

新目标大学英语系列教材

总主编 / 束定芳 总策划 / 庄智象

主 编 王腊宝 陶丽

# 科技英语教程

NEW TARGET COLLEGE ENGLISH  
READINGS IN SCIENCE  
AND TECHNOLOGY

学生用书

Student's Book

 上海外语教育出版社

外教社 SHANGHAI FOREIGN LANGUAGE EDUCATION PRESS

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# 总序

随着高等教育国际化的不断推进，各高校在特色办学、内涵发展和国际化人才培养等方面不断提出新的需求；随着数字网络技术和移动通信的持续创新，大学生英语学习需求呈现出多元化、多层面的变化和发展趋势。

教育部最近制定的《大学英语教学指南》对接国家发展战略需求，对大学英语教学提出了全新的目标与要求。

为满足各高校全面贯彻执行《大学英语教学指南》提出的提高大学生英语能力、培养国际化人才的要求，我们在上海外语教育出版社的帮助下，组织全国十多所高校设计、编写了这套“新目标大学英语系列教材”。

本系列教材参照《国家中长期教育改革与发展规划纲要(2010-2020年)》、《教育部关于全面提高高等教育质量的若干意见》以及《大学英语教学指南》的精神进行设计、编写，充分参照当今外语教学理论，并基于对中国大学英语现状与发展趋势的充分调研。

## 一、教材特色

“新目标大学英语系列教材”之“新目标”包含三层含义：1. 全球化和高等教育国际化发展趋势以及中国新的国家发展战略对中国大学生英语能力提出的新目标和新要求；2. 《大学英语教学指南》对大学英语提出的新的多元化课程目标；3. 各个大学根据学校办学定位、特色、人才培养规格对学生英语能力设定的新目标和新要求。

教材设计同时体现以下特色：

### 1. 以学生为本

各教程注重语言知识的讲解与传授，以及语言技能、学习技能和思维能力的培养，通过任务、活动及练习的设置引导学生在做中学，在真实的语言交际环境中提高学习技能和语言技能。教材主题的选择对接学生的年龄特点和时代特点，符合学生认知和情感能力发展的需求，可帮助学生拓宽国际视野及提升综合素养。练习类型包括主题拓展、语言知识、思维训练、自主学习能力培养等方面。

### 2. 多维度多层次的立体体系

教材继承传统的“《综合教程》+其他”教材体系，根据新时期大学英语教学的特点以及英语学习的最佳路径，构建全新的“《综合教程》+《视听说教程》+《阅读教程》+‘主题英语教程’”教材体系，不仅全面培养学生的英语听说读写能力，而且注重提高大学生科学人文素养和跨文化交际能力，并培养他们以英语为媒介从事专业学习和国际学术交流的能力。

## 二、教材结构

本系列教材的结构体系按照《大学英语教学指南》提出的“通用英语”、“专门用途英语”和“跨文化交际英语”三大板块进行设计、编写。

### 通用英语

通用英语教材旨在全面提高学生的英语语言技能，为后续课程——特别是专门用途英语课程或全英语专业课程——的学习打下基础。

《综合教程》：1—4册（刘正光主编）

《综合教程》通过帮助学生阅读符合其认知和情感特点的优秀范文，掌握基本阅读技能和语言基础知识，逐步形成系统的组织和表达思想的能力，同时利用阅读材料所提供的英语语言素材和相关主题知识，培养学生综合使用语言的能力。

《视听说教程》：1—4册（徐锦芬主编）

《视听说教程》通过各种口头的语言交际活动，特别是学术交流活动，帮助学生获得听懂专业课程、参与学术交流的能力。

《阅读教程》：1—4册（束定芳主编）

《阅读教程》的主题完全对应《综合教程》的主题，教材内容不仅增加了相同主题选文的体裁和数量，更重要的是帮助学生进一步巩固和拓展相关主题知识和语言技能，熟练掌握阅读技巧，提升阅读速度。

### 专门用途英语

《科技英语教程》（王腊宝主编）；《人文社科英语教程》（文旭主编）

这两本教材是专门为理工科和人文社科专业方向学生进入全英语专业课学习或阅读专业文献而编写的过渡性教材，也可作为不同专业学生的拓展阅读教程。

### 跨文化交际英语

《中国文化英语教程》（束定芳主编）；《西方文化英语教程》（殷企平主编）

这两本教材的设计充分考虑到中国学生对中国传统文化和西方文化的兴趣，能满足学生加深对中国传统文化和西方文化了解的需求。

## 三、教材使用建议

本系列教材可充分满足《大学英语教学指南》提出的通用英语课程中基础级和提高级的教学要求，各高校可根据本校学生的实际情况和教学目标选择使用。

本系列教材中的《综合教程》、《视听说教程》、《阅读教程》可作为主干教材用于基础阶段和提高阶段的教学；《科技英语教程》、《人文社科英语教程》、《中国文化英语教程》和《西方文化英语教程》可作为提高阶段教材，或作为学生自主学习的补充资源。

