

## **Unit Plan**

### **Bees and Beehives**

#### **NC Standard Course of Study Standards**

##### **Goals and objectives**

##### **Grade 3**

Art- **1.02, 1.06, 1.07, 1.08, 2.03, 3.03, 3.04, 3.10**

Science- **1.04, 1.05**

Language Arts- **1.03, 1.04, 1.06, 2.01, 2.02, 2.03, 2.04, 2.05, 2.06, 2.07, 2.08, 3.01, 3.03, 3.05, 3.06, 4.01, 4.02, 4.03, 4.04, 4.05, 4.06, 4.07, 4.08, 4.10, 5.04, 5.05, 5.06**

Social Studies - **4.01**

Mathematics **1.02, 1.03, 1.04, 1.05, 2.01, 2.03, 3.01, and 3.02**

##### **Grade 4**

Art - **1.01, 1.03, 5.01**

Science **1.01, 1.02**

Language Arts **1.01, 1.03, 1.04, 1.05, 1.06, 2.01, 2.02, 2.03, 2.04, 2.05, 2.06, 2.07, 2.08, 2.09, 3.01, 3.03, 3.05, 3.06, 4.01, 4.02, 4.03, 4.05, 4.06, 4.07, 4.08, 4.10, 5.04, 5.05, 5.06**

Social Studies **1.01, 6.03**

Mathematics **1.02, 2.01, 2.03, 3.03**

##### **Grade 5**

Art **1.01, 1.02, 3.02, 3.05, 6.02, 8.03**

Science **1.01, 1.05**

Language Arts- **1.01, 1.03, 1.04, 1.05, 1.06, 2.01, 2.02, 2.03, 2.04, 2.05, 2.06, 2.07, 2.08, 2.09, 3.01, 3.03, 3.05, 3.06, 4.01, 4.02, 4.03, 4.05, 4.06, 4.07, 4.08, 4.10, 5.04, 5.05, 5.06**

Social Studies **1.03, 1.06**

Mathematics **1.02, 2.01, 2.03, 3.03**

This unit includes a variety of activities and strategies which integrates all areas of the curriculum, with an emphasis on the English Language Arts curriculum. The English Language Arts curriculum contains strategies that enhance skills across all areas of the curriculum. The goal of the English Language Arts curriculum is to obtain and communicate information with a focus on thinking critically and creatively using oral and written language. One of the goals of the English Language Arts Curriculum is word recognition strategies and skills and vocabulary. According to Dr. Robert Marzano through teaching vocabulary students will increase their background knowledge and increase reading comprehension. Vocabulary should be directly taught in all areas of the curriculum. During this unit the students will apply many comprehension strategies in order to interact with the text before, during, and after reading. They will also make connections text to self, text to text, and text to world connections. We will use a variety of literature in this unit for both read alouds and independent reading. The students will be asked to read fiction and nonfiction selections in order to focus on the story structure and to discuss the differences between fiction and informational text about bees. Embedded in this unit you will find a list of books that can be read aloud or placed in a reading center for students to read during their reading time. The play that the students will produce will incorporate English Language Arts as well as visual arts and music.

This unit will take approximately three weeks to complete. The unit will begin with a pre-assessment to see what students already know about bees. Students will then view a brief PowerPoint about beekeeping overseas. I will then discuss that we will collect money to help families overseas to begin keeping bees and therefore improve their economic situation. During this unit we will also address the many uses of honey for nutrition as well as for medical purposes. At the conclusion of the unit we will invite a spokesperson from Samaritan's Purse to come in and talk to the class about the importance of bee keeping overseas.

The activities may need to be modified to meet the developmental levels and specific goals and objectives for the desired grade level for social studies and science. The curriculum in grades 3-5 all address geography skills and either plants or animal adaptations.

Assessment will be ongoing during this unit, and much of it will be informal. We will communicate orally on a daily basis. Through discussion and questioning, students will be asked to think about and respond to many areas of content. I will observe discussions and take informal notes to assist me in evaluating which areas I need to focus on as the unit progresses.

**Objectives:**

- Determine what students already know about bees, bee keepers, and honey
- Read and discover information from the read aloud

**Background:** (The background activities may take three or four 30 to 40 minute class periods). Prior to beginning our unit on bees I will have students write or draw everything they know

about bees. First they will make the foldable to record their information (See the attached directions). They will then be given sticky notes and asked to write or draw what they know on a sticky note. I will explain that this is information that is already in your **schema**. Explain that we have file folders in our brains where we store information. Some of our information might be wrong or misconceptions (you will need to make sure the students understand the term misconception) and we will need to make sure the information is correct. Display this information under **“What We Think We Know”**. Then students will place his/her sticky note(s) on the class chart. Students should not comment on whether information is correct or incorrect. After activating prior knowledge show the PowerPoint about bee keeping overseas. Prior to this activity I will send a note home explaining the project to parents. The students will collect spare change in a jar to help families overseas with the expense of bee keeping. We will decorate a jar to resemble a bee and collect spare change that will be given to representative from Samaritan’s Purse when they speak at the end of the unit.

We will then move into reading the book entitled *Magic School Bus Inside A Beehive*. This is a brief description of the book: “Ms. Frizzle’s students change into honey bees. They must gain entry into a hive so they can see firsthand how the worker’s, drones, and queen bee live together.

