

中学生活与科学

中学科学双语选修教材

SECONDARY LIVING SCIENCE

PEARSON
Education

Peter Doyle [英] John Ma Benjamin Yung 著



1A

外语教学与研究出版社 FOREIGN LANGUAGE TEACHING AND RESEARCH PRESS

学生用书 STUDENT'S BOOK

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学生用书

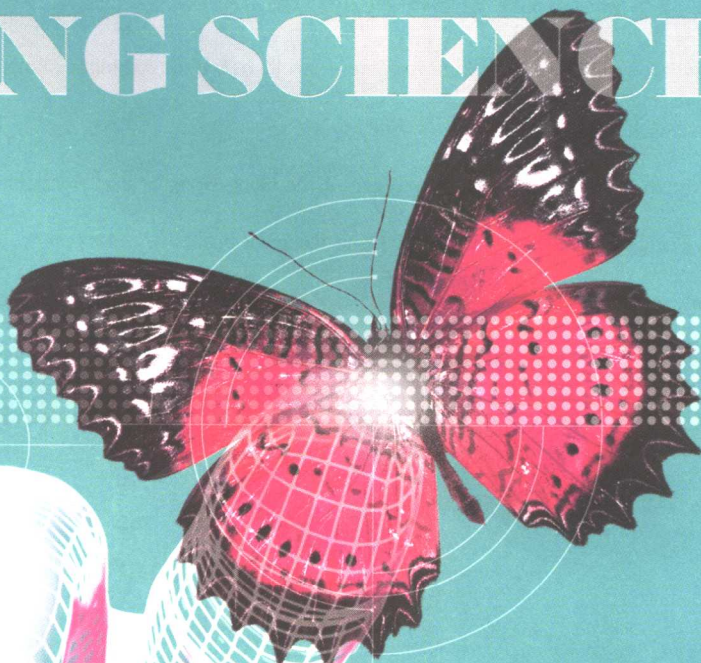
STUDENT'S BOOK

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中学生活与科学 1A

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* * *

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序言

积极推进中小学双语教学实验旨在更广阔的学科领域中、更丰富的语言层面上扩大学习者的英语实践空间,拓展英语教学的外延,深化英语教学的内涵,优化英语习得环境,培养学生英语思维的基本能力,提高学生的英语应用水平和能力。

目前,双语教学在我国的部分省市正在如火如荼地进行。现阶段的双语教学是以学科英语为主,在双语教学中扩大英语输入,促进英语的运用,在确保学科目标基本达到的基础上,以努力培养学生英语思维的习惯为重点任务,提倡培养学习者高效、优质地进行研究性学习,实现英语教学和学科教学的有机整合。但是,在双语教学的开展过程中也出现了一些问题,制约其发展的瓶颈问题就是缺乏适合于不同年级、不同学科、不同层次学习者的双语教材。

外研社组织了有关学科及英语教育专家、学者,根据中小学目前的教学实际,参考和借鉴了国内外先进教材的精髓,权衡各地开展双语教学试点工作的得失,博采众长,群策群力,引进、改编了这套《生活与科学》(Living Science)系列双语教材。这套教材重视学科定位,在语言难度、科学性等方面把握正确,具有鲜明的特色

首先,它贴近学生的生活与学习实际,着重培养学生学以致用用的能力,从而实现学生从科学世界向生活世界的回归。第二,文章内容充实,深入浅出。教材中出现的概念多以形象化、通俗化的词语来表述,较少出现专业术语。第三,它强调科学学习过程中激发学生的探究能力,既重结论更重过程。小学教材以活动贯穿内容始终,中学教材在一开始就引入科学的概念及科学探究的步骤,引导学生学科学、用科学,培养学生的观察能力、实验能力、思维能力及自学能力。第四,以知识宽度代替深度。在知识内容方面,本套教材主要涉及生命科学、物质科学与宇宙科学三大领域。在系统地讲解这三大领域的基础知识的前提下,它侧重从更广泛的范围内对课程进行整体构思,学科内容交叉渗透。第五,版面活泼,图文并茂。配备大量精美的插图是本套教材的一大特色,特别是小学教材充分考虑到学生的认知规律,以实物照片和卡通图片相结合,充分调动学生的创造力和想象力。第六,具有开放性。本套教材在学习内容、活动安排、作业与练习、评价等方面给师生提供了选择的机会和创新的空间,同时它还引导学生利用广泛存在于学校、家庭、社会、大自然、网络和各种媒体中的多种资源进行探究性学习,使学生在科学学习的过程中潜移默化地掌握英语,从而达到双语教学的目的。

