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Extensive Reading for Master Students of Engineering

程 硕 士 研 究 生 英 语

泛 读 教 程

徐方赋 徐 星 主编
刘宇慧 等 编



清华大学出版社

<http://www.tup.tsinghua.edu.cn>

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内 容 简 介

本书是工程硕士研究生英语系列教程之一,根据《全国工程硕士专业学位研究生英语教学大纲》的要求编写。全书由 25 个学习单元和 2 个复习单元组成。每个学习单元包括课文、生词短语表、课文注释和练习。每课练习由阅读理解、完型填空和英汉互译构成。书后附有各课练习参考答案。

本教程本着培养语言应用能力的原则,为读者提供较为广泛的阅读材料,这些材料选材新颖、题材实用、语言规范。本教程主要适用于工程硕士研究生、研究生课程班学员、在职申请硕士学位人员等等。

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前 言

1999 年 7 月, 国务院学位办公室和教育部全国工程硕士生指导委员会组织部分工程硕士研究生培养单位的专家开会, 制订《全国工程硕士研究生入学考试英语考试大纲》和《全国工程硕士专业学位研究生英语教学大纲》(以下简称“两纲”), 并要求依据“两纲”编写相应的全国工程硕士研究生英语系列教材, 以适应工程硕士研究生培养的实际需要。《工程硕士研究生英语泛读教程》正是在这一背景下, 经过多所院校的专家和教师的通力合作, 共同编写完成的。

本教程由 25 个学习单元和 2 个复习单元组成。每个学习单元包括课文、生词短语表、课文注释和练习。每课练习由阅读理解、完型填空和英汉互译构成。书后附有练习参考答案。既适合课堂教学, 也适合于自学。

本教程主要编写原则如下:

1. 选材新颖, 题材实用: 全部课文选自 90 年代英语出版物, 并根据成人特点选择思想性、趣味性和知识性俱佳的文章。
2. 语言规范, 难度适中: 根据工程硕士研究生的学习实际选择语言材料, 每篇课文长度不超过 1 000 单词(大部分在 900 词以内), 且生词率不超过 5%, 保证入学的工程硕士研究生既能读懂读通, 又能有所提高。
3. 语言基本功和应用能力培养并重: 要求读者在课文词、句准确理解的基础上, 着重文章的逻辑分析和篇章结构剖析, 并试图在改进英语学习者的阅读观念和阅读习惯方面有所突破。

基于以上原则, 本教程在单词和词组注释、课文难点解释上突出强调逻辑理解, 即必须根据文章上下文确定词句的逻辑含义。在练习的设计上, 阅读理解题中, 无论是选择题还是简答题, 都以篇章理解为重点, 且同工程硕士研究生英语学位课程考试的命题特点接轨。而所有的完型填空练习和部分翻译练习实际上是课文的摘要, 目的在于使读者能够从中获取足够的、有序的信息, 而不仅仅是识别单词和语言符号。为方便读者理解文章, 每一篇课文提供了脚注和课后注释, 其中脚注多为背景知识介绍或术语解释, 而课后注释则侧重难句句子结构和涵义分析, 并提供中文参考译文。

本书在编写过程中得到了清华大学外语系、清华大学出版社、石油大学外语系和研究生院、北京工业大学外语系以及吉林工业大学外语系等单位的大力支持。参加编写的人员还有王倩、于林龙。在此一并表示感谢。

由于编者水平有限,编写时间紧迫,错误和疏漏之处一定不少,热忱欢迎批评指正。

编 者

2000年12月

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What Is a Scientific Theory?

By Stephen W. Hawking¹

[1] A theory is a good one if it satisfies two requirements: It must accurately describe a large class of observations on the basis of a model that contains only a few arbitrary elements, and it must make definite predictions about the results of future observations. For example, Aristotle's theory that everything was made out of four elements, earth, air, fire, and water, was simple enough to qualify, but it did not make any definite predictions. On the other hand, Newton's theory of gravity was based on an even simpler model, in which bodies attracted each other with a force that was proportional to a quantity called their mass and inversely proportional to the square of the distance between them. Yet it predicts the motions of the sun, the moon, and the planets to a high degree of accuracy.

