Buzz, Buzz, Buzz! Why Bees are Important

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Grade Level	1
Duration	2-3 class periods

National Geography Standards	AZ Standards	Arizona Social Science Standards
1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information. 14. How human actions modify the physical environment. 18. How to apply geography to interpret the present and plan for the future.	**Reading:** **Key Ideas and Details** 1.RI.1: Ask and answer questions such as who, what, where, why and how about key details in a text. **Craft and Structure** 1.RI.6: Distinguish between information provided by pictures or other illustrations and information provided by the words in a text. **Science** **Life Science Standards** 1.L1U1.6 Observe, describe, and predict life cycles of animals and plants. 1.L2U2.7 Develop and use models about how living things use resources to grow and survive; design and evaluate habitats for organisms using earth materials. 1.L2U1.8 Construct an explanation describing how organisms obtain resources from the environment including materials that are used again by other organisms.	**GEOGRAPHY** **The use of geographic representations and tools helps individuals understand their world.** 1.G.1 Use, explore and construct maps, graphs, and other geographical representations to support content focus. **Human-environment interactions are essential aspects of human life in all societies.** 1.G2.1 Compare how human activities affect culture and the environment now and in the past. Such as agriculture, industrialization, urbanization, and human migration.

SIOP Elements

Preparation Adapting content **Linking to background** **Linking to past learning** Strategies used	**Scaffolding** **Modeling** **Guided practice** Independent practice **Comprehensible input**	**Grouping Option** **Whole class** **Small groups** **Partners** Independent
Integrating Processes Reading Writing **Speaking** **Listening**	**Application** **Hands on** Meaningful Linked to objectives **Promotes engagement**	**Assessment** **Individual** Group **Written** Oral

ARIZONA GEOGRAPHIC ALLIANCE

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Arizona English Language Proficiency Standards

Stage II
Basic
Writing
Standard 1: The student will express his or her thinking and ideas in a variety of writing genres.
B-3: Completing a written summary of the key events or ideas of informational text using key words and phrases with instructional support.
Reading
Standard 4: The student will analyze text for expression, enjoyment, and response to other related content areas.
Basic
B-3: Answering questions (yes/no, who, what, when, which, where, why) about text with instructional support.

Overview

"Without pollination, we would not have flowers, fruits, or many vegetables that we enjoy each day. However, it is sometimes hard to see why honeybees and other pollinators play such a big role in our lives. This exercise will help students to visualize the necessity of pollination and of healthy pollinators in the ecosystem." Quote from Be a Bee lesson plan found on PBS LearningMedia Arizona.

Purpose

In this lesson students will learn the important role that bees have in our world. Students will also learn the negative impacts that a low population of bees may have. This lesson includes strategies for diverse learners (ELLs).

Key Vocabulary

pollen- substance that helps plants to reproduce.
pollination-transfer of pollen from one plant to another
population-a group of one or more species living in a particular area or habitat
reproduce-to make more of itself
migratory-constantly moving from one place to another

Materials

- *What is Pollination?* by Bobbie Kalman
- Vocabulary Cards and Test
- Bee Loss in the U.S. 2017-18 map (color version) https://geoalliance.asu.edu/sites/default/files/maps/US_BeeLoss-2018-colored-legend.pdf
- Bee Loss in the U.S. 2017-18 map (uncolored version) https://geoalliance.asu.edu/sites/default/files/maps/US_BeeLoss-2018-uncolored.pdf
- Bee Loss in the U.S. 2017-18 map (only legend is colored version) https://geoalliance.asu.edu/sites/default/files/maps/US_BeeLoss-2018.pdf
- Coloring tools (crayons, markers, pencils)
- Glue sticks
- Scissors
- Cheetos
- Brown paper bags
- Flower pattern
- Pollination Experiment worksheet
- How Do Bees Pollinate Flowers? assessment
- Computer, LCD projector, or doc camera

Objectives

The student will be able to:

1. Ask and answer questions by using details in the text.
2. Describe why it's important for bees to pollinate.
3. Analyze a U.S. map showing populations of bees.

Procedures

Prerequisite Skills: Previous to this lesson, students should have already been exposed to the physical features and the life cycle of a bee.

SESSION ONE

Engage:

1. Engage students by these prompting questions: "Do you think it would be important if bees no longer existed? Or do you think it wouldn't matter if bees no longer existed?"
2. Have students share their answers with a partner using this sentence frame: "I think it (would/wouldn't) be important if bees no longer existed because _____." **(Integrating**

processes: Speaking, Grouping Option: Partners)

Explore:

