



新视域普通高等教育
大学英语规划教材



科技文献阅读 与翻译

陈蓉 潘倩 杨文健 闫欣 © 编著

*Reading and
Translating Scientific
Literature*



人民邮电出版社
POSTS & TELECOM PRESS






中国翻译协会
中国翻译理论研究会
中国翻译教育研究会

科技文献阅读 与翻译


中国翻译协会 中国翻译理论研究会
中国翻译教育研究会 编

科技文献阅读与翻译

中国翻译协会
中国翻译理论研究会
中国翻译教育研究会 编



新视域普通高等教育
大学英语规划教材



科技文献阅读 与翻译



陈蓉 潘倩 杨文健 闫欣 © 编著

*Reading and
Translating Scientific
Literature*

人民邮电出版社

北京



图书在版编目(CIP)数据

科技文献阅读与翻译 / 陈蓉等编著. — 北京: 人民邮电出版社, 2014. 10
新视域普通高等教育大学英语规划教材
ISBN 978-7-115-36836-2

I. ①科… II. ①陈… III. ①科技文献—英语—阅读教学—高等学校—教材②科技文献—英语—翻译—高等学校—教材 IV. ①H31

中国版本图书馆CIP数据核字(2014)第206011号

内 容 提 要

《科技文献阅读与翻译》是大学高年级语言技能拓展课程配套教材。本书编写遵循语言技能训练的一般规律,以大量的基于内容的语言输入为先导,介绍科技文献的定义、类别、阅读方法和技巧。在此基础上,以翻译理论知识为引导,用大量的示例从词汇和句法层面介绍科技文献翻译的方法和技巧,突出实用性与可操作性。

全书分为阅读模块和翻译模块,并附有阅读和翻译习题。阅读模块由四个单元与阅读练习构成,内容涉及科技文献的定义、种类、特征、阅读方法和技巧等。翻译模块由四个单元与翻译练习构成,内容涉及翻译基本理论、词汇、短语以及句子翻译等。本书知识系统清晰,并配套大量相关习题以及答案,既支持课堂教学的互动性,又为自主学习提供了素材。

本书适合高等院校各个专业学生、科技工作者以及科技英语自学者使用。

-
- ◆ 编 著 陈 蓉 潘 倩 杨文健 闫 欣
责任编辑 张孟玮
执行编辑 税梦玲
责任印制 彭志环 焦志炜
 - ◆ 人民邮电出版社出版发行 北京市丰台区成寿寺路11号
邮编 100164 电子邮件 315@ptpress.com.cn
网址 <http://www.ptpress.com.cn>
北京铭成印刷有限公司印刷
 - ◆ 开本: 787×1092 1/16
印张: 11.75 2014年10月第1版
字数: 300千字 2014年10月北京第1次印刷
-

定价: 36.00元

读者服务热线: (010) 81055256 印装质量热线: (010) 81055316
反盗版热线: (010) 81055315

前言

科技文献的阅读与翻译对科学研究的重要性毋庸置疑,特别是英语科技文献的阅读与翻译水平会在很大程度上影响专业学习和学术研究。因此,在高校英语教学中,科技文献阅读与翻译的教学与研究越来越重要。该门课程可以在学生修完基础阶段的英语课程之后开设,为学生进入高年级的专业学习做准备。

本书基于西安邮电大学科技文献阅读与翻译教学团队五年的教学实践所编撰,主要目的是为了满足文献阅读和翻译的语言技能训练要求。本书编写内容上支持依托课程内容进行语言教学、遵循更加合理的语言技能训练顺序、以语言输入为先导,为教师教学提供更丰富的具有逻辑性内容的教学材料,帮助学生更深刻地理解和学习科技文献的定义、类别、特征等知识性内容,提高语言技能,进行翻译实践。本书编写遵循以下几点要求。

实用性。本书在内容编排上遵循以内容为依托的语言教学方法,以语言输入为先导,以一般翻译理论知识为基础,培养翻译的逻辑,最后进行翻译技能的讨论与训练。

启发性。教学内容设计适合启发式与任务型教学,练习设计注重培养学生独立思考与自主学习的能力,倡导在“做”中学、“练”中学,为学生未来的工作与学习打下基础。

科学性。本书内容系统性强,按照客观认知规律以及第二语言学习规律,从指导阅读入手,逐渐过渡到翻译方法与技巧。

拓展性。本书鼓励学习者创新与实践。辅助教学资源为学生拓展学习提供素材。

灵活性和开放性。本书既适合研究型学习也适合任务型学习,鼓励学习者自我总结与归纳,形成个性化的理解与应用。

在使用本书时,编者建议教师在教学中注意引导学生触类旁通,加强总结辨析,根据学生的特点与实际需要有的放矢地选择和提炼教学内容。本书适宜32~48学时的课堂教学安排。

