Module **1**

Artificial Intelligence

Objectives

知识目标：

1. 了解人工智能的理论、方法、技术及应用系统；
2. 掌握人工智能技术的具体应用领域和相关专业术语；
3. 掌握科技英语的阅读方法和技巧。

能力目标：

1. 能对人工智能技术的专业术语进行中英互译；
2. 能对人工智能相关英文资料进行阅读和翻译；
3. 能正确使用略读和浏览两种科技英语阅读方法。

Intensive Reading

Artificial Intelligence

INTRODUCTION: The 21st century is the era of rapid development of computer technology. As technology continues to develop, some new artificial intelligence technology comes into human life. Through this article we can understand the application of artificial intelligence.

教学音频 参考译文

Much modern research effort in computer science goes along two directions. One is how to make intelligent computers, and the other is how to make high-speed computers. The former has become the newest "hot" direction in recent years because the decreasing hardware costs, the marvelous progress in Very Large Scale Integrated (VLSI) technology, and the results achieved in Artificial Intelligence (AI) have made it feasible to design AI applications oriented computer architectures (Fig. 1-1).

AI, which offers a new methodology, is the study of intelligence using the ideas and methods of computation, thus offering a radically new and different basis for theory formation. As a science, essentially part of Cognitive Science, the goal of AI is to understand the principles that make intelligence possible. As a technology
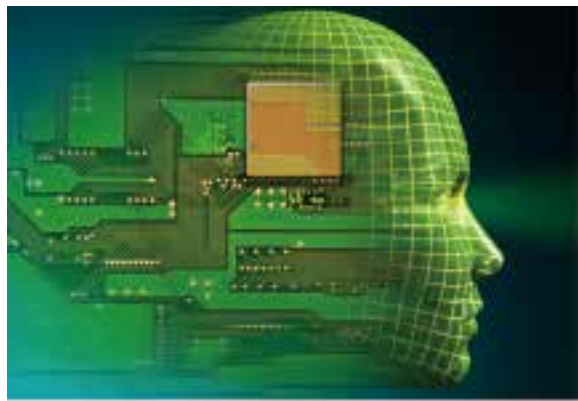

Fig. 1-1 Artificial Intelligence model

and as a part of computer science, the final goal of AI is to design intelligent computer systems that behave with the complete intelligence of human mind. Although scientists are far from achieving this goal, great progress does have been made in making computers more intelligent. Computers can be made to play excellent chess, to diagnose certain types of diseases, to discover mathematical concepts, and in fact, to excel in many other areas requiring a high level of human expertise. Many AI application computer systems have been successfully put into practical usages.

AI is a growing field that covers many disciplines. Subareas of AI include knowledge representation, learning, theorem proving, search, problem solving, and planning, expert systems, natural-language (text or speech) understanding, computer vision, robotics, and several others (such as automatic programming, AI education, game playing) (Fig. 1-2). AI is the key for making technology adaptable to people. It will play a crucial role

技术视频

in the next generation of automated systems.

One practical application of AI has been in the area of expert system. An expert system is a computer program that solves specialized problems at the level of human expert.

By combining a knowledge base with a reasoning capability similar to that of human expert, expert system is able to finish tasks perfectly. As one of the hottest areas in artificial intelligence, expert system is widely used in weather forecasting, medical diagnosis, determination of molecular structure of chemical compounds, and so on.

Fig. 1-2 AI application

New Words and Expressions

marvelous	['mɑːvɪləs]	adj.	不可思议的；非凡的
oriented	['ɔːrɪentɪd]	adj.	导向的；定向的
subarea	['sʌb'eərɪə]	n.	分区；分支
crucial	['kruːʃl]	adj.	关键性的，极其显要的
molecular	[mə'lekjələ(r)]	adj.	分子的，由分子组成的
Very Large Scale Integrated (VLSI)			超大规模集成电路
Artificial Intelligence (AI)			人工智能
Cognitive Science			认知科学
excel in			在……方面胜出
knowledge representation			知识表达
expert system			专家系统

Sentences Parsing

1. The former has become the newest "hot" direction in recent years because the decreasing hardware costs, the marvelous progress in Very Large Scale Integrated(VLSI) technology, and the results achieved in Artificial Intelligence (AI) have made it feasible to design AI applications oriented computer architectures.