3. Review with students the life cycle of a bee. **(Preparation: Linking to past learning)** Then explain that today they will learn about why bees are so important to our lives and what may happen when there are no bees left.
4. Project *What is Pollination* to the class (online version if you have a subscription) or the actual book using a doc camera. Read pages 4 & 5 and highlight "pollen" as a vocabulary word. Ask a guiding question such as: "What did the text say about pollen?" Have students share their answer with the designated partner using this sentence frame: "Pollen is what makes plants _____." **(Integrating processes: Speaking, Listening; Grouping Option: Partners; Scaffolding: Comprehensible input)**
5. Continue to read pages 6-7 and explain the process of pollination and highlight "pollination" as a vocabulary word. Ask a guiding question such as: "How does pollination occur?" Have students share their answer with the designated partner using this sentence frame: "Pollination happens when pollen is_____ from one plant to the other." **(Integrating processes: Speaking, Listening; Grouping Option: Partners; Scaffolding: Comprehensible input)**
6. Skip pages 8-11 and read pages 12-13 to explain why we need pollinators such as bees. Ask guiding questions such as: "What types of fruits and vegetables do you enjoy eating?" "What do you think would happen to the plants that grow those fruits and vegetables if they don't get any pollen?" "Do you think it's important for plants to get pollen?" Have students share their answer with the designated **partner** using this sentence frame: "Plants need pollen because_____." **(Integrating processes: Speaking, Listening; Grouping Option: Partners; Scaffolding: Comprehensible input)**
7. Distribute the vocabulary cards (cut into 3 pieces) to groups of students. Show students how each vocabulary word has a definition and an illustration. **(Scaffolding: Guided practice)** Have students sort the vocabulary cards for 5-7 minutes. Have groups share their matching vocabulary words with the whole class and will make changes if needed. **(Grouping Option: Small groups, Application: Hands on)**

SESSION TWO

Prior to this Session: Have a classroom volunteer copy, cut out the bee shapes, and laminate them.

Explain:

1. Read pages 16-17 to the students and explain that bees live in hives and are very social. They are also the best pollinators.
2. Project the Bee Loss in the U.S. 2017-18 map (color version). Explain how the colors show how many bee hives have died. And if the hive dies, that means lots of bees have died off. **(Scaffolding: Comprehensible input)**
3. Distribute uncolored Bee Loss in U.S. maps to each student. Project the colored version of the Bee Loss map and model how to color in the states using the legend.
4. Ask students to answer these questions: What are some areas that have the highest population of bees die? (Have students point to the orange states.) What are some areas that have the lowest population of bees that have died? (Have students point to the green states.) Why do you think that is? What do you think we can do to help stop the decrease of bees?
5. Have students share their answers in small groups and whole group.
6. Now read pages 28-31 so students know the book's answer to those questions. **(Integrated processes: Speaking and Listening)**

Elaborate:

1. Distribute a paper bag, glue stick, colored pencils (markers), scissors, and flower pattern to each student or group of students. Have students color the flower, glue the cupcake holder onto the flower, cut the flower out, and then paste the flower on the front of the brown paper bag. **(Application: Promotes engagement, Hands-on)**
2. Distribute some cheetos to each brown paper bag and give each student a bee. Show students how to put their fingers through the holes at the bottom and model how to use their bee to reach into the brown paper bag and grab a cheeto with their fingers. Then show the students how to "fly" over their paper flower by rubbing the cheeto against the flower. **(Scaffolding: Modeling)**
3. Have students "fly" from bag to bag to rub their cheetos against the flowers until they have rotated through all the bags.
4. After students have successfully "pollinated" their flowers, discuss what happened.

Evaluate:

1. Analyze the experiment by having students **i**ndependently fill out Pollination Experiment worksheet.
   - My bag of Cheetos represents_____.
   - My hand represents_____.
   - When I touched a friend's flower_____.

2. Have students draw conclusions by completing the How Do Bees Pollinate Flowers? assessment.
3. Give the Vocabulary Test. **(Assessment: Written, Independent)**

Assessment

ELA and Science
The Pollination Experiment drawings and answers can be graded for completeness and correctness. Mastery will be considered a score of 80% or higher.

The Vocabulary Test may be given. Mastery will be considered a score of 80% or higher.

How to bee pollinate flowers can be graded for its drawings and the written observations and conclusions. Mastery will be 2 appropriate drawings and one good observation or conclusion.

Geography
The U.S. Bee Loss maps colored by the students can be graded for accuracy and completeness. Master will be a score of 70% or higher.

Extensions

Bees are not the only pollinators around the world. Continue reading the book. For an additional lesson, you can teach about how each pollinator are similar and different. The same concept can be applied as to what would happen if not only bees but all pollinators would no longer exist. Students can act out scenarios given by the teacher in order to enforce deep learning.

Topic cards can be passed out to students for a writing assignment. Teacher will pass out two different cards. If students receive Topic card 1 they will be prompted to write about why it is good to have a higher population of bees and provide a drawing representation. If students receive Topic card 2 they will be prompted to write about why it is bad to have such a low population of bees and provide a drawing representation.

More advanced students can color their own bee loss map by distributing the version of the map with only the legend colored and having them identify which numbers/states would be which color.

Sources

What is Pollination by Bobbie Kalman **ISBN-10:** 0778733068 (Amazon $8.95) or online version if you sign up for a free account. https://www.getepic.com/book/13765292/what-is-pollination

Quote
https://az.pbslearningmedia.org/resource/kqed07.sci.life.oate.beeabee/be-a-bee/#.W1jCi9WpGUI