Award-winning science writer Joanna Cole uses a lively combination of fact, fancy, adventure, and humor to explore the community of honey bees. The complexity of insect life will amaze readers as they discover how honey bees find food; make comb, honey, and beeswax; and care for their young, all from the bee’s perspective. Brilliantly designed illustrations by Bruce Degen are rich in detail, easy to grasp, and sparkling with wit. This virtuoso effort is sure to satisfy the most inquiring minds. We will discuss genre. This book can be categorized as nonfiction of fantasy. The students go into the beehive on a magic bus, but the information is factual.

Materials: sticky notes, copy of *Magic School Bus Inside A Beehive*, large chart shaped like a file folder labeled “What We Think We Know” “What We Learned”, “Questions”, and “Misconceptions”. (During this lesson we will only fill out the “What We Think We Know” portion of the chart).

## Vocabulary

Thorax, Abdomen, Head, Stinger, Pollen, Petal, Nectar, Leaf, Stem, Pollinate, Pheromones, Worker, Queen, Drone, Beehive, Hexagon, Antennae, Larvae, Royal jelly, Metamorphosis, Pupae, Swarm, Beekeepers, Arachnid, Beeswax, Colony, Insect

### **Vocabulary Development** (Science, Social Studies, Language Arts, Mathematics)

Using Dr. Robert Marzano's book *Building Academic Vocabulary* and his philosophy for teaching vocabulary the students will participate in creating a cluster wall. Cluster walls are different from word walls. Cluster walls are words grouped together according to common characteristics. Cluster walls are used to display content words, vocabulary words and language analysis. The students may be familiar with some of the words and need instruction on other words associated with the topic of bees. This activity will be ongoing throughout the unit. The students will create an index card with his/her own definition and a nonlinguistic representation. This wall can be used when a student might need to be reminded of the meaning or for spelling when writing about the topic of bees or bee hives. The vocabulary lessons will be ongoing throughout this unit. At the end of the unit the students will play Password. One student will have his/her back to the screen while the other students on his/her team give them clues about the word without saying the word. I will be able to assess if the students have a good understanding of the vocabulary in this unit.

### **"Poetry from the Hive" (These lessons will require multiple sessions)**

#### **Objectives:**

- Define and identify stanza/verse, line, and rhyming pattern; interpret poetry; and recite poetry
- Compare and contrast poetry to different types of poetry
- Compare and contrast poetry to other genres

**Vocabulary:** stanza, verse, line, haiku, limerick, clerihew,

Review what students have learned about bees from their independent reading, research, and read alouds. Familiarize students with the several different types of poetry – have students write different types of poems about bees. Read examples of the different types of poems and then model an example of each type of poem you plan to have the students write. Below are a few types of poetry you may also want to look at free verse. After proofreading the student

may write his/her final copy and illustrate the poems. Have students put together a poetry book and then perform their favorite as a poetry theater.

### **Haiku:**

- Three lines
- The first line has five syllables
- The second line has seven syllables
- The third line has five

### **Limerick:**

- Five lines
- Lines 1,2 and 5 rhyme, and 3 & 4 rhyme with each other
- Lines 1, 2, and 5 generally have seven to ten syllables, while lines 3 and 4 have only five to seven syllables.
- Ideally, it should be humorous

### **Clerihews:**

- They are four lines long.
- The first and second lines rhyme with each other, and the third and fourth lines rhyme with each other.
- The first line names a person, and the second line ends with something that rhymes with the name of the person.
- A clerihew should be funny.

### **Couplets:**

- Contain two lines that rhyme
- Contain the same number of syllables in the first and second lines
- Focus on the same topic for both lines
- Assess whether or not the student understands the format for the different types of poetry. Some students will need additional instruction

### **Cinquain**

- Has five lines with a total of eleven words
- Uses the following pattern
  - Line 1 one word (title)
  - Line 2 two words (describe the title)
  - Line 3 three words (describe an action)
  - Line 4 four words (describe a feeling)
  - Line 5 one word (refer back to the title)

You may assess students as they write the different types of poetry, checking to see if they have an understanding of the pattern, rhyme, stanza, verse, syllables, and line. Students having a difficult time may require more examples or individual or group instruction.

**Websites for poetry:**

- <http://www.gigglepoetry.com/poetryclass.aspx>
- <http://www.pitara.com/magazine/limericks.asp>
- <http://www.poetry4kids.com>

**The Story of the Honeybee (This production will take several class sessions.)**

**Essential Question:**

**Objectives:**

This activity is a shadow puppet show that simulates life in a honeybee colony. Only girls will read the roles, which are the queen and the worker bees, since they are all female. The puppets can be handled by the boys and girls without roles. If there are not enough students for all the parts in the play, some may take more than one role as reader or puppeteer.

See the Blackline masters for the Play scenery, parts, puppets, and materials.

Evaluation procedure: This project will be evaluated on student participation and cooperation.

Rather than using an overhead projector you could use a document camera to display the puppets.

**Two Column Notes**

**Essential Question:** How does a honeybee's body help to

**Objectives:** What are the different parts of the honeybee?

- Practice taking notes about the different kinds of bees
- Write a paragraph that tells about the different kinds of bees and their roles

Tell students they will read a passage describing different kinds of honeybees. Students will respond by taking notes. Students should divide their paper into two columns. In column one student should write key words and in column two students will write supporting details. Using this information, students will write a paragraph describing the different kinds of bees. They should use sequence words (first, then, next, following that, after that, finally, last of all...) in order to explain the process.

Key words	Supporting Details

## Homonyms

### Lesson 1

Read aloud a picture book that includes homonyms.

