



## PREPARE TO READ

1. Look at the words (and phrases) in the list. Write the number(s) next to each word to show what you know. You may be able to write more than one number next to some of the words. You will study all of these words in this chapter.

1. I can use the word in a sentence.
2. I know one meaning of the word.
3. I know more than one meaning of the word.
4. I know how to pronounce the word.

3. Work with a partner. Look at the graph. Ask and answer the questions. If you don't know a word in English, ask your partner or look in your dictionary. Then write your new words on page 236.

1. What information does the graph show?
2. What are some possible explanations for the recent increase in the human population?
3. Is the increase in world population a positive thing? Explain.

- \_\_\_\_\_ abandon
- \_\_\_\_\_ abuse
- \_\_\_\_\_ collapse
- \_\_\_\_\_ drought
- \_\_\_\_\_ harsh
- \_\_\_\_\_ linked to
- \_\_\_\_\_ out of the question
- \_\_\_\_\_ resources
- \_\_\_\_\_ settlement
- \_\_\_\_\_ spray
- \_\_\_\_\_ standard of living
- \_\_\_\_\_ starvation

## Reading Skill: Identifying Rhetorical Structure

It is important to be able to identify the rhetorical structure of a text. Rhetorical structure refers to the content and organization of a text as a whole. Some common rhetorical structures are

- description of a person, place, or thing
- classification of types of things into groups
- persuasion (trying to convince the reader to believe or do something)
- narrative (telling a story in chronological order)

To identify the rhetorical structure of a text, ask yourself the following:

1. How does the author organize his or her main ideas?
2. Which examples and details does the author choose to include?
3. What point of view does the author have: positive, negative, or neutral?
4. What is the author's purpose for writing?

If you can identify the rhetorical structure of a text, it will help you when you summarize it.

**C.** Read paragraphs 1 and 2 of the magazine article "Reaching Our Limits: Welcome to 2100" on the next page. Check (✓) the answer to each question.

1. Which paragraph gives the main idea of the reading?

\_\_\_\_\_ a. paragraph 1

\_\_\_\_\_ b. paragraph 2

2. Which examples does the author include?

\_\_\_\_\_ a. examples of future shortages of essential products

\_\_\_\_\_ b. examples of future technological innovations

3. What point of view does the author express?

\_\_\_\_\_ a. positive

\_\_\_\_\_ b. negative

4. What is the author's purpose in writing?

\_\_\_\_\_ a. to warn the reader

\_\_\_\_\_ b. to entertain the reader

## READ

Read "Reaching Our Limits: Welcome to 2100" on the next page. As you read, try to identify the rhetorical structure of the reading.

# Reaching Our Limits: Welcome to 2100

Imagine that you live in a big city in the year 2100. You wake up in a small apartment, go into your kitchen, and check a series of electronic machines. They tell you that you have about a half a gallon [2 liters] of water for the day—enough to drink, but not enough to take a shower. You'll use a chemical **spray** instead of showering. It's raining, which means little solar power is available. You have enough electricity only to run your refrigerator and computer for a few hours. This is a big problem. You can't afford to lose all of the food in your refrigerator. Furthermore, you have to work on your computer, and going to the office isn't an option. Driving is **out of the question** because of the high cost of fuel, and the subways are flooded because of rising sea levels. Of course, it could be worse. In other parts of the world, there is no water, food, or electricity at all. Entire cities have been **abandoned**.

This vision of the future isn't certain, but it is possible. Research is showing that our way of life—our use of water, soil, and energy—is not sustainable. Scientists warn that if we don't limit our population growth and use of **resources**, our society will be deeply troubled in the future.

## VICTIMS OF OUR OWN SUCCESS

In one sense, large populations are a sign of a successful civilization. In fact, most population growth is **linked to** increases in material wealth and technological innovations. The development of industry between 1650 and 1850 allowed the global population to double from about 500 million to 1 billion. Since then, further technological advances—in agriculture, medicine, and engineering—have enabled the population to grow to almost

7 billion. Over this time period, our **standards of living** have increased. Many of us travel more, live in bigger houses, and eat better than our ancestors ever did. History, however, shows that human populations can grow to the point where they are no longer sustainable.

As anthropologist<sup>1</sup> Joseph Tainter explains, "Every society that **collapsed** thought it couldn't happen to them. The Roman Empire thought it couldn't happen. The Maya<sup>2</sup> civilization thought it couldn't happen . . . but it did." In the case of the Maya, environmental destruction and deforestation<sup>3</sup> led to a shortage of food, and **starvation** resulted. The Roman Empire grew to the point where it was unable to financially support its population. When each society used up its resources, fighting broke out over the little that was left, and the civilizations collapsed.