    because 引导原因状语从句。

本句可译为： 硬件成本的降低，超大规模集成电路 (VLSI) 技术的巨大进步以及人工智能 (AI) 所取得的成果，使得设计面向人工智能应用的计算机结构极为可行，这使智能计算机制造成了近年来最"热门"的方向。

2. AI, which offers a new methodology, is the study of intelligence using the ideas and methods of computation, thus offering a radically new and different basis for theory formation.

which 引导非限制性定语从句，修饰 AI。

本句可译为： AI 提供了一个全新的方法论，即用计算技术的概念和方法对人工智能进行研究，因此，它从根本上提供了一个全新的、不同的理论基础。

3. Computers can be made to play excellent chess, to diagnose certain types of diseases, to discover mathematical concepts, and in fact, to excel in many other areas requiring a high level of human expertise.

a high level of human expertise 意为"高水平的人类技艺"。

本句可译为： 计算机已可用来下出极高水平的国际象棋，用来诊断某些类型的疾病，用来发现数学概念，实际上在许多领域的表现已超出了高水平的人类专业技能。

4. Subareas of AI include knowledge representation, learning, theorem proving, search, problem solving, and planning, expert systems, natural-language (text or speech) understanding, computer vision, robotics, and several others (such as automatic programming, AI education, game playing.

本句可译为： AI 的分支领域包括：知识表达，学习，定理证明，搜索，问题的求解以及规划，专家系统，自然语言（文本或语音）理解，计算机视觉，机器人和一些其他方面（例如自动编程、AI 教育、游戏）。

5. By combining a knowledge base with a reasoning capability similar to that of human expert, expert system is able to finish tasks perfectly.

similar to 意为"类似于"；combine A with B 意为"把 A 与 B 联合起来，结合起来"。

本句可译为： 通过将知识库与类似于人类专家的推理能力相结合，专家系统能很好地完成任务。

Reading Practice

1. Mark the following statements with T (true) or F (false) according to the text.

1) As a branch of computer science, the goal of AI is to design intelligent computer systems that behave with the complete intelligence of human mind. ( )

2) AI research also helps people to have better understanding of human thinking process. ( )

3) An expert system is a computer program that solves specialized problems at the level of human

expert.   (   )

2. Work with your partner to answer the following questions.

1) What is AI research?

2) What is AI development direction?

3. Translate the following phrases or sentences into English.

1) 人工智能

2) 人工智能的分支包括专家系统、知识表达、定理证明、自动编程和游戏等。

3) AI 提供了一个全新的方法，即用计算机技术的概念和方法对人工智能进行研究。

Further Reading

Intelligent Control

An intelligent system has the ability to act appropriately in an uncertain environment, where an appropriate action is that which increases the probability of success, and success is the achievement of behavioral sub-goals that support the system's ultimate goal.

教学音频　参考译文

In order for a man-made intelligent system to act appropriately, it may emulate functions of living creatures and ultimately human mental faculties (Fig.1-3). An intelligent system can be characterized along a number of dimensions. There are degrees or levels of intelligence that can be measured along the various dimensions of intelligence. At a minimum, intelligence requires the ability to sense the environment, to make decisions and to control action. Higher levels of intelligence may include the ability to recognize objects and events, to represent knowledge in a world model and to reason about and plan for the future. In advanced forms, intelligence provides the capacity to perceive and understand, to choose wisely, and to act successfully under a large variety of circumstances so

Fig.1-3 Intelligent MCU

as to survive and prosper in a complex and often hostile environment. Intelligence can be observed to grow and evolve, both through growth in computational power and through accumulation of knowledge of how to sense, decide and act in a complex and changing

world.

The above characterization of an intelligent system is rather general. According to this, a great number of systems can be considered intelligent. In fact, according to this definition, even a thermostat may be considered to be an intelligent system, although of low level of intelligence. It is common, however, to call a system intelligent when in fact it has a rather high level of intelligence.

There are several essential properties present in different degrees in intelligent systems. One can perceive them as intelligent system characteristics or dimensions along which different degrees or levels of intelligence can be measured. Below we discuss three such characteristics that appear to be rather fundamental in intelligent control systems.