目 录

本书从资料收集、初稿编撰、课堂试用到最终完稿历时三年，由西安邮电大学外国语学院科技文献阅读与翻译课程教学团队合作完成。其中前三章由陈蓉执笔，共计4.5万字；第四章、阅读练习及其答案由潘倩执笔，共计7.9万字；第五章、翻译练习及其答案由闫欣执笔，共计9万字；第六章~第八章由杨文健执笔，共计7万字。本书的编写得到西安邮电大学外国语学院院长袁小陆教授、副院长陈德教授的大力支持和指导，在此表示诚挚的感谢！

本书在编写过程中参考了近年来国内外出版的有关资料和网络资源，特向这些作者致以衷心的感谢！

由于编者水平有限，书中疏漏之处在所难免，恳请各位读者批评指正。

编 者

2014年7月

目 录

Chapter One

Chapter One Researching Information in the Scientific Literature 1

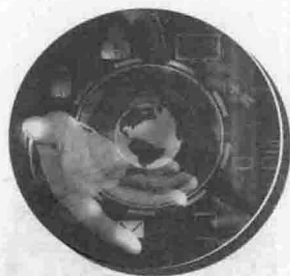
- | | |
|---|---|
| I. Primary, Secondary and Tertiary Literature | 2 |
| II. Which Types of Sources Are Appropriate for Your Research Paper? | 5 |
| III. Researching Topics in the Scientific Literature | 6 |
| IV. Some Basic Steps to Searching the Scientific Literature | 6 |



Chapter Two

Chapter Two Reading Scientific Literature 12

- | | |
|---|----|
| I. Scientific Literature and Research Work | 13 |
| II. Getting Familiar With Scientific Literature | 14 |
| III. Reading Critically and Actively | 18 |





Chapter Three

Chapter Three Reading a Scientific Paper 20

- I. Structure of Scientific Papers 21
- II. Five Steps for Reading a Scientific Paper 22



Chapter Four

Chapter Four Specific Skills for Reading Scientific Literature 29

- I. Literature Review 30
- II. Writing a Summary 32



Chapter Five

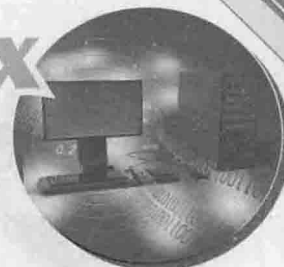
Chapter Five Translation Theories 38

- I. Basic Knowledge about Translation 39
- II. EST Translation 44
- III. Basic Theories of Translation 49
- IV. A Paradox in EST Translation 54

Chapter Six

Chapter Six Translation of Words 58

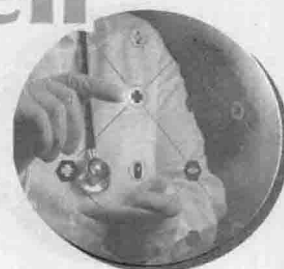
- | | |
|---|----|
| I. A Comparison of Words in English and Chinese | 59 |
| II. Understanding Words | 63 |
| III. Techniques of Words Translation | 71 |



Chapter Seven

Chapter Seven Translation of Phrases 76

- | | |
|--|----|
| I. Semantic Relations of Different Phrases and Their Translation | 77 |
| II. Translation of Some Special Phrases | 81 |

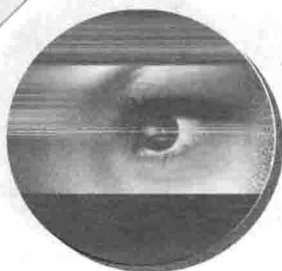


Chapter Eight

Chapter Eight Translation of Sentences 87

- | | |
|--|----|
| I. A comparison of sentence structure in English and Chinese | 88 |
| II. Sentence Analysis | 92 |
| III. Techniques of Sentence Translation | 97 |

