

## About the Book

Text Type: Nonfiction/Informational Page Count: 24 Word Count: 1,866

### Book Summary

According to scientists, the Earth only has about 120 years' worth of oil left. We need to start looking for other ways to power our vehicles. This book explores four alternatives to gasoline-powered cars—solar-powered, hydrogen-powered, battery-powered, and ethanol-powered cars. Find out their differences, how they are produced, and the challenges involved in converting our planet to alternative fuel sources.

## About the Lesson

### Targeted Reading Strategy

- Ask and answer questions


### Objectives

- Use the reading strategy of asking and answering questions to understand text
- Compare and contrast information in text
- Identify and understand hyphenated compound adjectives
- Recognize and use synonyms

### Materials

Green text indicates resources available on the website

- Book —*Alternative Fuel Cars* (copy for each student)
- Chalkboard, dry erase board, or interactive board
- Student thesauruses
- *KWL, compare and contrast, hyphenated compound adjectives, synonyms worksheets*
- *Discussion cards*

 Indicates an opportunity for students to mark in the book. (All activities may be demonstrated by projecting the 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: *alternative fuels (n.)*, *ethanol (n.)*, *fuel cells (n.)*, *hydrogen (n.)*,  
*renewable resource (n.)*, *solar cells (n.)*

Enrichment: *atom (n.)*, *biomass (n.)*, *bond (n.)*, *fermentation (n.)*, *gaseous (adj.)*, *pollutants (n.)*,  
*radiant (adj.)*

## Before Reading

### Build Background

- Ask students how they got to school this morning. If they rode in a car or a bus, ask how else they might have gotten to school.
- Discuss with students how their family's cars are powered. Read aloud the introduction of the book to students. Discuss how fossil fuels are nonrenewable resources (they are in limited supply and will soon run out).

- Create a KWL chart on the board and hand out the **KWL worksheet**. Review or explain that the *K* stands for knowledge we know, the *W* stands for information we want to know, and the *L* stands for the knowledge we learned. As various topics are discussed, fill in the first section (*K*) on the board with information students know about the topic. Have students complete the same section of their KWL chart.
- Ask students what they would like to know about alternative fuel cars. Have them fill in the second section (*W*) of their chart. Write their questions on the class chart.

### 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). Point out the glossary and index and ask volunteers to explain their uses.

#### Introduce the Reading Strategy: **Ask and answer questions**

- Discuss with students how having prior knowledge about the topic, and asking and answering questions while reading, can help readers understand and remember the information in a book.
- Direct students to the table of contents. Remind them that the table of contents provides an overview of the information in a book and how it is organized. After previewing the table of contents, use it to model asking questions.  
**Think-aloud:** I can use the table of contents to think of questions I would like to have answered about alternative fuel cars. For example, one section is titled "Solar-Powered Cars." I know that the word *solar* means related to the Sun. This makes me wonder how a car can work using power from the Sun. I'll have to read the book to find out. I'll write this question on my chart.
- Have students look at the other section titles. Have them write any questions they have, based on the covers and table of contents, in the *W* section of their KWL chart.
- Have students preview the rest of the book, looking at photos, illustrations, and captions. Invite students to read the glossary and index. Have them add any additional questions they might have on their KWL chart. Invite students to share their questions aloud. Write shared questions on the class chart.
- 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**

- Explain that one way to organize information in a book is to explain how topics are alike and different. Create a Venn diagram on the board. Label the left-hand side *Pencils* and the right-hand side *Markers*. Explain that information telling how pencils and markers are similar is written where both circles overlap. Information that is only true of pencils is written in the left side of the left circle. Information that is only true of markers is written in the right side of the right circle.
- Show students a pencil and a marker. Model comparing and contrasting the two objects.  
**Think-aloud:** *Pencils are similar to and different from markers. Pencils and markers are both used for writing. However, a pencil produces gray markings and a marker produces colored markings.*
- Model how to write each response on the Venn diagram. Invite students to share other ways pencils and markers are alike and different (alike: approximately the same length, used in art, and so on; different: you can erase mistakes with the pencil but not with the marker, and so on). Write their responses on the Venn diagram.