在此我们衷心希望这套教材中力求体现和贯彻的一些教学理念和实践经验,能对我国蓬勃发展的双语教学起到推动作用,也希望教师们能在教学中结合本校双语教学的客观情况,勤于钻研,敢于实践,为双语教学贡献出自己的力量。

《生活与科学》系列教材编委会

出版说明

在科技日新月异的21世纪,社会的发展对人才的要求越来越高,具备良好的科学素养已成为当今中小学生面临的一项重要的学习任务。为了帮助同学们达到相应的学科要求,并且能够在认识身边的科学、用科学的态度去解决自身学习和实际生活中所遇到的问题的同时,逐步培养起用英语进行思维的能力,我们推出了《生活与科学》(Living Science)。

《生活与科学》中小学系列双语教材的推出,前后经历了近两年的时间。我们在全国率先开设了双语课程的地区进行了多次调研、座谈,并与境外的多家出版机构进行联系,以期寻找最适合我国中小学课堂教学实际的双语教材。我们最终决定引进这套教材,因为其内容非常贴近中小学生的日常生活,强调激发和培养学生的科学探究能力,与教育部颁布的《科学课程标准》提倡的诸多理念相吻合。

为了使教材更易操作,我们对其进行了精心的改编。在中学学生用书中增加了生词的中文注释,但并没有给出英文释义和音标,以免教师步入传统英语教学学单词、抠语法、讲课文的误区;此外,我们还对教材部分内容进行了本土化改编,使教材用起来更加亲切。但是,本套教材改编的力度主要体现在教师用书中。中学教师用书除了保留原书的精华外,还增添了 Glossary (词汇注释)、Language Points (语言点注释)、Translation (课文翻译)、Supplementary Reading (补充阅读) 等几部分。Glossary 部分除了汉语释义外,与学生用书的词汇注释相比,还增添了英文释义,采用了最新的国际音标,以方便教师上课时用英文表述。本着实用的原则,我们对少量用英文释义比较复杂的单词,仅保留了音标和汉语释义。Language Points 部分主要是为了帮助教师理解文中出现的比较难的句子。与传统的英语教科书不同的是,这一部分淡化语法,重点解释了一些比较重要的短语。Translation 部分则有利于降低原书的难度,为英语教师或学科教师使用该教材提供了一个更易操作的平台。Supplementary Reading 则是对学生用书内容的拓展和补充,为教师备课提供了反映最新科技动态等方面的翔实资料。如学生用书1A的第二十页提到了发明摄氏度的科学家,但限于篇幅,教材并没有具体展开,我们在教师用书中就增加了这位科学家的生平,供教师参考。

参与改编工作的有英语教学方面的专家、沿海地区在双语教学方面有经验的教研员和一线骨干教师。本书编写期间,我们得到了全国各地专家的大力支持,特别是上海市教委的沃振华老师、朱浦老师为本套教材付出了大量的心血,我们在此谨表谢意。诚挚地希望我们的努力能够为我国方兴未艾的双语教学实验注入新的活力;更希望这套教材能为同学们开启一扇了解科学的窗口,使同学们在英语的语境下领悟更多自然界的奥秘,逐步树立起科学的世界观。21世纪需要具备创新意识、较高科学素养和熟练运用英语开展国际交往与合作的复合型人才,我们愿将这套教材奉献给那些勇于承担这一重任的广大师生。

外语教学与研究出版社
基础英语教育事业部

CONTENTS



1

Introducing Science

1.1	What Is Science?	2
1.2	Safety in the Laboratory	12
1.3	Using Common Laboratory Equipment	18
1.4	Scientific Investigation	43
Summary		55
	Glossary	55
	Key Points	56
Test Yourself		59



