

Overview

Summary

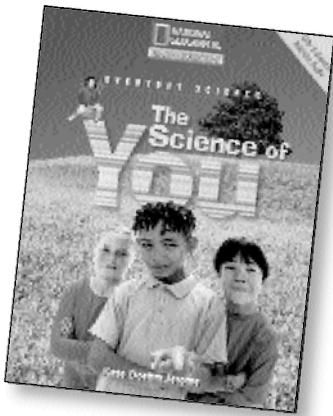
The *Science of You* answers some of the questions about the human body that may pop into readers' heads. The book discusses why haircuts don't hurt and what causes blinking and tears. Motion sickness and the reasons why people sweat are described, along with the mysteries of hiccups and sleep. The book ends with an explanation of heartbeats and saliva. The question-and-answer format piques reader interest and keeps the discussion lively.

Science Background

The human body has many interesting structures and functions. We often don't think about such actions as blinking and sweating, but these responses are part of an interesting series of cause-and-effect events that take place in our bodies every day. Scientists know a lot about the human body, but there is still a lot to learn. Even some common activities such as sleeping and eating are still being investigated and are the topics of a vast amount of scientific research.

The Science of You

By Kate Boehm Jerome



Learning Objectives

Science

- Identify structures in the human body and how they function
- Describe processes that take place within the human body
- Describe how external stimuli can affect the human body
- Explain ways that people can keep their bodies healthy
- Identify ways that technology has helped scientists learn about the human body

Process Skills

- Skill Focus**
- Collecting data
- Supporting Skills**
- Observing
 - Measuring

Reading Skills

- Genre: Expository**
- Skill Focus**
- Identify cause-and-effect relationships
 - Use specialized words
- Supporting Skills**
- Make judgments
 - Identify main idea and details
 - Draw conclusions

Writing Skills

- Writing Focus**
- Write steps in a process (expository)
- Supporting Skills**
- Prewrite
 - Conduct research
- Viewing**
- Create a diagram

Focus on Reading

Before Reading

Activate Prior Knowledge

Have students look at their hands, head, eyes, and mouth, using a mirror if possible. Have them list observations about each body part and tell things that they know about each one. Begin a K-W-L chart on the board, writing students' responses in the K (What We Know) column. Then have students tell what they want to learn about these parts of the body, listing responses in the second column of the chart (What We Want to Know). Have students copy the chart into a notebook. They can complete the third column (What We Learned) after reading *The Science of You*.

What I Know	What I Want to Know	What I Learned

Preview

Give students time to look through the book, paying attention to headings, subheads, and photos. When they have finished previewing the reading, ask:

Looking at the photographs, can you tell who or what is the subject of this book?

After reading the contents page, what can you tell about the topics in the book?

Set Purpose

Ask students whether this book reminds them of other books they have read. Have students set a purpose for reading. Ask:

What information do you want to learn about how our bodies work?

Encourage students to give reasons for their answers.

Vocabulary Strategy: Use Specialized Words Activity Master, Page 86

Explain to students that some words may be used to describe a certain topic. These words can be grouped because their meanings are related in some way. The words on the Activity Master on page 86 are specialized in that all have something to do with the human body. Have students use the glossary to define each word. Students then write one sentence to explain how each word relates to the human body. Students will use these vocabulary words:

- diaphragm
- follicle
- salivary glands
- sweat glands
- tears

Correlation to National Standards

Science

- Characteristics of organisms (K–4)
- Organisms and environments (K–4)
- Science and technology (K–4)
- Personal health (K–4)

Reading/Language Arts

- Read to build an understanding of human body structures and functions
- Apply a wide range of strategies to comprehend and interpret texts
- Use the writing process
- Conduct research
- Use written and oral language to communicate
- Use a variety of informational resources

State/Local

See Standards Chart on page 101.

