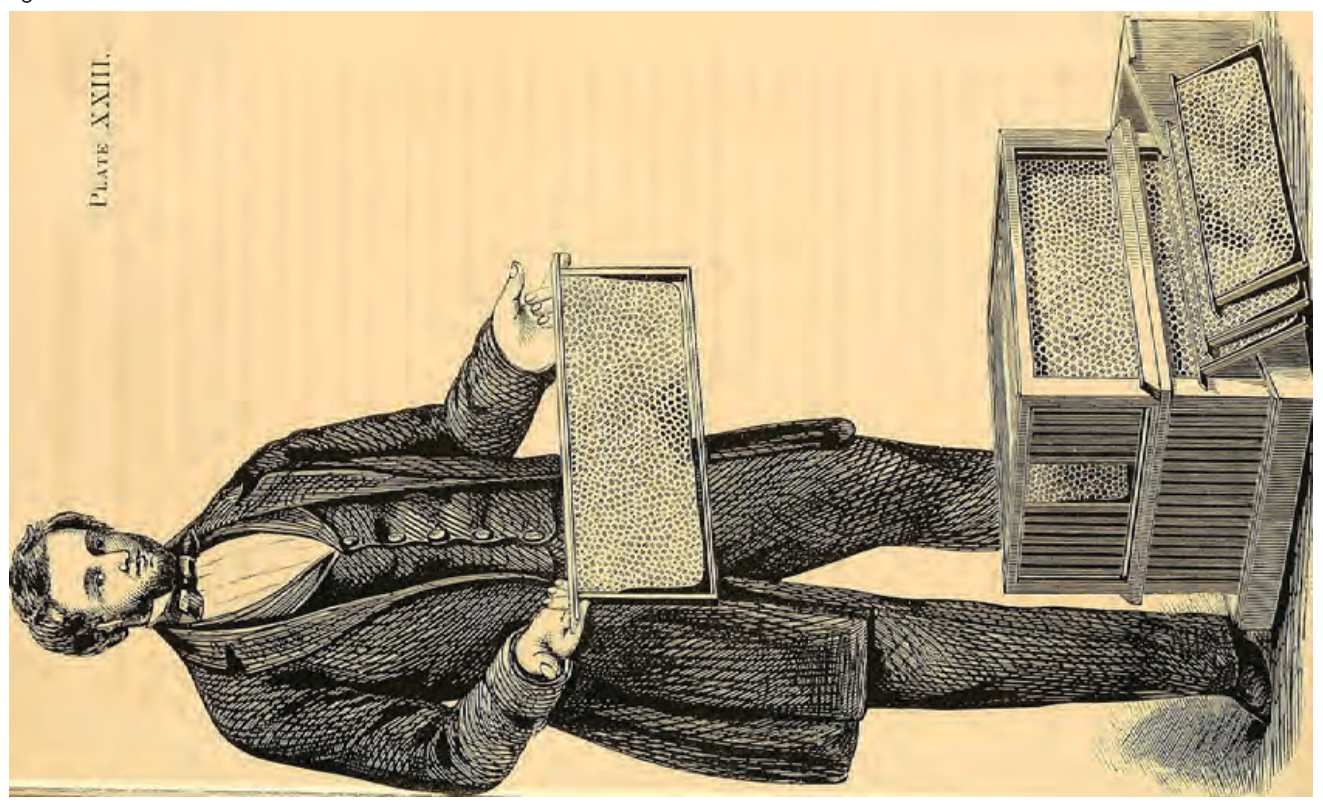
How should people use it and enjoy it?





RESOURCE

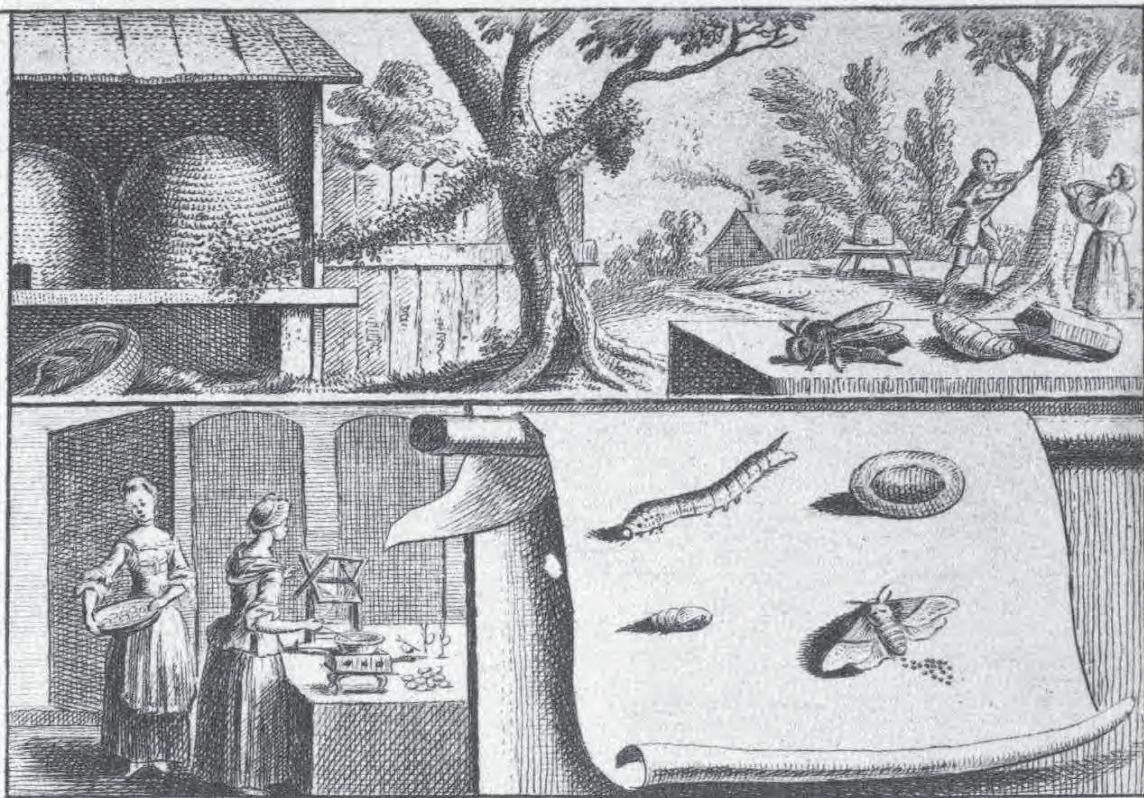
HONEY THROUGH HISTORY





RESOURCE

HONEY THROUGH HISTORY





*He who by Bees doth e'yer thinke to thrive,
Must order them, and neatly trim his Hive.*

ES *The ordering of Bees:*
OR, THE
TRUE HISTORY
OF MANAGING THEM
From time to time, with their hony
and waxe, shewing their nature
and Breed.

As also what Trees, Plants, and Hearbs are
good for them, and namely what are hurtfull: toge-
ther with the extraordinary profit arising
from them.

Set forth in a Dialogue, resolving all doubts
whatsoever.

By the late unparalleled experience
of
JOHN LEVETT, Gent.



LONDON,
Printed by Thomas Harper, for John Harjoh, 1694.