



附：英语科技文选自学考试大纲

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(附:英语科技文选自学考试大纲)

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组 编 前 言

当您开始阅读本书时,人类已经迈入了21世纪。

这是一个变幻难测的世纪,这是一个催人奋进的时代,科学技术飞速发展,知识更替日新月异。希望、困惑、机遇、挑战,随时随地都有可能出现在每一个社会成员的生活之中。抓住机遇,寻求发展,迎接挑战,适应变化的制用法宝就是学习——依靠自己学习,终生学习。

作为我国高等教育组成部分的自学考试,其职责就是在高等教育这一水平上倡导自学、鼓励自学、帮助自学、推动自学,为每一个自学者铺就成才之路。组织编写供读者学习的教材就是履行这个职责的重要环节。毫无疑问,这种教材应当适合自学,应当有利于学习者掌握、了解新知识、新信息,有利于学习者增强创新意识,培养实践能力,形成自学能力,也有利于学习者学以致用,解决实际工作中所遇到的问题。具有如此特点的书,我们虽然沿用了“教材”这个概念,但它与那种仅供教师讲、学生听,教师不讲、学生不懂,以“教”为中心的教科书相比,已经在内容安排、编写体例、行文风格等方面都大不相同了。希望读者对此有所了解,以便从一开始就树立起依靠自己学习的坚定信念,不断探索适合自己的学习方法,充分利用已有的知识基础和实际工作经验,最大限度地发挥自己的潜能,以达到学习的目标。

欢迎读者提出意见和建议。

全国高等教育自学考试指导委员会

1999年10月

编者的话

《英语科技文选》是一部受全国高等教育自学考试指导委员会之托,按照高等教育自学考试英语专业考试计划的要求,为英语本科自学考生编写的选考课程教材。凡具有英语本科三年级水平或达到理工院校英语六级水平的读者均可使用本教材。本教材也适合对英语科技文章有兴趣的读者学习使用。

本书在选材上遵循以下原则:一是题材的代表性。科技领域涉及面极广,本书不可能包罗万象,只能选择具有代表性的科技领域,如数、理、化、医、生、农、建筑、天文、电子、机械等。二是其科学内容的普及性,即可读性。我们尽量选择那些不涉及太多科技专业知识的文章,第三是体裁的时代性。本书的文章多选自九十年代出版的科技书籍、杂志、力图反映当代科技最新进展,内容尽量新颖有趣,如赛白空间、生命科学、生物技术、机器人、全息摄影术、太空黑洞、临终关怀等。

全书共分12个单元,从一到十一单元,每单元围绕一个科技领域,包括两个部分:Part A和Part B。Part A为精读课文;Part B含有一篇泛读课文,第十二单元为一篇科学论文,旨在为读者提供一个如何撰写科技论文的范例。本书末附有练习答案和总词汇表。

为了便于自学,本书采取了几项措施。旨在为读者铺设适当的台阶,不致使他们在学习中遇到很大的困难,比如,书中每篇文章都配有生词和词组表,课文后还附有比较详细的注释;同时,考虑到自学者学习时间零散的特点,每单元中对重点课文(Part A)的语言难点,常用词汇和词组均配有各种练习,以期达到复习巩固的目的。每篇文章后还注有该篇的总字数,目的在于提供一个自我检测阅读速度的数据。

本书的单词统计是以《大学英语教学大纲通用词汇表》(上海外语教育出版社,高等教育出版社 1993)为基础的,我们使用的计算机单词统计软件是由清华大学过浩川教授研制和提供的,在编写过程中,清华大学史光筠教授给予我们大力支持和帮助,并提出了许多宝贵的意见。清华大学孙复初教授在本书编写初期也给予了一定的指导。在此对他们表示衷心的感谢。

编者

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UNIT ONE



PART A

THE KNOWN, THE UNKNOWN AND THE UNKNOWABLE

1 We are all taught what is known, but we rarely learn about what is not known, and we almost never learn about the unknowable. That bias can lead to misconceptions about the world around us.

