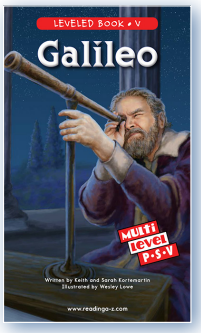
Focus Question:

How do questions lead to new discoveries?



Book Summary

Text Type: Nonfiction/Biography

Known as the father of modern science, Galileo Galilei was renowned for his brilliant mind and fierce determination to ask and answer difficult questions. Although his scientific endeavors ultimately led to trouble with religious authorities, Galileo persevered and remains one of the most influential scientists in history. In *Galileo*, students will learn about the discoveries of this remarkable Renaissance man who forever changed the course of science. The book can also be used to teach students how to summarize and to determine elements of a biography.
The book and lesson are also available for levels P and S.

Lesson Essentials

Instructional Focus

- ❑ Summarize to understand text
- ❑ Identify elements of a biography
- ❑ Describe information provided by graphics
- ❑ Recognize and use possessive nouns
- ❑ Identify and use antonyms

Materials

- ❑ Book: *Galileo* (copy for each student)
- ❑ Elements of a biography, possessive nouns, antonyms worksheets
- ❑ Discussion cards
- ❑ Book quiz
- ❑ Retelling rubric

Vocabulary

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

- **Words to Know**

  Story critical: ***astronomy*** *(n.)*, ***controversial*** *(adj.)*, ***laws of nature*** *(n.)*, ***revolutionary*** *(adj.)*, ***solar system*** *(n.)*, ***telescope*** *(n.)*

  Enrichment: ***gravity*** *(n.)*, ***heresy*** *(n.)*, ***measurable*** *(adj.)*, ***pendulum*** *(n.)*, ***philosophers*** *(n.)*, ***sunspots*** *(n.)*

- **Academic vocabulary:** *amount (n.)*, *continue (v.)*, *energy (n.)*, *final (adj.)*, *forever (adv.)*, *several (adj.)*

Guiding the Reading

Before Reading

Build Background

- Write the word *curiosity* on the board and read it aloud with students. Discuss with students the meaning of the word *curiosity.* Point out that developing curiosity entails creating good questions about the subject matter. Show students a box and explain to students that there is a mystery item in the box (place an image of the solar system in the box). Have students work in small groups to create one question about the mystery item. Answer each group's question and encourage students to listen closely to your responses. Then, invite students to create their next question on the basis of the information you have provided. Continue this way for several rounds. Engage students in a discussion about how to create relevant and driving questions.
- Reveal the image of the solar system to the class and write the word *solar system* on the board. Ask volunteers to share what they know about the solar system. Explain to students that they will be reading about a man named Galileo, who is one of history's most famous scientists and is known for his curiosity.

Introduce the Book

- Give students their copy of *Galileo*. 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 type of book it is (genre, text type, and so on) and what it might be about.
- Show students the title page. Discuss the information on the page (title of book, authors' names, illustrator's name).
- Preview the table of contents on page 3. Remind students that the table of contents provides an overview of the book. Ask students what they expect to read about in the book, on the basis of what they see in the table of contents. Accept all answers that students can justify.)

Guiding the Reading *(cont.)*

Introduce the Reading Strategy: Summarize

Explain to students that one way to understand and remember information in a book is to write a summary, or brief overview, of the most important information. Point out that a summary can encompass the entire book or a section of the book. Explain that a summary often answers the questions *who, what, where, when,* and *why.* Direct students to the table of contents. Remind students that the table of contents provides an overview of what the book is about. Have students work in small groups to preview the table of contents and the illustrations and discuss what they expect to read about in the book.

Introduce the Comprehension Skill: Elements of a biography

- Ask students to explain the difference between a biography and an autobiography (biography: the story of a person's life written by someone else; autobiography: the story of a person's life written by that person). Explain that this book gives biographical information about the famous scientist Galileo.
- Write the words *Accomplishments, Personality,* and *Influence* on the board in a three-column chart. Have students turn to a partner and discuss the meaning of each word. Discuss the definitions as a class (accomplishments: success achieved through practice or experience; personality: the qualities that make each person unique; influence: an effect on someone or something). Point out to students that as they read about Galileo they should pause to consider his accomplishments, personality, and influence.

Vocabulary

Have students turn to the "Words to Know" box on the copyright page. Discuss each word with students. Then, have students turn to the glossary on page 16. Explain that the glossary provides definitions for the vocabulary words in the book. Point out the use of each content word and academic vocabulary word in the book, and then use each word in a different model sentence. Have students work in groups to create posters for these words. Have them include on each poster the word and its part of speech, the definition, the word in an example sentence, and a picture illustrating the meaning of the word.

Set the Purpose

- Have students read to find out more about Galileo. Write the Focus Question on the board. Invite students to look for evidence in the book to support their answer to the question.
- Have students make a small question mark in their book beside any word they do not understand or cannot pronounce. These can be addressed in a future discussion.