[2] Any physical theory is always provisional, in the sense that it is only a hypothesis, you can never prove it. No matter how many times the results of experiments agree with some theory, you can never be sure that the next time the result will not contradict the theory. On the other hand, you can disprove a theory by finding even a single observation that disagrees with the predictions of the theory. As philosopher of science Karl Popper has emphasized, a good theory is characterized by the fact that it makes a number of predictions that could in principle be disproved or falsified by observation. Each time new experiments are observed to agree with the predictions the theory survives, and our confidence in it is increased; but if ever a new observation is found to disagree, we have to abandon or modify the theory. At least that is what is supposed to happen, but you can always question the

¹ Stephen W. Hawking: 英国人，继爱因斯坦之后迄今为止最杰出的理论物理学家。

competence of the person who carried out the observation.

[3] The eventual goal of science is to provide a single theory that describes the whole universe. However, the approach most scientists actually follow is to separate the problem into two parts. First, there are the laws that tell us how the universe changes with time. Second, there is the question of the initial state of the universe. Some people feel that science should be concerned with only the first part; they regard the question of the initial situation as a matter for metaphysics or religion. They would say that God, being omnipotent, could have started the universe off any way he wanted. That may be so, but in that case he also could have made it develop in a completely arbitrary way. Yet it appears that he chose to make it evolve in a very regular way according to certain laws. It therefore seems equally reasonable to suppose that there are also laws governing the initial state.

[4] It turns out to be very difficult to devise a theory to describe the universe all in one go. Instead, we break the problem up into bits and invent a number of partial theories. Each of them describes and predicts a certain limited class of observations, neglecting the effects of other quantities, or representing them by simple sets of numbers. It may be that this approach is completely wrong. If everything in the universe depends on everything else in a fundamental way, it might be impossible to get close to a full solution by investigating parts of the problem in isolation. Nevertheless, it is certainly the way that we have made progress in the past. The classic example again is the Newtonian theory of gravity, which tells us that the gravitational force between two bodies depends only on one number associated with each body, its mass, but is otherwise independent of what the bodies are made of. Thus one does not need to have a theory of the structure and constitution of the sun and the planets in order to calculate their orbits.

[5] Today scientists describe the universe in terms of two basic partial theories—the general theory of relativity and quantum mechanic—the great intellectual achievements of the first half of this century. The general theory of relativity describes the force of gravity and the large-scale structure of the universe, that is, the size of the observable universe. Quantum mechanics, on the other hand, deals with phenomena on extremely small scales, such as a millionth of a millionth of an inch. Unfortunately,

however, these two theories are known to be inconsistent with each other—they cannot both be correct. One of the major endeavors in physics today, is the search for a new theory that will incorporate them both—a quantum theory of gravity. We do not yet have such a theory, and we may still be a long way from having one, but we do already know many of the properties that it must have. (798 words)

New Words

arbitrary /'ɑ:bitrəri/	<i>a.</i> subjective, capricious 主观臆断的, 随意的
gravity /'græviti/	<i>n.</i> 重力
proportional /prə'pɔ:ʃən(ə)/	<i>a.</i> 成比例的
inverse /in'vɜ:s/	<i>a.</i> 相反的
provisional /prə'viʒən(ə)/	<i>a.</i> temporary 暂时的
disprove /dis'pru:v/	<i>v.</i> prove false or wrong, refute, deny 证明……不成立, 推翻
modify /'mɒdifai/	<i>v.</i> change, correct 修正, 修改
competence /'kɒmpətəns/	<i>n.</i> 能力
metaphysics /'metə'fiziks/	<i>n.</i> 形而上学, 玄学
omnipotent /ɒm'nipətənt/	<i>a.</i> 全能的, 无所不能的
partial /'pɑ:ʃəl/	<i>a.</i> 部分的, 局部的
inconsistent /'inkən'sistənt/	<i>a.</i> (consistent 之反义词) 不一致的
incorporate /in'kɔ:pəreit/	<i>v.</i> unite 统一, 使……合而为一

