



双语教材

学英语 · 学科学

中央教育科学研究所外语教育研究中心推荐双语教材

生命科学 (初级版)

Janus Life Science

(美) Mary K. Friedland 等著



机械工业出版社
China Machine Press

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Mary K. Friedland

Susan Echaore-Yoon

(美)

Winifred Ho Roderman

著

Nancy Lobb

Gerald Booth



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85

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出版说明

人们关于教育是否是一种科学的争论一直都在进行中，但无可质疑的是，教育离不开科学，不仅教育作为一种活动必须符合科学规律，同时人也需要接受科学教育——人必须有追求科学的精神和追求科学的能力。本着这种精神以及满足国内广大师生较高层次的英语学习需要的宗旨，北京华章图文信息有限公司精选并影印出版了多套外国优秀科学教育系列教材，以供各级外语特色学校和双语学校作为选修教材之用，当然也可作为英语爱好者自学的素材。这些原版的科学学习教材创造了一种学科英语的环境，学生不仅能在其中学到学科知识，更锻炼了用英语进行思维、表达的能力，这为他们以后阅读外文专业书刊、成为科学家以及各个领域的专业人才打下良好的基础。

学英语·学科学丛书之初级版，包括地球科学（太阳系、变化的地球、天气和地球资源，共4个单元）、物质科学（能源、电、声音和机器，共4个单元）和生命科学（绿色植物、动物、人体系统和人的五种感觉，共4个单元）三本。各单元包括引言、主题研究、学习结果的展示等几大部分，其中的主题研究还有引言、重点词汇等。这套教材的整体设计不仅保证了基本科学知识的全面性，还考虑到所学知识与现实生活的联系，从学生生活经验出发，让学生不仅爱学科学，还能轻轻松松地学好科学。在这里，科学既包括对学生科学思维的训练、科学认识的提高和科学技能的培养，又包括在科学探索过程中对学生科学探索情感、态度、价值观的熏陶，科学探索的过程和结果在本系列中获得了同样重要的地位。

初级版的显著特点是：

强调学习者的亲身体验，让学生通过想像、观察、记录等科学研究过程来发现身边的科学，具有极强的可操作性。

所有科学概念都被细化成一个一个小单元，易于学生逐步掌握。

活动和实验简单但却引人入胜，所用操作材料熟悉而方便。

观察、记录、分析、总结和预测等过程能够让学生掌握解决问题的策略，发展批判性思维。

科学探索的过程和结果并重。

学英语·学科学丛书不仅能使学生在特创的学习环境中了解很多已经被科学家发现或证明了的事实和道理，还能让学生用科学家们探索科学的方法，通过实验、观察和记录来了解我们周围的世界。

让我们跟着科学家的步伐去探索科学的奥秘吧！

北京华章图文信息有限公司

外语编辑部

Contents

TO THE STUDENT 2

GREEN PLANTS 3

Introduction 5

Unit 1 Getting Started 6

Unit 2 The Seedling 13

Unit 3 Roots 22

Unit 4 Stems 28

Unit 5 Leaves 34

Unit 6 New Plants from Old Plants ... 44

Show What You Learned 48

ANIMALS 49

Introduction 51

Unit 1 Living Things Called Animals .. 52

Unit 2 A Look at the Animal Kingdom . 57

Unit 3 Different Kinds of Bodies 69

Unit 4 Animal Life Cycles 76

Unit 5 Animal Lifestyles 82

Unit 6 Animals in Danger 90

Show What You Learned 94

HUMAN SYSTEMS 95

Introduction 97

Unit 1 You're Alive 98

Unit 2 Moving Parts 105

Unit 3 Staying Alive 111

Unit 4 The Movers
and Removers 118

Unit 5 Systems That Control
Your Body 126

Unit 6 Creating Life 133

Unit 7 Taking Care 138

Show What You Learned 140

THE FIVE SENSES 141

Introduction 143

Unit 1 The Five Senses 144

Unit 2 The Sense of Sight 149

Unit 3 The Sense of Hearing 159

Unit 4 The Sense of Smell 167

Unit 5 The Sense of Taste 173

Unit 6 The Sense of Touch 179

Show What You Learned 186

GLOSSARY 187

Introduction

In this book, you will learn about some of the things that scientists study. You will learn some of the things that scientists have discovered. You will explore and discover facts the same way scientists do, by experimenting, observing, and recording. And you will learn scientific information about the world that you can use right away.

Living Things

Life science is the study of living things. You are a living thing. And you need other living things to stay alive.

What is a living thing? How are you like other living things? How are you different? What living things do you need in order to stay alive?