新生英语基础相对较好的高校可加快各基础阶段的教学进度，并补充主题英语的内容；对于新生英语基础相对比较薄弱的高校，建议使用基础阶段教材帮助学生打好语言基本功，再视学生语言能力开设拓展课程。

本系列教材在编写过程中得到了多方面的支持，特别是教育部大学外语教学指导委员会、外语界许多知名专家学者、高校一线教师和上海外语教育出版社高等教育事业部的编辑等，在此一并表示衷心的感谢！

由于编者水平所限，编写时间仓促，教材中难免有疏漏与不足，欢迎专家、广大教师和学生批评指正。

束定芳

## Preface

The *New Target College English* series is the most comprehensive English language textbook series that I have seen. The whole series is based on the new college English curriculum guidelines set by the Ministry of Education, which emphasizes both training in basic skills and the development of cross-cultural awareness and some ESP skills. The contents of the textbooks are ideal for achieving these goals.

There is a primary focus on reading and writing in the *Integrated Course* but the reading texts also serve as a basis for creative thinking and developing speaking skills. The topics of each unit have been very carefully chosen to reflect the global role that English now plays. I was especially pleased to see that the reading passages were extensive rather than the fashionable short texts that figure in many contemporary textbooks. There is – very rightly – a major emphasis on developing students' vocabulary, including both words and phrases.

The *New Target College English* series also focuses on academic listening and speaking with the specially designed *Video Course*. *Readings in Western Culture* and *Readings in Chinese Culture* provide extensive reading materials in both Chinese and Western cultures while *Readings in Science and Technology* and *Readings in the Humanities and Social Sciences* are designed as ESP materials to enhance students' academic skills in English. This series will appeal to a wide range of teachers with its blend of traditional type and communicative activities.

A key feature of the series is that it aims to cater to the different needs of Chinese students at different levels and locations. There is a rich array of learning activities in each course that will allow teachers the opportunities to select those activities that they consider best suited to their own students. Teachers can also elect to use one, two or all of the courses in the complete series based on their students' English proficiency and the aims and objectives of the English curriculum in their own college. My hope, however, is that they will take advantage of the whole series.

The textbook series also takes account of the fact that many Chinese college students will need to use English to further their own academic studies. Thus there are activities specifically directed at the English language skills and strategies that students will need to study through the medium of English.

My lifelong work in second language acquisition points to one key principle that needs to inform the design of language courses – namely, the importance of providing as much input in the second language as possible. Language learning is a slow and gradual process that can only be successful if learners are exposed to massive amounts of input. Most language courses consist only of the main textbooks, which by themselves can never ensure the quantity of input needed to achieve high levels of proficiency. The *New Target College English* series is a very welcome exception.

I am very happy to endorse the *New Target College English* series.

Rod Ellis  
Distinguished Professor, University of Auckland  
Changjiang Scholar, Shanghai International Studies University



## 编者的话

大学英语学习的核心目标之一是阅读能力的培养，阅读科技文献的能力对于今日中国大学生而言尤其重要。如何编写适合新时代、新学生、新要求的英语教材，为培养这一能力构建很好的阅读课堂教学素材，是众多大学英语工作者一直以来不断思考的问题。《科技英语教程》的编者立足《国家中长期教育改革与发展规划纲要》和《大学英语教学指南》等国家纲领性文件，在对国内英语教学现状广泛调研的基础上有针对性地编写了这本阅读教程，旨在培养学生的阅读技能，丰富学生的科技知识，提高学生思辨能力，培养具有科学素养和国际视野的高素质人才。

本教程具有以下特点：

(1) “工具性”和“人文性”的统一。全书共分16个单元，包含了与人类社会发展息息相关的多个科技领域的素材，每个单元的选材不仅为学生提供丰富的相关语汇和句型，还较全面地展示了推动人类文明进程的重要科技知识，并将其与人类生活方式、行为规范、价值观念及整体文明进程相映照，对于扩大学生知识面、拓宽他们的视野、提高他们的思辨能力、培养他们的科学及人文素养都会产生非常积极的影响。

(2) 选材的时代性和趣味性。进入21世纪以来，数字和网络技术使得人们的传统阅读习惯发生了巨大改变，学生对阅读材料的趣味性也提出了新的要求。本教材选取的材料大多涉及当代最前沿的科技发展，内容生动有趣。每个单元在选材时摒弃了过于枯燥和晦涩的学术语言，多数文章轻松而诙谐，对于各个科技发明的介绍语言清晰明了，适合学生的语言水平，易激发学生的阅读兴趣，增强其学习英语的动力和信心。

(3) 文本的多样性。针对不同层次学生群体的需要，每单元选择三篇阅读材料，在难度上呈梯级上升，教师可以根据教学目标和学生水平选择合适的教学内容。同时，文本来源丰富，包括记叙、说明、议论、新闻报道等多种文体风格，让学生在丰富知识的同时体会不同作者驾驭文字的方式和功力。

