

### About the Book

Text Type: Nonfiction/Informational    Page Count: 24    Word Count: 1,531

### Book Summary

The Hubble Space Telescope is truly out of this world! This huge telescope is located outside Earth's atmosphere, allowing it to take clearer pictures of objects in space. Read about the recent repairs that the Hubble received and all the amazing things scientists are learning from it. Engaging and informative photographs, many from the Hubble Telescope itself, support the text.

### About the Lesson

#### Targeted Reading Strategy

- Summarize

#### Objectives

- Use the reading strategy of summarizing to understand text
- Identify main idea and details
- Identify and understand the use of the dash as punctuation
- Recognize and understand the use of syllable patterns

#### Materials

Green text indicates resources available on the website

- Book—*Hubble: An Out-of-This-World Telescope* (copy for each student)
- Chalkboard or dry erase board
- Dictionaries
- Main idea and details/summary, syllable patterns worksheets
- Discussion cards



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

#### Vocabulary

\*Bold vocabulary words also appear in a pre-made lesson for this title on [VocabularyA-Z.com](http://VocabularyA-Z.com).

#### • Content words:

Story critical: *astronomers* (n.), *atmosphere* (n.), *collision* (n.), *elements* (n.), *infrared light* (n.), *orbits* (v.)

Enrichment: *hole* (n.), *complex* (adj.), *density* (n.), *ejecting* (v.), *fragile* (adj.), *glitch* (n.), *informative* (adj.), *light years* (n.), *multitude* (n.), *nebulas* (n.), *plumes* (n.), *spectrographs* (n.), *vacuum* (n.)

### Before Reading

#### Build Background

- Share some images taken by the Hubble Telescope (see <http://hubblesite.org>). Ask students to identify what they are looking at and to share how they think the pictures might have been taken.
- Explain to students that photographs like these are taken by telescopes at observatories or laboratories. If possible, show students a picture of an observatory, such as Kitt Peak National Observatory, which is located outside of Tucson, Arizona.

## Lesson Plan *(continued)*

## Hubble: An Out-of-This-World Telescope

- Explain to students that the telescope that took the images you shared is very special because it is not located in an observatory or anywhere else on Earth.

### 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 type of book it is (genre, text type, fiction or nonfiction, and so on) and what it might be about.
- Show students the title page. Discuss the information on the page (title of book, author'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, based on what they see in the table of contents. (Accept all answers that students can justify.)

#### Introduce the Comprehension Skill: **Main idea and details**

- Ask students to skim through the text, noticing where the sections begin (where the subtitles are located). Explain that when a book or text contains a large amount of information, the author groups it into smaller sections, each one with its own main idea. Details in the section support that main idea.
- Explain to students that this book has an informative text structure. To identify the main idea and details, the reader must determine what information is essential and nonessential to understanding the main idea or text.
- Remind or explain to students that the section headings often give clues about the main ideas. Model how to identify the main idea of a section by using the table of contents.  
*Think-aloud: I know that a section heading often identifies the main idea of the section. Each section contains details that support a main idea about the Hubble Telescope. For example, the section "Carina Nebula: A Star Nursery" is likely to explain a star nursery. When I read that section, I will probably find many details that tell about the specific star nursery called Carina Nebula. I may also read about how the Hubble Telescope helped scientists to study it.*
- Project a copy of the [main-idea-and-details/summary worksheet](#) on the board. Say: *I can use a chart like the one on this worksheet to help me keep track of the main idea and details of each section of the book. I will use the section heading as a strong clue as to what the main idea will be for that section.*

#### 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 a brief overview of the most important information in the text. Point out that a summary includes the main idea and one or two supporting details. It often answers the questions *who*, *what*, *when*, *where*, and *why*.
- *Think-aloud: To summarize, I decide which information is most important to the meaning of the section that is necessary to remember. To do this, I can identify the main idea and important details and then organize that information into a few sentences. I can use my worksheet to help me write this summary.*
- Tell students that they will be stopping after each section, identifying the main idea and important details, and then organizing the important information into a few sentences to create a summary.
- As students read, encourage them to use other reading strategies in addition to the targeted strategy presented in this section.

