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专业信息交流英语教程

English for Technical Communication

主 编 段 平 顾维萍 张 鸽
副 编 赵丽萍 龙 芸 孙建华

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教育部高教司制定的《大学英语课程教学要求》指出,“大学英语的教学目标是培养学生的英语综合应用能力……使他们在今后的工作和社会交往中能用英语有效地进行口头和书面的信息交流”。学生的英语应用能力应体现在“他们今后的工作和社会交往中”,因此,要提高学生的英语应用能力,首先要了解社会需要学生具备什么样的能力。

科学技术的迅速发展改变了人们交流信息的方式。现代专业信息的特点是信息量大和传递速度快。同时,由于电脑、网络等的普及,专业信息的接受者不仅包括专业读者,还包括广大的非专业读者,非专业读者需要简单易懂的专业信息。因此,为提高交流效率,读者要求专业信息便于查阅、便于理解和便于应用。

专业交际学(technical communication)指的是有效地进行工作信息交流的原则和技巧,它是在上述背景下在英、美等国家发展起来的以应用语言学为基础的一门交叉学科,研究快速查阅信息、准确理解信息和有效应用信息的方式,并采用这种方式来撰写专业文件,以提高信息交流的效率和满足不同对象的需要。专业交际学提出了专业信息交流的三项基本标准:信息的可获得性(accessibility)、可理解性(comprehensibility)和可使用性(usability)。

要提高信息的可获得性,就需要给文件提供捕捉关键信息的标志,这需要作者掌握文件设计的技巧;要提高信息的可理解性,就需要用便于理解的语言和方式来撰写文件,这需要作者掌握专业文件的文体和修辞技巧;要提高信息的可使用性,就需要作者了解读者对象,进行对象需求分析。这些是学生在大学英语基础阶段尚未掌握,而在他们今后的工作、学习和社会交往中十分需要的知识和技能。

本教材是以专业交际学的教学理念为指导,并结合我国大学英语教学的实际而编写的适应我国学生特点的专业英语教材,旨在提高学生的专业英语应用能力和他们专业文件写作的国际化水平,满足 21 世纪社会信息交流的需要。

本教材采用由一般到具体的循序渐进的编写方式,从专业信息交流的基本原则和策略入手,到专业阅读、写作与口语交际的常用技巧,再到各种具体的专业信息交流任务。教材分为五大部分,共 20 章,主要内容如下。

第一部分:专业交际学的基本原则和策略,包括专业交际的定义和标准;阅读技巧;写作程序;对象分析;信息收集方式;专业文体与修辞技巧;写作道德与文献引证。



第二部分：文件设计和图表的使用，包括如何进行信息分割和给信息块加注信息标志，以及表格、坐标图、流程图、分解图、照片等的信息特点与使用方法。

第三部分：专业写作技巧，包括术语定义、专业描述、专业分析、专业辩论等。

第四部分：常用专业文件写作，包括论文摘要、研究报告、文献综述、使用说明书和业务信函等。

第五部分：口语交际技能，包括演讲稿的写法、论文宣读方法、演讲与回答问题技巧、常用公式读法和求职面试策略等。

本教材为各学科通用教材，主要作为非英语专业研究生的专业英语教材和非英语专业大学生的大学英语后续课教材；也可作为英语专业培养外语复合型人才科技英语教材和专业科技人员从事英语写作的工具书。

有关本书的参考资料和参考答案，请联系 jufa@crup.com.cn 免费索取。

北京外国语大学刘润清教授对本书提出了很好的修改意见，作者深受教益，谨表谢忱。

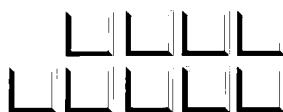
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Part One

Basic Principles and Strategies



Chapter 1

Introduction to Technical Communication

What is technical communication (or TC for short)? To put it in a simple way, TC means the effective exchange of information at work. To make it clearer, TC is the art and craft of communicating technical information appropriately and persuasively to intended audiences, in complex contexts, and for particular purposes.

Although technical communication has existed as long as people have recorded information, it developed rapidly as a profession only during the second half of the twentieth century. TC was initially defined as writing that dealt primarily with scientific and technical information, but today subject matter is no longer sufficient to define TC. In fact, TC now concerns with the effective information exchange not only in the fields of natural sciences and technology, but also in the fields of social sciences, including politics, economy and culture, even art and literature, which are more traditional.

