

About the Book

Text Type: Nonfiction/Pro-Con Page Count: 24 Word Count: 1,803

Book Summary

Energy Sources: The Pros and Cons informs readers about the major sources of energy consumed in the world today: fossil fuels, hydroelectric energy, solar and wind energy, and nuclear power. Discussions of the pros and cons of each source are included, allowing readers to form their own opinion about the use of each type of energy. Photographs, charts, and diagrams support the text.

About the Lesson

Targeted Reading Strategy

- Summarize

Objectives

- Use the reading strategy of summarizing to understand text
- Identify details to compare and contrast different types of energy sources
- Identify and use complex sentences
- Recognize and use synonyms and antonyms

Materials

Green text indicates resources available on the website

- Book—*Energy Sources: The Pros and Cons* (copy for each student)
- Chalkboard or dry erase board
- Thesauruses
- Compare and contrast, complex sentences, synonyms and antonyms 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.

- Content words:

Story critical: **energy** (n.), **fossil fuels** (n.), **global warming** (n.), **hydroelectric** (adj.), **pollutants** (n.), **sediment** (n.)

Enrichment: **carbon dioxide** (n.), **environmentalist** (n.), **natural gas** (n.), **turbines** (n.)

Before Reading

Build Background

- Ask students to list things that need energy to run (automobiles, jets, water heaters, stoves, televisions, and so on). Write the results of the discussion on the board.
- Provide books with photographs of coal mines, dams, solar panels, wind turbines, nuclear power plants, and oil rigs. Talk about the many different ways to tap into the Earth's energy sources that humans have discovered. Ask students to share what they know about the energy resources needed to assist us in our daily lives.

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 and what it might be about.
- Show students the title page. Discuss the information on the page (title of book, author'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, based on what they see in the table of contents. (Accept all answers that students can justify.)

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 a section. Point out that a summary often answers the questions *who*, *what*, *when*, *where*, and *why*.
- Create a chart on the board with the headings *Who*, *What*, *When*, *Where*, and *Why*. Read the first section ("The Endless Need for Energy") aloud to students and model summarizing.
- **Think-aloud:** *To summarize, I need to decide which information is the most important to remember in a section. To do this, I can consider who and what the section is about, what information it contains, and when and why things have happened. Then I can organize that information into a few sentences. This section is mostly about modern society's need for energy. I will write people in modern society under the heading Who. The author explains that the energy used by people comes from many different sources, and that all of these sources have their own pros and cons. I will write different energy sources, all with pros and cons under the heading What. People in modern societies need large amounts of energy to support their use of automobiles, airplanes, machinery, and so on. I will write this under the heading Why. This book is informing readers of modern-day problems and possible future solutions. I will write today's problems/tomorrow's solutions under the heading When. When I organize all of this information, a summary of this section might be: There are many different sources of energy, each with its own pros and cons. Scientists are working to find possible future solutions to the endless need for energy that people in modern society demand.*
- Write the summary on the board. Discuss how you used the information in the chart, along with your own words, to create the summary.
- 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 to students that one way to understand concepts in a book is to tell how the information is similar and different.
- Show students two familiar objects, such as a pen and pencil. Model how to compare and contrast information about these two objects.
Think-aloud: *A crayon and pencil are both objects I can use to write with. They can both be used to draw pictures. These are ways that a pen and pencil are alike. A pen is filled with ink. A crayon is made with wax. A pencil is long, but a crayon is short. These are ways that these objects are different.*
- Model how to compare and contrast information using a Venn diagram. Draw a Venn diagram on the board. Label the left circle *Crayon* and the right circle *Pencil*. Explain to students that information telling how these two objects are similar is written where both circles overlap. Information that is only true of a crayon is written in the left side of the left circle. Information that is only true of a pencil is written in the right side of the right circle.
- Have students identify other similarities and differences between a crayon and a pencil. Write this information on the Venn diagram.

Introduce the Vocabulary

- Write the following content vocabulary words on the board: *energy*, *global warming*, and *pollutants*. Read the words aloud with students. Ask them to share what they might know about the meaning of each word. Point out to students that using familiar words might help them identify the meanings of the words. (For instance, the word *pollute* could help them in thinking about what *pollutants* might mean.)
- Write each of the content vocabulary words on a piece of poster board. Place students in small groups and assign each group to a poster. Have them discuss what they know about the meaning of their word and write a definition on the poster. Rotate the groups until each group has visited all three posters.
- Review each word and the information about the word that students wrote on the poster. Create a definition based on students' knowledge and write it on the board.
- Have a volunteer read the definition for each word from the glossary. Compare students' definitions with the glossary definitions. Use the comparison to modify the definition for each word on the board.

