

NATIONAL GEOGRAPHIC

READING EXPEDITIONS™

国家地理
科学探索丛书

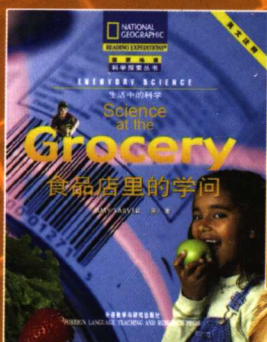
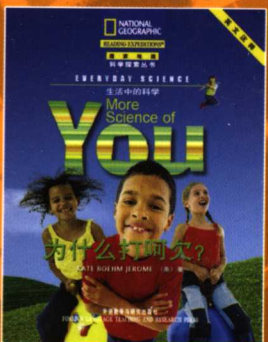
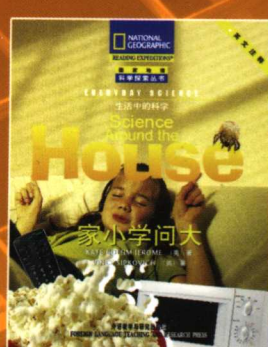
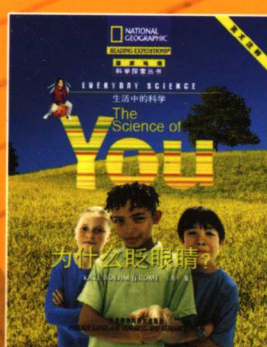
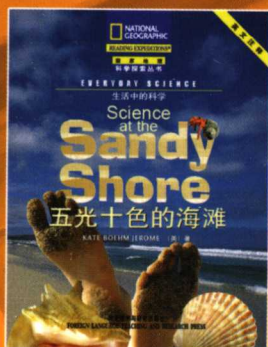
SCIENCE

自然科学

Everyday Science 生活中的科学

TEACHER'S GUIDE & ASSESSMENTS

教师指导与评估手册



外语教学与研究出版社

FOREIGN LANGUAGE TEACHING AND RESEARCH PRESS

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美国国家地理学会 编著

Lesson Notes

课程教案

Activity Masters

课堂活动

Teacher Resources

教学资源

外语教学与研究出版社

FOREIGN LANGUAGE TEACHING AND RESEARCH PRESS

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简介 (Introduction)

“生活中的科学”系列讨论了日常生活中所接触到的科学知识。无论是去公园、在家里，还是到食品店购物，处处充满了科学。系列中的每册书旨在培养学生对非小说类作品的阅读技巧。书中的照片、插图和图解等信息都会帮助学生每册书的主题有更深入的了解。

本系列的结构设计力图激发学生的好奇心和求知欲。与其他系列的整体结构运用不同，本系列以一个对开页为单元阐述相关信息，每一对开页内容均以一个启发式问题或陈述短语结束，引领学生继续阅读，去探索更多的科学奥秘。这种排版形式使学生在领会科学知识的同时，有一种参与其中的感觉。

本系列中每一本书分别以一个主题为核心，贯穿书中的知识严格遵循相关学科领域的分类线索：

- 《为什么打呵欠？》——生命科学、人体
- 《家小学问大》——物理科学、生命科学
- 《怎样坐飞机？》——物理科学
- 《奇趣水族馆》——生命科学
- 《食品店里的学问》——生命科学、物理科学
- 《商场里的秘密》——物理科学
- 《公园乐事多》——生命科学
- 《五光十色的海滩》——生命科学、地球科学
- 《动物园里的科学》——生命科学
- 《为什么眨眼睛？》——生命科学、人体

注重读写能力 (Focus on Literacy)

培养阅读理解技巧

每本书都为学生提供了培养、练习和扩展阅读技巧的机会，让他们把自己的阅读技巧应用到具有不同结构的非小说类作品中去。

本系列介绍了以下阅读技巧：

识别事实和评价 (Identify facts and opinions)

归纳一般规律 (Make generalizations)

用自己的话解释 (Paraphrase)

识别主题和细节 (Identify main ideas and details)

得出结论 (Draw conclusions)

作出判断 (Make judgments)

运用上下文线索 (Use context clues)

确定事件的顺序 (Identify sequence of events)

概括总结 (Summarize)

比较和对比 (Compare and contrast)

识别因果关系 (Identify cause-and-effect relationships)

