高等学校大学英语专业阅读阶段教材

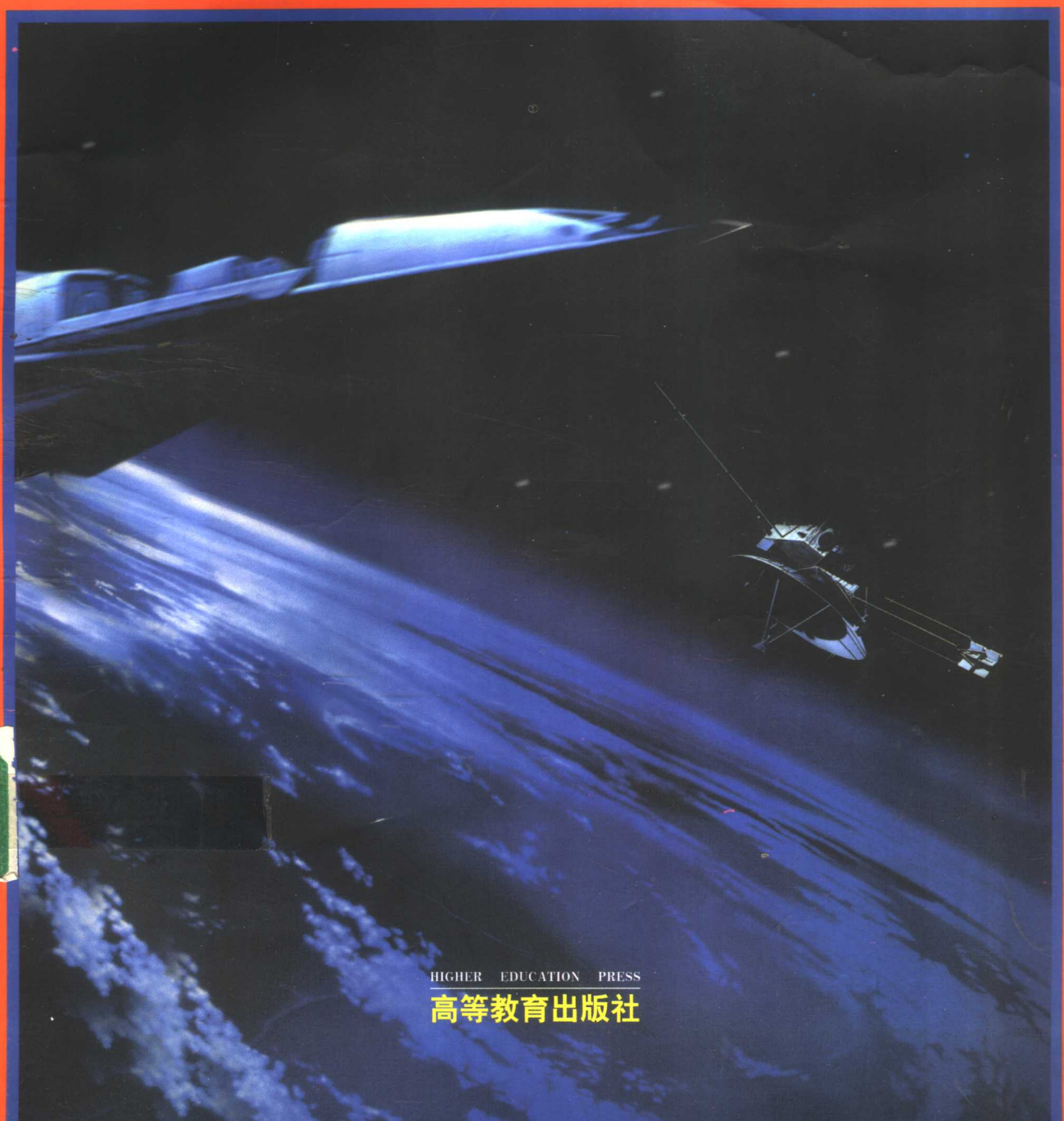
NEW SCIENCE ENGLISH

STUDENT'S BOOK

学生用书

新科技英语

东南大学中英《新科技英语》教材项目组



HIGHER EDUCATION PRESS

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前　言

<<新科技英语>>(New Science English)是由国家教育委员会与英国政府海外开发署共同商定的文化交流项目之一。该项目由国家教育委员会领导、英国政府资助、东南大学主持，历时三年，现已圆满结束。在此，我们十分高兴地将此成果推荐给大学英语专业阅读教学的同行们。