Set the Purpose


Have students read the book to find out more about different types of energy sources. Encourage students to underline information in each section while reading that answers the questions *who*, *what*, *when*, *where*, and *why*.

During Reading
Student Reading


- **Guide the reading:** Have students read from page 6 to the end of page 13. Encourage those who finish before others to reread the first three sections.
- Model summarizing important information in the second section, "Fossil Fuels."
Think-aloud: I made sure to stop reading after the second section to summarize what I'd read so far. First, I thought about the information that answers the questions who, what, when, where, and why. Then, in my mind, I organized the important information into a few sentences. In this section, I learned what fossil fuels are and where they are formed. I underlined remains of plants and animals, millions of years ago, heat and pressure underground and nonrenewable. I also learned why people want to use fossil fuels as energy. I underlined abundant, gas burns very cleanly, and oil burns efficiently in the book. I also read that most fossil fuels produce pollutants and are contributing factors of the greenhouse effect and global warming. I will also underline these facts in the book.
- Write the information underlined in the chart on the board. Have students share any additional information they underlined about fossil fuels that answers the questions *who*, *what*, *when*, *where*, and *why*. Write this information on the chart. Create a summary with students based on the information in the chart. (Fossil fuels are a nonrenewable resource formed underground from the remains of plants and animals that died millions of years ago. They are an abundant energy source whose gas burns very cleanly. However, the use of most fossil fuels contributes to the greenhouse effect and global warming.)
- Have students work with a partner to reread the third section ("Hydroelectric Power") and underline important information in their book. Remind them to answer the questions *who*, *what*, *when*, *where*, and *why*. When they have finished, create a summary as a class. (Hydroelectric power is produced when water is stopped by a dam and passed through turbines and generators. Dams produce electricity, control flooding, create recreation, and provide water. However, dams also stop the flow of nutrients and block routes for fish.)
- Review with students the underlined information they used to summarize the sections on fossil fuels and hydroelectric power. Discuss any similarities and differences between these two kinds of energy sources (similarities: both energy sources, have environmental disadvantages; differences:


Lesson Plan *(continued)*

Energy Sources: The Pros and Cons

fossil fuels are created from the remains of plants and animals, hydroelectric power is created from damming water and running it through turbines and generators). Write the information on the board in a Venn diagram.

- **Check for understanding:** Have students reread pages 14 through 17 about solar energy. Remind them to underline information that answers the questions *who*, *what*, *when*, *where*, and *why* while reading. Then have students work with a partner to write a brief summary of the section on a separate piece of paper. Have them share and discuss their summaries.
- Have students work with a partner to compare and contrast hydroelectric power and solar energy. Have them write the information on a Venn diagram on a separate piece of paper. Invite students to share their work. Discuss their responses.

 Have students read the remainder of the book. Have them underline information in each section that answers the questions *who*, *what*, *when*, *where*, and *why*.

 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

- Divide students into small groups. Assign each group a remaining section from the book ("Nuclear Power" or "Looking to the Future"). Have each group discuss the information they underlined in their section. Have them use the information to write a group summary of the section. When students have finished, share and discuss their summaries aloud.
- **Think-aloud:** *I know that summarizing keeps me actively involved in what I'm reading and helps me remember what I've read. I know that I will remember more about the different kinds of energy sources because I summarized as I read the book.*
- Ask students to share whether the pros and cons of any of the types of energy sources surprised them.

Reflect on the Comprehension Skill

- **Discussion:** Review with students the similarities and differences between hydroelectric power and solar energy. Discuss how the information was organized on the Venn diagram.
- **Independent practice:** Introduce, explain, and have students complete the [compare-and-contrast worksheet](#) by comparing either solar power with nuclear power or nuclear power with fossil fuels. If time allows, discuss their answers.
- **Enduring understanding:** In this book, you learned about the supply and demand of energy in modern society. Now that you know about the pros and cons of using each energy source, how does the knowledge make you think differently as a consumer of energy?

Build Skills

Grammar and Mechanics: **Complex sentences**

- Write the following sentence on the board: *Many power plants release harmful chemicals into the air _____ fossil fuels burn.*
- Have students read the sentence and suggest words that belong in the blank to complete the sentence (*as*, *once*, *when*).
- Review or explain to students that a *conjunction* is a word that joins together two parts of a sentence. Point to the examples on the board that students suggested to complete the sentence. Explain that these conjunctions join parts of sentences together to form a *complex sentence*.