Some possibilities are: *The King Who Rained* – Fred Gwynne, *A Chocolate Moose for Dinner* – Fred Gwynne, *Eight Ate – A Feast of Homonym Riddles* – Marvin Terban, *Night, Knight* – Harriet Ziefer, *A Fly Can Fly* – Kelly Duodna

Ask students to define 'homonym' and chart their responses. Fill in any gaps or misconceptions of their definition.

One definition of a homonym is one or two or more words spelled and pronounced alike but different in meaning (bat). Another definition is two words spelled differently, pronounced alike but have different meanings (no/know). One form is a homophone, the other a homograph but both fall under the umbrella of homonym.

Direct students back to the picture book and ask students to give examples of homonyms they heard in the reading listing students' responses on chart paper. Ask students to think of other homonyms to share.

### Lesson 2

Review definition of homonym and remind students there are two different types.

Ask volunteers for homonyms they know and list homonyms on board or chart paper.

Tell students to write a sentence using homonyms and have them repeat the pattern in the picture book read during lesson 1. Tell students to illustrate their sentence.

Put completed papers together in order to form a book. Ask students to discuss possible titles and then vote on favorite title.

If time allows have small groups of children share the homonym book with other classes.

## **Social Studies**

**Essential Question:** How do bees communicate their location?

**Objectives:**

- Use a map and map key in order to answer the questions
- Draw a map of the classroom and simulate the actions of a honeybee

## **A Sweet Search**

What do a dancing bee and a map have in common? Entertain students' responses to this question, and then reveal that both things communicate locations. Tell students that sometimes bees dance to let other bees know where to find flowers whose nectar they use to make honey. Explain that different dances signal whether the flowers are nearby or far away. To follow up, divide the students into an even number of small groups. Give each group crayons, a sheet of paper, and a different color or type of flower cutout. Instruct the group members to draw a chosen hiding place. Next, pair the groups. Designate the members of one group in each pair as scouts. Have the other group leave the classroom while the scouts hide their flower. When the students return, they use their partners' map to locate the hidden flower. Then the groups switch roles and repeat the process. For a fun extension serve each student Honeycomb cereal as they complete the blackline master ("Busy Bees").

Mailbox Magazine (Issue) April/May 2004

Honey Bees do a little wiggly six-step to 'tell' other bees about nectar discoveries. Go to the following website and check out the "bee dance".

<http://ourworld.compuserve.com/homepages/Beekeeping/beedance.htm>

## **Mathematics**

**Essential Question:** How can we use different shapes to make a hexagon?

**Objectives:**

- Manipulate different shapes to create a hexagon
- Discuss the different ways in which students used the shapes to create a hexagon
- Write a description naming the different shapes used to create the hexagon

## **Honeycomb Hexagons**

If worker bees had a favorite shape, surely it would be the hexagon. After all, they build thousands of six-sided cells! Use the blackline master to create a booklet project to have students build their own hexagons. First, draw a hexagon on the board and explain that each cell of a honey comb has six sides



and vertices. Confirm that students know the name of the shape. Then have each student cut out one copy of the booklet cover and four copies of the booklet pages.

After each student assembles a booklet, divide students into small groups. Give each group crayons and these pattern blocks: two trapezoids, three rhombuses, and six triangles. Display labeled illustrations of the shapes for student reference. Challenge each group to identify four pattern block combinations that form a hexagon. When a group identifies a combination, each student records it on a page in the booklet by coloring tracings of the pattern blocks in the provided space and completing the caption.

**Assessment:** This project will be evaluated by observing whether or not the students can manipulate shapes in order to make the required combinations, cooperation with partner, and booklet.

Mailbox Magazine (Issue) April/May 2004

### **Multiplication Bee**

**Essential Question:** Do you know the multiples of nine?

#### **Objective**

**Essential Question:** Do you know the multiples of nine?

- Students practice multiplication tables.

#### **Lesson Plan**

Organize students in a circle, and name a number between 2 and 9. Choose a student to begin the game by saying the number 1. The next student says the number 2 and so on around the circle. Each time the number called out is a multiple of the number chosen; the student must raise his/her hand instead of calling out the number. If a student doesn't raise his/her hand at the right time or raises it at the wrong time, he or she is out. Continue until students reach the last multiple of the number times 9.

Education World®

Copyright © 2004 Education World

### **Make Some Bubblecombs**

**Essential Question:** Why do you think that bees form the hexagonal shape?

- Students will estimate  $\frac{1}{2}$  to  $\frac{3}{4}$  inch
- Think about and discuss what you know about vertices
- Measure the bubble solution

You will need a clear, zip-top bag, bubble solution, and a straw. Put two tablespoons of bubble solution into the bag. Close the bag and spread the solution around so that it covers all areas of

the bag. Open the bag and place a straw inside to where the solution has pooled. Blow into the straw; keep blowing until your bubbles are oozing out of the bag. Slowly push down releasing the air in your bag until it is about  $\frac{1}{2}$  to  $\frac{3}{4}$  inch thick. You will have a variety of bubble sizes. What do you notice about the bubbles and the walls of bubbles? What have you discovered about the vertices? Does this remind you of anything? Why do you think this happens? Why do you think bees form these same shapes (cells) when making honeycombs? Are they mathematicians? What can we learn from bees?

**Art:**

### **What's The Buzz?**

Purchase a sheet of beeswax (available in arts and crafts). Pass the beeswax among students without revealing what it is called. After students identify the material set out the beeswax with yellow and brown crayons (papers removed).