Life scientists study living things. They discover ways living things are the same and ways they are different. Some scientists study certain animals, such as monkeys or insects. Other scientists study another animal—humans—to find out how our bodies work or how we live.

We know a lot about plants, ourselves, and other animals because of what scientists have learned. We know how to raise animals and plants for food. We also know how our bodies use food to keep us healthy. And we know that we need plants and animals in order to stay alive.

In this book, you'll learn some of the facts that scientists have discovered about living things. As you study living things, you will use the same methods that scientists use: You will observe living things and record what you find out. And you will learn some of the ways living things help each other to stay alive.



GREEN PLANTS

What kind of living things are green plants? How are they like other living things? What do green plants need to stay alive? In this section, you'll learn many facts about these living things. And you'll learn how green plants play an important part in our lives.

Contents

Introduction	5
Unit 1 Getting Started	6
Unit 2 The Seedling	13
Unit 3 Roots	22
Unit 4 Stems	28
Unit 5 Leaves	34
Unit 6 New Plants from Old Plants	44
Show What You Learned	48
Glossary	187



Introduction

Picture this:

You're moving into your own place. It's your first apartment! You've got a bed. You've got a few chairs and a table. You've got a stereo and some other things.

You put all your things in the apartment. But even with all your things, the apartment looks a little empty. What else can you put in the apartment?

You don't have much money. But you want to get something that will make the place look great. What can you get?

You can get some green plants. You can buy them or you can start them yourself. But either way, you'll have to take care of those plants. What will you do to take care of them? How will you keep them green? How will you keep them growing? How will you keep them alive?

In this section, you'll learn about one type of living thing: green plants. You'll learn how to start your own plants. You'll learn what plants need to grow and stay healthy. And you'll learn some scientific facts about plants.

You'll know a lot about green plants. So, when you move into your own place, you can use plants to make it look great.

Unit 1

Getting Started

Think of a plant. Is that plant green?

There are many different kinds of plants in this world. But most of the plants we see are green, like the plant you probably thought of.

You'll learn about green plants in this book. How? By watching plants grow.

Many green plants can be started from seeds. So that's how you'll begin—by starting plants from seeds.

- What makes seeds grow?
- How do seeds become plants?

You'll find out in this unit.

Before You Start

You'll be using the science words below. Find out what they mean. Look them up in the Glossary that's at the back of this book. On a separate piece of paper, write what the words mean.

1. **seedling**
2. **soil**
3. **sprout**





Getting Seeds to Grow

You'll be starting plants from three kinds of seeds: radish seeds, bean seeds, and tomato seeds.

The radish seeds will come from a packet of seeds. The bean seeds will come from the grocery store. And the tomato seeds will come right out of a tomato.

You'll do three things to get those seeds to grow. What do you think those three things are?

These are the three things you'll do:

1. You'll plant the seeds in soil.
2. You'll give the seeds water.
3. You'll put the planted seeds in a warm place.

Look around the room. Find a warm place where you can put the planted seeds. Where is that place?

You can get your bean seeds and radish seeds to sprout quickly. Here's how: Soak them in water for a while *before* you plant them in soil.

Soak the seeds right now. You'll need two cups and some water.

- Fill each cup half full with water.
- Put eight lima beans in one cup.
- Put eight radish seeds in the other cup.
- Let the seeds soak overnight.

Experiment 1

How long do seeds take to sprout?

Some seeds take longer to sprout than others. For example, your radish, bean, and tomato seeds will sprout on different days. How many days will each take? Do this experiment and find out.

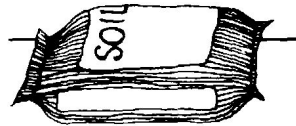
Materials (What you need)