I Importance of Technical Communication

The rapid advancement of science and technology has brought great changes to human life ever since the second half of the last century. Formerly, technology was mainly used by engineers and experts, but now non-technical occupations are more and more involved in technology. Office managers, political activists, small business owners, salespeople, journalists and many others have all seen how technology transform their day-to-day activities. Nowadays computers and computer-controlled machines are being used in every profession that virtually every person in every field has to learn to use certain kind of technology.

Along with the rapid development of technology is the explosion in the amount and variety of technical documents, combined with the fact that they are being read by a broader audience than ever before. Whether to make important business or personal decisions or merely to stay informed, the average person today must read a wide variety of technical material, such as computer tutorials, instruction manuals for home appliances and office machines, news reports on chemical hazards, economic forecasts, articles on medical advances, etc. Therefore, if you

want to be successful in your career, you must learn to communicate technical information effectively.

II. Three Essential Criteria of Technical Communication

Our age is rightly called an age of information because a huge amount of information comes to us continuously at an amazing speed. It is difficult for anyone to handle so much information even in his or her own field. Therefore, we need effective ways to find out the right message quickly from the sea of information and read it quickly.

Since technology has got into people's daily life and work, the vast users of technical information are now non-professionals. Common people can not understand technical documents written in a professional way. They want these documents to be easy to understand and easy to use. Therefore the effective methods of technical communication should enable people, especially general readers, to find out the required information quickly (accessibility), to understand the information easily (comprehensibility) and to use the information correctly (usability). These are the three essential criteria of technical communication.

1. Accessibility

Accessibility means "easy to find". In more detail, it means to enable readers to get the required message quickly and accurately, especially from a large amount of information. Now let us compare two pieces of writing of the same contents but with different organizations, and see which is easier for readers to catch the right information quickly.

Figure 1-1 Wall of Words

Effective Reading Strategies

Reading is not simply looking at words on a page, figuring out their meanings, and stringing them together. It is a complex process and has less to do with interpreting the meanings of words than with the way readers interpret meaning in particular situations. How well people read has a great deal to do with previous knowledge and reading strategies. Researchers have a number of theories about how people read, but most accept the following strategies as critical in effective reading: identifying structure and hierarchy, distinguishing main points, and drawing inferences.

Technical documents usually have a clear and identifiable structure and hierarchy. This structure and hierarchy of contents can often be identified by recognizing genre characteristics. A genre is a category of writing marked by a distinctive style, form, or content. For example, the abstract of an original research paper usually includes the following parts in sequence: Background; Purpose; Methods; Results; and Conclusions. You are likely to read abstracts more quickly and with greater comprehension if you anticipate their elements and structure, and this is also true of other kinds of documents you read if you have knowledge of their genre. A paragraph in technical writing is generally composed of two kinds of sentences: a topic sentence that states

the main points and several supporting sentences that help readers understand the relationships among ideas in a paragraph. Sometimes the main points are easy to distinguish because the writer has constructed the document so that topic sentences clearly signal the main points. Sometimes, however, the main points may not be clearly marked by any visual cues, and you must be able to distinguish the topic sentence from supporting sentences in a paragraph to find out the main points. The following guidelines are used to identify the topic sentence. The topic sentence provides the main idea or the topic of the paragraph while supporting sentences give detailed explanations to support the topic sentence. The topic sentence introduces new information into the paragraph while supporting sentences provide information that is already known. The topic sentence is usually more general in meaning while supporting sentences are more specific in meaning. Although technical writing values straightforward expressions, not everything that you learn from a text is clearly stated. Therefore, you should be able to draw inferences. You should be able to understand the implied meaning of certain expression and make connections and draw conclusions beyond the words and visuals that are presented. Three specific strategies will help: identify the implied assumptions on which you believe the document is based—what is assumed but not clearly stated; extend the ideas to discover reasonable but unstated implications—what is implied but not clearly stated; reflect on the effect of the implications—what is possible but not clearly stated.

The writing in Figure 1-1 is organized in traditional paragraphs. It uses the same font type, font size, and the same line space without any information indicating labels. Readers have to read it sentence by sentence from beginning to end to get the main idea. It is a slow and time-consuming process.

Figure 1-2 Information Map

Effective Reading Strategies

Reading is not simply looking at words on a page, figuring out their meanings, and stringing them together. It is a complex process and has less to do with interpreting the meanings of words than with the way readers interpret meaning in particular situations. How well people read has a great deal to do with previous knowledge and reading strategies. Researchers have a number of theories about how people read, but most accept the following strategies as critical in effective reading: identifying structure and hierarchy, distinguishing main points, and drawing inferences.