2

Looking at Living Things

2.1	Living and Non-living Things	68
2.2	Learning More about Animals	75
2.3	Diversity of Living Things	81
2.4	Classification	89
2.5	Endangered Species	98
Summary		107
	Glossary	107
	Key Points	109
Test Yourself		110



3

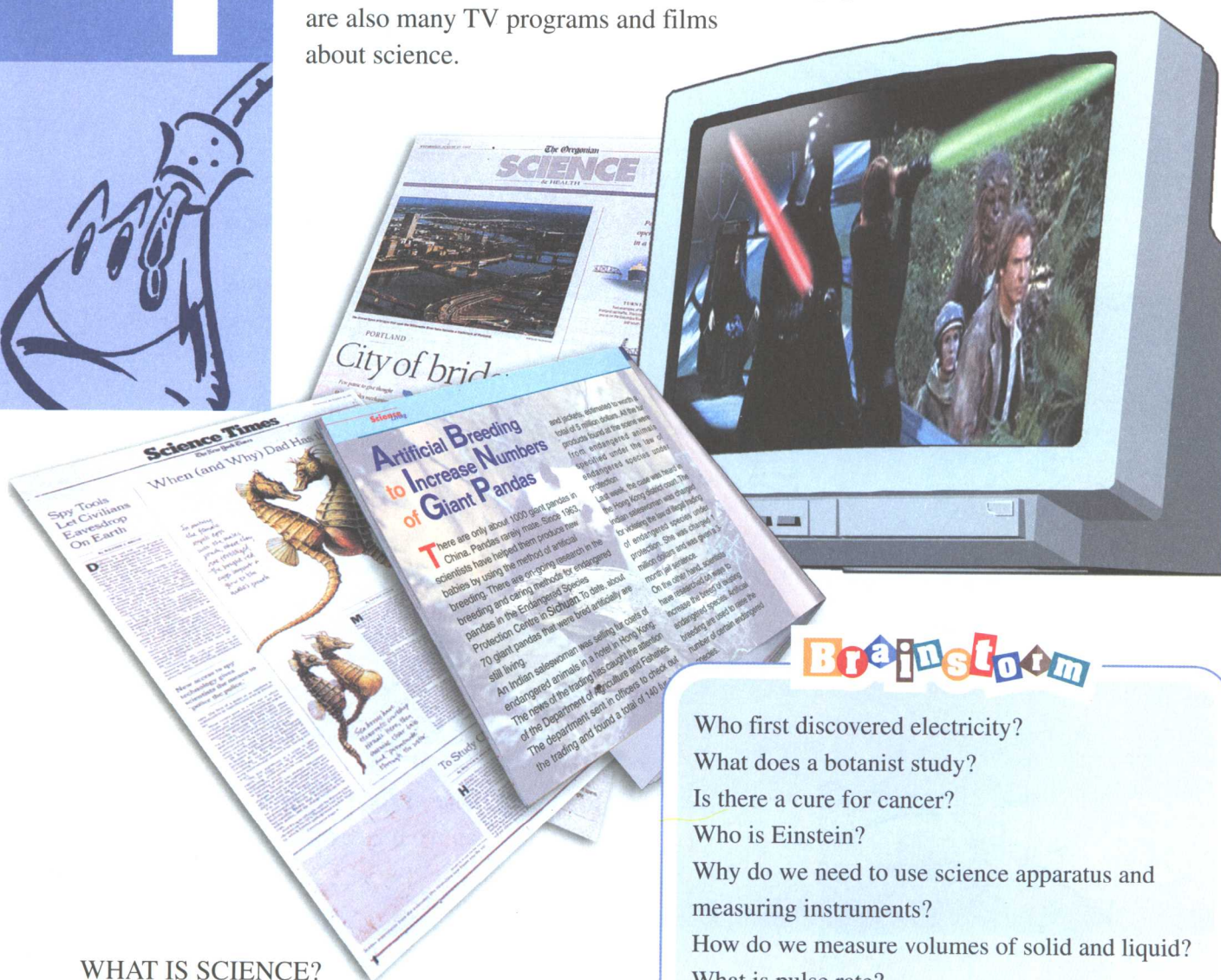
Cells and Human Reproduction

3.1	The Basic Units of Living Things	116
3.2	A New Life Is Born	126
3.3	Puberty	135
3.4	Pregnancy	139
3.5	Sexually Transmitted Disease	147
Summary		151
	Glossary	151
	Key Points	152
Test Yourself		155
Index		159



Introducing Science

You read about science in magazines and newspapers. There are also many TV programs and films about science.