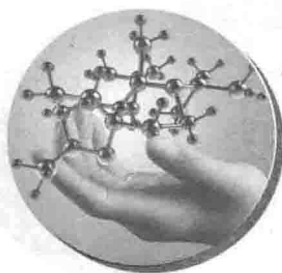




Appendix I

Appendix I Reading Exercises 103

- | | |
|-------------------------|-----|
| I. Sentence Summary | 104 |
| II. Reading and Writing | 105 |
| III. Summary | 114 |

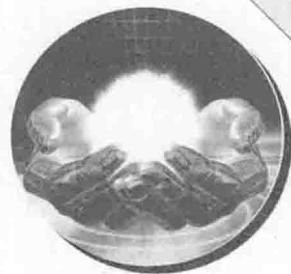


Appendix II

Appendix II Translation Exercises 138

- | | |
|---|-----|
| Exercise 1 Translation of "As" | 139 |
| Exercise 2 Translation of Long Sentences | 140 |
| Exercise 3 I. 根据词类选择词义 | 142 |
| II. 根据上下文选择词义 | 142 |
| III. 词义的引申 | 143 |
| Exercise 4 I. 时间 | 145 |
| II. 空间 | 148 |
| III. 原因、结果 | 148 |
| IV. 条件 | 150 |
| Exercise 5 I. 非限定动词 | 152 |
| II. 后置修饰语频繁 | 152 |
| Exercise 6 Translation of Long Sentences | 152 |
| Exercise 7 Translation of Paragraphs and Passages | 153 |

Answers to Reading Exercises	156
I. Suggested Answers	157
II. Reading and Writing	157
III. Summary	158
 Answers to Translation Exercises	 162
Exercise 1 Translation of "As"	163
Exercise 2 Translation of Long Sentences	164
Exercise 3 I. 根据词类选择词义	165
II. 根据上下文选择词义	166
III. 词义的引申	166
Exercise 4 I. 时间	168
II. 空间	170
III. 原因、结果	171
IV. 条件	172
Exercise 5 I. 非限定动词	173
II. 后置修饰语频繁	174
Exercise 6 Translation of Long Sentences	174
Exercise 7 Translation of Paragraphs and Passages	174
 References	 177



Chapter One

Researching Information in the Scientific Literature



- I. Primary, Secondary and Tertiary Literature
- II. Which Types of Sources Are Appropriate for Your Research Paper?
- III. Researching Topics in the Scientific Literature
- IV. Some Basic Steps to Searching the Scientific Literature

Scientists communicate the results of their research to other scientists primarily through the scientific literature, which therefore constitutes a permanent repository of scientific knowledge and a record of progress in scientific enquiry. The scientific literature currently includes thousands of journals and hundreds of thousands of books. Searching this enormous scientific literature requires skills that can only be learned through experience. However, most of the scientific literature is well indexed, and can be accessed relatively easily when the proper “channels” are known. Don’t let the challenge of researching scientific topics overwhelm you, because only a few basic skills and experience are needed.

I. Primary, Secondary and Tertiary Literature

Scientific literature is generally classified as primary, secondary, and tertiary sources of information. You should learn to distinguish these types of sources. Some journals carry literature in two or more of these categories, although depending upon the intended audience, many journals and magazines may present only a single type of source literature.

Primary Literature

The primary literature comprises all scientific literature that presents new scientific data or ideas. In general, this encompasses all papers that present novel scientific research, but also may include literature reviews, perspectives and analyses that advance new concepts and viewpoints about data generated by others. The primary literature is written by scientists who have done the research themselves.

In general, this literature is published in scholarly journals. The most widely respected journals are “peer-reviewed”, which means that the scientific articles are reviewed by other scientists before being accepted for publication. Normally journals require a paper to consist of a title, abstract, keywords, introduction, material and methods, results, discussion, acknowledgements and references. Papers are submitted to the journal editor who then asks a number of recognised experts in the area of study addressed by the paper (called “**referees**”) to give an opinion on whether the work reported presents new scientific information, and to report on the merits and deficiencies of the work. On the basis of the referees’ reports, the editor may accept the paper as it was submitted, or may require minor revision from the authors, or may require major revision, or the paper may be refused outright. This formal reviewing process is known as “**peer review**”. There are different types of journal that range from international to regional to local and there are also systems that grade the importance of journals on the basis of how often papers carried by the journal are cited in other scientific papers (called the “**impact factor**”).