During Reading

Read Strategically: Identify Cause-and-Effect Relationships

Activity Master, Page 87

As students read, have them use the Activity Master on page 87 to focus on the cause-and-effect relationships between certain environmental stimuli and how the human body reacts. Remind students that an effect is what happens and the cause is why it happens.

Strategy Tip: Paraphrase

Suggest that students restate in their own words any passages they would like to clarify for themselves. They can paraphrase one sentence or an entire paragraph. Explain that paraphrasing requires students to identify important ideas and summarize them.



Meeting Individual Needs

For specific strategies on meeting individual needs, see pages 90–95.

After Reading

Responding

Initiate a class discussion to assess reading comprehension. Ask:

When you are in a roller coaster or on a bumpy car ride, what besides the motion may make you feel sick? (See pages 10–11 in the student book.)

(draw conclusions)

What are possible causes for hiccups and blinking? (See pages 8–9 and 14–15.)

(recognize cause-and-effect relationships)

What happens during REM sleep? (See pages 16–17.)

(summarize)

What are some ways that the SA node in your heart regulates your heartbeat? (See pages 18–19.) **(identify main idea and details)**

Which of the body's responses that you have learned about do you find most interesting? Why? (Answers will vary.) **(make judgments)**



Writing and Research: Write Steps in a Process **Activity Master, Page 88**

Explain to students that they will research and write the steps for one of the processes discussed in *The Science of You*. They can choose to explain the function of tears, why people get motion sickness, or the importance of saliva. Students should include not only what happens but also the body parts that contribute to what happens. They can use the Activity Master on page 88 to plan their list of steps. Students can get more information from the Internet and other resources.

Communicating: Viewing

Create a diagram

Have students create a diagram to illustrate the process that they wrote about. They can refer to the research they used when writing their papers. Students should show the parts of the body involved in the process and label each part properly. They should also title their diagrams.

Diagrams should

- ✓ show each part of the human body involved in the process
- ✓ use accurate names for processes and body parts
- ✓ include a title to summarize the diagram

Focus on Science



Thinking Like a Scientist Process Skill: Collecting Data Activity Master, Page 89

Students have learned about heart rate and about factors that change it. Using the Activity Master on page 89, students change their heart rate through activity, record it, and compare it to a resting rate. Then students answer questions about resting and active heart rate. To do this activity, watches or a clock with a second hand should be available.

Answers: **1** about 35 beats in 30 seconds **2** about 70 beats in 30 seconds **3** about 30 to 40 beats in 30 seconds **4** Answers include flushed face, increased breathing, and sweating.

Life Science: Problem-Solution Chart

Have students create a two-column problem-solution chart, listing a problem experienced by the human body in one column and one possible solution that the human body uses to correct it in the second column. (See below.) Have students use the questions at the beginning of each section of their books to help them think of problems and solutions. Students should include at least three entries in their charts.

Problem	Solution
dust in your eyes	tears produced to wash them

Assessment Options

Use the following assessment options to assess understanding of *The Science of You*.

Questions

Ask the following questions during individual conferences, or have students write the answers independently in their notebooks:

- 1 Name one way the environment outside the body can affect the body's reactions.
- 2 Name two processes of the human body described in this book, and tell how each works.
- 3 What are sweat glands and salivary glands, and what do they do?
- 4 What are some body processes that change when we are upset or nervous?
- 5 What are some reasons that scientists think humans sleep?

Assessment Activity

When we are scared, our bodies enter what is known as “fight or flight” mode. In this mode, the body prepares to get out of a threatening environment. Heart rate increases, and the body produces more sweat and less saliva. Discuss these processes with students. Then have them work in pairs to create a poster illustrating the relationship between environmental stimulation, heart rate, saliva, and sweat.

Students should include captions explaining what is happening to each component of the human body.

Posters should

- ✓ include an illustration of each part of the body involved with the environmental stimulation
- ✓ accurately represent how each part of the body works
- ✓ include captions that explain what is going on

Multiple-Choice Test

Use the multiple-choice test on page 115.