#### Introduce the Vocabulary

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


- Have students find the bold word *fermentation* on page 20. Have them look for clues to the word's meaning in the sentence containing the word *fermentation*. Read the sentence out loud and have students tell you what they think the word means. Explain that clues are not always present in the same sentence, but that other information in the paragraph often explains it.
- Explain to students that sometimes they will not find 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 *fermentation* in the glossary. Have students follow along on page 20 as you read the sentence in which the word *fermentation* is found to confirm the meaning of the word. Repeat the exercise with the remaining vocabulary words.

### Set the Purpose

- Have students think about what they already know about alternative fuel cars as they read the book to find answers to their questions. Have them write what they learned while reading in the *L* section of their KWL chart.

### During Reading

#### Student Reading

- **Guide the reading:** Have students read the section titled "Solar-Powered Cars." Remind them to look for information that will answer questions on their KWL chart. Encourage students who finish early to go back and reread.
  - When students have finished reading, have them circle any questions on their KWL chart that were answered and write any new questions that were generated.
  - Model answering a question and filling in the third section (*L*) on the KWL chart.  
*Think-aloud:* *I wanted to know how a car could be powered by the Sun. I found out that energy from the Sun is collected in solar panels that cover the car. These panels can produce enough electricity to run a special motor. I noticed that the next section is titled "Hydrogen-Powered Cars." I wonder what hydrogen is and how it is able to power a car motor. I will write this question on my chart.*
  - Have students write answers to their circled questions in the *L* section of their KWL chart. Invite them to share the information they learned and the questions they generated as they read the book. Record shared responses on the class KWL chart.
  - **Check for understanding:** Have students read to the end of page 17. Have them write answers they found while reading in the *L* section of their KWL chart and additional questions they raised in the *W* section. Invite them to share the information they learned and the questions they generated as they read pages 12 through 17. Write shared responses on the class KWL chart.
  - Review with students the information about solar-powered and hydrogen-powered cars. Discuss any similarities and differences between these two kinds of cars (similarities: both are types of working vehicles, both can run on electricity, both do not harm the environment; differences: hydrogen cars are fueled from the hydrogen in natural gas or water, and solar cars are fueled by energy from the Sun; hydrogen cars are fueled using a liquid, and solar cars get their power from light energy absorbed by solar panels). Write this information in a Venn diagram on the board.
  - Have students work with a partner to compare and contrast battery-powered cars and solar-powered cars. Have them underline the information in their book. Discuss their responses and write the information on a Venn diagram on the board.
  - Have students read the remainder of the book. Remind them to look for and write answers to their KWL chart questions, as well as to look for information to compare and contrast. Encourage them to add new questions they might have to their chart 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 Reading Strategy


- **Think-aloud:** *I wanted to know what hydrogen is and how it is able to power a car motor. I learned that hydrogen is one of two elements that make up water. It is the lightest and most abundant of the 92 natural elements on Earth. Hydrogen can be burned in an engine or used to make electricity to power vehicles.*
- Ask students to share questions they added to their KWL chart while reading, and ask them what questions were answered (or not answered) in the text. Have students write answers they found while reading in the *L* section of their KWL worksheet.
- Reinforce that asking questions before and during reading, and looking for the answers while reading, keeps readers interested in the topic. It also encourages them to keep reading to find answers to their questions and helps them understand and enjoy what they have read.

### Reflect on the Comprehension Skill

- **Discussion:** Review with students how information is organized in a Venn diagram on the board. Have students work with a partner to identify similarities and differences between battery- and ethanol-powered cars. Have them write the information in a Venn diagram on a separate piece of paper.
- **Independent practice:** Introduce, explain, and have students complete the [compare-and-contrast worksheet](#) by comparing ethanol-powered cars with another type of car from the book. If time allows, discuss their answers.
- **Enduring understanding:** In this book, you learned that the supply of oil to make gasoline won't last forever. Now that you know this information, what do you think people's current responsibility should be to identify and begin using alternative fuel sources?