2 The known is pressed on us from the first. In school we start each course at the beginning of a long book full of things that are known but that we do not yet know. We understand that beyond that book lies another book and that beyond that course lies another course. The frontier of knowledge, where it finally borders on the unknown, seems far away and irrelevant, separated from us by an apparently endless expanse of the known. We do not see that we may be proceeding down a narrow path of knowledge and that if we look slightly left or right we will be staring directly at the unknown.

3 Even when we are right on the edge of the unknown, we may not be aware of it. Those of us who learned the history of the Persian Wars¹ in school did not know that the events so vividly described are all based on the writings of the one source who survived—Herodotus². If you want to know almost anything that happened in the Greece of that time and it was not recorded by Herodotus, it is unknown and in all probability can never be known. But we did not

think of his accounts as fragments of knowledge on the edge of the unknown; it was just more stuff from the huge pile of facts we had to learn about the history of Greece.

4 Because of such lessons, we grow up thinking more is known than actually is. If we had a better description of the limits of present knowledge, that description could be a part of what we are taught. Such insight would give us a better perspective on what is known and what is currently unknown.

5 In time, many things now unknown will become known. We will learn more about what lies below the surface of the earth, and we may learn how neurons interact to let us perceive and think. The accumulating pile of data can be misleading, however. Beyond the currently unknown are the things that are inherently unknowable.

6 Few unknowables are consciously recognized as such. The outcome of a spinning roulette wheel and the local weather three months from now belong to that small class. Every day, however, we bump into phenomena that may well be unknowable but that we do not recognize as such. Some of these unknowables form the bases of respected professions. Brokers make a living anticipating the fluctuations of stock prices. Presidents run for office based on claims of what they will do for a vast and poorly understood economy composed of many unpredictably interacting sectors. We do not even know if we are dealing here with the partly known, the mainly unknown or the unknowable.

7 Nevertheless, we unconsciously recognize that the unknowable surrounds us. Nobody thinks about or pretends to know who will run for president 20 years from now. Nor do people try to predict the automobile accidents they will be involved in. To know that we will be struck by a car next year, we would have to know, with impossible accuracy, the particulars of the life of the driver, his habits, his tim-

ing, his way of pressing the accelerator and so forth — all the facts that are needed to bring him with perfect precision to that unpleasant encounter. It is clear that all these details are unknown, and we do not try very hard to learn about them because we instinctively realize they are also unknowable.

8 In distinguishing the known or the unknown from the unknowable, the level of detail can be decisive. The level of detail is what separates the delusion of the gambler from the wealth of the casino owner. The gambler attempts to predict the individual and unpredictable spins of the roulette wheel; the owner concerns himself with the quite predictable average outcome.

9 The prediction process is aided by the fact that the artificial is generally simpler than the natural. The roll of a bowling ball down an alley, for instance, is easier to predict than the motion of an irregular stone tumbling down a rough hillside. It is likely that the artificial will increasingly save us from the unpredictable. It may be easier to move gradually toward a completely enclosed earth whose climate could be artificially controlled than to learn to predict the natural weather.

10 It is in creating the artificial and controllable that science excels. Science and engineering have made it possible to construct the partially artificial surroundings we live in today, replete with huge bridges, trucks, airplanes, antibiotics and genetically altered species. We are likely to build an increasingly artificial, and hence increasingly knowable, world.