Phrases and Expressions

in principle: 理论上

in isolation: 孤立地

all in one go: combined; together 包罗万象

partial theories: 局部理论

quantum mechanic: 量子力学

quantum theory of gravity: 量子引力论

Notes

1. Newton's theory of gravity was based on an even simpler model, in which bodies attracted each other with a force that was proportional to a quantity called their mass and inversely proportional to the square of the distance between them: 句中 in which 引导的是一个非限制性定语从句, which 指 an even simpler model, 因此该句可译为: “根据这个模型, 天体之间有一个相互作用的力, 该作用力同天体的量(称为质量)成正比, 而同它们之间的距离的平方成反比。”
2. Any physical theory is always provisional, in the sense that it is only a hypothesis, you can never prove it: 句中 in the sense that 所引导的是一个表示原因从句, 可译为: “因为该理论只是一种假设, 你永远无法证明它。”
3. No matter how many times the results of experiments agree with some theory, you can never be sure that the next time the result will not contradict the theory: 该句以及本文其他地方出现的 agree with 都不能理解或翻译为“同意”, 当物与物之间相互 agree 时, 相当于 be identical to (同……吻合, 一致)。因此该句可译为: “不管多少次实验结果同某一理论吻合, 你也不能保证下次实验结果同它不相矛盾。”
4. ...They regard the question of the initial situation as a matter for metaphysics or religion: 他们(指前文提到的 some people)将关于宇宙初始状态的问题看成是形而上学或者宗教的问题。
5. Each of them describes and predicts a certain limited class of observations, neglecting the effects of other quantities, or representing them by simple sets of numbers: 句中两个现在分词短语 neglecting 和 representing 均是谓语动词 describes and predicts 的伴随状语。整句可译为: “每一个局部理论只用于描述对某一限定范围的观测, 而忽略其他量的作用, 或仅以简单的一组数字来指代这些量。”
6. It may be that this approach is completely wrong: 句中 that 引导的是 be 的表语从句, 整句可译为: “也许这种方法根本是错误的。”
7. Today scientists describe the universe in terms of two basic partial theories: 句中 in terms of 相当于 using。整句可译为: “如今科学家们运用两个基本的局部理论来描述宇宙。”

Exercises**I. Reading Comprehension**

1. According to Hawking, a good scientific theory _____.

- A. must contain some arbitrary element
 - B. is not necessarily purely objective
 - C. should not contain a single subjective element
 - D. may not necessarily predict the future events
2. The first paragraph implies that _____.
- A. neither Aristotle's nor Newton's theory mentioned here is a good one
 - B. Aristotle's theory is not good because it is too simple
 - C. Newton's theory is good since it is even simpler
 - D. Newton's theory is good since it can make some definite predictions
3. A physical theory is always provisional because _____.
- A. it becomes invalid when disproved
 - B. it can never be proved right or workable
 - C. philosopher of science Karl Popper believed so
 - D. we often have to question the competence of the person who set up the theory
4. To express the idea that any physical theory is always provisional, the author uses the writing technique of _____.
- A. illustration
 - B. quotation
 - C. cause-effect analysis
 - D. argumentation
5. The word "falsified" (Para.2) is closest in meaning to _____.
- A. proved
 - B. accepted
 - C. refuted
 - D. disagreed
6. "The problem" in the second sentence of the third paragraph refers to _____.
- A. the eventual goal of science
 - B. providing a single theory
 - C. a single theory
 - D. description of the whole universe
7. As to the question of the initial state of the universe, the author _____.
- A. holds a religious idea
 - B. believes that the universe began to develop in a completely arbitrary way
 - C. regards it as a matter of metaphysics
 - D. criticizes the religious idea and believes in laws governing the initial state
8. According to the author, the approach of partial theory _____.
- A. is completely wrong
 - B. cannot lead to a full solution
 - C. is effective because it worked well in the past