## RIISING DEMAND, FALLING SUPPLY

Scientists now wonder if we are repeating the mistakes of these earlier civilizations. As the global population has grown over the last fifty years, consumption of resources has increased as well. In the United States alone, use of petroleum and electricity has more than tripled since 1950. Water use has doubled to about 350 billion gallons (1.3 billion cubic meters) a day. Experts say that for each person added to the U.S. population, approximately one acre of land is lost to urbanization. As a result, the amount of available farmland per person in the United States is expected to decrease from 1.8 acres today to 0.6 acres by 2050. At least 1.2 acres per person is necessary to maintain current American dietary standards, however. These same trends in consumption can be seen worldwide.

<sup>1</sup> **anthropologist**: a social scientist who studies people, societies, and cultures

<sup>2</sup> **Maya**: one of the tribes of the Yucatan area in Central America

<sup>3</sup> **deforestation**: the cutting or burning down of all the trees in an area



80 As supplies of resources are dropping, prices  
are rising. Oil prices have gone from a few  
dollars a barrel<sup>4</sup> in the early 1970s to well over  
\$100 in recent years. Food costs are expected  
to triple or even quintuple<sup>5</sup> by 2050. As Nobuo  
Tanaka, director of the International Energy  
Agency, says, "Current trends in energy supply  
85 and consumption are [clearly] unsustainable—  
environmentally, economically, and socially."

The environment, in fact, may be the  
resource we have **abused** most. At times, in  
attempting to repair our economies, we have  
90 further damaged the environment. About 80  
percent of the world's original forests have  
been cut down to accommodate farmland and  
human **settlements**. Heavy use of fossil fuels  
has filled the atmosphere with carbon dioxide<sup>6</sup>  
95 and created a warming effect. **Droughts, harsh**  
storms, and rising sea levels have resulted.  
These environmental changes, in turn, create  
economic problems. Longer droughts mean less  
water for farming, resulting in less food. Rising  
100 sea levels flood subway systems and even wipe  
out communities.

## LEARNING TO CHANGE OUR WAYS

105 The issue of sustainable living is complex,  
as it involves more than one problem. We must  
not only limit our population growth, we must  
also consume fewer resources. Meeting these  
challenges will not be easy.

Fortunately, however, many governments  
and individuals are starting to take action. A  
110 return to sustainable farming and energy use  
has begun around the world. More and more  
environmentally friendly products are being  
developed. Scientists, for example, are learning  
to make fuel from garbage and to use recycled  
115 plastics to make warm clothing. There are even  
plans for the construction of eco-cities, cities  
whose populations are able to survive without  
importing any food, water, or energy. The year  
2100 may not be so bad after all. It may be a  
120 time of peace and stability, where humans have  
learned to live in harmony with nature. If that  
is to be the case, however, a lot of hard work  
has to be done between now and then.

<sup>4</sup> **barrel**: a large curved container with a flat top and bottom, usually made of wood or metal

<sup>5</sup> **quintuple**: multiply by five

<sup>6</sup> **carbon dioxide**: the gas produced when animals breathe out, when carbon is burned in air, or when animal or vegetable substances decay, which may make Earth warmer

## Vocabulary Check

Complete the text with the boldfaced words from the reading. Use the correct form of the word.

There are environmental problems everywhere. In places where it hasn't  
rained for months, (1) \_\_\_\_\_ are hurting farmers. If farmers  
can't grow food, people will face (2) \_\_\_\_\_. In other places,  
there is loss of other natural (3) \_\_\_\_\_, such as wood. People  
cut down trees for firewood or for raising animals. This deforestation is  
changing the climate.

(continued on next page)

It is true that humans have (4) \_\_\_\_\_ the environment and hurt the planet. However, there is hope that people will start solving the problems before human civilization begins to (5) \_\_\_\_\_.

One proposal is that humans find a new planet and create human (6) \_\_\_\_\_ in space. Such an idea is not (7) \_\_\_\_\_, but it will not happen in the near future.

A more practical solution that does not require us to (8) \_\_\_\_\_ Earth is for humans to use energy differently. Scientists are finding ways to pull energy from the sun and the wind. These natural sources of energy do not cause pollution and still allow people to have a high (9) \_\_\_\_\_. They can live comfortably, cleanly, and safely.

Finally, many people are willing to make changes. Some farmers have stopped using chemical (10) \_\_\_\_\_ on their plants. They use natural methods for controlling pests and create less pollution in the water.

In sum, humans are very closely (11) \_\_\_\_\_ nature. We cannot ignore the connection. While there are scary stories about what might happen, we do not have to accept a(n) (12) \_\_\_\_\_ future. We can understand the problem and then move on to the stories that discuss solutions.

## READ AGAIN

Read "Reaching Our Limits: Welcome to 2100" again and complete the comprehension exercises on the next page. As you work, keep the reading goal in mind.