11 Two limitations may constrain the march of predictability. First, as the artifacts of science and engineering grow ever larger and more complex, they may themselves become unpredictable. Large pieces of software, as they are expanded and amended, can develop a degree of complexity reminiscent of natural objects, and they can and do be-

have in disturbing and unpredictable ways. And second, embedded within our increasingly artificial world will be large numbers of complex and thoroughly idiosyncratic humans. (909 words)

NEW WORDS

accelerator /æk¹seləreɪtə/ *n.* piece of apparatus in a car, etc which is used to increase speed 加速装置(例如汽车等交通工具使用的加速装置);加速器

alley* /'æli/ *n.* narrow piece of ground, or floor along which heavy balls are rolled in order to knock over pieces of wood, plastic, etc. placed at the far end; lane (保龄球)球道;小巷;胡同

amend* /ə¹'mend/ *v.* make changes in the words of (a rule or law) (对法律或法规用词的)修改;修正

artifact /'ɑ:tɪfækt/ *n.* anything made by man, esp. sth. useful (尤指实用的)人工制品

artificial* /,ɑ:tɪ'fiʃl/ *a.* made by man; not natural 人造的;假的

bias /'baɪəs/ *n.* tendency of mind 偏爱;倾向

broker /'brəʊkə/ *n.* person who does business for another, esp. in buying and selling shares in business or foreign money 经纪人;掮客

casino /kə'si:nəʊ/ *n.* (有表演,舞池等的)卡西诺赌场

consciously* /'kɒnʃəsli/ *ad.* 有意识地;有知觉地

constrain* /kən'streɪn/ *v.* [fml] make sb. do. sth. by force or limiting alternatives, freedom of action or choice [正式]强迫;强制

delusion /di'luzən/ *n.* false belief, esp. if strongly held 错觉;幻想

edge* /edʒ/ *n.* part along the outside of sth 边;棱

embed* /ɪm'bed/ *v.* fix sth. firmly and deeply 埋置;嵌入

expanse* /ɪk'spæns/ *n.* wide space 广阔(的区域)

fluctuation * /flʌktʃu'eɪʃn/ *n.* wave - like motion, going up and down 波动;变动;浮动

gambler /'gæmblə/ *n.* one who risks money on horse races, in card games, business, etc. 赌博者

genetically /dʒə'netikəli/ *ad.* in accordance with genetics 遗传学上;遗传学方面

idiosyncratic /iidiəsɪŋ'krætɪk/ *a.* of a peculiarity of one person 特质的;癖性的;个人特性的

inherently /ɪn'hɪərəntli/ *ad.* by its or one's nature 本质上

insight * /'ɪnsaɪt/ *n.* (an example of) power of using one's mind to understand sth. deeply 洞察;洞察力;见识

instinct * /'ɪnstɪŋkt/ *n.* natural force in people and animals which causes certain behavior patterns 本能;直觉;天性;本性

instinctively /ɪn'stɪŋktɪvli/ *ad.* based on instinct, not coming from training or teaching 凭本能;本能地

interact * /ɪntə'rækt/ *v.* have an effect on each other or sth. else 互相作用;互相影响

irregular * /'ɪrɛɡjələ/ *a.* (of shape) not regular; having different - sized parts 不规则;不整齐

irrelevant * /ɪ'reləvənt/ *a.* not having any real connection with or relation to sth. else 不相干的;不相关的;离题的

misconception * /'mɪskən'sepʃn/ *n.* (an example of) understanding wrongly; state of being mistaken in one's understanding 误解;看法错误

neuron /'njuərən/ *n.* 神经元;神经细胞

particular * /pə'tɪkjələ/ *n.* facts or details relating to sth. or sb. 特色;细节(pl.)

perceive * /pə'sɪv/ *vt.* [fml] become aware of, esp through the eyes or the mind [正式]感觉;察觉

reminiscent /remɪ'nɪsnt/ *a.* that reminds one of; 使人想起的;引

起联想的

replete /ri'pli:t/ *a.* [fml] quite full, esp. of food [正式]饱和的
(尤指食物); 充(装、填)满的

roulette /ru:'let/ *n.* game of a chance in which a small ball is spun
around a moving wheel and falls into a hole marked with a number
轮盘赌

species * /'spi:ʃi:z/ [单复同] *n.* group of plants or animals of the
same kind, which are alike in all important way and can breed to-
gether 种

tumble /'tʌmbl/ *v.* fall or roll over suddenly, helplessly 摔倒; 滚

PHRASES

border on: be very much like, be next to 近似; 接近; 接界

bump into: come against with a blow or knock 碰; 撞

in all probability: most probably 很可能

in time: eventually 最终; 迟早

press on: force the acceptance of sth. 把...强加于

reminiscent of: reminding one of; suggestive of 发人联想的; 提示
的

replete with: filled with; holding as much as possible 充满的; 装
满的; 饱满的

run for office: [esp AmE] offer oneself for election to (a group) or
for (a position) 竞选(某职位)

