

全国职业技能英语系列教材

总主编 丁国声

VP

*Practical English for
Science and Technology*

实用科技英语

魏汝尧 董益坤 主编



北京大学出版社
PEKING UNIVERSITY PRESS

全国职业技能英语系列教材

实用科技英语

主 编 魏汝尧 董益坤

副主编 张凤艳 胡月国 王海峰 姜茜 周炎



北京大学出版社
PEKING UNIVERSITY PRESS

图书在版编目(CIP)数据

实用科技英语 / 魏汝尧, 董益坤主编. —北京: 北京大学出版社, 2009.1

(全国职业技能英语系列教材)

ISBN 978-7-301-13844-1

I. 实… II. ①魏… ②董… III. 科学技术-英语-高等学校: 技术学校-教材
IV. H31

中国版本图书馆 CIP 数据核字(2008)第 067938 号

书 名: 实用科技英语

著作责任者: 魏汝尧 董益坤 主编

责任编辑: 刘 强

标准书号: ISBN 978-7-301-13844-1/H·2006

出版发行: 北京大学出版社

地 址: 北京市海淀区成府路 205 号 100871

网 址: <http://www.pup.cn>

电子邮箱: zbing@pup.pku.edu.cn

电 话: 邮购部 62752015 发行部 62750672 编辑部 62765014 出版部 62754962

印 刷 者: 涿州市星河印刷有限公司

经 销 者: 新华书店

787 毫米×1092 毫米 16 开本 9 印张 220 千字

2009 年 1 月第 1 版 2009 年 1 月第 1 次印刷

定 价: 26.00 元

未经许可, 不得以任何方式复制或抄袭本书之部分或全部内容。

版权所有, 侵权必究

举报电话: 010-62752024

电子邮箱: fd@pup.pku.edu.cn

全国职业技能英语系列教材

编委会

顾问

胡壮麟 (北京大学)

刘黛琳 (中央广播电视大学)

总主编

丁国声 (河北外国语职业学院)

编委会名单 (以姓氏笔画为序)

丁小莉 (山东商业职业学院)

王乃彦 (天津对外经济贸易职业学院)

牛健 (中央广播电视大学)

伍忠杰 (电子科技大学)

李相敏 (河北外国语职业学院)

李恩亮 (江苏海事职业技术学院)

张冰 (北京大学出版社)

张九明 (开封大学)

张春生 (衡水职业技术学院)

陆松岩 (江苏城市职业学院)

陈玉华 (成都航空职业学院)

林晓琴 (重庆电力高等专科学校)

赵倩 (重庆机电职业技术学院)

赵鹏 (北京联合大学)

赵爱萍 (浙江水利水电专科学校)

赵翠华 (承德民族师范高等专科学校)

胡海青 (南京交通职业技术学院)

贾方 (辽宁装备制造职业技术学院)

黄宗英 (北京联合大学)

崔秀敏 (承德石油高等专科学校)

蒋磊 (河南商业高等专科学校)

程亚 (江西景德镇陶瓷学院)

黎富玉 (成都航空职业学院)

潘月洲 (南京工业职业技术学院)

Martin Fielko (Cornelsen Press GmbH & Co. KG)

总 序

我国高职高专教育的春天来到了。随着国家对高职高专教育重视程度的加深,职业技能教材体系的建设成为了当务之急。高职高专过去沿用和压缩大学本科教材的时代一去不复返了。

语言学家 **Harmer** 指出:“如果我们希望学生学到的语言是在真实生活中能够使用的语言,那么在教材编写中接受技能和产出技能的培养也应该像在生活中那样有机地结合在一起。”

教改的关键在教师,教师的关键在教材,教材的关键在理念。我们依据《高职高专教育英语课程教学基本要求》的精神和编者做了大量调查,秉承“实用为主,够用为度,学以致用,触类旁通”的原则,历经两年艰辛,为高职高专学生编写了这套专业技能课和实训课的英语教材。

本套教材的内容贴近工作岗位,突出岗位情景英语,是一套职场英语教材,具有很强的实用性、仿真性、职业性,其特色体现在以下几个方面:

1. 开放性

本套教材在坚持编写理念、原则及体例的前提下,不断增加新的行业或岗位技能英语分册作为教材的延续。

2. 国际性

本套教材以国内自编为主,以国外引进为辅,取长补短,浑然一体。目前已从德国引进了某些行业的技能英语教材,还将从德国或他国引进优秀教材经过本土化后奉献给广大师生。

3. 职业性

本套教材是由高职院校教师与行业专家针对具体工作岗位、情景过程共同设计编写的,同时注重与行业资格证书相结合。

4. 任务性

基于完成某岗位工作任务而需要的英语知识和技能是本套教材的由来与初衷。因此,各分册均以任务型练习为主。

5. 实用性

本教材注重基础词汇的复习和专业词汇的补充。适合于在校最后一学期的英语教学,着重培养和训练学生初步具有与其日后职业生涯所必需的英语交际能力。

本教材在编写过程中,参考和引用了国内外作者的相关资料,得到了北京大学出版社外语编辑部的倾力奉献,在此,一并向他们表示敬意和感谢。由于本套教材是一种创新和尝试,书中瑕疵必定不少,敬请指正。

丁国声

教育部高职高专英语类专业教学指导委员会委员

河北省高校外语教学研究会副会长

河北外国语学院院长

2008年6月

前 言

根据教育部最新颁布的《高职高专英语课程教学基本要求》和国务院关于要把基础教育、职业教育和高等教育放在同等重要位置的要求,在北京大学出版社的组织下我们编写了这本富有时代特色、新型实用的高职高专科技英语教材。

本教材紧扣《高职高专英语课程教学基本要求》提出的教学目的,旨在,在基础阶段英语教学结束的基础上,进一步提高学生获得英语知识和技能的能力,以应用功能语言学为指导,采用任务型教学模式,坚持实用性、适时性和趣味性原则,注重语言交际,力求使英语学习达到学用结合、学以致用、学后会用,培养学生的英语实际应用能力。

本教材选材新颖,编写具有特色,分为 10 个单元,每个单元各有侧重,又相互关联,既重视了系统性、连贯性,又不忽视各章的特殊性和专业性。

由于时间仓促,编写过程中难免有不当之处,敬请批评指正。

编 者



Contents

Unit 1 Energy Comes in Many Forms / 1

1. Warm-up activity / 1
2. Leading to Scientific English: Defining / 1
3. Oral practice / 3
4. Writing practice / 4
5. Translate the following passage into Chinese / 4
6. Guided-reading / 4
7. Answer the following questions according to the reading / 7
8. Fill in the blanks with the words used in the reading / 8
9. Self-reading / 8

Unit 2 Classification of Computers / 12

1. Warm-up activity / 12
2. Leading to Scientific English: Classifying / 12
3. Oral practice / 14
4. Writing practice / 16
5. Translate the following passage into Chinese / 16
6. Guided-reading / 17
7. Answer the following questions according to the reading / 19
8. Fill in the blanks with the words used in the reading / 19
9. Self-reading / 20

Unit 3 Ancient Chinese Architecture / 25

1. Warm-up activity / 25
2. Leading to Scientific English: Exemplifying / 25
3. Oral practice / 27
4. Writing practice / 28
5. Translate the following passage into Chinese / 28
6. Guided-reading / 29
7. Answer the following questions according to the reading / 31
8. Fill in the blanks with the words used in the reading / 31
9. Self-reading / 31



Unit 4 Global Warming / 35

1. Warm-up activity / 35
2. Leading to Scientific English: Cause and Effect / 35
3. Oral practice / 37
4. Writing practice / 38
5. Translate the following passage into Chinese / 38
6. Guided-reading / 38
7. Answer the following questions according to the reading / 41
8. Fill in the blanks with the words used in the reading / 41
9. Self-reading / 41

Unit 5 The Papermaking Process / 45

1. Warm-up activity / 45
2. Leading to Scientific English: Comparing / 45
3. Oral practice / 47
4. Writing practice / 48
5. Translate the following passage into Chinese / 49
6. Guided-reading / 49
7. Answer the following questions according to the reading / 53
8. Fill in the blanks with the words used in the reading / 53
9. Self-reading / 53

Unit 6 Internal Body Clock / 58

1. Warm-up activity / 58
2. Leading to Scientific English: Give Evidence / 58
3. Oral practice / 59
4. Writing practice / 59
5. Translate the following passage into Chinese / 60
6. Guided-reading / 60
7. Answer the following questions according to the reading / 62
8. Fill in the blanks with the words used in the reading / 63
9. Self-reading / 63

Unit 7 Some Notions about Motion / 66

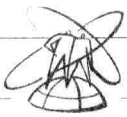
1. Warm-up activity / 66
2. Leading to Scientific English: Hypothesis / 66
3. Oral practice / 68
4. Writing practice / 69
5. Translate the following passage into Chinese / 69
6. Guided-reading / 69
7. Answer the following questions according to the reading / 71
8. Fill in the blanks with the words used in the reading / 71
9. Self-reading / 72