Next, arrange for each student to use the provided materials to do a crayon rubbing on the beeswax. As the student waits for his turn, he uses the blackline master to make a construction paper hive. Students add the bees to the hives with markers or other arts-and-crafts supplies. Then he glues the hive atop the crayon rubbing and trims the excess paper. Display student's work in the hallway or on a bulletin board.

Mailbox Magazine (Issue) April /May 2004

**Science:**

### **Characteristics of an Insect**

**Essential Questions:** Why are honeybees useful insects?

### **Important Insects**

Even though bees are known for their painful stings, they are among the most useful insects. They produce honey as well as beeswax, which are used to make candles, lipstick, shoe polish, and many other products. Plus, many crops depend on bees for pollination. Share this information with students; then have each student bring in one item (or an illustration of an item) that was produced with the help of bees. Give each student an identical white paper hexagon. After students color their hexagons yellow, arrange the shapes on the wall to resemble a hexagon.

Mailbox Magazine (Issue) April/May 2004

### **Honeybees and their Environment**

**Science Objective:** Students learn about hive construction and how honey bees dance to communicate

**Mathematics and Geography Objective:** Students become familiar with a U.S. map and understand how to calculate distance using a scale, while locating states where honey bee pollination is highest

### **DIRECTIONS**

#### **Lesson Steps:**

1. Ask students: Where are bee hives usually located? (*In hollow trees or other sheltered places.*)
2. Ask students: What do you think is the primary building material inside the hive? (*Beeswax.*) Explain that the interior of the hive is made from wax secreted from the worker bees' abdomens. The bees chew the wax to make it pliable and build one or more large vertical combs.
3. Each comb consists of hexagonal wax structures called cells. Tell students that the size of the cell is linked to its function: those that are about 0.20 inches across are used for raising worker bees; and those that are about 0.25 inches across are used for rearing drones. Both kinds of cells are used for storing pollen and honey.
4. Tell students that honey bees communicate with each other by dancing. After a honey bee has found food she returns to the hive. While she dances on the honeycomb, other bees use the receptors on their feelers and legs to feel the dance. By tasting the nectar she's carrying, the other bees can tell what type of flower she has visited.

See Blackline Master

[http://www2.scholastic.com/content/collateral\\_resources/pdf/b/bee\\_rep4\\_act4\\_bee\\_dance.pdf](http://www2.scholastic.com/content/collateral_resources/pdf/b/bee_rep4_act4_bee_dance.pdf)

### **Power of Pollination**

**Essential Question: How do bees pollinate flowers?**

#### **Objectives:**

- Explain why the number of seeds a plant produces depends on variables such as light, water, nutrients and pollination
- Observe and discuss how bees pollinate flowers

**Content** **Bees** have large, hairy back legs. Spaced between the hairs are **pollen baskets**. When a bee initially lands on a flower, **pollen** from the stamen (male part) is trapped in the baskets and carried from flower to flower as the bee searches for food. When the bee lands on another flower it brushes off the pollen on the pistil (female part) and therefore **pollinates** the flower.

#### **Materials:**

Per Student:

- freeze dried honey bee glued to a toothpick\* (These can be purchased through a science supply store or a local beekeeper.)

Per Student Group:

- cornmeal
- two paper plates

\*If you are not able to obtain honey bees, pipe cleaners may be substituted by forming them into a ball.

**Process skills:** Observe, Communicate, Predict, Infer

***Preparation:***

Prior to this lesson, the teacher must glue the honey bees onto toothpicks. This process can be done using a hot glue gun.

**Engage:** Ask students to predict how they think the pollen is transferred from the stamen to the pistil especially on flowers that do not contain both the stamen and the pistil.

**Explore:** Give each student a honey bee toothpick. Give each student group two plates, one with cornmeal and one that is empty. Allow students time to explore how to transfer the cornmeal from the first plate to the second plate.

**Explain:** Discuss how the honey bees' hairy legs were able to grasp the cornmeal (pollen) and deposit some on the clean plate (pistil). Discuss how this is similar to what happens with flowers.

**Elaborate:** Have students research other ways that flowers pollinate. (i.e. wind, animals, people)

Students can also research bees and why they are so important to our food supply.

**Evaluate:**

*Performance Assessment:* Interview students and have them use the tools from the lesson to demonstrate how pollen is transferred between flowers.

**Culminating activity:** We will invite someone from Samaritan's Purse to speak about bee keeping overseas. The speaker will have the SmartBoard available to show a PowerPoint or access maps in order to show the students where bee keeping is being implemented and to hear how the money they have collected will help families overseas to be more successful.

**Evaluation:** Observation of participation

## Assessment

I will continue to assess the students' knowledge about the roles of honeybees in a colony and vocabulary terms through informal discussions and note taking. I will use a flip chart with each student's name to do this. Each time a child seems confused about a topic of discussion or is having trouble with a concept, I will make a note of it next to the child's name on the flip chart. In order to assess what the children know about the roles of honeybees and how they affect their environment, I will administer two essay questions. Before the assignment we will brainstorm experiences the bee may have so the students will have an understanding of what to write. The students will respond by writing complete sentences to form a paragraph. I will ask them the following:

If you could change into a honeybee for just one morning, where would you fly? What do you think you would do? After students complete the essay they may want to include a picture.