Brainstorm

Who first discovered electricity?

What does a botanist study?

Is there a cure for cancer?

Who is Einstein?

Why do we need to use science apparatus and measuring instruments?

How do we measure volumes of solid and liquid?

What is pulse rate?

How can we put out a fire?

How do scientists carry out investigations?

What do all the above questions have in common?

WHAT IS SCIENCE?

Let's try the brainstorm questions.

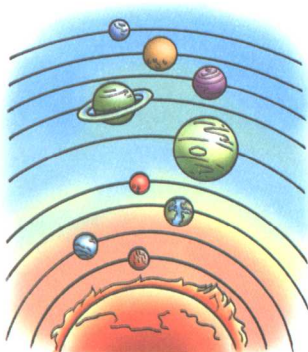
All the brainstorm questions are about science or **scientists** and this is what this first unit is all about.

1.1 What Is Science?

Science is the study to help us understand *how* our natural world works. In science, we find out *what* happens and *why* certain things happen in our world.



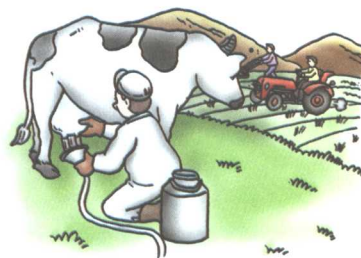
What are drugs used for?
Why do we need them when we are ill?



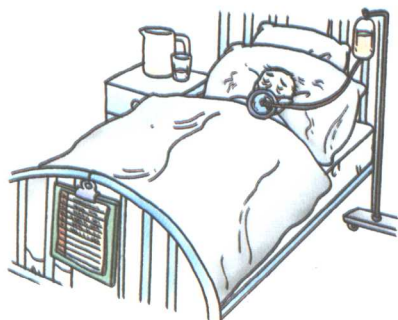
How did the universe start?
How can we see the stars in the sky?



What causes pollution?
How can we make our city less polluted?



What kind of food is good for our health?
How can we improve our food supply?



What causes cancer? And what is the cure?



Key point

Science is the study of how our natural world works.



Things to do

Enter the Internet and see how many sites you can get from the search engine by just typing the word 'science'. Then search for other subjects on science, for example, science games, science research, etc. What does the result tell you about science?



All about scientists

Scientists are people who study science or whose work involves science.

Can you name any famous scientists?

The work that a scientist does to find out his answers is called an **investigation**. It is very similar to what the police do to solve a crime.

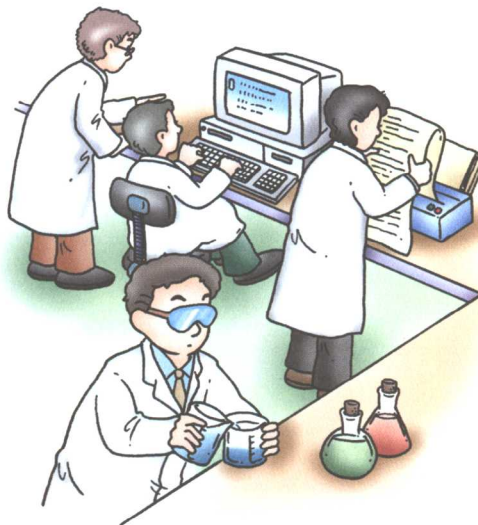


At the end of this unit, you will carry out an investigation to find the answer to an interesting science problem.

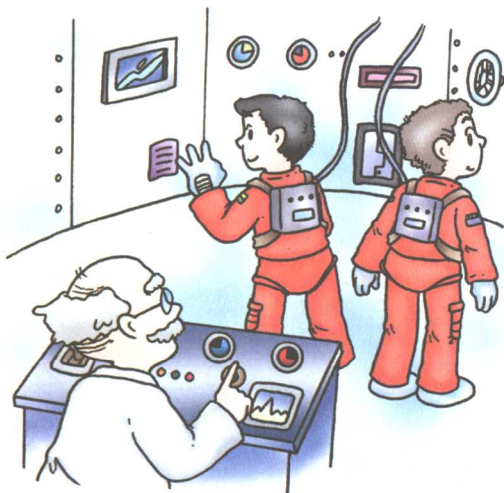
Scientists work in many different areas. Below are some typical scientists. Most of them are working with other people in a team.



