

Lesson Plan

What Do You Think About Climate Change?



About the Book

Text Type: Nonfiction/Informational Page Count: 24 Word Count: 2,447

Book Summary

Many scientists believe that Earth's climate is changing back to a warmer pattern, and they call the change "global warming." This book informs readers of the evidence for climate change, discusses possible causes for the changes, and touches on possible results of climate change. The author asks readers specific questions, encouraging the formation of opinions, and also offers ideas for personal changes people can make to help fight global warming. Photographs and diagrams support the text.

About the Lesson

Targeted Reading Strategy

- Ask and answer questions

Objectives

- Use the reading strategy of asking and answering questions to understand text
- Understand and identify cause-and-effect relationships
- Identify and understand the use of parentheses
- Arrange words in alphabetical order

Materials

Green text indicates resources available on the website

- Book—*What Do You Think About Climate Change?* (copy for each student)
- Chalkboard or dry erase board
- Index cards and four sheets of poster board
- [KWLS/ask and answer questions, cause and effect, parentheses, alphabetical order 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](#).

• Content words:

Story critical: *climate* (n.), *fossil fuels* (n.), *global warming* (n.), *greenhouse gases* (n.), *pollutants* (n.), *renewable energy* (n.)

Enrichment: *atmosphere* (n.), *axis* (n.), *computer models* (n.), *geothermal* (adj.), *glaciers* (n.), *greenhouse effect* (n.), *hydropower* (n.), *ice ages* (n.), *ice shelf* (n.), *industrialization* (n.), *meteorologists* (n.), *orbit* (n.), *photosynthesis* (n.)

Before Reading

Build Background

- Write the phrase *climate change* on the board. Ask students to tell what they already know about long-term patterns in weather and how they change.
- Create a KWLS chart on the board and hand out the [KWLS/ask-and-answer-questions worksheet](#). Review or explain that the *K* stands for knowledge we know, the *W* stands for information we want to know, the *L* stands for the knowledge we learned, and the *S* stands for what we still

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want to know about the topic. As various topics are discussed, fill in the first column (K) on the board with information students know about the topic. Have students complete the same section of their KWLS worksheet.

- Ask students what they would like to know about climate change. 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 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 ask volunteers to explain its use.

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 climate change. For example, the second section is titled "Evidence for Climate Change." This makes me wonder what kinds of people find evidence about such a specific scientific topic. I'll have to read the book to find out. I'll write these questions on the 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 KWLS worksheet.
- Have students preview the rest of the book, looking at the photographs and diagrams. Invite students to read through the glossary. Have them add any additional questions they might have on their KWLS worksheet. 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: **Cause and effect**

- Review or explain that a *cause* is *an event that makes something happen*, and the *effect* is *what happens because of, or as a result of, the event*. Create a two-column chart on the board with the headings *Cause* and *Effect*. Write the following sentence on the board under the *Cause* heading: *I put on my hat.*
- Model identifying a series of cause-and-effect relationships.
Think-aloud: I know that there are reasons, or causes, for events to happen. When I put on a hat, it might be because it is hot outside. The hat shades me from the sun and keeps me cool. So, a cause for putting on the hat could be because I wanted to stay cool. However, I also sunburn easily. Since a hat shades my face from the sun, another reason to put on a hat could be to prevent me from getting sunburned. There can be more than one cause for an effect to happen.
- Invite students to explain other possible causes for putting on a hat (it is cold, it is windy, it is raining, it is part of a uniform, and so on).
- Write each of the following sentences on index cards: *I am cold. I put on a sweater. I eat too much candy. I feel sick. My vision is blurry. I go to the eye doctor. I am bored. I call a friend.* Mix up the cards and give each volunteer a card. Have volunteers find a match to their sentence on one of the other cards. Then have each person in the pair identify who has the cause and who has the effect. Ask the remaining students to explain whether the match and explanation are correct.