Identifying Structure and Hierarchy

Technical documents usually have a clear and identifiable structure and hierarchy. This structure and hierarchy of contents can often be identified by recognizing genre characteristics. A *genre* is a category of writing marked by a distinctive style, form, or content. For example, the *abstract* of an original research paper usually includes the following parts in sequence: **Background; Purpose; Methods; Results; and Conclusions**. You are likely to read abstracts more quickly and with greater comprehension if you anticipate their elements and structure, and this is also true of other kinds of documents you read if you have knowledge of their genre.

Distinguishing Main Points

A paragraph in technical writing is generally composed of two kinds of sentences: a topic sentence that states the main points and several supporting sentences that help readers understand the relationships among ideas in a paragraph. Sometimes the main points are easy to distinguish because the writer has constructed the document so that topic sentences clearly signal the main points. Sometimes, however, the main points may not be clearly

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- The topic sentence provides the **main idea** or the topic of the paragraph while supporting sentences give detailed explanations to support the topic sentence.
- The topic sentence introduces **new information** into the paragraph while supporting sentences provide information that is already known.
- The topic sentence is usually more **general in meaning** while supporting sentences are more specific in meaning.

Drawing Inferences

Although technical writing values straightforward expressions, not everything that you learn from a text is clearly stated. Therefore, you should be able to draw inferences. You should be able to understand the implied meaning of certain expression and make connections and draw conclusions beyond the words and visuals that are presented. Three specific strategies will help:

- Identify the implied assumptions on which you believe the document is based—what is assumed but not clearly stated.
- Extend the ideas to discover reasonable but unstated implications—what is implied but not clearly stated.
- Reflect on the effect of the implications—what is possible but not clearly stated.

The writing in Figure 1-2 is organized in the form of an information map. It uses various information labels to guide the readers to find key information quickly and easily. The design has the following characteristics:

- ◆ Bold headings provide an overview of the text.
- ◆ Italic expressions make it easy to scan to locate key information.
- ◆ Related information is chunked into short paragraphs.
- ◆ Individual topics are separated by double space.
- ◆ Bulleted items draw attention and make reading easier.

The two examples show that the traditional paragraph organization is no longer adequate to technical communication. To make things easier for readers to find the required information quickly and easily, you should not only be able to write, but also be able to organize your contents in an effective way. Therefore, document design has become an important measure to increase the accessibility of technical information.

2. Comprehensibility

Comprehensibility means “easy to understand”. In more detail, it means to convey your information in such a way that the audience can understand it quickly and accurately. For example, read the following sentences and see which is the easiest and quickest for you to understand.

- (1) The microcomputer did not come into being until the integrated circuit was invented.
- (2) The microcomputer came into being after the integrated circuit was invented.
- (3) After people invented the integrated circuit, the microcomputer came into being.

The English thinking sequence follows Plato-Aristotle Sequence, whose pattern of development is linear, following the cause-to-effect or old-to-new (time) order. According to general cognitive principles of interpretation, we usually assume what is mentioned first happens first, which is the most natural sequence of cognition.

In the above examples, sentence (1) and (2) put the new information before the old, which goes against the natural sequence of cognition and thus slows down the thinking process. Sentence (3) follows peoples' natural way of thinking and is the easiest to understand.

The above examples show that sentences with the same meaning but different structures may affect the readability of the sentences. Therefore, to enable the audience to understand easily, quickly and accurately, special rhetorical skills should be adopted in technical communication. Rhetoric is the art of using language effectively and persuasively. It tells how to determine words, grammar, sentence patterns and text organization to make your writing more effective.

3. Usability

Usability means "easy to use". In more detail, it means to express your idea in such a way that the audience can use it easily and productively, or that they can follow it to complete the task on hand. Now let's assume such a situation. If you have met a technical problem while working on a computer and you have three choices for help, which of the following choices do you prefer?

- ◆ Go to the on-line help.
- ◆ Call a technician for advice.
- ◆ Turn to your friend who is good at computers for help.

It may be difficult and time-consuming to find the solution in the on-line help; and even if you find the answer, it may be hard to follow. The writer of the on-line help may neglect certain steps in the process which makes it impossible for you to complete the job. The technician's advice can be too technical for you to follow. Your friend's answer is usually easy to follow because your friend knows you as an audience better than others, and thus can give you the answer you understand.

Therefore, if you want your writing to be useful to the reader, you should first understand your reader. You should put yourself in your reader's position and make audience analysis. Audience analysis concerns with the audience's education, professional experience, cultural background, working environment, purpose and motivation, reading level, organizational role, etc.