#### Introduce the Vocabulary

- As students preview the book, ask them to talk about what they see in the photographs. Reinforce the vocabulary words they will encounter in the text.



- Explain to students that sometimes strong context clues are present in the text to help the reader define an unfamiliar word (point out the term *light years* on page 9 and show students how the definition follows the word in the text). However, sometimes there won't be any context clues that define an unfamiliar word. Model how students can use the glossary or a dictionary to locate a word's meaning. Have a volunteer read the definition for *collision* in the glossary. Have students follow along on page 13 as you read the sentence in which the word *collision* is found to confirm the meaning of the word.
- Have students locate each of the remaining content vocabulary words in the glossary. Read and discuss their definitions as a class.


### Set the Purpose

- Have students read to learn about the Hubble Telescope. Remind them to stop after each section to identify the main idea and details.

### During Reading

#### Student Reading

- **Guide the reading:** Have students read to the end of page 7. Encourage those who finish before others to reread the text and to think about the important information presented on these pages.
- Model identifying the main idea and details on pages 6 and 7.  
**Think-aloud:** *As I read the section titled "Hubble's New Eyes," I noticed that most of the sentences mentioned something about astronaut Mike Massomino and the work he performed on the telescope. Mike had to take out the old spectrograph and put in a new one. It was difficult work in a bulky spacesuit, and he was using new tools. One of the panels he had to remove was stuck. I am going to underline these sentences and phrases. I am also going to underline where it says that ground control told him to break the handle off the panel. Once he broke off the handle, Mike was able to pull out the old instrument and put in the new one. Over five days, the Hubble got new cameras, spectrographs, computers, and batteries. Based on what I've read and underlined, I think the main idea of this section is: Astronaut Mike Massomino worked in space to repair the Hubble Telescope.*
- Point out to students that a main idea is usually not a sentence that they can directly underline or highlight in the text. Rather, it is a new sentence that they create after reading and thinking carefully about all the information presented in a section.
- Write the main idea on a copy of the worksheet and project it on the board. Ask students to identify details that support this main idea. Write these details on the worksheet for students to see.
- Point out to students that the sentences and phrases written on the worksheet are the supporting details for this main idea.
- Model how to create a summary from the main idea and details. Say: "Now that I have identified the main idea and details, I can write a summary, in my own words, for this section. I think a summary of this section might be: *Astronaut Mike Massomino worked in space to repair the Hubble Telescope. It was dangerous work to replace the old spectrograph, especially when the panel was stuck and Mike had to break it off. Eventually, he and the other astronauts gave the Hubble new cameras, spectrographs, computers, and batteries.*"
-  **Check for understanding:** Have students read to the end of page 14. Have them underline or highlight important details as they read.
- Divide students into groups. Have each group identify the main idea from the details of the section and write it on a separate piece of paper.
- Have students from each group use the main idea and details to write a summary. Discuss their responses.
-  Have students read the remainder of the book. Remind them to underline important details from each section as 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 Comprehension Skill

- **Discussion:** Discuss how stopping to review the important details helped students remember the facts and better understand the information in the book. Remind students that determining which details are essential and nonessential is an important skill that takes practice.
- **Independent practice:** Distribute the main-idea-and-details/summary worksheet to students. Have them write a main idea and supporting details for one of the remaining sections of the book. If time allows, discuss their responses.


### Reflect on the Reading Strategy


- Review with students how the main idea and details from each section can be used to develop a summary. Discuss with them the benefits of summarizing information they read (to understand the main point of a larger piece of writing). Invite students to share instances of when summarizing might be helpful.
- **Independent practice:** Have students write a summary using the information they wrote on the top half of their main-idea and details/summary worksheet. If time allows, discuss their responses.
- **Enduring understanding:** In this book, you read about what scientists are learning by having telescopes outside Earth's atmosphere and what faraway objects in space look like up close. Now that you know this information, what will you think about the next time you look up at the night sky?