Introduce the Vocabulary

- Write the following content vocabulary words and phrases on the board: *pollutants*, *climate*, *global warming*, and *greenhouse gases*. Read the words and phrases aloud with students. Ask them to share what they know about the meaning of each word or phrase. Point out to students that using familiar words might help them identify the meanings of the words. (For instance, the word *greenhouse* is a compound word, and the two words that make up the compound word can help them in thinking about what *greenhouse* might mean.)
- Write each of the content vocabulary words or phrases on separate sheets 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 or phrase and write a definition on the poster. Rotate the groups and have them repeat the process with the other words and phrases.
- Review all four words/phrases and the information about them that students wrote on the posters. Create a single class definition for each one, based on students' knowledge, and write it on the board.
- Have a volunteer read the definition for each word or phrase in the glossary. Compare students' definitions with the glossary definitions. Use the comparison to modify the definition for each word or phrase on the board.

Set the Purpose

- Have students think about what they already know about climate change as they read the book to find answers to their questions, and write what they learned in the *L* section of their KWLS worksheet.

During Reading


Student Reading

- **Guide the reading:** Have students read to the end of page 8. Remind them to look for information about climate change that will answer questions on their KWLS worksheet. Encourage students who finish early to go back and reread.
- When students have finished reading, have them circle any questions on their KWLS worksheet that were answered and write any new questions that were generated.
- Model answering a question and filling in the third section (*L*) of the KWLS chart.
Think-aloud: I wanted to know what kinds of people find evidence about such a specific and scientific topic as climate change. I found out that meteorologists (scientists who study the weather) have kept careful records of Earth's surface temperatures since the mid-1800s. I also read that old photographs provide evidence that Earth's surface is warming, and that new photographs are taken of Earth's surface by cameras aboard satellites. I wonder how and why Earth's surface is warming. I will write this question on my chart.
- Have students write answers to the questions they circled in the *L* section of their KWLS worksheet. Invite them to share the information they learned and the questions they generated as they read the book. Record shared responses on the class KWLS chart.
- Create a cause-and-effect chart on the board. Write *Earth's surface is warming* under the *Cause* heading. Ask students to use the text and think-aloud discussion to identify the effect of this cause. (Mountain glaciers are melting and shrinking at faster rates.) Write this information on the chart under the *Effect* heading.
- Introduce and explain the [cause-and-effect worksheet](#). Ask students to write the information from the board on their worksheet. Have them identify and write on their worksheet a cause-and-effect relationship that happened as a result of mountain glaciers melting. (*Cause*: meltwater flows into the ocean; *Effect*: average sea level around the world has risen.) Point out how the chain connects the first cause-and-effect relationship with the second (the effect, *mountain glaciers are melting and shrinking at faster rates*, is connected to the next cause, *meltwater flows into the ocean*).

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- **Check for understanding:** Have students read to the end of page 11. Have them write any answers they found while reading in the *L* section of their KWLS worksheet 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 9 through 11. Write shared responses on the class KWLS chart.
- Have students identify and write on their worksheet a cause-and-effect relationship that happened as a result of the average sea level rising. (*Cause:* Scientists try to understand global warming; *Effect:* The greenhouse effect is studied and possible solutions considered.) Allow time for students to make additions and corrections on their worksheet.
- Have students read the remainder of the book. Remind them to continue to look for and write answers to their KWLS worksheet questions, and to look for cause-and-effect relationships to record. Encourage them to add new questions they might have to their KWLS worksheet 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 how and why Earth's surface is warming. I read that global warming is thought to be occurring mainly because of the burning of fossil fuels. I read that when fossil fuels are burned, carbon dioxide gas gets released in the air. As time passes, carbon dioxide and other gases build up in the atmosphere. As sunlight is radiated back into the air, these gases trap the heat energy and force it back to the surface where it warms the Earth more. I also read that the greenhouse effect is a natural part of how Earth functions, but that carbon dioxide released into the air by the burning of fossil fuels is increasing the warming of the greenhouse effect. I'd like to know more about what is being done by different countries to stop the greenhouse effect from further endangering our planet. I will write this in the S section of my chart.*
- Ask students to share questions they added to their KWLS worksheet 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* column of their KWLS 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.
- Point out to students that all of their questions may not have been answered in this text. Brainstorm other sources they might use to locate additional information to answer their questions. Invite students to fill in the final section (*S*) of their KWLS worksheet with information they would still like to know about climate change.