Eight soaked radish seeds



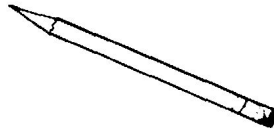
Eight tomato seeds



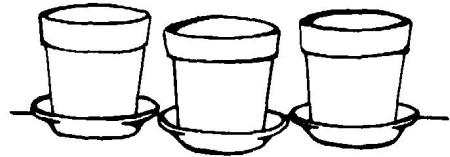
Soil



Eight soaked lima beans



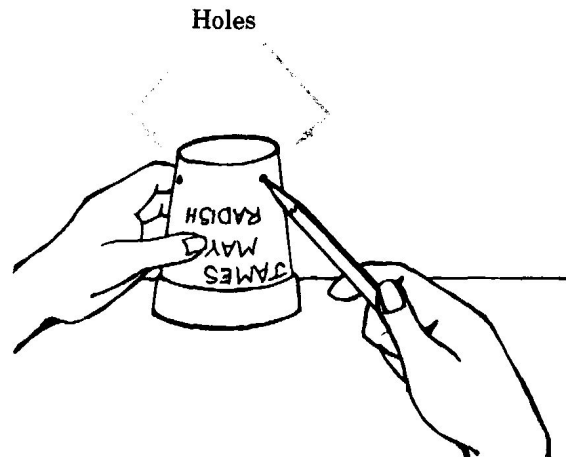
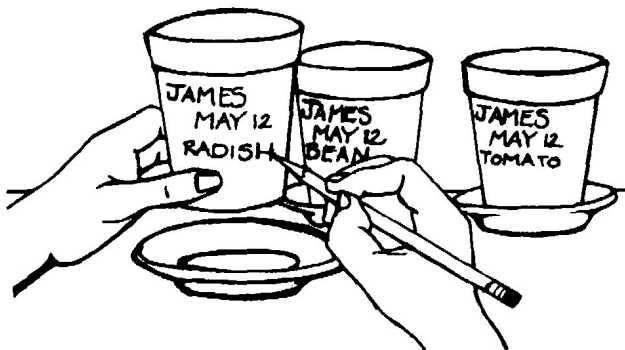
One pencil



Three Styrofoam bowls on dishes

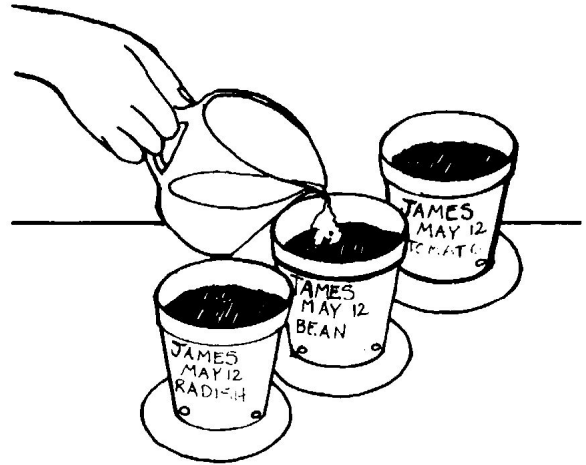
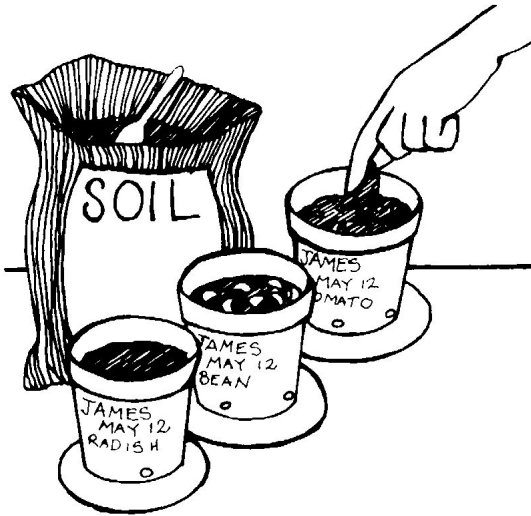
Procedure (What you do)

1. Write your name on each bowl. Then write today's date on each bowl. Next, write *radish* on the first bowl, *bean* on the second bowl, and *tomato* on the third bowl.
2. Turn the bowls upside down. With your pencil, poke three holes near the bottom of each bowl.



3. Fill each bowl almost to the top with soil. Put the seeds in the right bowls. Spread the seeds out. Cover them with a thin layer of soil.

4. Pour water on the top of the soil. Move the bowls to a warm place. Look at them every day. As you watch them, you will be able to answer the questions below.



Observations (What you see)

1. When did the first radish seedling come up?
2. When did the first bean seedling come up?
3. When did the first tomato seedling come up?

Conclusions (What you learn)

1. How many days did the first radish seed take to sprout?
2. How many days did the first bean seed take to sprout?
3. How many days did the first tomato seed take to sprout?

Plant Watch

Watch your radish seeds grow into seedlings. See how they change.

Two days after you've planted the seeds, start watching them. Watch them every day for four days. Keep a record of what you see.



A Record of How Radish Seeds Grow

Two Days After Planting

Take a seed out of the soil. Look at it. What do you see growing out of the seed? On a separate piece of paper, draw what you see.

Three Days After Planting

Take another seed out of the soil. What's growing out of the seed? On a separate piece of paper, draw what you see.

Four Days After Planting

By now, you should have a seedling growing out of the soil. Carefully take it out of the soil.