I will use their written responses to assess whether or not they understand what a bee experiences on a given day. If they do understand this, then their response should reflect this by showing the bee in a situation it could actually be in, such as sipping on nectar, or flying around a field. If the child responds with an answer such as the bee swimming in the ocean, I will know he or she does not understand what a bee's life is like.

When we add to "What I Learned" section of the Graphic Organizer chart on the final day, the product we end up with will help me assess what all the students have learned about the bee's content. If they have not included important facts, then at that point I can discuss any missing pieces with them, and take notes about the gaps. I can then re-teach as necessary to improve comprehension of the content.

I will assess understanding of how bees affect the environment by asking the students to write a paragraph explaining how bees affect the environment. This is the second of my two essay questions. The student should be able to give a reasonable answer such as: they make honey that other animals and people eat, they pollinate fruit and flowers, they make a hive in someone's tree or log. I will be looking for a reasonable answer and to see if the student can give evidence of his/her understanding.

On the final day, I will assess knowledge of the content in a more formal fashion by administering true/false items, fill-in the blank items, multiple choice items, and matching exercise. I will assess our "who liked honey and who did not" with my graphing activity.

True/False Items: Students will be evaluated individually on whether or not they can answer the questions. If the answer is false the student will rewrite the statement in order to make it true.

1. A honeybee is an insect. (true)
2. A worker is a male (boy) bee. (false)

3. A drone lays the eggs in a colony. (false)

4. Bees get nectar to make honey. (true)

**Fill-in the blank Items:** Students will fill in the answer to each question.

1. The kind of bee that mates with the queen is called a \_\_\_\_\_. (drone)

2. The tiny places where honey is stored in a honeycomb are called \_\_\_\_\_. (cells)

3. A group of honeybees that live and work together is called a \_\_\_\_\_. (colony)

4. The dust honeybees collect from flowers and use to feed their babies is called \_\_\_\_\_ . (pollen)

**Essay Items:** Both essay questions will be read orally to the students. They will respond in written form to the both questions.

1. If you could change into a honeybee for just one morning, where would you fly? What do you think you would do? Write a paragraph using complete sentences. You may add a picture to go with your paragraph.

2. Explain one way honeybees change the environment around which they live. Write a paragraph using complete sentences. You may add a picture to go with your paragraph.

(possible answers: they make honey that other animals and people eat, they pollinate fruit and flowers, they make a hive in someone's tree or log.)

**Multiple Choice Items:** Circle the best answer from the choices given.

1. The name of the place where a bee lives is called a:

A. den

B. hive

C. house

D. burrow

(B)

2. Which of these is NOT one of the three types of bees we learned about?

A. a queen

B. a drone

C. a sweeper

D. a worker

(C)

3. When a baby bee is growing and it looks like a worm, it is called a:

A. larva

B. pupa

C. caterpillar

D. snake

(A)

4. When a baby bee is growing its eyes, legs, and wings, and has not hatched yet, it is called a:

A. larva

B. worker

C. queen

D. pupa

(D)

## **Related Literature Fiction and Nonfiction**

*Bouncing Bug Book Bee* - by David Hawcock

*The Life and Times of the Honeybee* - by Charles Micucci

*Time For Kids: Bees!* - by Editors Of Time For Kids

*The Honey Makers* - by Gail Gibbons

*The Bee Tree* - by Patricia Polacco

*Are You a Bee?* - by Judy Allen

*Honey in a Hive* - by Anne Rockwell

*Honeybees* - by Joyce Milton

*The Magic School Bus Inside a Beehive* - by Joanna Cole

*Happy Bees!* - by Arthur Yorinks

*Bee & Me: An Animation Experience* - by Elle J. McGuinness

*The Royal Bee* - by Frances Park

*Why I'm Afraid Of Bees (Goosebumps Series)* - by R L Stine

*Ruby Lee the Bumble Bee: A Bee of Possibility* - by Dawn Matheson

*Would You be a Bee?* - by Christine Hall

*The Honey Bee's Hive: A Thriving City* - by Joyce L. Markovics

*In the Trees, Honey Bees!* - by Lori Mortensen

*Bumble Bees* - by Fran Howard

*Brilliant Bees* - by Linda Glaser

*The Work Bees Go on Strike* - by Timothy R. Smith

*The Spider and the Bee* - by Michele Shen

*The Queen With Bees in Her Hair* - by Cheryl Harness

*From Flower to Honey* - by Robin Nelson



*The Bugville Critters Visit Dad and Mom at Work* (Buster Bee's Adventures Series #1, The Bugville Critters)- by Robert Stanek

*Honey Bees and Flowers* - by Lola M. Schaefer

*Ebenezer: The Claustrophobic Bee* - by Elizabeth M. James

*The Bugville Critters Go to School* (Buster Bee's Adventures Series #2, The Bugville Critters) (Bugville Critters: Buster Bee's Adventures) - by Robert Stanek

*The Bugville Critters Have a Sleepover* (Buster Bee's Adventures Series #3, The Bugville Critters) (Bugville Critters: Buster Bee's Adventures) - by Robert Stanek

*When the Bees Fly Home* - by Andrea Cheng

*Kendal, The Baker Bee* - by John, A. Hartigan

*How Bees Make Honey (Nature's Mysteries)* - by Michael Chinery

*Dragonfly Beetle Butterfly Bee* - by Maryjo Koch

*The Bee Tree* - by Stephen Buchmann

## Blackline – Reading Comprehension

### The body of the honey bee

The honey bee, like all insects, has a body that is divided into three sections: the head, the *thorax* (chest), and the abdomen. The insect's *honey stomach*, in which it carries nectar, is in the abdomen. The bee's body is thickly covered with fine structures called *hairs*. Bee hair is not true hair, which grows only on mammals, but it resembles true hair. When a bee travels from flower to flower, grains of pollen stick to these hairs. Honey bees range in color from black to shades of light brown. Drones are slightly larger than workers, and queens are longer than both workers and drones.