理解非小说类作品的体裁、文本特征和图表

善于从非小说类作品中获得信息的读者对这类作品的各种体裁和格式都很熟悉。要有效地利用非小说类作品的各种特点，就要首先了解这类作品提供信息的材料。“生活中的科学”系列中涉及到许多非小说类作品的特征：

体裁 (Genres)

说明文 (Expository)

文本特征 (Text Features)

标题 (Headings)

插图说明和标签 (Captions and Labels)

书的组成部分 (Parts of a Book)

目录 (Contents)

图表信息 (Graphic Information)

照片 (Photographs)

插图 (Illustrations)

文章对比阅读

最近关于学生阅读行为和水平的调查结果显示，让学生有机会阅读和对比多篇文章有助于提高他们的阅读技巧。本系列各书在一个相同的主题——科学与我们的日常生活息息相关——中涉及的不同课题的文章为学生提供了阅读的绝好机会。通过比较和对比不同的文章，学生可以对各篇文章的内容、结构和表述进行评价。学生可以就下述问题展开讨论：

对比（Compare）——这几本书各自的结构是怎样的？它们之间有哪些相同点和不同点？

评价（Evaluate）——书中的信息表述得是否清楚？哪些辅助手段有助于对主题的理解？

总结（Generalize）——这个系列中每本书的主题有哪些相同点和不同点？这些主题对科学概念有什么帮助？

注重科学知识（Focus on Science）

培养科学研究能力

“生活中的科学”系列的每一本书都为学生培养和应用科学研究技能提供了机会。本书中的课程教案

还为学生提供了在进行科学调查与实践的同时，进行科学的推理、判断的方法和机会。“生活中的科学”主要介绍了下列帮助学生培养科学研究思路和技能的技巧及方法：

- 分类（Classifying）——《食品店里的学问》、《五光十色的海滩》
- 创建条形图（Creating a Bar Graph）——《奇趣水族馆》、《动物园里的科学》
- 收集数据（Collecting Data）——《为什么眨眼睛？》
- 观察（Observing）——《家小学问大》、《怎样坐飞机？》、《商场里的秘密》、《公园乐事多》
- 阅读图表（Reading a Graph）——《为什么打呵欠？》

Lesson Overview

课程概述

课程概述 (Overview) ——帮助教师快速选书备课

概要 (Summary)

此处简要说明书中的主要观点和重要细节。

科学背景

(Science Background)

此处就书中涉及的地点、人物和科学主题提供补充信息，为该书提供背景知识。

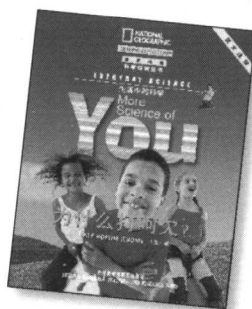
学习目标

(Learning Objectives)

此处列出了在非小说类作品的特点、体裁，以及阅读、写作和科学研究技能等方面的学习目标，方便教师备课。

More Science of You

为什么打呵欠?



By Kate Boehm Jerome

Overview

Summary

The book, *More Science of You*, is an extension of *The Science of You*. Among many interesting facts, students will learn how the skeletal system protects their internal organs, supports their body, and provides a place for muscles to attach. Questions ranging from why baby teeth are replaced by adult teeth to why humans sneeze, shiver, and yawn will be examined to provide insight into the incredible workings of the human body.

Science Background

The human body is an amazing machine made up of many parts. Learning about these parts and how they function is the focus of two broad areas of life science: anatomy and physiology. Anatomy is the branch of life science concerned with the study of the structures that make up living things. Physiology is the study of how the various structures (from individual cells to complete organ systems) of living things function to carry out the processes necessary for life.

Learning Objectives

Science

- Identify the functions of bones
- Describe how fingernails grow
- Explain the role of the tongue and the nose in taste
- Explain why the body reacts to mosquito bites

Process Skills

- Skill Focus**
 - Reading a graph
- Supporting Skills**
 - Observing
 - Collecting data

Reading Skills

- Genre: Expository**
- Skill Focus**
 - Make and check predictions
 - Determine word knowledge
- Supporting Skills**
 - Identify main ideas and details
 - Summarize

Writing Skills

- Writing Focus**
 - Write a newspaper article (expository)
- Supporting Skills**
 - Use the writing process
 - Conduct research
- Speaking and Listening**
 - Give an oral presentation

注重阅读 (Focus on Reading) —— 关于帮助学生在阅读前后及阅读过程中培养技巧的建议

Focus on Reading

Before Reading

Activate Prior Knowledge

Have students review the contents page. Ask students to consider what they know about each topic listed. For example, write the word *bones* on the board and ask:

What are bones?