<<新科技英语>>是根据国家教育委员会颁布的<<大学英语专业阅读阶段教学基本要求>>编写的第一套新型教材。主要供我国工科高等院校非英语专业的专业英语阅读教学使用，也可供其它类型的高等院校进行科技英语阅读教学时采用。

这一项目在设计上，针对我国大学英语专业阅读阶段教学的薄弱环节，旨在促进我国大学英语专业阅读阶段教学的发展，特别是在进一步提高学生阅读理解能力和综合分析的能力、习惯科技词汇、开阔科普视野和思路、了解科技文体、掌握<<大学英语专业阅读阶段教学基本要求>>所规定的学习技能、语言技能和基本词汇，进一步提高学生运用英语的能力，以满足日益增长的国际科技交流与合作的需求。

该项目共分五个阶段实施:

一、大学英语专业阅读教学的调研与需求分析。

二、编写大纲设计、教材编写与试用。

三、教材修订与再次试用。

四、项目的总体评估。

五、教材的出版与推广。

自1995年9月起，本教材在东南大学先后进行了两轮大面积的试验教学与修订，并相继在西安交通大学、重庆大学的部分教学班进行了试点。这些试验教学由中方教师(包括外语系教师和专业系科的教师)与英方教师共同执教、共同收集和分析反馈信息，对教材进行修改。

该教材在编写上力图全面贯彻<<大学英语专业阅读阶段教学基本要求>>的精神，因此较全面地覆盖了“基本要求”所规定的学习技能、功能意念、词汇和其他教学要求。

在进行了学生调查的基础上，教材精选主题。课文内容涉及世界科技发展的最新领域，并反映典型的科技文体的表达形式。

在练习编写上以学生学习为中心，全面地培养学生读、写、译的能力。特别值得一提的是，在阅读练习的设计上增加了阅读过程的指导。课文右边给出一定的单词注释和设计一些阅读提示性问题，使学生阅读过程中得到正确的引导和帮助。此举在学生的反馈意见中，得到了积极的反应。

此外，本教材还配有一本详尽实用的教师手册，以帮助任课教师理解本书的编写意图，解决一定的语言和文化障碍，更好地组织课堂教学。

需要说明的是，考虑到本书为语言教材，为保持选文及有关例句的原有风格，对本书中所使用的非国际标准单位均未予改动。

1997年3月由邵永真、吴银庚、韩其顺、郭杰克、程恩洪、刘龙根等六位教授组成的大学外语教学指导委员会评审组对该教材进行了评审。并作出了积极、充分肯定的评价。他们一致认为这

是一部目的明确、符合“基本要求”、实用性强的好教材。它题材多样，语言规范、真实，反映了世界最新科技发展的动态。

这一项目历时三年，得到了各方的支持和关心。在此我们要特别感谢国家教委高教司外语处负责人岑建君、外语处前处长张序义，英国驻华大使馆英国文化教育处的官员John Hilton, Babara Wickham和Jim Banks。东南大学国际交流处、教务处、外语系的领导也给予了本项目很多的帮助。我们还要感谢西安交通大学外国语学院、重庆大学外国语学院的领导和同行们给予此项目的大力支持。在本书出版之际，我谨代表中英<<新科技英语>>项目组向所有关心和支持过该项目的所有人员表示由衷的感谢。

尽管在本书的编写中我们尽了最大的努力，但恐难免做到尽如人意。我同时也希望广大的教师在使用本教材的过程中对本教材不断提出宝贵的意见。

中英<<新科技英语>>项目组主任
邹长征

1997年4月于东南大学

TO THE READER

WHAT IS THE STRUCTURE OF THE BOOK?

There are sixteen units in *New Science English (NSE),* twelve of which have a core reading text (CRT) and a supplementary reading text (SRT), and the other four units focus on writing practice. These reading texts deal with some new areas of science and technology. As you work through the book, for example, you'll be reading about the latest developments in traffic technology and the information superhighway, about space exploration and robot farms. The core reading texts are all taken from up-to-date English magazines, journals and newspapers; the supplementary reading texts are from a wide range of sources: textbooks, encyclopaedias, conference papers, and so on. While some texts have been shortened, none of them have been simplified; so you will be reading authentic English.