**Eyes.** A bee has five eyes—three small ones that form a triangle on top of its head, and a large *compound eye* on each side of its head. Each compound eye has thousands of lenses crowded closely together. Bees cannot focus their eyes because they have no pupils.

Honey bees were the first insects known to be able to distinguish colors. Bees have three kinds of color-sensitive cells in their eyes. These visual cells are especially sensitive to blue, yellow, and ultraviolet rays, which humans cannot see. However, bees cannot distinguish red. To them it blends in with green. In addition to color, bees can distinguish different geometrical patterns, such as those of different kinds of flowers.

**Antennae** are slender, jointed feelers attached to the front of the bee's head. They have tiny sense organs that provide a means of smelling. Tiny hairs on the antennae probably serve as organs of touch.

**Mouth.** The bee uses its tongue to suck water, nectar, and honey into its mouth. The tongue is a flexible tube on the outside of the bee's head. It can be shortened, lengthened, and moved in all directions. On the sides of the tongue are two jaws. The bee uses its jaws as tools to grasp wax and pollen.

Strong muscles are attached to the inside walls of the mouth. A bee sucks nectar up its tongue, through its mouth, and into its honey stomach. It can also reverse this process and bring food from its stomach out through its mouth. In this way, workers put nectar into wax cells or give it to other bees.

**Wings.** A bee has two thin wings on each side of its thorax. The two front wings are larger than the hind wings. When the bee flies, the front wings and the smaller hind wings become fastened together by a row of tiny hooks along the edge of the front wings.

The wings can move up and down, and forward and backward. A bee can fly forward, sideways, or backward, and can hover in one place in the air.

**Legs.** A bee has three legs on each side of its thorax. Each leg has five main joints, plus tiny segments that make up the foot. The worker bee uses its legs for walking, for brushing pollen off its body, and for handling wax. It carries pollen and propolis on its hind legs.

Each front leg has a notched structure called the *antenna cleaner*. The bee uses it to clean dirt from its antennae. On the outside of each of the hind legs of worker bees is a smooth area surrounded by long, curved hairs. This area, called the *pollen basket*, is used to carry pollen. Hairs on the inside of the hind legs help load pollen into the pollen basket. When the worker returns to the hive, it places its hind legs down into a cell and kicks off the pollen. Another worker uses its head to flatten out the pollen on the bottom of the cell.

**Sting.** Most bees depend on their stingers, or stings, as their only means of defending their home and their lives. Glands attached to the sting produce a *venom* (poison) made up of complex chemical substances.

The sting of a worker bee is straight, with *barbs* (hooks) on it. When the bee thrusts the sting into flesh, the barbs hold tight, and the stinger pulls out of the bee's body. But muscles inside the sting keep working and force it deep into the wound. At the same time, muscles pump more poison down the sting. A worker bee dies soon after losing its sting.

The queen bee has a smooth, curved sting that she uses only to kill other queens. Queens do not lose their stings as do workers. Drones have no stings.

A bee sting causes sudden pain, and the poison produces continued pain and swelling. A person stung by a bee should scrape the stinger off immediately, being careful not to pinch or squeeze it. This action reduces the amount of poison that enters the wound. Some people are so sensitive to bee stings that they may die from only one sting unless a doctor treats them quickly.

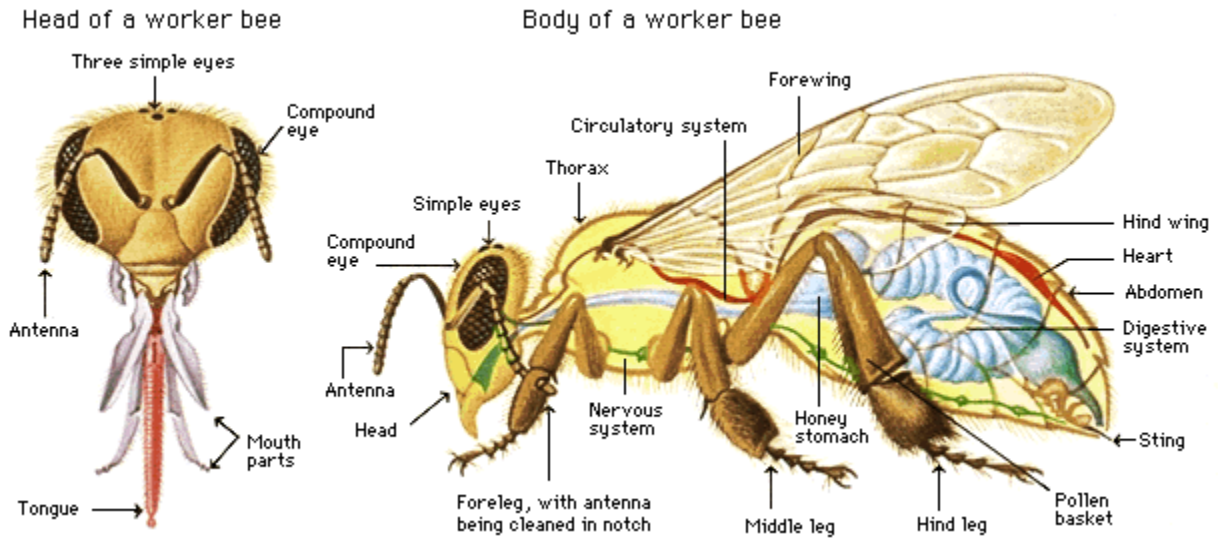
During the 1970's, American scientists became concerned that swarms of vicious South American "killer bees" might spread to the United States. If their hive is disturbed, these bees attack anything that moves. They attack in large numbers, and their stings have killed people and animals. These bees developed in Brazil in the late 1950's and early 1960's. A researcher had imported aggressive African honey bees that produce large amounts of honey. Some of the colonies escaped, and some of their queens mated with local drones. The resulting hybrids have spread rapidly throughout much of South America, Central America, and Mexico.