The primary literature presents or comments upon the immediate results of research activities. It often includes analyses of data collected in the field or the laboratory. It is very current and specialized. Examples of primary literature in the sciences include:

- primary research articles in peer-reviewed journals
- dissertations and theses
- technical reports
- conference proceedings

Secondary Literature

The secondary literature comprises summaries of results and ideas from the primary literature written for an audience of scientists with some understanding of the topic.

Since sources of information in the secondary literature are always cited, these articles are excellent places to begin researching a topic. The secondary literature summarizes and synthesizes the primary literature. Therefore it is both broader and less current than the primary literature. Most information sources in the secondary literature contain exhaustive bibliographies, and they can be useful for finding more information on a particular topic.

Here it is not a requirement for the authors to have done the work themselves, since the purpose of the publication is to summarise and synthesise knowledge in a specific area for other scientists who already have an understanding of the topic; however, the authors of secondary publications would normally have worked and published primary literature in the area they are writing about. The secondary literature includes review journals, monographic books and textbooks, handbooks and manuals. Although normally written in a scientific style, secondary publications are not organized in the same way that primary publications are; however, it is a universal requirement that they are fully referenced and that most of these references are to the primary literature. Scientists use the secondary literature to gain an overview of research areas that are close to or relevant to their own, or to familiarize themselves with existing research in new topics on which they plan to start working.

Examples of secondary literature in the sciences include:

1. Journals that only publish review articles. Review articles present updates on current research on a particular topic. "Annual Reviews" publishes volumes each year dedicated to specific subject areas, such as *Annual Review of Ecology* and *Annual Review of Immunology*. Other relevant subject areas include plant physiology, cell biology, genetics, microbiology, and many other disciplines. "Trends in ...", and "Advances in ..." are other review series publishing volumes focusing on different subject areas.

2. Review Articles and Perspectives in other journals. Many journals publish papers that review topics of current interest. This would include, for example, papers in *Science* published as "Articles" and "Perspectives."

3. Symposia. Scientists within a discipline often meet to present scientific information focused upon a particular topic. These presentations are often published together as a book.

4. Books. Obviously there are many books written about specific scientific topics. Some of these are written by an individual, others including articles by many different authors compiled by one or more editors. Some books may be considered as primary sources, such as "monographs" discoursing new ideas on a very specific topic, for example, Darwin's *On the Origin of Species*.

Tertiary Literature

The tertiary literature consists of published works that are based on primary or secondary sources and that are aimed at scientists who work in different areas from the subject matter of the publication, or towards an interested but lay audience. Such publications are normally written in a popular rather than a scientific style and while such publications may include a short bibliography, they do not usually include references to the primary literature.

The tertiary literature is generally written for a nonscientific audience or for scientists in other disciplines. Generally sources of information in these articles are not cited, or only a bibliography of related readings is included. Some examples of the tertiary literature sources are described below.

1. Science magazines. Generally, these magazines publish articles readable by scientists in other disciplines. This also includes “News and Comment” and “Research News” articles in *Science*.

Examples of magazines that carry literature of a tertiary nature include:

● *Scientific American*

● *Current Science*

● *Science Today*

2. Lay magazines. Written for a non-scientist audience. Information found in these articles is generally unreferenced. As sources of information about the impacts or effects of new science on society, these might be acceptable, but they are not acceptable sources for information about the science itself. These sources include:

● *Discover Magazine*

● *Newspapers*

● *Newsweek, etc.*

3. Textbooks. Textbooks are a good place to begin learning about a topic, but textbooks often contain inaccuracies and simplifications. Generally your textbook is not an acceptable source of information for a lab report or a research paper.

4. Encyclopedias. Encyclopedias can be consulted to familiarize yourself with a topic, but generally these are not acceptable sources of information for a lab report or a research paper.

● *The Harper Encyclopedia of Science*

● *Scientific Encyclopedia*

“Gray” Literature

The gray literature refers to sources of scientific information that are not published and distributed in the usual manner and which therefore may be difficult to obtain. Gray literature includes theses and dissertations, technical reports with a limited distribution, journals published by special interest groups that have a limited distribution, abstracts of conference papers and conference proceedings that are only made available to conference participants, environmental impact statements, some types of government documents, working papers, and some types of online documents. Note that being classified as “gray literature” in no way implies that the publication has little scientific merit, since some types of gray literature are rigorously peer reviewed and counted as primary literature; “gray” refers more to the limited distribution and difficulty of accessing the publication than to its content. The gray literature also includes many government publications. Material in these publications may range from interpretive brochures for an agency or park (which would correspond to tertiary literature), to detailed scientific studies done by competent government scientists (or university researchers under government

contract). These detailed studies may have all the attributes of a primary paper except peer review (some government publications even pass this test).