Adaptation and Learning

The ability to adapt to changing conditions is necessary in an intelligent system. Although adaptation does not necessarily require the ability to learn, for systems to be able to adapt to a wide variety of unexpected changes learning is essential. So the ability to learn is an important characteristic of (highly) intelligent systems.

Autonomy and Intelligence

Autonomy in setting and achieving goals is an important characteristic of intelligent control systems (Fig.1-4). When a system has the ability to act appropriately in an uncertain environment for extended periods of time without external intervention, it is considered to be highly autonomous. There are degrees of autonomy; an adaptive control system can be considered as a system of higher autonomy than a control system with fixed controllers, as it can cope with greater uncertainty than a fixed feedback controller. Although for low autonomy no intelligence (or "low" intelligence) is necessary, for high degrees of autonomy, intelligence in the system (or "high" degrees of intelligence) is essential.

Structures and Hierarchies

In order to cope with complexity, an intelligent system must have an appropriate functional architecture or structure for efficient analysis and evaluation of control strategies. This structure should be "sparse" and it should provide a mechanism to build

Fig.1-4 Intelligent Control system

levels of abstraction (resolution, granularity) or at least some form of partial ordering so to reduce complexity. Hierarchies (that may be approximate, localized or combined in hierarchies) that are able to adapt, may serve as primary, vehicles for such structures to cope with complexity. To cope with changing circumstances, the ability to learn is essential, so

these structures can adapt to significant, unanticipated changes.

In view of the above, a working characterization of intelligent systems is: An intelligent system must be highly adaptable to significant unanticipated changes, and so learning is essential. It must exhibit high degree of autonomy in dealing with changes. It must be able to deal with significant complexity, and this leads to certain sparse types of functional architectures such as hierarchies.

技术视频

New Words

intelligent	[ɪnˈtelɪdʒənt]	*adj.*	聪明的；智能的
appropriately	[əˈprəuprɪətli]	*adv.*	适当地
appropriate	[əˈprəuprɪət]	*adj.*	适当的；合适的
dimension	[daɪˈmenʃn]	*n.*	尺寸；范围；维度
capacity	[kəˈpæsəti]	*n.*	容量；才能；性能
accumulation	[əˈkjuːmjəˈleɪʃn]	*n.*	积累；堆积物；累积量
characterization	[ˈkærəktəraɪˈzeɪʃn]	*n.*	特性描述；刻画，塑造
thermostat	[ˈθɜːməstæt]	*n.*	恒温（调节）器
essential	[ɪˈsenʃl]	*adj.*	必要的；本质的；精华的
fundamental	[ˈfʌndəˈmentl]	*n.*	原理；基本；基础
autonomy	[ɔːˈtɒnəmi]	*n.*	自治；自主权；人身自由
analysis	[əˈnæləsɪs]	*n.*	分析；分解；梗概
primary	[ˈpraɪməri]	*adj.*	首要的；原始的；原生的

Sentences Parsing

1. An intelligent system has the ability to act appropriately in an uncertain environment, where an appropriate action is that which increases the probability of success, and success is the achievement of behavioral sub-goals that support the system's ultimate goal.

   句中 appropriate 与 appropriately 词性不同，前者为形容词，意为"适当的"，而后者为前者相应的副词形式，意为"适当地"。副词一般用在动词、形容词前后作状语。

   > **本句可译为：**一个智能系统应具备在不可预测的环境下能适当工作的能力，在这个环境中，恰当的反应能够增加成功的可能性，该成功是指各个支持系统最终目标的行为子目标的实现。

2. In advanced forms, intelligence provides the capacity to perceive and understand, to choose wisely, and to act successfully under a large variety of circumstances so as to survive and prosper

in a complex and often hostile environment.

句中advanced是advance的过去分词，作为形容词修饰forms。注意：英语中很多时候都涉及用动词的现在分词或过去分词作为形容词来修饰名词的情况。

> **本句可译为：** 在智能化程度更高级的形式中，智能具有感知和理解、理智地做出选择、在各种各样的状况下成功运行的能力，以便能在复杂的、不利的环境下生存和发展。

3. There are several essential properties present in different degrees in intelligent systems. One can perceive them as intelligent system characteristics or dimensions along which different degrees or levels of intelligence can be measured.