Unit 8 Penny Chemistry / 78

1. Warm-up activity / 78
2. Leading to Scientific English: Experiment / 79
3. Oral practice / 80
4. Writing practice / 80
5. Translate the following passage into Chinese / 80
6. Guided-reading / 81
7. Answer the following questions according to the reading / 84
8. Fill in the blanks with the words used in the reading / 84
9. Self-reading / 85

Unit 9 Earth / 90

1. Warm-up activity / 90
2. Leading to Scientific English: Describing / 90
3. Oral practice / 92
4. Writing practice / 93
5. Translate the following passage into Chinese / 93
6. Guided-reading / 94
7. Answer the following questions according to the reading / 96
8. Fill in the blanks with the words used in the reading / 97
9. Self-reading / 97



Unit 10 Alcohol And Health / 103

1. Warm-up activity / 103
2. Leading to Scientific English: Reporting / 103
3. Oral practice / 105
4. Writing practice / 106
5. Translate the following passage into Chinese / 106
6. Guided-reading / 107
7. Answer the following questions according to the reading / 109
8. Fill in the blanks with the words used in the reading / 110
9. Self-reading / 110

参考答案 / 116

References / 133



Unit 1

Energy Comes in Many Forms

1

Warm-up activity: *try to describe the following things in your own ways and ask your partner to guess what they are.*

- (1) an apple
- (2) a bridge
- (3) a diamond
- (4) picnic
- (5) coffee
- (6) echo
- (7) a TV set

2

Leading to Scientific English: Defining.

定义(defining)是通过列出一个事物或者一个物件的基本类属来描写或者规范一个词或者一个概念的意义。被定义的事物或者物件叫做被定义项,其定义叫做定义项。定义在科技文体中尤为重要,因为有时在科技文体中某一术语会有其特殊的含义。比如: *function* 在日常用语中有“功能、作用”的意思,而在数学领域中则有“函数”的意思。

在科技英语中,一个事物或者一个物件完整的定义应该包括这一事物或者物件的类属以及其区别于其他概念的特性。精确的定义使得科技研究信息得以准确地传递和交流

2.1 Using English to classify things.

Definition should include the general classification of a term plus the specific characteristics that differentiate the term from other members of its class, for example, a definition of a computer should include a classification, such as, *A computer is a machine*; and specific characteristics, such as, *which is used for storing, organizing and finding information*; so the whole definition is: *A computer is an electronic machine which is used for storing, organizing and finding information.*



Definition formula:

Term = Class + Characteristics (事物/物件 = 类属 + 特征)

Term = Characteristics + Class (事物/物件 = 特征 + 类属)

For Examples:

(1) *Fish is an animal that lives in water, and uses its fins and tail to swim.*

(事物或物件的特征通常用以 which, that, who, or where 引导的关系从句表示,有时也使用介词词组。)

term = class + characteristics

Fish = is an animal + that lives in water, and uses its fins and tail to swim.

(2) *Pilot is someone who operates the controls of an aircraft.*

term = class + characteristics

Pilot = is someone + who operates the controls of an aircraft.

(3) *Thermal Energy, or heat, is the internal energy in substances.*

term = characteristics + class

Thermal energy = is internal + energy in substance

注意:

(1) 下定义时通常使用一般现在时;

(2) 如果被定义的事物是可数名词,通常用 a 修饰,表示泛指。

2.2 Useful structure and sentence patterns.

(1) 先整体类属,再具体特征

DEFINING TERM	=	GENERAL CLASS WORD	+	PECIFIC CHARACTERISTICS
被定义的事物	=	概括类属的词汇	+	具体特征

{ A chemist A barometer (气压计) is A pipeline (管道)	{ a scientist who an instrument that a tube through which	{ studies chemistry. measures air pressure. liquid or gas can flow for long distances.
--	---	---

{	Mathematics	is	{	the study	{	of numbers, shapes and space.
	A square			a flat shape		with four sides of equal length and four angles of 90°.

(2) 先具体特征,再整体类属

TERM	=	SPECIFIC CHARACTERISTICS	+	GENERAL CLASS WORD
被定义的事物	=	具体特征	+	概括类属的词汇

{	Mercury (水银)	is a	{	liquid	{	metal.
	A circle (圆)			continuous curved		line.
	Asbestos (石棉)			fire-resistant		mineral.

3

Oral practice: give definitions of the following things.

(1) machine



(2) lamp



(3) satellite



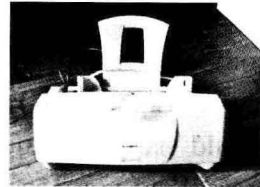
(4) lab



(5) aircraft



(6) printer





4

Writing practice: give definitions with the information given in each series.