- D. is a good way because Newton once used it
9. Newton's theory of gravity is mentioned in the fourth paragraph as an example of _____.
A. a good theory as has been mentioned in the first paragraph
B. a partial theory that works well in describing part of the universe
C. an ideal theory to calculate the orbits of the sun and its planets
D. a theory that failed to provide a full solution to the description of the whole universe
10. From the last paragraph, one can infer that the author _____ the future development of the partial theories.
A. is optimistic about
B. is pessimistic about
C. has no idea about
D. is critical of

II. Cloze

Not only must a good theory be able to accurately 1) _____ a large class of observations, but also it should be able to make definite predictions about the result of future observations. 2) _____, any theory is 3) _____ because it may be disproved sooner or later. The eventual goal of science is to provide a single theory that describes the whole universe, both its changes with time and its 4) _____. But actually, it is almost 5) _____ to do so. Therefore, scientists invent a number of 6) _____, each dealing with a limited class of observations. Today the two basic partial theories scientists use are 7) _____ and quantum mechanic.

III. Translation

In practice, what often happens is that a new theory is devised that is really an extension of the previous one. For example, very accurate observation of the planet Mercury revealed a small difference between its motion and the predictions of Newton's theory of gravity. Einstein's general theory of relativity predicted a slightly different motion from Newton's theory. The fact that Einstein's predictions matched what was seen, while Newton's did not, was one of the crucial confirmations of the new theory. However, we still use Newton's theory for all practical purposes because the difference between its predictions and those of general relativity is very small in the situations we normally deal with.



Interview Preparation

.....

By Richard O'Connor

[1] The job interview is the moment of truth in job hunting. In addition to how the interviewer sees your qualifications and personal qualities, much will depend on how they evaluate your interview performance in general. Therefore, it is helpful to consider it a performance or a game whose goal is to see the interviewer on the idea that you are the best person for the job.

[2] Most people take a passive approach to an interview, answering whatever questions they are asked to the best of their ability. A better approach is to take control and give the interviewer what you want to give, not necessarily what they are trying to find out; inspire confidence—to give the interviewer every reason to believe that you can handle the job for what which you are being considered and little reason to believe you can't. You do this with more than the answers you provide. Confidence is also inspired by the way you look, the enthusiasm, energy, confidence, personal ability and ambition you show or don't show.

[3] The main reason most candidates do not get the job is that they don't inspire confidence. They lose out not because they don't have the qualification to do the job but because their confidence in their ability to do the job didn't come through in the interview. They didn't sell themselves well enough. The reason is that they are nervous and feel great pressure to perform. Many people feel like failures and become even more anxious if they don't get an offer after each interview. This is unrealistic. Most people who get interviewed get turned down.

[4] Just forget about whether you are going to get the job. Concentrate on the interview and do as many as you can. Interviewing is a skill that is learned with practice just like any

sport or performance. Preparation is the key. Practice answering questions and sounding confident. Just like an actor rehearses, you are rehearsing your role as a job candidate. It will give you the confidence to take control when it is your turn “on stage”. When you handle the interview with confidence, the job will take care of itself. Never go to any interview without doing as much research as possible about the company, institution, etc. Surveys in US show that lack of familiarity with the company will hurt your chances in as many as 75% of the interviews.

[5] Some people suggest narrowing the topic by asking the interviewer in what areas they are specifically interested. It is good to be able to target it to their interest, but that approach runs the risk of them mentioning an area for which you are not prepared. As it is harder to think on your feet if you are a foreigner, the more you can prepare ahead and practice, the better. At the end of the statement, it is appropriate to ask the interviewer if there is anything else they would like to know.