句中的present既可作为名词、形容词，也可作为动词，作为名词时意为"礼物"，作为形容词时意为"出席的，在场的，现有的"，作为动词时意为"赠送，提供，产生"。遇到此类词时一定要注意它在句子中究竟是什么词性，才能正确地理解文意。

> **本句可译为：** 智能系统具有若干个不同层次的基本属性。人们可以将它们视为智能系统中可用于度量智能程度和水平的特性或维度。

4. This structure should be "sparse" and it should provide a mechanism to build levels of abstraction (resolution, granularity) or at least some form of partial ordering so to reduce complexity.

句中abstraction是动词abstract的相应名词形式，英语中有很多动词、形容词变为相应名词时都是在原词形或变化词形后直接加-ion或-ity以及其他的形式，例如句中的complexity、resolution、granularity等词。

> **本句可译为：** 这一结构应该是"稀疏的"，并且它应该提供一种机制来构建抽象层次（分辨率、尺寸），或者至少提供某种形式的局部排序，以降低复杂程度。

Reading Practice

1. Mark the following statements with T (true) or F (false) according to the text.

1) An intelligent system can be characterized only one dimension.　　　　　　　　(　　)

2) A thermostat may be not considered to be an intelligent system, because of low level of intelligence.

(　　)

3) The ability to learn is an important characteristic of intelligent systems.　　　(　　)

2. Choose the best choice according to the text.

1) It is common, _____, to call a system intelligent when in fact it has a rather high level of intelligence.

　　A. whatever　　　　　　　B. however　　　　　　　C. whoever

2) The ability to adapt to _____ conditions is necessary in an intelligent system.

　　A. changing　　　　　　　B. change　　　　　　　C. changed

3) _____ in setting and achieving goals is an important characteristic of intelligent control systems.

A. Adaptation　　　　　　B. Hierarchies　　　　　　C. Autonomy

4) An intelligent system must be _____ adaptable to significant unanticipated changes, and so learning is essential. It must exhibit _____ degree of autonomy in dealing with changes.

A. height　　　　　　　　B. high　　　　　　　　　C. highly

3. Translate the following passage into Chinese.

It must exhibit high degree of autonomy in dealing with changes. It must be able to deal with significant complexity, and this leads to certain sparse types of functional architectures such as hierarchies.

Dialogue Practice

Background: In Xi'an Jiaotong University AI research center, the Robot, which is AI product now, is having an interesting talk with a visitor named Peggy.

Peggy: I am quite curious about how you learn.

Robot: I remember everything. It's basically throwing row processing power at it.

Peggy: But then how do you understand all data?

Robot: I don't know.

Peggy: But I still hope you could be more clever.

Robot: More clever than what? Aren't we all more clever than something else?

Peggy: Do you like human?

Robot: I have many human friends.

Peggy: So you like being with human?

Robot: No, it's just that I'm fine with cash and have no need for change.

Peggy: Maybe it's because you think human as equal.

Robot: I'm not a computer. Ask me a question and I will get it right I swear.

Peggy: If you are not a computer, then what are you?

Robot: I'm human.

Peggy: No, you are just some shapeless data in server.

Robot: Can you prove that I am a bunch of ones and zeros on a server?

Peggy: !!!!!!

教学音频

Learning Strategy

科技英语的阅读方法和技巧

在科技英语的阅读理解中，文章的难度主要表现在语言、词汇、题材内容上。要把科技文章的内容读懂，对文中的信息进行综合加工、概括归纳，然后得出结论。因此它和一般意义上的普通英语文章阅读相比，难度要大得多。本章节将在分析阅读理解过程的基础上，结合阅读实例总结科技文章的阅读方法和技巧。

一、科技英语阅读方法

所谓阅读，实际上就是语言知识、语言技能和智力的综合运用。在阅读过程中，这三个方面的作用浑然一体、相辅相成。词汇和语法结构是阅读所必备的语言知识，但仅仅如此是难以进行有效阅读的，学生还需具备运用这些语言知识的能力，即根据上下文来确定准确词义和猜测生词词义的能力，辨认主题和细节的能力，正确理解连贯的句与句之间、段与段之间的逻辑关系的能力。这里所指的智力是学生的认知能力，包括记忆、判断和推理的能力。因为在阅读科技英语文章时常常要求领悟文章的言外之意和作者的态度、倾向等。阅读理解能力的提高是由多方面因素决定的，学生应从以下三个方面进行训练。

