

About the Book

Text Type: Nonfiction/Informational Page Count: 24 Word Count: 1,941

Book Summary

Microbes: Friend or Foe? is an informational book that gives readers a close look at microbes—including bacteria, viruses, fungi, and protozoa. The book provides examples of how microbes are both helpful and harmful. It explains how they are spread and how bad microbes are fought using vaccines and antibiotics. Photographs, a map, and a chart support the text.

Book and lesson also available at Levels U and Z.

About the Lesson

Targeted Reading Strategy

- Summarize

Objectives

- Summarize to understand nonfiction text
- Identify details to compare and contrast various microbes
- Recognize comparative and superlative adjectives
- Identify compound words

Materials

Green text indicates resources available on the website

- Book—*Microbes: Friend or Foe?* (copy for each student)
- Chalkboard or dry-erase board
- Dictionaries
- Summarize, compare and contrast, comparative and superlative adjectives, and compound words worksheets
- Discussion cards



Indicates an opportunity for students to mark in the book. (All activities may be demonstrated by projecting the book on an interactive whiteboard or completed with paper and pencil if the books are reused.)

Vocabulary

*Bold vocabulary words also appear in a pre-made lesson for this title on VocabularyA-Z.com.

Content words:

Story critical: *antigens* (n.), *contaminated* (adj.), *immune system* (n.), *invade* (v.), *organisms* (n.), *vaccines* (n.)

Enrichment: *antibiotic* (n.), *cells* (n.), *disease* (n.), *epidemic* (n.), *eradicate* (v.), *infection* (n.), *microscope* (n.), *mutate* (v.), *outbreak* (n.), *pandemic* (n.), *parasites* (n.), *resistance* (adj.), *symptoms* (n.)

Before Reading

Build Background

- Ask students if they have ever been sick. Have them explain how they felt and what symptoms they had.
- Encourage students to share what they know about how their everyday actions can help stop the spread of diseases (washing hands, using their arm or sleeve to cover their mouth when they cough or sneeze, and so on).

Preview the Book

Introduce the Book

- Give students their copy of the book. Guide them to the front and back covers and read the title. Have students discuss what they see on the covers. Encourage them to offer ideas as to what kind of book it is and what it might be about.
- Ask students if they think this book is fiction or nonfiction and to explain their reasoning.
- Show students the title page. Talk about the information on the page (title of book, author's name, illustrator's name).
- Ask students to turn to the table of contents. Remind them that the table of contents provides an overview of what the book is about. Ask students what they expect to read about in the book based on what they see in the table of contents. (Accept all answers that students can justify.)

Introduce the Reading Strategy: **Summarize**

- Explain that one way to understand and remember information in a book is to summarize paragraphs, sections, or chapters mentally or on paper. Explain that a summary is a brief overview of the most important information in the text.
- Read page 4 aloud to students and model summarizing.
Think-aloud: To summarize, I need to decide which information is important from what I've read. Then, in my mind, I organize the information into a few words or sentences. For example, the text on page 4 describes how symptoms, such as a sore throat, are signs of being sick. The page also describes how microbes, called germs, cause diseases. It also explains that long ago, no one knew what made people sick. I will underline this information. When I look at this important information, a summary of page 4 might be: Long ago, sickness was a mystery. Now we know that microbes, or germs, can cause disease.
- Have students read page 5. Discuss the important information, and use this information to create a summary of the section (Example: *Microbes are very small organisms all around us. Some microbes help protect us from disease, and others can cause us to be sick.*)
- As students read, encourage them to use other reading strategies in addition to the targeted strategy presented in this section.

Introduce the Comprehension Skill: **Compare and contrast**


- **Introduce and model the skill:** Explain that one way an author helps readers understand information in a book is to tell how topics in the book are alike and different.
- Have students look at the chart on page 11: "Do You Have a Common Cold or the Flu?" Model how to compare and contrast using the information in the chart.
Think-aloud: This chart compares the flu to the common cold. One way their symptoms are the same is that the common cold and flu both involve coughing. What information in the chart supports this conclusion? (The symptom of coughing on the chart says Yes for both the common cold and the flu.) The symptoms for the common cold and flu are also different in some ways. Someone with the flu experiences a headache, but this is not a symptom of a cold.
- Model how to compare and contrast information using a Venn diagram. Draw a Venn diagram on the board. Label the left circle *Common Cold* and the right circle *Flu*. Explain that information relating to the common cold is written in the left side of the left circle (no headaches). Information that relates to the flu is written in the right side of the right circle (headaches). Explain that in the middle where both circles overlap, information is written about what the common cold and the flu have in common (coughing).
- Have students identify other similarities and differences between the common cold and the flu. Record these on the Venn diagram.