- (1) anchor/a heavy metal object/attached to a rope and dropped over the side of a ship to keep it in one place
- (2) butterfly/a flying insect/with a long thin body and four large, usually brightly coloured, wings
- (3) necklace/a piece of jewellery/consisting of a chain, string of beads etc, worn around the neck
- (4) work/the use of force/to produce movement
- (5) function/a quantity/whose value depends on the varying values of others
- (6) gold/a yellow precious metal/used for making coins, jewellery, ornaments, etc
- (7) fireplace/an open space for a fire/in the wall of a room
- (8) kite/a toy/made of light frame covered with paper or fabric, which people fly in the air at the end of one string

5

Translate the following passage into Chinese.

In strict scientific terms energy is classified into two main forms: kinetic and potential energy. Kinetic energy (动能) is defined as the energy of a moving object. A thrown football, a speeding automobile, a waterfall, or rocks falling from a cliff are examples of objects that have kinetic energy. Potential energy (势能) appears in many different forms, and is defined as the energy in matter due to its position. The various forms of potential energy include gravitational potential energy (重力势能), elastic potential energy (弹性势能), chemical potential energy (化学势能), and electrical potential energy (电势能).

6

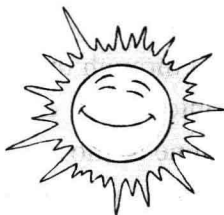
Guided-reading

Energy Comes in Many Forms

Can you imagine a world without energy? You wouldn't be able to play computer games, ride a bicycle, or talk on the phone. Cars and trucks wouldn't move. Lights wouldn't shine. Plants wouldn't grow. Without energy, nothing would happen! Energy is the ability to change or move matter. Just about everything you see, hear, and feel depends on energy. Energy comes in many forms.

Chemical energy is energy that is released by a chemical reaction. The food you eat contains chemical energy that is released when you digest your meal.

Wood, coal, gasoline, and natural gas are fuels that contain chemical energy. When these fuels are burned, the chemical energy is released as heat.



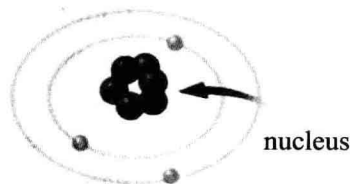
Radiant energy is energy that can move through empty space. The sun and stars are very powerful sources of radiant energy. The heat and light given off by lightbulbs and campfires are also forms of radiant energy.

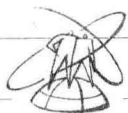
Mechanical energy moves objects from place to place. You use mechanical energy when you kick a ball or turn the pedals of a bicycle. Other examples of mechanical energy include water flowing in a stream or tires rolling down a road.



Electrical energy comes from the electrons within atoms. It can be created at a power plant or inside a battery, and can power everything from remote-controlled cars to refrigerators. Lightning and static electricity are also forms of electrical energy.

Nuclear energy is energy contained in the nucleus at the center of an atom. Nuclear energy is released when nuclei are split apart into several pieces, or when they are combined to form a single, larger nucleus.





Energy can be transformed into another sort of energy. But it cannot be created and it cannot be destroyed. Energy has always existed in one form or another. Stored energy in a flashlight's batteries becomes light energy when the flashlight is turned on. Food is stored energy. It is stored as a chemical with potential energy. When your body uses that stored energy to do work, it becomes kinetic energy. If you overeat, the energy in food is not "burned" but is stored as potential energy in fat cells. When you talk on the phone, your voice is transformed into electrical energy, which passes over wires (or is transmitted through the air). The phone on the other end changes the electrical energy into sound energy through the speaker. A car uses stored chemical energy in gasoline to move. The engine changes the chemical energy into heat and kinetic energy to power the car. A toaster changes electrical energy into heat and light energy. (If you look into the toaster, you'll see the glowing wires.) A television changes electrical energy into light and sound energy.

To make sure we have plenty of energy in the future, it's up to all of us to use energy wisely. We must all conserve energy and use it efficiently. It's also up to those who will create the new energy technologies of the future. All energy sources have an impact on the environment. Concerns about the greenhouse effect and global warming, air pollution, and energy security have led to increasing interest and more development in renewable energy sources such as solar, wind, geothermal, wave power, etc.

But we'll need to continue to use fossil fuels and nuclear energy until new, cleaner technologies can replace them. One of you who is reading this might be another Albert Einstein or Marie Curie and find a new source of energy. Until then, it's up to all of us.

Useful Words & Expressions

imagine	v.	想象
depend	v.	依靠, 依赖
chemical	adj.	化学的
release	v.	释放
reaction	v.	反应
contain	v.	包含, 容纳
digest	v.	消化
coal	n.	煤
gasoline	n.	汽油
natural	adj.	自然的
fuel	n.	燃料