During Reading

Text-Dependent Questions

As students read the book, monitor their understanding with the following questions. Encourage students to support their answers by citing evidence from the book.

- *What made Galileo unique as a child and young man?* (level 2) pages 5–7
- *How did Galileo use his observation of a swinging chandelier to inspire new discoveries?* (level 1) page 7
- *What was the effect of Galileo creating a telescope?* (level 2) pages 9–11
- *Why were Galileo's discoveries so upsetting to the Catholic Church?* (level 2) pages 11–12
- *What was the effect of the Church finding Galileo guilty?* (level 1) page 13
- *How did Galileo's gift of asking important questions help him become the father of modern science?* (level 3) multiple pages
- *What made Galileo a Renaissance Man?* (level 3) multiple pages

Text Features: Graphics

Have students locate the graphics on page 12 and reread the accompanying text for each. Point out that the additional text and the diagrams are provided by the author to expand upon and clarify the information discussed in the book. Ask a volunteer to explain what information the author is conveying through these graphics. Point out that such features are often present in nonfiction books. Have students discuss the following questions with a partner: *Why did the author include information about both models of the solar system? How do the images provided by the author help you better understand Galileo's discoveries?*

Skill Review

- Review with students that a summary is a brief overview that includes only the most important information about a book or a section of a book. Point out that a summary answers the questions *who, what, where, when,* and *why.*
- Have students work in small groups to review the section "The Astronomer" and create a written summary. Remind them to include only the most important information that answers the questions *who, what, where, when,* and *why.* Invite groups to share their summaries with other groups and then with the class. Discuss with students why summarizing a book or a section of a book helps them understand and remember what they have read.
- Review with students the elements of a biography: accomplishments, personality, and influence. Point out that by identifying these aspects of a historical figure the biographical information is easier to organize and remember.
- Model identifying elements of a biography. **Think-aloud:** *I know that the elements of a biography*

Guiding the Reading *(cont.)*

include a person's accomplishments, personality, and influence. As I read, I look for this information about Galileo. For example, I know that Galileo noticed changes in the shape of Venus, which suggested that both Venus and Earth circle the Sun. This accomplishment forever changed the way scientists viewed the solar system. When I consider Galileo's accomplishments, especially considering the resistance from the Church, I know that he was brilliant, curious, and determined. As I continue to read, I will consider how Galileo influenced history.

- *Record the above information about Galileo in the chart on the board. Invite volunteers to add any additional information.*
- Model how to complete the elements-of-a-biography worksheet. Remind students to use details from the text to support their responses.

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.

Skill Review

Graphic Organizer: Elements of a biography

Review the elements-of-a-biography worksheet that students completed. Have students share their work in groups. Invite volunteers to share with the rest of the class the details they chose.

Comprehension Extension

Discussion cards covering comprehension skills and strategies not explicitly taught with the book are provided to be used for extension activities.

Response to Focus Question

Have students cite specific evidence from the book to answer the Focus Question. (Answers should include the following information: *When people ask questions about the world around them, they exhibit curiosity and can express a new point of view. Curiosity and questioning allow people to explore new possibilities.)*

Comprehension Checks

- Book quiz
- Retelling rubric

Book Extension Activities

Build Skills

Grammar and Mechanics: Possessive nouns

- Write the following sentence on the board: *Galileo's discoveries were strong evidence that the planets in our solar system revolve around the Sun.* Remind students that words that name a people, places, and things are called *nouns.* Explain that a *possessive noun* is a word that shows ownership or possession. Circle the word *Galileo's* and note the *'s* at the end of the word. Underline the word *discoveries.* Point out that the word *Galileo's* is a possessive noun because the sentence is referring Galileo's ownership, or possession, of his discoveries. Explain that *discoveries* is the object of the possessive noun.
- Write the following sentence on the board: *The church had the power to punish people who spread ideas that challenged the Church's teachings.* Ask students to identify the possessive noun and the object of the possessive noun.
- **Check for understanding:** Write a list of nouns on the board and have students work with a partner to make these words possessive nouns by adding *'s* to the end of each word. Then have each group create sentences using these possessive nouns.
- **Independent practice:** Introduce, explain, and have students complete the possessive nouns worksheet. If time allows, discuss their answers.

Word Work: Antonyms

- Write the word *enormous* on the board and read it aloud with students. Ask students to suggest a word that means the opposite of *enormous.* Review or explain that a word that means the opposite of another word is called an *antonym.*
- Reread the first paragraph of page 6 as students follow along. Have them highlight the following words: *young, first, before.* Invite students to work with a partner to identify an antonym for each word. Have them discuss how using the antonym in the given sentence changes the meaning of the text. Have volunteers share their discussions with the class.
- **Check for understanding:** Have students work independently to record antonyms for the following words: *smart, many, boring, outside.* Then have students turn to a partner and share their antonyms. Invite students to give a thumbs-up signal if their partner identified an antonym correctly.
- **Independent practice:** Introduce, explain, and have students complete the antonyms worksheet. If time allows, discuss their answers.

Connections

- See the back of the book for cross-curricular extension ideas.