**READING GOAL:** To identify the rhetorical structure and write a summary

# Comprehension Check

A. Check (✓) the sentence that best summarizes each paragraph.

1. Paragraph 3:

- \_\_\_\_\_ a. Because our civilization has successfully developed industry and technology, we now enjoy high standards of living.
- \_\_\_\_\_ b. Successful civilizations tend to have large populations, but if populations get too big, disaster can result.
- \_\_\_\_\_ c. There are two signs that a civilization is succeeding: It has a sustainable population, and it has a lot of material wealth.

2. Paragraph 4:

- \_\_\_\_\_ a. The ancient Romans and Mayans are examples of civilizations that overused their resources and collapsed as a result.
- \_\_\_\_\_ b. The historical examples of the Roman and Mayan civilization show that every society will one day collapse.
- \_\_\_\_\_ c. Joseph Tainter says most people do not understand the true reasons why the Roman and Mayan civilizations collapsed.

3. Paragraph 5:

- \_\_\_\_\_ a. People in the U.S. use much more energy, water, and land than people in other parts of the world.
- \_\_\_\_\_ b. The global population keeps growing because we are not using energy wisely.
- \_\_\_\_\_ c. Like previous civilizations that collapsed, we risk using up our resources.

4. Paragraph 7:

- \_\_\_\_\_ a. To help our economy, we often hurt the environment, which in turn creates new economic problems.
- \_\_\_\_\_ b. Our environment has been greatly damaged by use of fossil fuels and the destruction of forests.
- \_\_\_\_\_ c. Our mistreatment of the economy has led to serious environmental problems.

5. Paragraph 9:

- \_\_\_\_\_ a. The year 2100 promises not to be so bad after all, thanks to the fact that people and governments are changing their ways.
- \_\_\_\_\_ b. Around the world, people are making new efforts to live sustainably, but a lot more work has to be done.
- \_\_\_\_\_ c. It is unclear what type of future we are heading toward: a time of peace and stability or a time of fighting over limited resources.

**B. Work with a partner. Answer the questions about the reading.**

1. Is there a hook?
2. What is the rhetorical structure of the text: description, classification, persuasion, or narrative?
3. Which main idea sentences in the reading help you identify the rhetorical structure? Underline two examples.
4. Which details in the reading help you identify the rhetorical structure? Underline three examples.
5. What does the author want the reader to do? Explain in your own words.
6. Does the information in the last two paragraphs support the author's main idea? Why do you think the author includes this information?

**C. Write a summary of the reading. Include two to three detailed examples from the text. Use your answers from Exercises A and B to help you.**

## **DISCUSS**

Work in groups. Discuss the position of each of the city leaders about how to use tax dollars and decide which one you agree with. Share your positions with the class.

1. Mr. Brown: This city needs bigger freeways. We need to use tax dollars to reduce traffic. That will slow down pollution.
2. Ms. Chung: If we spend tax money on more and better public transportation, people won't have to drive as much and will use less energy.
3. Ms. White: The city needs more green space. Let's use tax dollars to create parks and plant trees to clean the air and provide shade.
4. Mr. García: The city should invest in sun and wind energy. It costs more, but it does less damage to the environment.

## **VOCABULARY SKILL BUILDING**

### **Vocabulary Skill: Collocations**

In English, certain words pair up with each other often to form *collocations*. Learning common collocations will help you use words the way native English speakers do. For example, English speakers say *take action*, not *do action*. Study these examples of collocation patterns from recent units.

**EXAMPLES:**

Noun + verb: *research shows*

Verb + noun: *waste time*

Adjective + noun: *outer space*

Adverb + verb: *locally grown*

Noun + noun: *belief system*



A. Circle the words that collocate with the words around them. Check your answers by looking in the reading.

1. It is important to (*do / take*) action before the pollution gets worse.
2. Research (*shows / tells*) that solar power technology works in many climates.
3. The products are advertised as environmentally (*positive / friendly*).
4. There is a (*building / rising*) demand for eco-cars.
5. People in the energy industry say (*typical / current*) trends favor the green energy industry.
6. Governments are starting to (*monetarily / financially*) support new research in alternative fuels.
7. A new generation is ready to (*meet / do*) the challenges of the 21st century's energy crisis.
8. It takes a lot of electricity to (*fuel / run*) a refrigerator.
9. The banks were (*deeply / highly*) troubled by the news about rising oil prices.
10. You use water when you (*take / have*) a shower.

B. Work with a partner. Ask and answer the questions using the collocations.

1. What academic **challenge** do you need to **meet**?
2. Were you ever **deeply troubled** by another student's behavior in class? Explain.
3. What is a **current trend** in fashion these days?
4. How long should parents **financially support** their children?
5. Would you believe **research** that **showed** that there is a planet that can support life?
6. What is a product that has experienced a **rise in demand** this season?
7. How much more would you spend for an **environmentally friendly** product?
8. What kind of **action** would you **take** if you wanted to reduce your energy use?