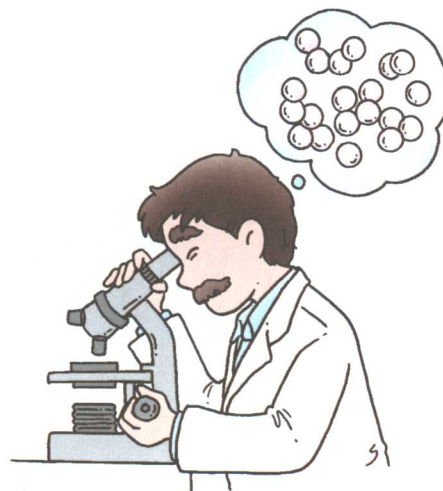
An astronomer is a scientist who studies the stars and planets.



A research scientist works in a laboratory. He tries to discover new materials like chemicals. He also invents useful products.



An astronaut travels to space. He also studies and finds out stars and planets in space.



A biologist studies living things like plants and animals.

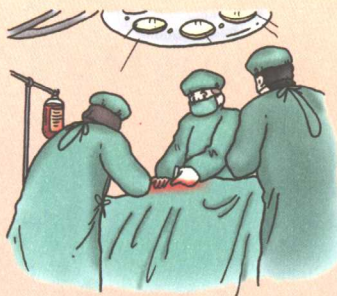
Let's discuss



The pictures shown on page 4 are just a few examples of scientists. Many professions also require a good knowledge of science. Some of them are shown here. Discuss with your classmates about what these people are doing and why they need to study science to do their job.



A civil engineer



A surgeon



A pharmacist



A science teacher



A nurse



A pilot

Reference Materials

Scientific eyes

The Nobel Prize is the highest award granted to a scientist. This scientist received a Nobel Prize in 1998. Do you know what his name is?



Key points

A person who studies science or whose work involves science is called a scientist.

Many professions require a good knowledge of science.

What are scientists doing today?

There are many important questions that scientists are investigating today.

How Can Cancer Be Cured?

New Cancer Drug Found

In 1998, a team of scientists working for a US drug company discovered a new drug to help cancer patients. The drug can block

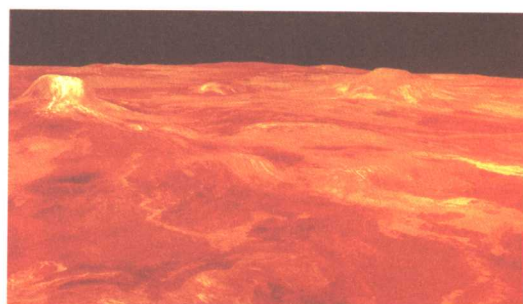
nutrients to *cancer tumours*. The *tumours* get no food and die.

Scientists are doing more research and test on the drug. This new cancer drug certainly looks very promising.



<http://www.cancer.org>

Is there life on Mars? Can men travel to Mars?



<http://www.fas.org/mars>

What is so special about 'Dolly'? How is it different from the other animals?



You may use the following website to find out some cloning information.



<http://www.humancloning.org>

The 'discovery' website is very useful to find out answers to many questions about nature.



<http://www.discovery.com>

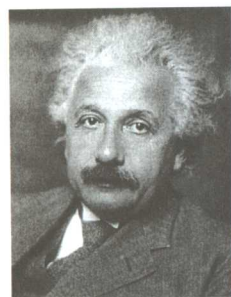
What did scientists do in the past?

Here are pictures of three famous scientists. Underneath is a brief description of their most important discovery.



Charles Darwin (1809-1882)

Darwin was the first scientist to explain how plants and animals developed into the forms that we see today. Darwin explained how simple life forms changed to more complicated ones.



Albert Einstein (1879-1955)

Einstein's most famous discovery was the connection between mass and energy. His research helped to bring about atomic power stations.