Swarms of hybrid bees reached Texas in 1990. By the mid-1990's, swarms of these bees had been sighted in several Southwestern States. They are expected to have a serious impact on U.S. beekeeping. Scientists are working to reduce the impact through control of wild populations and management of domestic colonies.

**Regulating body temperature.** In order to fly, honey bees must maintain their flight muscles at a temperature of at least 86 °F (30 °C). When honey bees are in flight, the heat from the energy they use up is usually enough to keep their flight muscles warm. When honey bees are not flying, they rapidly shiver their wings to stay warm.

Unlike most other insects, honey bees do not hibernate during the winter. Instead, they form a dense cluster in the hive. The clustered bees keep warm by shivering and by crowding together to seal off escaping heat.

Honey bees can also withstand extreme heat inside the hive. In a hot hive, bees crowd less closely together, creating air channels between them. They also gather water and sprinkle it in the hive. As the water evaporates, it cools the hive.





<b>What I Think I Know</b>	<b>What I learned</b>
<b>Questions</b>	<b>Misconceptions</b>

Dear Families,

We are beginning a unit on honeybees and their environment. The students will be learning about bees in all areas of the curriculum. To begin the unit we are teaming up with Samaritan's Purse to raise money for people overseas that would like to make extra money by becoming beekeepers. This extra income would help to buy food, send their kids to school, etc... This would be a project that would go along with our character trait of kindness. We will design a jar to look like a bee hive and then we will collect spare change and any donations. At the end of the unit we will have a speaker involved with the "Beekeeping Project to come in and speak to the students about the process of teaching the trade of beekeeping. They will be able to tell actual stories, discuss the culture, and show where the countries are located on the map.

The students will also be working on a play that they will perform at the end of the unit. I will send home additional information about the time, date, and location of the play.

We are looking forward to the project and all of the activities that will be involved in this unit.

Sincerely,

Deanna Holaday

## Week One

Activity	Procedures and Materials	Process	Curriculum Focus
Home Connection	Whole class letter	Informing Parents about the focus of the unit and our connection to Samaritan's Purse	Communication
Pre-assessment - File Folder/Chart – “What We Think We Know”	Individual -Student Chart – Class File folder and two or three sticky notes per student	Brainstorming, recalling, comparing and contrasting	Language Arts, Science, Art,
Read Aloud <i>The Magic School Bus Inside the Beehive</i>	Copy of <i>The Magic School Bus Inside the Beehive</i> Blackline chart- fill in information under “What I Learned”	Listening, recording, note taking, responding, discussing	Language Arts, Science,
Vocabulary Study – Introduce some of the vocabulary that the students will need to be familiar with (This will be ongoing throughout the three week unit)	Index cards to write the definition and draw a nonlinguistic representation for cluster wall, Vocabulary notebook to record the terms	Applying, labeling, reading, sketching, contrasting	Language Arts, Science
Honeycomb Hexagon(mathematics)	Blackline for book, manipulatives (shapes for hexagons) crayons, students will work with a partner for this activity so you will need enough shapes for each partner group	Cooperation, observing, recording, sketching	Mathematics, Science, Word study, Art
Learning to write Limericks, and Haikus	Poetry books for examples of this type of poetry, Model writing a Haiku and a Limerick, Student created Poetry Book (This will be used later for Poetry Theater)	Writing Limericks and Haikus using the required format, counting syllables, identifying topics, and Rhyming (Limericks)	Language Arts, Science, Art



Reading Log – Read books independently about bees, beehives, and beekeepers	Refer to the Related Literature List for titles of fiction and nonfiction books	Reading, Responding and discussing	Language Arts And Word Study
<i>A Sweet Search</i> –Map skills	Paper, crayons, and flower patterns Students will complete the blackline master focusing on a map skills they will then create a map of their classroom and take turns hiding the flowers in different locations.	Simulating, relating, reading, locating destinations	Social Studies Art Science
The Story of The Honey Bee – Play  This activity should begin during the first week and the students should have a period of time each day to work on the play	Copies of the script, cut-outs of puppets, and scenery, wire, glue gun; orange, brown, and blue felt pens; puppet theater; overhead projector or document camera, large white butcher paper – Select script readers, puppeteers, and stagehand practice	Simulating, relating, reading, responding, discussing,	Language Arts Math – measurement Art Social Studies (different roles and even careers) science
Characteristics of an Insect – Honeybees are useful insects	Items produced using beeswax, crayons, hexagon cut-outs – Students will learn about useful items that are produced using beeswax	Discussing, identifying, supporting, organizing, defining	Science Math Language Arts