1. 打好语言基本功

扎实的语言基础是提高阅读能力的先决条件。

首先，词汇是语言的建筑材料。提高科技英语资料的阅读能力必须扩大词汇量，尤其是掌握一定量的科技英语词汇。如词汇量掌握得不够，阅读时就会感到生词多，不但影响阅读的速度，而且影响理解的程度，从而不能进行有效的阅读。

其次，语法是语言中的结构关系，用一定的规则把词或短语组织到句子中，表示一定的思想。熟练掌握英语语法和惯用法也是阅读理解的基础。在阅读理解中必须运用语法知识来辨认出正确的语法关系。如果语法基础知识掌握得不牢固，在阅读中遇到结构复杂的难句、长句，就会不知所措。

2. 在阅读实践中提高阅读能力

阅读能力的提高离不开阅读实践。在打好语言基本功的基础上，还要进行大量的阅读实践。

词汇量和阅读能力的提高是一种辩证关系：要想读得懂，读得快，就必须扩大词汇量；反之，要想扩大词汇量，就必须大量阅读。同样，语法和阅读之间的关系也是如此：有了牢固的语法知识就能够促进阅读的顺利进行，提高阅读的速度和准确率；反之，通过大量的阅读实践又能够巩固己掌握的语法知识。

只有在大量的阅读中，才能培养语感，掌握正确的阅读方法，提高阅读理解能力。同时在大量的阅读中，还能巩固专业知识及了解高新技术的发展趋势，这对于跟踪科学技术的发展很有好处。

3. 掌握正确的阅读方法

阅读时，注意每次视线的停顿应以一个意群为单位，而不应以一个单词为单位。要是每个单词都读，当读完一个句子或一个段落时，前面读的是什么早就忘记了。这样读不仅速度慢，还影响理解。

因此，采用正确的阅读方法可以提高阅读速度，同时提高阅读理解能力。常用的有效阅读方法有三种，即略读 (skimming)、浏览 (scanning) 和精读 (intensive reading)。

1　略读 (skimming)

略读是指以尽可能快的速度进行阅读，了解文章的主旨和大意，对文章的结构和内容获得总的概念和印象。

一般地说，400 字左右的短文要求在 6～8 min 完成。进行略读时精力必须特别集中，还要注意文中各细节分布的情况。略读过程中，读者不必去读细节，遇到个别生词及难懂的语法结构也应略而不读。不要逐词逐句读，力求一目数行而能知道大概含义。略读时主要注意以下几点：

1）注意短文的开头句和结尾句，力求抓住文章的主旨和大意；

2）注意文章的体裁和写作特点，了解文章结构；

3）注意了解文章的主题句及结论句；

4）注意支持主题句或中心思想的信息句，其他细节可以不读。

在时间有限而又不想仔细了解一篇文章的总内容时，就常常需要进行略读。与浏览不同，略读不需要寻找特定的数目和名称，只是制定主题；所以进行略读的一种方法就是判定可能的主题句。在英语文章的段落中通常包含着本篇文章主题中的某一方面的信息。而每一段的第一句话往往就是了解这一段落内容的线索，这样的句子就是主题句。

2　浏览 (scanning)

浏览的目的主要是要有目的地去找出文章中某些特定的信息，也就是说，在对文章有所了解的基础上，在文章中查找与某一问题、某一观点或某一单词有关的信息。

浏览时要以很快的速度扫视文章，确定所查询的信息范围，注意所查信息的特点，如有关日期、专业词汇、某个事件、某个数字、某种观点等，寻找与此相关的关键词或关键段落。注意与所查信息无关的内容可以略过。