[6] Other useful tips for the interview include: Plan to be at the interview five minutes early dressed in appropriate business clothes. Be gracious to anyone you meet. This is especially true for the receptionist and secretarial help. Many job seekers treat them as if they were furniture. They may be asked for their opinion of you.

[7] When meeting the interviewer, look him in the eye, shake hands and say something like “Mr. Smith, I’m Michael Jordan. I’ve been looking forward to meeting you.”

[8] Be observant. As soon as you walk into the interview’s office, take a quick look around and note family pictures, awards and books. People are generally proud of the things displayed in their offices. A genuine display of interest will generally be welcome and “break the ice”.

[9] Make sure the conversation goes two ways. Do ask questions to involve the interviewer. The more they open up the better chances of getting clues as to what they want. Have some questions ready based on your research on the company, the job, or general ones such as, “How long have been in this location?” Most people like to talk about themselves and their career and will view your interest in other people as a positive attribute.

[10] You don’t need snap answers to every question. Pause and collect your thought before answering. It indicates you think before you speak.

[11] Keep your answers brief and to the point. Keep focuses on what you are trying to accomplish. If questioning gets into areas you feel inappropriate, ask why they want to know the information politely. If their answer makes sense and you feel like giving the information, do. No matter what happens, keep your head cool.

[12] Be enthusiastic. 90% of interviewers consider enthusiasm a very important qualification. End the interview on a positive note. Depart in the same polite, confident way you entered. Always send a brief thank-you letter within 24 hours. Some interviewers like people to follow up and call if they haven't heard anything after a week. (830 words)

New Words

rehearse /ri'hə:s/

v. 排练

gracious /'greɪʃəs/

a. polite, kind, and pleasant 亲切的, 和蔼的

tip /tɪp/

n. piece of advice 劝告

attribute /ə'tribju:t/

n. quality 性质; 品性

Phrases and Expressions

lose out: (口语) 输掉

come through: display 体现出来

get turned down: be refused 被拒绝

break the ice: (口语) 打破沉默

open up: 敞开说

view...as...: 视……为……

to the point: 不跑题

make sense: 有道理

Notes

1. ...the moment of truth: 真理的曙光。该句意思是: 找工作的过程中, 有了面试, 便有了成功的希望。

2. ...inspire confidence: 使人有信心
3. The job will take care of itself: 工作自然会有着落。
4. ...think on your feet: know what to do or say right away 应对敏捷迅速
5. This is especially true for the receptionist and secretarial help: 千万不要小看接待员和秘书。
6. ...treat them as if they were furniture: 对他们就像是对待家具一样。这句话暗示不少求职者对他们熟视无睹。
7. ...snap answers: answer the questions quickly: 快速回答问题
8. End the interview on a positive note: 以积极的反应结束面试。

Exercises

I. Questions for short Answers

1. Why does the job-hunter consider the interview as the moment of truth?
2. According to the passage, what is regarded as the most important factor in an interview?
3. What results in the failure of some interviewees?
4. During the interview, how can an interviewee create a light atmosphere?
5. According to the passage, how to become a successful interviewee?

II. Cloze

Job hunters are 1)_____ a hard time in such a 2)_____ society. They 3)_____ it more difficult than ever before to find a satisfactory job. Getting a chance of interview thus becomes a critical 4)_____, as it will 5)_____ the ultimate success or failure. For the eventual success, a job hunter must 6)_____ his chance, that is, he should make good 7)_____ for the interview. But only having a good 8)_____ about the company is not enough, how to 9)_____ confidence, letting the interviewer know you are competent 10)_____ the future job, becomes very important.

III. Translation

Most people take a passive approach to an interview, answering whatever questions they are asked to the best of their ability. A better approach is to take control and give the