What do bones do?

Write students' ideas on a K-W-L chart on the board (see chart below). In the first column, write what students know about bones. In the second column, write questions they have about bones. In the third column, record what students have learned after reading the book.

K (What I Know)	W (What I Want to Know)	L (What I Learned)

Ask students to copy the K-W-L chart in their notebooks and work with a partner to complete the first two columns for each topic. Have students return to the chart after reading to identify what they have learned.

Preview

Give students time to flip through the book. Ask them to look at the pictures and pay close attention to the section titles. Ask:

What is this book about?

What will you learn about the human body?

Set Purpose

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

Vocabulary Strategy: Determine Word Knowledge Activity Master, Page 14

Explain that the vocabulary words in the book are related to health and the body. Tell students that on the Activity Master on page 14, they will use the text and notes of *More Science of You* to write a sentence that relates each vocabulary word to health or the human body. Students will use these words:

allergies
primary teeth
saliva
skeletal system
taste buds

More Science of You

知识热身 (Activate Prior Knowledge)

这些用来热身的知识常常可以用图表进行组织。

预习 (Preview)

预习非小说类作品可以帮助学生理解作品的结构，预测作品将提供哪类信息。

词汇 (Vocabulary Strategy)

学生在阅读前可以使用“课堂活动”(Activity Master)学习课文中的关键词汇。

My Notes

注重阅读 (Focus on Reading) ——关于帮助学生在阅读前后及阅读过程中培养技巧的建议

阅读技巧

(Read Strategically)

每一种重要的阅读理解技巧都配有相应的“课堂活动”(Activity Master)。“技巧点拨”(Strategy Tip)提供具体的建议,帮助学生检测自己的阅读效果。

课堂互动

(Responding)

此处的讨论问题可以帮助学生考查书中的主要观点。

写作和研究

(Writing and Research)

学生可以就书中的主题进行调查研究,然后用各种体裁和形式进行写作。

课堂交流

(Communicating)

课堂活动可以帮助学生培养听、说等交流技巧和观察能力。

Focus on Reading (continued)

During Reading

Read Strategically: Make and Check Predictions Activity Master, Page 15

Assign each section of the book as independent reading. As students read, they can use the Activity Master on page 15 to help them focus on the main ideas in *More Science of You*. Suggest that students use the questions that begin each topic to help them predict what they will learn on each set of pages. They should then check their prediction as they read each section. To model the process, make a prediction as a class and check it together after reading the first section.

Strategy Tip: Self-question

To help students check their own comprehension, suggest that they ask themselves questions about the topic they are reading. For example, they might ask:

Do I understand what each section of this book is mostly about?

After reading, can I answer the question asked at the beginning of each section?

For questions they cannot answer, students can reread sections of the book with those questions in mind. If students are still having difficulty, they can ask for clarification during the follow-up class discussion.

After Reading

Responding

Initiate a class discussion to assess reading comprehension. Ask:

How do a baby's bones differ from an adult's bones? (See page 6 in the student book.) (compare and contrast)

How do fingernails grow? (See page 8.) (sequence)

What parts of the body help you taste your food? (See pages 10-11.) (draw conclusions)

What are ways the body can react to allergies? (See pages 12-13 and 14.) (identify cause-and-effect relationships)

What causes shivering? (See pages 16-17.) (identify cause-and-effect relationships)

What are primary teeth? (See pages 18-19.) (summarize)

What do you think causes yawning? (See pages 20-21.) (make judgments)

Writing and Research: Write a Newspaper Article

Activity Master, Page 16

Tell students they are going to write an article for their local newspaper. Their assignment is to answer the letter a young reader sent to the “Questions Kids Ask” column of the newspaper. Students can use *More Science of You*, the Internet, and library resources, such as science books or encyclopedias, as resources for their responses. The Activity Master on page 16 will help students organize their ideas.

Communicating: Speaking/Listening

Give an oral presentation

In small groups, students can read their articles.