NOTES

1. **Persian Wars** (499—449 B.C.): 在希腊人和波斯帝国之间进
行的战争

2. **Herodotus** /he'rɒdətəs/ (485—425 B.C.): 希腊历史学家, 被

誉为“历史之父”。他写的书《历史》讲述了公元前 490—479 年在希腊人和波斯帝国之间进行的战争以及导致这些战争的事件。

EXERCISES

Reading Comprehension

1. Give answers to the following questions.
 1. How many parts do you think the essay can be divided into?
What is the main idea of each part?
 2. What are the misconceptions mentioned in part 1?
 3. What leads to these misconceptions?
 4. In paragraph 5, the author says “The accumulating pile of data can be misleading, however.” What does it imply?
 5. In paragraph 6, what does ‘class’ refer to in “... belong to the small class.”?
 6. In paragraph 6, what is the tone used by the author when he says “Some of these unknowables form the bases of respected professions.”? Why does he use such a tone?
 7. In paragraph 6, what does ‘here’ refer to in “... if we are dealing here with the partly known, ...”?
 8. What function does “his habits, his timing, his way of pressing the accelerator and so forth” (paragraph 7) serve?
 9. What distinguishes a gambler from a casino owner?
 10. What is easier to predict?
 11. In what way does science contribute to the world?
 12. What pushes science forward? (Refer to the last two paragraphs.)

Vocabulary

II. Give the derivations of the words in the first column.

know	known	unknown	unknowable
avoid			
build			
deny			
desire			
forget			
learn			
question			
touch			

III. Fill in the following table as required.

Affixes	The Chinese Meaning	Words from the Passage	Other Examples and Their Chinese Meaning
anti-			
mis-			
ir-			
un-			

IV. Find in the passage the words which are closest in meanings to the following words or expressions.

- roll over
- misbelief
- wide space
- abundantly filled
- hold back by force
- remindful
- fix firmly and deeply
- feel, sense
- lane, passageway
- change, modify
- nonnatural
- accuracy

V. Fill in the blanks, each using one of the words in the box in its proper form. Some of them can be used more than once.

predict	decide	fluctuate	probable
complex	anticipate	precise	accurate

1. It appeared highly _____ to her that the school would stop her scholarship.
2. He had _____ ways of doing things and would not change.
3. A _____ person is needed to deal with the situation.
4. It's strange, but all her _____ have come true.
5. With prices _____ so much, it's hard to plan a budget.
6. The soldier shined his boots in _____ of the inspection.
7. He had by now a better insight into the _____ of his nature.
8. I lack a sense of scientific _____.
9. All year round she has _____ between optimism and despair.
10. What is it _____ that you suggest?
11. A willingness to negotiate increased the _____ of an early settlement.
12. The manager doubted the _____ of the report.

Sentence Patterns

- A. Instead of saying 'We can measure temperature changes', a scientist can say 'It is possible to measure temperature changes.' In paragraph 9, the author also says "It is likely that...", "It may be easier to move...". The following patterns

It + be + *adj.* + to do/that clause

It + be + past participle + that clause

are an essential feature of the scientific style. This type of introduction to a sentence makes the sentence sound more impersonal.

- VI. Rewrite the following sentences by using the patterns shown above.

1. We do not want to allow cold water to enter the boiler.
2. The whole of the compression cannot practicably be carried out in one cylinder.