(4) 练习的科学性和实用性。各单元的练习由浅入深，既从文章大意和细节出发帮助学生理解文本本身，也引领学生在充分阅读的基础上思考、阐释、质疑文本中隐含的内涵与价值，从表层理解走向深层理解，从机械阅读走向理性思考、感性体悟，进而走出教材，达到思维的升华。同时教材还参考了大学英语四六级考试、雅思、托福及国内外优秀阅读教材练习的设置，既培养学生的综合语言能力和思辨能力，也意在增强学生的应试技巧。

(5) 拓展性和自主性。教材不是学习的终点，而应成为学生走向更远路程的起点。本教材不仅鼓励学生理解掌握课本内的知识，还通过课堂讨论、课后调研等多种形式引导学生扩充自己的阅读量，帮助学生构建立体化、网络化的知识体系，同时培养学生自主学习的习惯和能力。

《科技英语教程》在新时代的背景下，立足我国当前英语教学实际需求，通过选择丰富、实用的阅读文本、设置科学合理的练习和课堂活动，努力激发学生的学习兴趣，使学生在提高阅读能力的同时深入了解前沿科技知识，提高思辨能力、科学和人文素养，成为适应时代要求的新人才。

2016年1月  
编者

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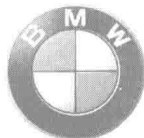
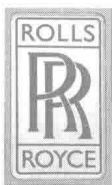
# Unit 1



## Cars: Need a Ride

### Lead-in

1. The following are some famous car logos. How many do you recognize?



2. Technology has been constantly changing our concept of the automobile by making our craziest dreams come true. One example is offered below.

The idea of flying cars, or flying-driving vehicles, has been brought to reality with a design of a propeller-powered airplane that can fold up its wings, drive down the road and park in a single-car garage.

What other advances do you expect to see in the future?



## Why Don't We Still Drive Steam Cars?

*Christopher Brooks*

1 Fast, clean and energy efficient, the steam-powered car was at one time the motorist's vehicle of choice. So why did it run out of puff?

2 Mention steam engines and most people will think of steam trains, not steam cars. But this has not always been the case. At the turn of the 20th century more than half the cars in the USA were powered by steam. Mainly produced by the American companies Stanley and White, steam engines had a series of advantages over the newer internal combustion engine.

### **Safe and easy to drive**

3 They were simpler mechanically, producing continuous power from steam pressure so they had no need for the transmission, clutch or gears required to harness and convert the strokes of a combustion engine.

4 With few moving parts, they ran quietly and could be fuelled with anything that burned. They produced 100% of their power from rest so were also easier to drive, and safer for pedestrians. Their power could be switched into reverse at any point to reduce speed more quickly than the ineffective brakes of the time.

5 But steam cars also had disadvantages. They were more cumbersome than their smaller rivals, often weighing between two and three tonnes. Substantial boilers and water tanks were needed with early steam cars losing up to a gallon (4.5 litres) of water every mile. Stanley partially remedied this with the

internal combustion engine 内燃机

transmission *n.* 传动装置, 变速器  
clutch *n.* 离合器  
gear *n.* 排挡

pedestrian *n.* 行人

cumbersome *a.* 笨重的  
boiler *n.* 锅炉

gallon *n.* 加仑 (容量单位)



introduction of *condensers* in 1915, which turned much of the steam back to liquid water before it could escape. But even then they were still only achieving eight miles per gallon of water.

*condenser* *n.* 冷凝器

6 Another drawback was how long it took to build up steam pressure before a journey could begin. A Stanley steamer owner's manual published in 1918 suggested that this would take between 10 and 15 minutes, but in cold weather it was likely to take much longer.

7 Starting had also been an issue for cars powered by the new combustion engines. Early models required hand-operated cranks to start which could break arms and wrists when the car backfired. But the invention of the *electric starter* gave the internal combustion engine an advantage and led large manufacturing companies to invest.

*crank* *n.* 曲柄

*backfire* *vi.* (车辆或其发动机) 逆火, 回火  
*electric starter* 电发动机

### **Overtaken by rivals**

8 By 1910, cars with internal combustion engines were being churned out in huge numbers at prices so low that the smaller steam car manufacturers had no chance of matching them. Soon, the Ford Model T took the Stanley's crown as the most popular car on American roads.

*churn out* 大量生产

9 Steam car makers adapted to their *marginalisation*, marketing their cars as luxury products. Stanley took out newspaper adverts emphasising the "soft, smooth, gliding motion," to help readers "(recognize) the fundamental superiority of steam," as they put it.

*marginalisation* *n.* 边缘化

10 But by 1918 the Stanley Steamer was almost six times the price of a Model T. The Stanley Company declined and eventually stopped trading in 1924, by which point steam cars were considered a rare and antiquated novelty.

11 Since then, steam cars have all but disappeared from roads. However, many have been preserved by enthusiasts like Alun Griffiths, Secretary of the Steam Car Club of Great Britain, who owns a 1916 Stanley Steamer.

12 "(I hear) the wind whistling in the hood fittings and no other sound apart from a faint thump, thump from the feedwater pumps, like the beat of the machine's heart."

*feedwater pump* 给水泵