Students reading should

- ✓ speak clearly
- ✓ make eye contact with listeners
- ✓ adapt speech as appropriate

Listeners should

- ✓ listen politely
- ✓ distinguish between speakers' opinions and facts
- ✓ ask questions to clarify ideas they didn't understand

拓展和测试 (Extend and Assess) —— 科学活动、测试和拓展活动

为教学提供了丰富的内容

Extend and Assess

Focus on Science

Thinking Like a Scientist Process Skill: Reading a Graph Activity Master, Page 17

Explain to students that the graph on the Activity Master on page 17 shows the number of baby teeth that a student lost at different ages. Students will use the information given in the graph to answer the questions that follow.

Answers: 1 *Answers will vary but the title should be relevant to the chart.* 2 *The student lost the most teeth at age 9.* 3 *The student lost the fewest teeth at age 6.*

Life Science: Create a Body System Poster

Remind students that each body system has a specific purpose. Body systems are discussed in *More Science of You*. Have students prepare a poster showing at least one body system. They can draw pictures illustrating the system they chose or they can find pictures relating to the system in magazines. They should tell in a few words how each system is important. Have students give their posters a title.

Assessment Options

Use the following assessment options to assess students' understanding of *More Science of You*.

Questions

Use the following questions during individual conferences or ask students to write answers in their notebooks.

- 1 Why are bones important to the body?
- 2 What four kinds of taste can taste buds detect?
- 3 What is a reflex action?
- 4 What causes you to lose a primary tooth?
- 5 Why do people yawn?

Assessment Activity

Ask students to create an eight-page booklet titled *Interesting Facts About My Body*. Have students make one page in their booklets for each topic discussed in *More Science of You*. Each page should include one fact and one illustration.

Booklets should

- ✓ be well-organized and carefully prepared
- ✓ use both words and images to communicate ideas
- ✓ use correct grammar and mechanics

Multiple-choice Test

Use the multiple-choice test on page 106.

Cross-curricular Connection

Mathematics

Have students use the information about bones to calculate how many fewer bones are in the body of an adult than in a newborn.

Home-school Connection

Students can find a newspaper or magazine article that discusses a topic related to the human body. They can then discuss the main ideas from the article with parents and explain how the topics in the article relate to information in *More Science of You*.

More Science of You

注重科学知识

(Focus on Science)

通过与科学概念和研究技能相关的实践活动来帮助学生用新的方法理解书的内容。这部分也配有相关的“课堂活动”(Activity Master)。

测试 (Assessment Options)

用讨论问题、评估活动或多项选择题对学生进行评估,考查他们对书中重要概念的理解。

跨学科链接

(Cross-curricular Connection)

此处提供一些活动建议,帮助学生将科学知识 with 数学、社会研究、音乐、艺术和文学联系起来。

家庭—学校链接

(Home-school Connection)

给学生一些建议,让他们与家人一起讨论学到的内容。

Overview

Summary

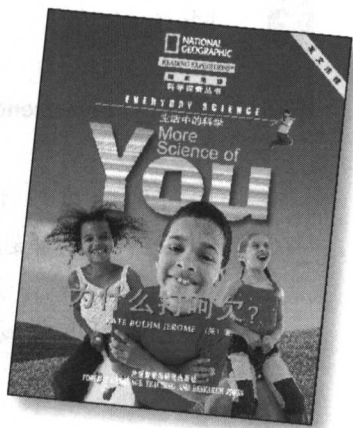
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More Science of You

为什么打呵欠?



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- allergies
- primary teeth
- saliva
- skeletal system
- taste buds

K (What I Know)	W (What I Want to Know)	L (What I Learned)

My Notes

During Reading



Read Strategically:

Make and Check Predictions

Activity Master, Page 15

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After reading, can I answer the question asked at the beginning of each section?

For questions they cannot answer, students can reread sections of the book with those questions in mind. If students are still having difficulty, they can ask for clarification during the follow-up class discussion.