It is important to note that the form that a publication does not guide to its classification as primary, secondary or tertiary literature. For example, books may belong to any of these three categories. A monograph that presents new ideas as a result of scientific research that has been reviewed by a number of referees (usually called “readers” in the case of a book), will be counted as primary literature (in effect, a very long scientific paper), whereas an encyclopaedia or a science magazine article, even if written by a Nobel laureate, is still tertiary literature.

Another example is the case of conference proceedings. Papers presented at international, regional or national conferences, workshops or symposia are considered as primary literature if they are peer-reviewed and published, either as a book of conference proceedings, or as a special issue of a scientific journal. On the other hand, abstracts of papers presented at a conference, or the papers themselves, which have not been peer-reviewed, can not be counted as primary literature even if they are published in book form. An in-between case is that of conferences where the papers presented are published as peer-reviewed “extended abstracts” (in effect, long summaries of the work that may be formatted in the same way as a journal paper.) Normally, such papers present work that is in an advanced stage but not yet completed to an audience of peers for comment and criticism. Most such work is later published in full form in primary scientific journals.

The situation is further complicated by the Internet. Scientific information available on the Internet ranges from absolute rubbish to high quality. There are very authoritative-looking sites that present completely wrong information, sometimes deliberately, whereas at the other end of the spectrum, there are primary peer-reviewed scientific journals that are published online (normally, but not always, with at least a limited print edition as well). Professional-looking websites are no guarantee of quality information. Users of the Internet should very carefully evaluate the source, quality and accuracy of any information that they plan to use.

II. Which Types of Sources Are Appropriate for Your Research Paper?

This is a question that will be answered by your instructor for specific classes. However, bear in mind a few general guidelines.

Introductory level science classes. You should expect to delve somewhat into the secondary literature. However, multidisciplinary science journals are acceptable tertiary sources. You will probably be required to include some primary sources. Lay magazines should only be used as sources of social commentary and relevance and not “hard” scientific information. You will be expected to use one or more indexes to the scientific literature described below. Unless otherwise indicated, your textbook and encyclopedias are not acceptable sources.

Upper level courses. Your literature sources should be exclusively from the secondary and primary

literature. Limited use of tertiary sources may be allowed in some cases.

III. Researching Topics in the Scientific Literature

The ability to effectively research a topic among thousands of different journals and hundreds of thousands of books is a skill as important to science as those used in the laboratory itself. The rest of these guidelines will introduce you to some of the major “portals of entry” to this immense scientific literature. Don’t forget that the library staff is also there to help.

IV. Some Basic Steps to Searching the Scientific Literature

The first step in researching a paper is not necessarily a trip to the library! Before you can make a successful search, you must know what you are looking for. Typically, this will involve doing some reading about the subject in a handy source, such as your textbook. If the textbook isn’t helpful, a quick online search of the world-wide web, or an article or two in an encyclopedia may help you develop an initial understanding of the topic. The steps outlined below take you through this initial study and the subsequent steps of a literature search:

1. Use an encyclopedia, a textbook, or other easily accessible tertiary source to gain background information and possibly develop a beginning bibliography.
2. Develop an initial list of “key words” that can be used to research your topic.
3. Search the computerized catalog under those key words.
4. Use the various computerized and bound indexes to search key words. Identifying recent books and review articles will enormously expedite the search process. Revise your key words as needed to broaden or narrow the search.
5. As you begin to access the secondary and primary sources, use the literature cited in these papers to identify other relevant articles.

Careful Selection of Key Words

As for searches of all indexes, careful selection of key words is crucial to an effective search. Suppose you wished to research a term paper on "Environmental Impacts of Pesticides". Careful choice of key words will be necessary to identify papers that are most relevant to this topic.

The number of citations can be brought down to a manageable level by selecting appropriate key words. Take time to learn Boolean, or set, searching. This technique allows you to link search terms with connectors such as AND, OR, or NOT. This technique can be used with all electronic databases. Remember, you can learn how to use electronic databases by using the on-line “help” menus, written documentation, and the library staff. The following tips are given for successful retrieval.

Tip 1: Developing keywords from a topic