Lesson Plan *(continued)*

Energy Sources: The Pros and Cons

- List the following examples of conjunctions on the board (*after, although, as, because, before, if, once, since, than, though, unless, until, when, while*).
- Reread the sentence on the board, including a conjunction in the sentence. (*Many power plants release harmful chemicals into the air when fossil fuels burn.*) Underline *Many power plants release harmful chemicals into the air*. Explain that this part of the sentence is called the *independent clause* because it is a complete thought. Circle *when fossil fuels burn*. Explain that the part of the sentence that includes and follows the conjunction is called the *dependent clause*. Point out that even though both sentence parts contain a subject and verb, the dependent clause does not express a complete thought and is not a sentence that can stand alone.
- Write the following sentence on the board: *Since the Sun sends abundant free energy streaming toward Earth, people from many parts of the world have mounted solar cells.*
- Have students identify the conjunction (*since*), the dependent clause (*Since the Sun sends abundant free energy streaming toward Earth*), and the independent clause (*people from many parts of the world have mounted solar cells*).
- Point out that in this example, the dependent clause is at the beginning of the sentence.



Check for understanding: Have students highlight the following sentence from page 17 in their book: *Until inexpensive manufacturing is developed for solar cells, this free energy source will continue to come at a high cost to capture and convert to electricity.* Have students underline the dependent clause (*Until inexpensive manufacturing is developed for solar cells*) and circle the independent clause (*this free energy source will continue to come at a high cost to capture and convert to electricity*). Ask students to identify the conjunction (*until*).

- **Independent practice:** Introduce, explain, and have students complete the [complex sentences worksheet](#). If time allows, discuss their responses.

Word Work: Synonyms and antonyms

- Write the word *problem* on the board. Ask students to suggest a word that means almost the same thing (*difficulty, trouble*). Review or explain that a word that means the same or almost the same as another word is called a *synonym*.
- Ask students to suggest a word that means the opposite of *problem* (*solution, answer*). Review or explain that a word that means the opposite of another word is called an *antonym*.
- Write the following sentence on the board: *Solar cells are very expensive to manufacture.* Ask students to find the word that describes solar cells (*expensive*). Ask them to suggest a word that means the same or almost the same as *expensive* (*costly*). Ask students to suggest a word that means the opposite of *expensive* (*cheap*).
- Have students replace the word *expensive* with its antonym (*cheap*) in the sentence on the board. Invite students to tell how using the antonym changed the meaning of the sentence. Discuss with them how the correct word choice is important for conveying meaning to readers.
- Show students a thesaurus. Use the example above to explain how to use a thesaurus, writing the synonyms and antonyms for *expensive* on the board.
- **Check for understanding:** Have students turn to page 18 in their book. Have students locate and read the following sentence: *An atomic bomb explodes by creating a very rapid chain reaction.* Point out the word *rapid*. Invite students to share synonyms and antonyms for the word. Write these words on the board. Then give pairs of students a thesaurus. Ask them to find the word *rapid* and have them name the synonyms listed. If the thesaurus lists antonyms, have them find the antonyms for *rapid*.
- **Independent practice:** Introduce, explain, and have students complete the [synonyms-and-antonyms worksheet](#). If time allows, discuss 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 them discuss with someone at home how to summarize as they read each section.

Extend the Reading

Persuasive Writing Connection

Have students choose the energy source from the book that they think is the best choice for modern society to continue to use. Instruct them to review the pros and cons associated with their chosen energy source. Have them write about their opinion, persuading readers that their choice is the best form of energy used today. Remind them to back their opinion with clear facts.

Visit WritingA-Z.com for a lesson and leveled materials on persuasive writing.

Elements of Nonfiction Connection

Discuss the charts on pages 5, 7, 11, 21, and 23. Invite students to consider the facts in the captions and address the questions posed. Lead a round-table discussion in which students share their opinions and get answers to their questions. Discuss the purpose of incorporating these charts (to provide clarification and elaboration of information on nearby pages; to draw conclusions about information presented in the main body of the text). Ask students to explain why it might be beneficial to examine and understand charts in the text as they read.

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:

- accurately use details from the text to create section summaries during discussion and on a separate piece of paper
- correctly compare and contrast nonfiction details within the text during discussion and on a worksheet
- correctly identify the parts of complex sentences; write complex sentences during discussion and on a worksheet
- identify, select, and use synonyms and antonyms during discussion and on a worksheet

Comprehension Checks

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