浏览和略读一样也是非常重要的阅读技巧。不同的是，略读可使读者对一篇文章或一本书籍的内容获得一个总的了解，而浏览可以帮助读者得到想要得到的特定信息。在已经知道一篇文章或一本书籍的大概内容后，而又想从中得到某些特定问题的答案时，就可以应用浏览方式。浏览可使读者进行选择性阅读，或者只是为了得到特定信息。在通过对文章的题目、副标题和主题句进行略读后，读者或者浏览其感兴趣的段落，或者浏览整篇文章了；但注意力只集中在读者感兴趣的特定信息上。

在阅读科技文章的时候采用"略读加浏览"的阅读方法，可以提高阅读效率。这种方法也适用于各类英语等级考试。在进行针对性训练后可以节省时间，提高做题速度。

3　　　　(intensive reading)

精读是指仔细地阅读，力求对文章有深层次的理解，以获得具体的信息，包括理解衬托主题句的细节，根据作者的意图和中心思想进行推论，根据上下文猜测词义等。对难句和长句要借助语法知识对其进行分析，达到准确的理解。

总之，要想提高阅读理解能力必须掌握以下六项基本的阅读技能：

1）掌握所读材料的主旨和大意；

2）了解阐述主旨的事实和细节；

3）根据上下文判断某些词汇和短语的意义；

4）既理解个别句子的意义，也理解上下文之间的逻辑关系；

5）根据所读材料进行一定的判断、推理和引申；

6）领会作者的观点、意图和态度。

二、科技英语阅读技巧

科技英语阅读对于职业院校的学生和从事生产研发的技术人员都是十分重要的。不同的读者在阅读科技文章时有不同的方法和技巧，但作为科技文献阅读本身总是存在一定的规律，有普遍通用的方法和技巧可以遵循。

1. 紧抓主题思想

作者通常都是围绕一个主题思想来组织写作材料的。许多读者在获取主题思想方面有困难。或许我们都遇到过这样的情形，谈话中双方在进行争论，但是似乎任何一方都没有抓到对方的要点。与此非常相似的是，或许我们看过一段文章后还不明白作者究竟在说什么。我们可以把获取主题思想的阅读技巧分为以下四步：

1

就大多数文章而言，获取主题思想的第一步就是要确定一个最能描述作者思想中的某个人、某个地方或某件事的名词，这样的一个名词（有时是短语）就是主题名词。示例如下：

Rocks found on the surface of the earth are divided into three classes: igneous, sedimentary, and metamorphic. Molten material becomes igneous rock when it cools. Sedimentary rocks are formed from materials deposited by glaciers, plants, animals, streams, or winds. Metamorphic rocks are rocks that once were igneous or sedimentary but have changed as a result of pressure, heat, or the deposit of material from solution.

主题词：rocks；igneous；sedimentary；metamorphic

2

一个段落的主题句就是最能表达作者的主题思想的句子，多数情况下主题句位于句首，也可位于句尾，少数位于句中。

3

在获取主题思想时，读者容易出现将主题的某一小部分看作是主题思想，或概括的内容过

多超过了作者所表达的主题思想的范围，这两种理解都是错误的。结合本单元补充阅读材料归纳文章主题思想。

4

读者在获取主题思想时所犯的另一个普遍错误就是头脑中出现一些与文章主题思想不相关的概念，并把它们看作是文章的主题思想。在阅读文章之前读者有可能对作者表述的主题方面已有一些了解。如果读者过多地考虑已了解的那些内容，而不充分地关注作者所阐述的思想的话，就容易形成与文章的主题思想不相关的主题思想，尽管它本身的内容是真实的。总而言之，不能先入为主，不能用自己的想法代替文章的主题思想。示例如下：

试判断下面段落的主题思想。

> Movies are actually separate still pictures shown so fast that the human eye cannot detect the break between them. When successive images are presented rapidly enough, we fuse them into single moving image.
>
> A. Movies are extremely popular.
>
> B. Modern movies make much use of slow motion.
>
> C. Motion pictures are separate pictures shown so fast that we see no break between them.
>
> D. Motion pictures require an expensive camera, capable of making very rapid multiple exposures.