Michael Faraday (1791-1867)

Faraday's most useful discovery was how to make electricity. His research helped to invent machines called generators. These machines are used to produce electricity in our power stations.

Try to use the search engine on the Internet to narrow your search on these scientists. For example, Searching 'Charles Darwin' will give you thousands of related sites. Searching 'Charles Darwin short biography' will get you closer to what you want to look for.



Key points

Scientists work in many different areas.

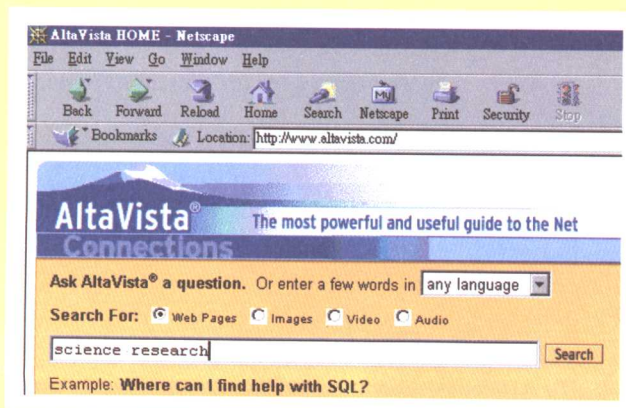
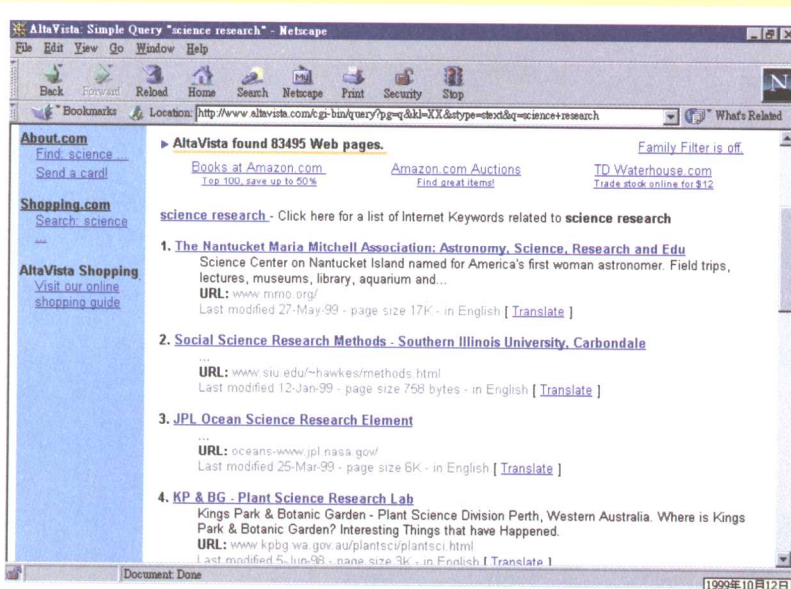
Discoveries made by scientists in the past help us live a better life today.