What does the seedling look like? Describe it. On a separate piece of paper, draw what you see.

Five Days After Planting

Take another seedling out of the soil. Look at it.

Now look at the seedling you drew yesterday. How is today's seedling different? On a separate piece of paper, draw a picture of the seedling.

Three Main Parts

Look at the radish seedling you have removed from the soil. What are the parts that make it up?

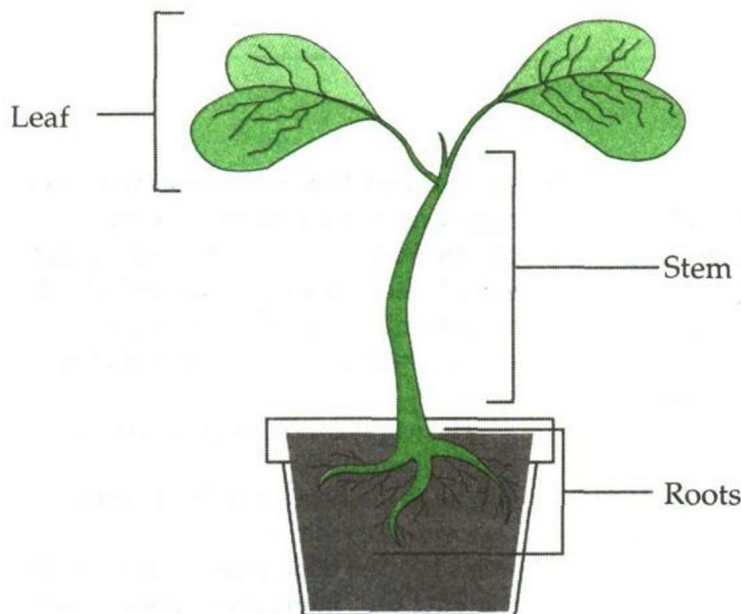
One part of the seedling was in the soil. This part is the **root**. What do you think the root does for the plant?

A second part of the seedling spread out above the soil. This part is made up of **leaves**. What do you think leaves do?

A third part of the seedling supported the leaves and connected them to the roots. This part is the **stem**.

Most green plants have the same main parts you see in your radish seedling.

Find the drawing you made of the radish seedling. Write *root*, *stem*, and *leaves* next to those parts in the drawing. Your drawing should now look like the picture on this page.



You will need other seedlings to do the experiments that come later. Plant at least 4 bean seeds and 4 tomato seeds now. Follow the directions for Experiment 1, but put each bean seed in a separate cup, put 2 of the tomato seeds in separate cups, and put 2 tomato seeds in one cup.



Review

Use the words you learned on page 6 to answer the questions.

1. a. What do you call the earth that plants grow in?
b. What do you call a very young plant?
c. What word means “start to grow”?

Look back at page 7 to answer these questions.

2. a. How did you get bean and radish seeds to sprout quickly?
b. What three things did you do to get your seeds to grow?

Check These Out

1. Make a Science Notebook for this section. Use it to keep a record of what you learn about green plants. Put your list of glossary words and their meanings in it. Also keep your notes from experiments and the Plant Watch sections in it. You can keep anything else you learn about green plants in your notebook too.
2. Find out how to **transplant** seedlings. Then transplant the seedlings that you have grown. Put each seedling in its own cup.
3. Take your radish seedlings home. Plant them in a large pot or in the ground. In three weeks, some radishes should be ready to eat.
4. Make a seed collection. Get seeds from fruits, vegetables, nuts, or outdoor plants. Tape the seeds on a large piece of heavy paper. Below each seed, write the name of the plant that the seed came from.
5. As you work through this section, you may want to find out more about plants. You can do this by looking in an encyclopedia or by getting books from a library. You can also talk to an expert, such as a gardener, florist, or botanist.
Here are some things you may want to find out:
 - What’s inside a seed? What does *germinate* mean?
 - Seeds often end up far away from the plants they came from. Seeds travel in many different ways. What are those ways?



Unit 2

The Seedling

You began to study plants by watching radish seeds sprout. You put the seeds in soil. Soon, roots pushed out from the seeds. The roots grew quickly. Then a stem and leaves appeared on top of the soil. Your seeds had grown into seedlings.

- What do the parts of a seedling look like close-up?
- What things do plants need so they can grow?

You'll find the answers in this unit.

Before You Start

You'll be using the science words below. Find out what they mean. Look them up in the Glossary. On a separate piece of paper, write what the words mean.

1. **dissolve**
2. **fertilizer**
3. **nutrient**