Accompanying each core reading text there are a number of tasks. Before each text there is a pre-reading task which will get you thinking about the topic, and may introduce some unfamiliar vocabulary. Then there are global and detailed reading tasks that will ensure you really understand the text. Finally there are vocabulary development activities and a 'language in use' section.

The supplementary reading texts are accompanied by tasks that are similar to the question-types in the post-Band 4 Specialised Reading examinations. The answer keys for these tasks are at the back of this book. Each reading unit also includes a vocabulary check activity that reviews some of the key vocabulary in the units, and a 'Wordbuilder' section that focuses upon the vocabulary in the *College English Specialised Reading Stage* vocabulary list (published by Higher Education Press, 1996). The answer keys for the 'Wordbuilder' tasks are at the back of the book.

After every three reading units there is a unit that focuses on writing. These units will give you practice in writing and in using visual information such as charts and maps to support your writing, and will introduce you to some academic writing conventions.

Finally, at the back of the book, there is a selective glossary of key words and phrases.

WHAT ARE THE AIMS OF THE BOOK?

NEW SCIENCE ENGLISH aims to be a bridge between the general English reading you have done so far and the more subject-specific reading you will probably be doing in the future.

So by the end of the book you should have:

* further developed your general reading and analytical skills (e.g. note-taking and information transfer);
* become accustomed to dealing with authentic texts in English;
* enlarged your scientific and technical vocabulary;
* broadened your general scientific and technical outlook;
* become more aware of how to write formal letters and project descriptions, and of how to use visual information (maps, charts, tables and graphs) and academic writing conventions;

* practised a variety of language structure and function-focused writing and translation tasks;
* covered the study skills, language functions and much of the vocabulary that make up the *Basic Teaching Requirements for College English Specialised Reading Stage*.

WHAT ARE THE BOOK'S MAIN FEATURES?

* **The text layout**: every word outside the Band 4 syllabus is glossed in Chinese in the margin beside the text. These translations should increase your reading fluency (and when you re-read the text, you can cover the Chinese glosses). Reference questions are also in the margin of the core texts. These are questions that encourage you to consider the contexts in which words like 'this', 'it', and 'the other' occur. You will need to refer back to preceding sentences as well as to read forward through the text in order to answer the questions, and this will help you to check whether you are following the author's ideas. The answers to these questions are at the back of the book.

* **The reading tasks**: these are not meant simply to test whether you have understood the text; they are designed to guide you through the text and to encourage you to stop and think about what you have read. Some tasks will ask you to transfer what you have read to a table or to label a diagram; at other times you will complete a set of notes or a summary of the text. Whatever the task, the focus is upon the text itself and the message it is trying to get across to you, the reader.

* **The vocabulary development tasks**: these should help you to build up a wider vocabulary. They include activities that focus on scientific words and key technical terms, as well as work on word formation, collocations and idiomatic phrases. By completing these tasks, you may also learn one or two new ways of developing your vocabulary that you can continue to use long after you have finished the book.

* **Language in use**: you will be studying examples of language in real contexts, because they are taken from the reading texts. Once you have analysed them, you will be asked to use these language features in short guided writing and translation activities.

* **Vocabulary check**: before each supplementary reading text there is a vocabulary activity that reviews some of the important words that are glossed in the core reading texts. Answer keys are at the back of this book.

HOW SHOULD I USE THE BOOK?

You will probably find some of the reading texts very challenging; there will be new ideas, many unfamiliar words and phrases, and maybe some words that you once knew but have now forgotten. You may want to spend some time before class reading through the texts, but don't try to look up and translate every new word.

In class, you will be reading the core texts and doing the accompanying tasks. Trust the tasks: they are there to help you think your way through the texts. Starting a topic-based vocabulary notebook in which to note down new words and phrases would be

useful. After you have studied the unit, it would be a good idea to review the text and the tasks after class. The supplementary texts and their tasks are also meant to be used on a self-study basis outside class. You might like to discuss some of the new scientific ideas and technological developments with your classmates in English !

The end of the course does not mean you have to stop developing your reading skills. You could look for other English-language journals and newspapers in your university library, and read some similar articles. Keep your vocabulary notebook up-to-date, and share what you have read with your classmates.

致读者

<<新科技英语>>是如何编排的?