Introduce the Vocabulary

- Write the following words from the content vocabulary on the board: *antigens, vaccines, immune system, contaminated.*

- Give groups of students a large piece of blank paper. Have them divide the paper into four sections. For each word, have them write or draw what they know about the word. Have groups discuss and create a definition for each word using prior knowledge.
- Review or explain that the glossary and a dictionary contain a list of vocabulary words and their definitions. Model how students can use the glossary or a dictionary to find a word's meaning. Have students locate the glossary at the back of the book. Invite a volunteer to read the definition for *antigens* in the glossary. Have students compare the definition with their prior knowledge of the word. Then have students follow along on page 21 as you read the sentence in which the word *antigens* is found to confirm the meaning of the word. Repeat the exercise with the remaining vocabulary words.


Set the Purpose

 Have students read the book to find out more about microbes, stopping after every few pages to summarize information to identify similarities and differences between topics. Encourage students to underline or record on a separate piece of paper the important information in each section.

During Reading

Student Reading

- **Guide the reading:** Have students read to the end of page 8. Encourage those who finish early to go back and reread the text. When students have finished reading, discuss the important information they identified.
- Model summarizing the important information in the section titled "The Immune System."
Think-aloud: I made sure to stop after each section to summarize the information I'd read so far. First, I decided what information was important to remember. For example, this section describes how our bodies defend against microbes. I underlined the important information. Why do our bodies defend against microbes? (Harmful microbes can get in our body and multiply.) I will also underline this information. How does our body defend itself? (Using the immune system, which includes white blood cells, skin, and mucus.) Using this information, what might a summary be for this section? (The immune system recognizes and defends the body against harmful microbes. When the immune system cannot fight the harmful microbes, the person gets sick.)
- **Check for understanding:** Have students read to the end of "How Do Microbes Spread Infection" section. Invite them to share the important information from sections "Four Groups of Microbes" and "How Do Microbes Spread Infection." Ask students to write a brief summary of each section on a separate piece of paper. Have them share what they wrote.
- Have students read the remainder of the book. Remind them to think about the details in the book so they can summarize the information after they read.

 Have students make a question mark in their book beside any word they do not understand or cannot pronounce. Encourage them to use the strategies they have learned to read each word and figure out its meaning.

After Reading


- Ask students what words, if any, they marked in their book. Use this opportunity to model how they can read these words using decoding strategies and context clues.

Reflect on the Reading Strategy

- Ask students to explain how the strategy of summarizing helped them understand the book.
Think-aloud: I know that summarizing keeps me actively involved in what I'm reading and helps me understand and remember what I've read. I know that I will remember more about microbes because I summarized the information in my own words as I read the book.


- **Independent practice:** Introduce, explain, and have students complete the [summarize worksheet](#) using one of the remaining sections in the book. If time allows, invite students to read their completed summaries aloud.

Reflect on the Comprehension Skill

- **Discussion:** Have volunteers provide examples of how bacteria and fungi are alike and different (alike: single-celled, can make people sick, used to make foods; different: fungi can be multicelled, bacteria are only single-celled). Record this information on the Venn diagram.
-  **Check for understanding:** Have students draw a Venn diagram on a separate piece of paper or on the inside front cover of their book. Label the left circle *Bacteria* and the right circle *Protozoa*. Have them use the information in the book to compare and contrast these two topics. When finished, invite them to share their information.
- **Independent practice:** Introduce, explain, and have students complete the [compare-and-contrast worksheet](#). If time allows, have them discuss their answers.
- **Enduring understanding:** In this book, you learned about microbes and how they can be both helpful and harmful. Now that you know this, how important is the work of scientists of the past and how does it affect the work of scientists of today? What kinds of things can you do in your daily life to stay healthy?