Reflect on the Comprehension Skill

- **Discussion:** Discuss with students the information on their cause-and-effect worksheet. Have students reread page 15 to identify the cause-and-effect relationship that occurs as a result of scientists studying the greenhouse effect. (*Cause:* Scientists learn more about global warming—whether caused by humans, natural factors, or both; *Effect:* Scientists create computer models to predict the future of climate change.)
- **Independent practice:** Have students complete the cause-and-effect worksheet, looking for cause-and-effect relationships on pages 16 and 17. If time allows, discuss their responses.

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- **Enduring understanding:** In this book, you read about the effects of climate change. Some scientists believe human activity is the primary cause of global warming, while others believe it is part of Earth's natural evolution. Now that you know this information, what is your opinion about climate change? What can you do to help the current situation?

Build Skills

Grammar and Mechanics: Parentheses

- Direct students to page 7 and have them find the first sentence containing parentheses. Read the following sentence aloud as they follow along: *Polar bears use ice floes (floating ice) in winter as platforms to hunt seals.* Ask students how the parentheses are used in this instance (to clarify the definition of an ice floe).
- Direct students to page 9 and have them find the first sentence containing parentheses. Read the following sentence aloud as they follow along: *The main human activity blamed for global warming is the burning of fossil fuels (coal, oil, natural gas) in automobiles, factories, and electric power plants.* Ask students how the parentheses are used in this instance (to clarify the definition of fossil fuels).



Check for understanding: Have students find and circle all the parentheses in the book. Have them write in the margin of the page how the parentheses are used in each instance.

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

Word Work: Alphabetical order

- Review the process of putting a list of words in alphabetical order. Remind students that if the first letter of two words is the same, they must compare the second letter instead. If the second letter of the two words is the same, they continue to compare the third letter, and so on, until they find two letters that are different.
- Write the words *photosynthesis* and *pollutants* on the board. Point out that the words begin with the same letter (*p*). Ask a volunteer to tell which word would appear first in alphabetical order and to explain his or her thinking (*photosynthesis*, because the second letter, *h*, in *photosynthesis* comes before the second letter, *o*, in *pollutants*).
- Write the words *communities* and *computer models* on the board. Have a volunteer explain which word would appear first in alphabetical order (*communities*) and why. Point out that all of the letters in *communities* and *computer models* are the same until the fourth letter. Point out that because the fourth letter in *communities* (*m*) comes before the fourth letter in *computer models* (*p*), the word *communities* comes first in alphabetical order.
- Write the words *create* and *created* on the board. Have a volunteer explain which word would appear first in alphabetical order (*create*) and why. Point out that all of the letters in *created* and *create* are the same until the final letter (*d*) in the word *created*. Point out that because there are no other letters at the end of *create*, it comes first in alphabetical order.
- **Check for understanding:** Write the phrases *greenhouse gases* and *greenhouse effect* on the board. Have students write the phrases in alphabetical order and explain their thinking on a separate piece of paper. Discuss their answers aloud, pointing out that the word *greenhouse* is the same in both entries, so the second word in each entry is compared.
- **Independent practice:** Introduce, explain, and have students complete the [alphabetical order 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 students also take home their completed KWLS worksheet and explain to someone at home what each section means. Have them tell about the information they wrote on the chart.

Extend the Reading

Informational Writing and Art Connection

Provide print and Internet sources for students to find out more about the importance of Greenland remaining frozen. Citing information from their research and the book, have them write a report about what may happen if all of the ice in Greenland melts. Instruct students to include in their report at least three sections, including 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 WritingA-Z.com for a lesson and leveled materials on expository report writing.

Science Connection

Rent a copy of *An Inconvenient Truth* from the local library or video store. Give students a sheet of paper to take notes on as they view the documentary, looking for answers to questions such as: *What disasters are possible if global warming persists at the current rate? What could happen if these disasters occur?* Invite them to share their opinions and findings, along with any other interesting facts they learned, in a class discussion after the documentary has been viewed.

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
- understand and identify cause-and-effect relationships in text during discussion and on a worksheet
- correctly identify the use of parentheses during discussion and on a worksheet
- understand the process of arranging words in alphabetical order during discussion and on a worksheet

Comprehension Checks

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