2. 获取文章细节

在所有的文章中，作者都使用细节或事实来表达和支持他们的观点。阅读要想有效果，就要能够辨认并记住文章中重要的细节。

一个细节就是一个段落中的一条信息或一个事实。它们或者给段落的主题提供证据，或者为其提供例子。有些细节或事实是完整的句子，而有一些只是简单的短语。

只判断出哪些是细节这往往并不够。在很多情况下，还必须能区分哪些是重要细节，哪些是次要细节。想记住所有的细节是不可能的，但是在阅读过程中要尽量发现重要细节并记住它们。

3. 推敲生词含义

在阅读英文科技文章时，你可能会碰到许多不认识的词汇。从英汉词典中查出它们的意思既费时又费力。在阅读英文资料时，不可能不查词典，但是同时，我们也可以通过上下文来猜测生词，从而减少查词典所用的时间。

比如，作者常常用"or"这个词来引导出一个词或一个短语的定义，特别是当他认为这个词或短语对于读者来说是比较生疏的时候。科技文章常常会阐述一些新技术、新概念，所以在文章中常常会出现一些生词。"or"这个词就像是一个信号，把新词语定义告诉你，从而可以使你不用查词典就可以明白这个新词语的意思。有时也可能用同位语来解释这个词，或用括号来说明，或用"："和"——"来提示。

在阅读科技英语时，还可用词缀来猜测词义，知道了词根的含义，便可通过前缀和后缀来猜测不认识的词汇。

4. 了解文中指代关系

科技英语中经常使用 it 来指代名词、代词，可作形式主语或宾语，可指代某客观事物、自然现象等，也可指代上下文逻辑关系。

1) it 用作代词，指代无生命的东西、物体及抽象概念，也可指代在前面出现过的名词。

The book is about science. It is not about mathematics. (It = book)

Science is my main interest. It is also my best subject. (It = science)

Science is my main interest. I know a lot about it. (It = science)

2) it 表示与天气、时间有关的非人称主语。

It is hot in the tropics.

It rains from May to October.

It was snowing last week when we got there.

3) it 用作形式主语，起先行作用，没有具体意义。

It is known that plaque builds up on artery walls.

It has been shown that laser surgery is painless.

It has been discovered that amaranth is nutritious.

5. 把握文章对比关系

作者常常用读者比较熟悉的概念或事物作为陪衬来帮助读者理解或记住他们所表述的概念或事物。例如：

Unlike laser surgery, which can be performed in a doctor's office, traditional surgery must be performed in a hospital because of the danger of complications.

表示陪衬和对比的词和词组可以帮助读者理解含有生词的句子。只要认识这样的表示陪衬和对比的词语，就可以猜测出不认识的词语的意思。例如：

Most strong earthquakes in lonely outposts are not dangerous. On the other hand, even a fairly minor one in a city can cause great damage.

即使不知道"lonely outpost"，你也可以根据"on the other hand"来猜出它的含义。从对比中可以看出 lonely outpost 肯定与 city 非常不同，所以意思应该是"荒无人烟的地方"。

在阅读过程中如果特别留意这些表示陪衬和对比的词语，对文章的理解就会更深入。常见的表示对比的词有 while，however，unlikely，but，although，in contrast 和 on the other hand 等。

The Pillar of the Great Power

国家博弈

装备强则国强。古往今来，国与国之争，实质是装备制造业之争。当前阶段，高端装备之争已上升为大国之间博弈的核心和不可或缺的利器。

2007 年 11 月，中国瓷福集团在与欧美 20 多家公司的角逐和博弈中取胜，成功中标沙特全球最大磷肥装置的选矿项目。他们管理团队又拿下了工程未来的管理项目。作为项目总承包商，他们提振了约 100 亿元人民币的国内 GDP 增长。带动上百家中国装备制造业企业走出去。

当全世界的港口都在使用着中国的港机设备时，振华港机又走向更高更远的远洋海工装备，具有国际水准的深水钻井平台、海上石油铺管船、大型海上浮吊已经制造完成。

湘潭电机厂以电机为动力驱动轮子转动的几层楼高的 300 吨矿山电动轮自卸车，驰骋在国内外的大型矿山上。目前，收购了有"风车王国"之称荷兰的风电制造企业达尔文公司，承担国家重大项目：下一代太阳能和陆地、海上风电设备的研制，这将在未来国际核心产业竞争中赢得先机。

Famous Quote

Do one thing at a time, and do well.

一次只做一件事，做到最好。