Build Skills

Grammar and Mechanics: **Comparative and superlative adjectives**

- Have students explain what *adjectives* do (describe nouns or pronouns). Review that an adjective describes *which one*, *how many*, or *what kind* of something. Have students turn to page 10 and identify all of the adjectives in the first paragraph (*harmful*, *painful*, *swollen*, and so on).
- Review that when two or more things are compared, similarities and differences are identified. Hold up two pencils of different lengths and ask students to compare them. Ask students to identify words used to compare sizes of two things (*long*, *short*, *tall*, *small*, *thick*, *thin*, and so on). Ask a volunteer to use the word *long* to compare one pencil with the other. (*The red pencil is longer than the yellow pencil.*) Write this example on the board under the heading *Comparative Adjectives*. Discuss that the *-er* suffix added to *long* makes the comparative form of the word. Explain that comparative adjectives compare two things.
- Add a third pencil, longer or shorter than the others. Ask students for examples of how to compare all three pencils (Example: *The blue pencil is the longest.*) Write this on the board under the heading *Superlative adjectives*. Discuss how adding *-est* to *long* makes it the superlative form of the word. Explain that superlative adjectives compare *more than two* things.
-  **Check for understanding:** Have students identify the comparative adjective on page 11 (*smaller*). Ask them what two things are being compared (viruses and bacteria). Then have them think of the superlative adjective for *small* (*smallest*).
- **Independent practice:** Introduce, explain, and have students complete the [comparative-and-superlative-adjectives worksheet](#). If time allows, discuss their answers.

Word Work: **Compound words**

- Write the word *everywhere* on the board. Ask students which two words were joined together to make the word *everywhere* (*every* and *where*). Explain that this word is a *compound word*. A compound word contains two words that together create one word meaning.
- Write the word *disease-causing* on the board. Explain to students that this is an example of a different type of compound word. Each of the examples on the board has two parts that make up one word meaning; however, some compound words are separated by hyphens, some are joined, and others are separate.

- Write the following sentence on the board: *Our immune system is like our bodyguard.* Have students read the sentence and identify the compound word (*bodyguard*). Ask them which two words are joined together in the word *bodyguard* (*body* and *guard*). Explain that the definitions of the two separate words can help students figure out the meaning of the bigger word (something that *guards* the *body*).



Check for understanding: Have students read page 16 in their book. Have them identify and circle the compound words on the page (*outbreaks*, *worldwide*, and *airplane*). Ask students to circle the two words that make up each compound word. Have them use these words to discuss with a partner the meaning of each larger word. Then discuss the meaning of each word with students as a group.



Independent practice: Introduce, explain, and have students complete the **compound words worksheet**. If time allows, discuss their answers.

Build Fluency

Independent Reading

- Invite students to read their book independently. Additionally, partners can take turns reading parts of the book to each other.

Home Connection

- Give students their book to take home to read with parents, caregivers, siblings, or friends. Have students create a Venn diagram and compare and contrast something at home (for example, two foods, two people, and so on).

Extend the Reading

Informational Writing Connection

Provide print and Internet sources for students to find out more about malaria. Citing information from their research and the book, have them write a report. Instruct students to include at least three sections with supporting details, plus an introduction and conclusion. Encourage them to add illustrations or photographs to their report. Require an error-free final copy and a front and back cover. Either bind each report separately or bind all of the reports together to make a class book with its own front and back cover.

Visit **Writing A-Z** for a lesson and leveled materials on expository report writing.

Math Connection

Have students complete the “Math Minute” problems on pages 6 and 7. Invite them to share their answers.

Skill Review

Discussion cards covering comprehension skills and strategies not explicitly taught with the book are provided as an extension activity. The following is a list of some ways these cards can be used with students:

- Use as discussion starters for literature circles.
- Have students choose one or more cards and write a response, either as an essay or as a journal entry.
- Distribute before reading the book and have students use one of the questions as a purpose for reading.
- Conduct a class discussion as a review before the book quiz.

Assessment

Monitor students to determine if they can:

- consistently use the strategy of summarizing to better comprehend the text during discussion and on a worksheet
- consistently compare and contrast nonfiction details within the text during discussion and on a worksheet
- accurately identify comparative and superlative adjectives during discussion and on a worksheet
- correctly identify and form compound words during discussion and on a worksheet

Comprehension Checks

- [Book Quiz](#)
- [Retelling Rubric](#)