<<新科技英语>>共编写了16个单元，其中12个是阅读单元。每个阅读单元含有一篇阅读主课文（CRT）和一篇补充阅读课文（SRT）。其余4个单元的重点在写作练习上。阅读单元的课文内容涉及科技发展的一些最新领域。在学习本书的过程中，你将会了解到有关诸如交通技术、信息高速公路、宇宙探险和机器人繁衍等方面的最新发展。阅读主课文均选自最新的英文杂志、期刊和报纸。补充阅读课文选材范围广泛，包括教材、百科全书、会议论文等。除了少数几篇课文有所删节外，其余文章未经简化，保留了原文的真实风格。

每一单元的正课文均编有许多练习。每篇课文前的读前练习，将启发阅读思路，并介绍一些相关的生词。精心设计的全文略读练习和细读练习将帮助你透彻理解课文意义。最后，每一课还配有词汇练习和语言应用练习。

补充阅读课文后所附练习与四级后专业英语考试的题型类似，书后附有答案。每一个阅读单元还配有词汇量测试练习，帮助你复习本单元的关键词汇。同时有1个“增加词汇”的部分，重点放在<<大学英语专业阅读阶段>>（高等教育出版社1996年版）的词汇表上。书后亦附有“增加词汇”练习的答案。

每隔3个阅读单元有1个写作单元。写作单元提供写作练习和利用诸如图表等视觉信息说明文字的练习，并介绍了一些学术写作的规范。

最后，本书后还附有一份精选的关键词及词组表。

<<新科技英语>>的宗旨是什么?

<<新科技英语>>旨在帮助你完成从大学基础英语阅读阶段到专业英语阅读阶段的过渡。因此通过学习本教材，将使你:

* 进一步提高阅读理解和综合分析能力(如记笔记、信息转换等)。
* 习惯于阅读真实的语言素材。
* 扩大科技词汇量。
* 开阔科普视野和思路。
* 进一步了解如何书写正式的英文书信、项目规划书，学会如何利用图表、表格等视觉信息，熟悉科技文体的写作规范。
* 操练以不同语言结构、以语言功能为中心的写作练习和翻译练习。
* 掌握<<大学英语专业阅读阶段教学基本要求>>所规定的学习技能、语言功能和基本词汇。

MAP OF *NSE*

UNITS 1 - 3 : Core Reading Texts UNIT 4 : Focus on Writing

Unit	Pre-reading	Global reading	Detailed reading	Vocabulary	Lang. in Use	Vocab. Check
1	Prediction	Writing line numbers to show main sections	1. Note-taking 2. Completing a diagram with given prompts	1. Key technical terms 2. Word form conversions 3. Abbreviations and acronyms	1. 'Because' and 'Although' sentences 2. Eng. – Ch. translation	Key word puzzle
2	Flow chart & cloze	Matching key ideas with line numbers	1. Scanning for statistics 2. Completing cloze summary	1. Words in context 2. Collocation 3. Dictation	1. Present continuous 2. Eng. – Ch. translation	Word search
3	Giving opinions	Writing line numbers to show main sections	1. Note-taking 2. Labelling a diagram 3. Reordering statements 4. Completing a table	1. Adjectives in context 2. Nouns in context 3. Key scientific phrases	1. Process descriptions 2. Ch. – Eng. translation	Classification quiz
4	1. Name cards: translation 2. Conventions of formal letters: reading & writing 3. Letters of application: reading & writing 4. Formal and informal letters: reading, writing & translation					

UNITS 5 - 7 : Core Reading Texts UNIT 8 : Focus on Writing

Unit	Pre-reading	Global reading	Detailed reading	Vocabulary	Lang. in Use	Vocab. Check
5	Vocabulary work	Skimming to find order of topics	1. Completing a table 2. Completing a summary	1. Working out complex technical phrases 2. Concordancing work	Enabling verbs and phrases, comparisons 1. Eng. – Ch. translation 2. Sentence completion	Key word puzzle
6	Dictation	Ordering main sections of text	1. Completing cloze summary: introduction 2. Completing flow chart: example in practice 3. Completing table: evaluation	1. Odd Man Out: nouns from verbs & adjs. 2. Noun phrases 3. Matching words & definitions	1. Exemplification signals 2. Ch. – Eng. translation	Misprints
7	Opinion gap	Confirming opinions	1. Completing table 2. Matching	1. Words in context 2. Compound nouns	1. Modals 2. Ch. – Eng. translation	Word search
8	1. Using tables: reading & writing 2. Using bar charts and pie charts: writing 3. Using graphs: translation 4. Using charts and graphs: writing					