### Build Skills

#### Grammar and Mechanics: Hyphenated compound adjectives

- Review or explain that *adjectives* are words that describe nouns or pronouns and tell *which one*, *how many*, or *what kind*.
- Write the following sentence on the board: *The woman drove a red car.* Have a volunteer come to the board and circle the adjective in the sentence (*red*). Then have him or her underline the noun that the adjective describes (*car*).
- Write the following sentence on the board: *Hydrogen-powered cars are the wave of the future.* Underline the word *cars*. Have a volunteer come to the board and circle the word that describes the cars (*Hydrogen-powered*). Explain that this word is an example of a *hyphenated compound adjective*. Point out that the short line between the words is a *hyphen*. Explain that each part of a *hyphenated compound adjective* alone does not accurately describe the noun. For example, the author could have called the car a *hydrogen car* or a *powered car*, but the words *hydrogen* and *powered* together create a hyphenated compound adjective that correctly and more accurately describes the noun.
-  **Check for understanding:** Write the following sentence on the board: *Humans have a gas-guzzling appetite.* Underline the word *appetite*. Have students identify the adjective that describes the appetite and write it on a separate piece of paper (*gas-guzzling*). Ask students to discuss with a partner the reasons why each word within the hyphenated compound adjective could not describe the noun *appetite* alone (it doesn't make sense to say a *gas appetite*; it isn't accurate to say a *guzzling appetite*).
- **Independent practice:** Introduce, explain, and have students complete the [hyphenated-compound-adjectives worksheet](#). If time allows, discuss their responses.

### Word Work: **Synonyms**

- Write the word *estimate* on the board. Ask students to suggest a word that means almost the same thing as *estimate* (*guess*). Review or explain that a word that means the same or almost the same as another word is called a *synonym*.
- Explain to students that the use of synonyms is important in writing because they help to describe something in text and make the writing more interesting. Provide an example that supports this explanation. (For example, in the sentence *The amount of gasoline people consume just keeps on increasing year after year*, the word *consume* allows readers to get a more accurate and specific idea of gas being used.)
- Have students turn to page 5 to find the word that describes the fuels that are different from gasoline (*alternative*). Write the word *alternative* on the board. Ask students to use the context of the sentence to suggest a word that means the same or almost the same as *alternative* (*different, other, and so on*). Write these words on the board.
- Show students a thesaurus. Use the word *alternative* to demonstrate how a thesaurus is used. Write synonyms for *alternative* on the board and compare the meanings of these words with the words on the board. Point out that a thesaurus identifies synonyms for words.
- **Check for understanding:** Give pairs of students a thesaurus. Ask them to locate synonyms for the word *consume* and write them on a separate piece of paper. Then have them choose one of the synonyms and use it to write a sentence on the paper. If needed, provide additional practice using a thesaurus.
- **Independent practice:** Introduce, explain, and have students complete the [synonyms worksheet](#). If time allows, check their responses.

### **Build Fluency**

#### Independent Reading

- Allow students to read their book independently. Additionally, allow partners to 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 compare and contrast two objects in their home and write the information in a Venn diagram.

### **Extend the Reading**

#### Informational Writing Connection

Ask student pairs to choose one of the four types of alternative fuel cars to further research. Provide books, encyclopedias, and access to the Internet to allow them to find out more about their specific fuel. Ask pairs to create a poster with the information they found to accompany their written research.

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

#### Math Connection

Have students turn to pages 9 and 17, and read the Math Minute sidebars together. Have student pairs work to solve each of the problems by drawing pictures and showing their calculations. Then ask student pairs to write their own math story problems using information from the text to create the scenarios. If time allows, have them exchange problems to solve.

### 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 ask relevant questions about a topic prior to and during reading; locate answers to their questions and write them on a worksheet
- compare and contrast nonfiction details within the text during discussion and on a worksheet
- accurately identify hyphenated compound adjectives in text during discussion and on a worksheet
- identify and use synonyms during discussion and on a worksheet; understand how to use a thesaurus to locate synonyms for words

### Comprehension Checks

- **Book Quiz**
- **Retelling Rubric**