Things to do

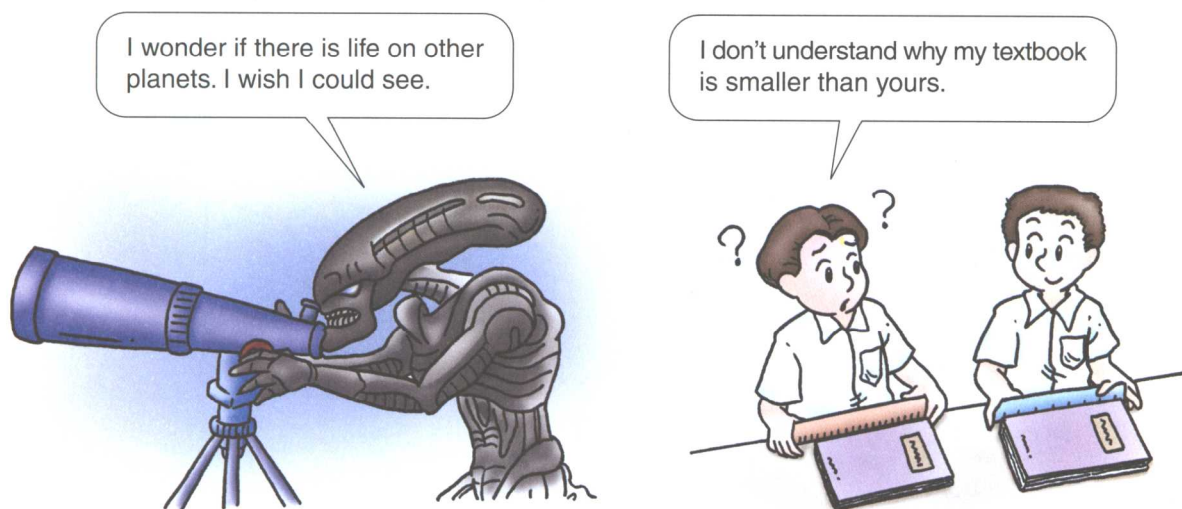
Extension Activity

1. Collect a magazine article or news clipping on an important question that scientists are currently investigating.
2. Try to find out more about current science research on the Internet.

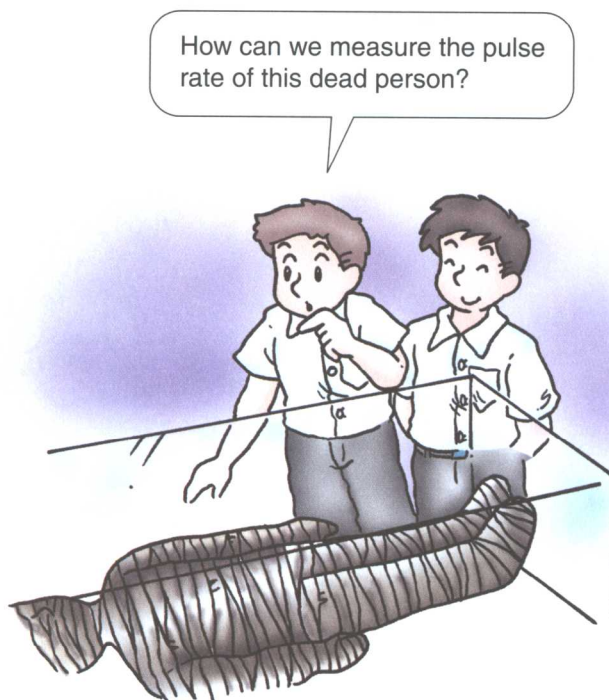


The limitations of science

Science is wonderful but it cannot answer every question. It has its **limitations**. There are a number of reasons for this. For example, the instrument used in a science investigation may not be powerful enough, or the instrument may not be **accurate** enough.



Sometimes, it is not possible to test something scientifically.



The main reason that science cannot answer every question is because the natural world is too complicated. There are too many unknown factors. Look at the examples given below.

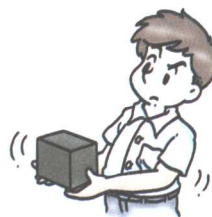


Key point

There are limitations in scientific knowledge. Science cannot give us the answer to every question.

A lot of times, scientists can only find part of an answer to many important questions in science. Like the boy on the right who is trying to find out what is inside a black box, scientists often have to make clever guesses about things that they cannot see.

In Activity 1.1, you will try to make some clever guesses.



Activity 1.1



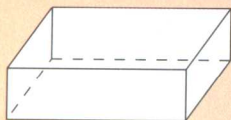
The black box experiment

Procedures

1. Your teacher will give you four boxes filled with different objects such as ruler, rubber, paper, fur, etc. The boxes are sealed. You cannot open them.
2. You can shake the boxes. The noise may give you a clue.
3. Is the object heavy? This question may help to identify it.
4. Tilt the boxes. The movement of the object may help to give you some idea about the shape of the object.

Now draw what you think is inside each box.

Black box A



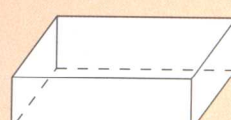
Black box B



Black box C



Black box D



Your teacher will tell you what is inside the boxes at the end of the experiment.

How accurate were you? Can you find out everything about the objects in the boxes?

List some objects that are impossible to find unless the box is opened.

Apparatus and materials

sealed black box

4