Cross-Curricular Connection

Literature

Additional information about common bodily responses can be found in Brigid Avison's *I Wonder Why I Blink and Other Questions About My Body*. Have students read it to see what answers it provides to questions they posed earlier in the lesson.

Home-School Connection

Students can discuss with their families the types of body features and functions that they learned about in *The Science of You*. The family can create other questions about the body, such as “Why do I cough and sneeze?” Together, the family can research the answers to their questions.

Vocabulary: Use Specialized Words

Some words can be used to describe specific topics. The words below are from *The Science of You*. First, use your glossary to define each word. Then write a sentence explaining what each word has to do with the human body.

1. diaphragm

Definition: _____

My sentence: _____

2. follicle

Definition: _____

My sentence: _____

3. salivary glands

Definition: _____

My sentence: _____

4. sweat glands

Definition: _____

My sentence: _____

5. tears

Definition: _____

My sentence: _____

Reading: Identify Cause-and-Effect Relationships

As you read *The Science of You*, think about what causes your body to react in certain ways. Then think of the effects this has on what your body does. To find the effect of each cause in the chart, read the cause and ask, “What happened because of this?” To find what caused an effect, ask, “Why did this happen?” Write your answers in the chart. There may be more than one possible answer for each.

Causes	Effects
1.	1. Your eyes fill up with tears. You start to blink faster.
2. You eat or drink something too fast. Your diaphragm twitches.	2.
3. Your eyes see that you are not moving, but you feel like you are moving.	3.
4.	4. You begin to sweat.

Writing: Write Steps in a Process

Each of the body's systems involves a process and many different parts. You will research and write the steps for one of the following processes: producing tears, getting motion sickness, or producing saliva.

Use the student book and other resources, such as library books and the Internet, to gather information about the process. In the space below, organize the information you gather.

1. What process will you write about? _____

2. What parts of the body are used in the process?

3. How does this process help the body?

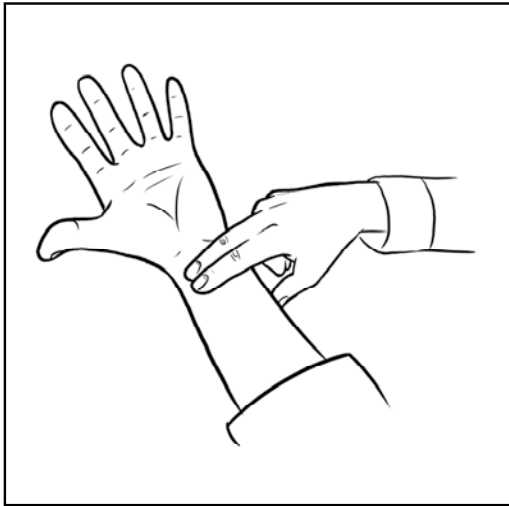
4. Other information to include:

5. List the steps in the process.

Thinking Like a Scientist: Collecting Data

You read that your heart rate changes if you are exercising or scared. You also know that you have a heart beat even when you are sitting very still. You can find it by placing two fingers on the inside of your wrist around the area where you would wear a watch. Do this to find a pulse.

Work with a partner to follow the directions below. Then answer each question, using the information you collect.



	Trial One	Trial Two
Resting Heart Rate		
Exercise Heart Rate		

1. Sit in a chair and relax for one minute. After a minute, have a partner find your pulse and count the number of beats in 30 seconds. Write this number in the chart in the box for Resting Heart Rate, Trial One. Repeat for another trial, and record the number in the Trial Two box.
2. Have a partner count for 30 seconds while you do jumping jacks or run in place. Then have a partner find your pulse and count the number of beats in 30 seconds. Write this number in the correct box above. Repeat for another trial.
3. How much faster is your pulse after 30 seconds of exercise? Explain why the pulse rate increased.

4. Tell two other things that happen to your body when you exercise. Did you experience these two things? Explain.