After Reading

Responding

Initiate a class discussion to assess reading comprehension. Ask:

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How do fingernails grow? (See page 8.) (**sequence**)

What parts of the body help you taste your food? (See pages 10-11.) (**draw conclusions**)

What are ways the body can react to allergies? (See pages 12-13 and 14.) (**identify cause-and-effect relationships**)

What causes shivering? (See pages 16-17.) (**identify cause-and-effect relationships**)

What are primary teeth? (See pages 18-19.) (**summarize**)

What do you think causes yawning? (See pages 20-21.) (**make judgments**)



Writing and Research:

Write a Newspaper Article

Activity Master, Page 16

Tell students they are going to write an article for their local newspaper. Their assignment is to answer the letter a young reader sent to the "Questions Kids Ask" column of the newspaper. Students can use *More Science of You*, the Internet, and library resources, such as science books or encyclopedias, as resources for their responses. The Activity Master on page 16 will help students organize their ideas.

Communicating: Speaking/Listening

Give an oral presentation

In small groups, students can read their articles.

Students reading should

- ✓ speak clearly
- ✓ make eye contact with listeners
- ✓ adapt speech as appropriate

Listeners should

- ✓ listen politely
- ✓ distinguish between speakers' opinions and facts
- ✓ ask questions to clarify ideas they didn't understand

Focus on Science

Thinking Like a Scientist **Process Skill: Reading a Graph** Activity Master, Page 17

Explain to students that the graph on the Activity Master on page 17 shows the number of baby teeth that a student lost at different ages. Students will use the information given in the graph to answer the questions that follow.

Answers: 1 *Answers will vary but the title should be relevant to the chart.* 2 *The student lost the most teeth at age 9.* 3 *The student lost the fewest teeth at age 6.*

Life Science: Create a Body System Poster

Remind students that each body system has a specific purpose. Body systems are discussed in *More Science of You*. Have students prepare a poster showing at least one body system. They can draw pictures illustrating the system they chose or they can find pictures relating to the system in magazines. They should tell in a few words how each system is important. Have students give their posters a title.

Assessment Options

Use the following assessment options to assess students' understanding of *More Science of You*.

Questions

Use the following questions during individual conferences or ask students to write answers in their notebooks.

- 1 Why are bones important to the body?
- 2 What four kinds of taste can taste buds detect?
- 3 What is a reflex action?
- 4 What causes you to lose a primary tooth?
- 5 Why do people yawn?

Assessment Activity

Ask students to create an eight-page booklet titled *Interesting Facts About My Body*. Have students make one page in their booklets for each topic discussed in *More Science of You*. Each page should include one fact and one illustration.

Booklets should

- ✓ be well-organized and carefully prepared
- ✓ use both words and images to communicate ideas
- ✓ use correct grammar and mechanics

Multiple-choice Test

Use the multiple-choice test on page 98.

Cross-curricular Connection

Mathematics

Have students use the information about bones to calculate how many fewer bones are in the body of an adult than in a newborn.

Home-school Connection

Students can find a newspaper or magazine article that discusses a topic related to the human body. They can then discuss the main ideas from the article with parents and explain how the topics in the article relate to information in *More Science of You*.

Vocabulary: Determine Word Knowledge

Each word or term below is related to your health or your body in some way. In the first column, write what you already know about each word. Then use *More Science of You* and its notes to find new information about each word. Write a sentence that relates each word to your health or your body.

Word	What I Already Know	My Sentence About Health/Body
allergies		
primary teeth		
saliva		
skeletal system		
taste buds		

Reading: Make and Check Predictions

As you read *More Science of You*, predict what each section will be about. Write your prediction as a sentence that states what you think you will learn about each topic in the chart. Then continue reading to see how close your prediction was. In the “Check” column of the chart, explain how close your prediction was and add information that was different from what you predicted.

Section	Prediction	Check
Skeletal System		
Fingernails		
The Sense of Taste		
Mosquito Bites		
Allergies		
Shivering		
Baby Teeth		
Yawning		

Writing: Write an Article

You are the writer of the “Questions Kids Ask” section of your local newspaper. You need to write an article to answer the questions in the letter shown below. To research and write your article, you can use *More Science of You*, the Internet, or books or encyclopedias found in the library. Use the space below to organize your ideas.

Dear Questions Kids Ask:

I love to swim. Sometimes, when I get out of the pool I get cold. When this happens, I shiver. Soon, my arms and legs are covered with little bumps. What are these bumps and what causes them? Are they harmful?

Sally

1. Identify the question or questions you need to answer in your article.

2. Briefly describe the information your article must include to answer the reader.

3. List any other ideas you would like to include.

4. Photos and other images can help explain ideas. What photo or image would you like to include with your article?