UNITS 9 - 11 : Core Reading Texts UNIT 12 : Focus on Writing

Unit	Pre-reading	Global reading	Detailed reading	Vocabulary	Lang. in Use	Vocab. Check
9	Listing advantages and disadvantages	Skimming / scanning through pre-questions	1. Reordering a time sequence 2. Labelling diagrams from text 3. Note-taking	1. Words in context 2. Word formation 3. Compound nouns	1. Structural description (measurements) 2. Eng. – Ch. translation	Too many words
10	Vocabulary work	Skimming / scanning through pre-reading questions	1. Labelling diagrams 2. Completing table : comparison of systems 3. Completing table: evaluation 4. Labelling map & completing table	1. Adverbs & adjectives 2. Informal phrases	1. Parallel statements to express causal & contrastive relationships 2. Eng. – Ch. translation	Crossword
11	Vocabulary work	Skimming/ scanning through pre-reading questions	1. Scanning for statistics 2. Completing table: reasons	1. Prefixes 2. Suffixes	1. Discourse markers of concession & addition 2. Reconstructing a paragraph 3. Ch. – Eng. translation	Classification quiz
12	1. Introduction to the new airport: reading 2. Planning the new airport: reading & writing 3. Airport proposals: translation 4. Airport layout: vocabulary development		5. Airport layout: writing 6. The construction schedule: translation 7. Land reclamation: writing			

UNITS 13 - 15 : Core Reading Texts UNIT 16 : Focus on Writing

Unit	Pre-reading	Global reading	Detailed reading	Vocabulary	Lang. in Use	Vocab. Check
13	Ordering topic sentences	Locating topic sentences	1. Completing a chart describing a process 2. Completing a table 3. Choosing the best summary	1. Word formation 2. Informal phrases 3. Compound nouns	1. Complex sentences (inserting information) 2. Eng. – Ch. translation	Word deductions
14	Vocabulary work	Matching paragraphs with key ideas	1. Identifying main and supporting statements 2. Completing a flow-chart that compares two models	1. Substitution devices 2. Prefix work 3. Sorting words into categories (revision)	1. Referencing devices: analysis 2. Practising referencing 3. Ch. – Eng. translation	Crossword
15	Cloze-dictation	Predicting and identifying an order of events	1. Identifying people and times 2. Finding line evidence for true statements / answering reflective questions	1. Guessing invented words 2. Multi-part verbs	1. Past perfect tense 2. Ch. – Eng. translation	Odd Man Out
16	1. Introduction: reading & vocabulary development 2. Writing an abstract: reading, analysis, writing & translation 3. Referring to others' ideas: reading & writing 4. Bibliographies: analysis & writing					

SUPPLEMENTARY READING TEXTS & WORDBUILDER

UNIT	SUPPLEMENTARY READING TEXT	TEXT TYPE	TASK TYPE(S)	WORDBUILDER
1	***The Last Big Bang?***	Book review	1. Matching paragraphs & topics 2. Short answers	Word grammar
2	***The Complete Survival Guide to the Information Superhighway***	Popular science magazine	Completing mind-map: summary of text	Vocabulary networks
3	***Plastics in the Home***	Encyclopedia entry	Completing table: classification	Clines & Matching words
5	***Developing an Optimal Scoring System with a Special Emphasis on Volleyball***	Research paper	1. Completing table: explanations 2. Interpreting data	Word formation 1
6	***Guide to Authors***	Professional journal	True / False / Not Given	Word formation 2
7	***Factors in the Development of Transportation***	Encyclopedia entry	Completing table: cause and effect	Visualising vocabulary
9	***Building Parts Fit for Change***	Conference paper	Completing flow chart: problems & solutions	Synonyms & antonyms
10	***The Rifle***	Encyclopedia entry	Inferring meanings from context	Formal verbs
11	***Water Resource Management System***	College textbook	Multiple choice	Nouns & adjectives
13	***Biotechnological Innovations in Food Processing***	College textbook	1. Cloze summary 2. Definitions	Intransitive verbs
14	***The Biological Factory***	Popular science book	Choosing headings for paragraphs	Adverbs
15	***Spacepoem 3: Off Course***	Poem	Discussion questions: inference & implication	Spelling

CONTENTS