### Build Skills

#### Grammar and Mechanics: Dash

- Explain to students that a dash (—) is a punctuation mark that may be used for one of two purposes: to show an afterthought or summary at the end of a sentence or to “set off” or clarify information within a sentence.
- Write the following sentences on the board:  
*My friend—the nicest person in the world—deserved the award.*  
*Joey searched everywhere for his prized possession—his lucky key chain.*
- Explain to students that in the first sentence, the dashes are used in the middle of the sentence to “set off” and clarify or provide more information about the friend. In the second sentence, the dash is used to add a thought to the end of the sentence.

 **Check for understanding:** Direct students to page 6 in their book, and have them highlight the sentence *Mike's job for this space walk was to take out the old spectrograph—a machine used to examine different gases—and replace it with a new one.* Ask students how the dashes are used in this sentence (to “set off” and clarify what a spectrograph is).

 **Independent practice:** Have students find and circle all the sentences in the book that make use of dashes (pages 6, 9, 11, 12, and 14). Have partners explain to each other how each dash is used.

### Word Work: Syllable patterns

- Explain that a *syllable* is a unit of sound in a word. A syllable contains a vowel and usually one or more consonants. The word *sit* contains one syllable. The word *orbit* contains two syllables. Explain that many words have multiple syllables, such as the words *telescope* and *astronaut*. Tell students that knowing how to break words into syllables can help them read and spell long words.
- Write the word *problem* on the board. Say the word aloud, clap the syllables, and put a dot over each of the vowels in the word. Then draw a line to divide the word into its two syllables. Say: *Notice that the vowel, o, is in the middle of the syllable prob, and it is closed in by the consonants r and b on either side. The vowel sound is short in the syllable prob. We call this a "closed syllable." Vowels in closed syllables are often short vowels. I can remember this piece of information when I am trying to sound out unfamiliar words so I will recognize closed syllables.*
- Repeat the process with the word *prepare*. Demonstrate that the syllable break comes after the vowel, so it is an "open syllable"—there is no consonant closing it in. Vowels in open syllables are often long.
- **Check for understanding:** Write the following words from the book on the board: *beyond, having, replace, gases*. Ask volunteers to come to the board, divide each word into syllables, and then explain whether each syllable is open or closed.
- **Independent practice:** Introduce, explain, and have students complete the [syllable patterns worksheet](#). If time allows, compare how students sorted the words.

### Build Fluency

#### Independent Reading

- Allow 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 summarize with someone at home what they learned about the Hubble Space Telescope and the objects in space it has shown us.

### Extend the Reading

#### Informational Writing Connection

Ask students to work as a team and have them use their main-idea-and-details/summary worksheets to create a "book" explaining the Hubble Telescope. Have students transfer their summary paragraphs onto appropriate paper and draw an illustration. Arrange their summaries in the same order as the table of contents in *An Out-of-This-World Telescope*. Bind the pages together and ask a volunteer to illustrate the front cover.

Visit [Writing A-Z](#) for a lesson and leveled materials on expository writing.

#### Social Studies Connection

Supply books and links to Internet websites for students to learn more about telescopes, observatories, and astronomy. Have them find out if there are any observatories in their area that they can visit.

**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.
- Cut apart and use the cards as game cards with a board game.
- 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 comprehend the text during discussion and on a worksheet
- accurately use main-idea statements and supporting details to write a summary in their own words on a worksheet
- recognize and understand the use of a dash as punctuation during discussion and in the text
- recognize and understand the use of syllable patterns in discussion and on a worksheet

**Comprehension Checks**

- Book Quiz
- Retelling Rubric