## Week Two

Activity	Procedures and Materials	Process	Curriculum Focus
<p>The Story of The Honey Bee – Play</p> <p>This activity should begin during the first week and the students should have a period of time each day to work on the play</p>	<p>Copies of the script, cut-outs of puppets, and scenery, wire, glue gun; orange, brown, and blue felt pens; puppet theater; overhead projector or document camera, large white butcher paper – Select script readers, puppeteers, and stagehand practice</p>	<p>Simulating, relating, reading, responding, discussing,</p>	<p>Language Arts</p> <p>Math – measurement</p> <p>Art</p> <p>Social Studies (different roles and even careers)</p> <p>science</p>
<p>Reading Log – Read books independently about bees, beehives, and beekeepers</p>	<p>Refer to the Related Literature List for titles of fiction and nonfiction books</p>	<p>Reading, Responding and discussing</p>	<p>Language Arts</p> <p>And Word Study</p>
<p>Vocabulary Study – Introduce some of the vocabulary that the students will need to be familiar with (This will be ongoing throughout the three week unit)</p>	<p>Index cards to write the definition and draw a nonlinguistic representation for cluster wall, Vocabulary notebook to record the terms</p>	<p>Applying, labeling, reading, sketching, contrasting</p>	<p>Language Arts, Science</p>
<p>Learning to write couplets, and clerihews</p>	<p>Poetry books for examples of this type of poetry, Model writing a Haiku and a Limerick, Student created Poetry Book (This will be used later for Poetry Theater)</p>	<p>Writing Limericks and Haikus using the required format, counting syllables, identifying topics, and Rhyming (Limericks)</p>	<p>Language Arts, Science, Art</p>
<p>Homonyms Lessons one and two</p>	<p>Literature the shows the use of homonyms, paper, create a book using homonyms</p>	<p>Defining, writing sentences with homonyms, discussing, identifying, synthesizing, reading</p>	<p>Language Arts</p>
<p>Power of Pollination-</p>	<p>freeze dried honey</p>	<p>Observing, inferring,</p>	<p>Science and Language</p>

Discover how flowers are pollinated	bee glued to a toothpick Per Student Group: Cornmeal, two paper plates	communicate, and predict	Arts
Multiplication Bee-practice multiplication tables	Students will form a circle and practice their multiples of nine	Listening, identifying,	Math
What's The Buzz? – Art activity – Students will do a crayon rubbing using a piece of beeswax	Beeswax, crayons, construction paper, pattern to make a construction paper hive, other arts and crafts supplies	Identify, following directions, and designing	Art
Two Column Notes	Students will divide their notebook paper into two columns and take notes about the different body parts. Depending on the grade level teacher will want to model for the students	Note-taking, identifying main ideas and details	Language Arts Science Strategic comprehension
Honeybees and their Environment	Students will need a copy of the blackline master in order to complete this activity. Students learn about hive construction and how honey bees dance to communicate. Students become familiar with a U.S. map and understand how to calculate distance using a scale, while locating states where honey bee pollination is highest	Calculate distance, locate places on the a map, read and synthesize information	Social Studies Math Language Arts Science

### Week Three

Activity	Procedures and Materials	Process	Curriculum Focus
<p>The Story of The Honey Bee – Play</p> <p>This activity should begin during the first week and the students will practice and perform the play during week 3</p>	<p>Copies of the script, cut-outs of puppets, and scenery, wire, glue gun; orange, brown, and blue felt pens; puppet theater; overhead projector or document camera, large white butcher paper – Select script readers, puppeteers, and stagehand practice</p>	<p>Simulating, relating, reading, responding, discussing,</p>	<p>Language Arts</p> <p>Math – measurement</p> <p>Art</p> <p>Social Studies (different roles and even careers)</p> <p>science</p>
<p>Reading Log – Read books independently about bees, beehives, and beekeepers</p>	<p>Refer to the Related Literature List for titles of fiction and nonfiction books</p>	<p>Reading, Responding and discussing</p>	<p>Language Arts</p> <p>And Word Study</p>
<p>Vocabulary Study – Introduce some of the vocabulary that the students will need to be familiar with (This will be ongoing throughout the three week unit) students will be assessed on their understanding of vocabulary through formative and summative assessments</p>	<p>Index cards to write the definition and draw a nonlinguistic representation for cluster wall, Vocabulary notebook to record the terms Students will complete the cluster wall and the remainder of the terms in their vocabulary notebook</p>	<p>Applying, labeling, reading, sketching, contrasting</p>	<p>Language Arts, Science</p>
<p>Password - Assessment</p>	<p>This is game will be played using the computer game Password. While one students stands with his her back to the screen the students on the team will give clues to the word without saying the word</p>	<p>Following directions, connections, explaining, analyzing, communicate</p>	<p>Language Arts</p> <p>Science</p>

Make some Bubblecombs	Bubbles, plastic bags, Students will review math vocabulary and answer questions about honeybees and hexagons	Inferring, analyzing, measuring, synthesizing,	Math
Learning to write a cinquain	Poetry resource books, student created poetry book	Writing a cinquain, using adjectives, using action words, using feeling words	Language Arts
Poetry Theater	Student created poetry book – Students will choose a poem to recite for the class	Communicating, reading, explaining	Language Arts
Speaker – from Samaritan’s Purse- Following the presentation we will present the money we collected to help to teach people overseas about beekeeping	The speaker will have knowledge of the culture, countries, process of teaching people overseas to learn the trade of beekeeping	Listening, discussing,	Language Arts Social Studies Math Science