



大学金砖英语数字化系列教材

理工类大学金砖英语 读写教程3

总主编 王正元

主 编 冯 彦

College
Golden Brick English
Reading & Writing
(For Science and Engineering Students)

3



对外经济贸易大学出版社

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编写说明

经过国内外二十余所大学的一百五十余名中、外英语教师的共同努力，我们完成了这套《大学金砖英语数字化系列教材》的编写以及教辅资源的开发和建设工作。

这套教材包括二十四本纸质教材和配套教辅资源“金砖英语在线”，工作量很大，为此，全体工作人员付出了艰巨的劳动。在此谨向这套教材编写学术委员会的专家、领衔主编的各位教授、参加编写和技术开发的全体教师，以及帮助出版本套教材的对外经济贸易大学出版社的领导和编辑，表示衷心的感谢。

一、编写依据

我们在组织编写这套教材前后，反复学习了教育部颁发的《大学英语课程教学要求》，在几所大学召开了英语教师和学生座谈会，就“你们喜欢什么样的大学英语教材”听取了师生的意见，并以《大学英语课程教学要求》为依据，组织编写了这套教材。

二、编写理念

我们在编写这套教材时，坚持满足“不同层次要求”和“个性化要求”两个基本理念；充分考虑了大学生英语“一般要求”、“较高要求”、“更高要求”的水平差异性及其不同专业人才对英语需求的个性，在教材设计上注意突出以下特点：

1. 满足“一般要求”、“较高要求”、“更高要求”的层级特点；
2. 满足“理工”、“医学”、“农林”、“社科”不同学科需求内容个性化特点；
3. 可以在线自主学习的数字化特点。

三、教材构成

这套《大学金砖英语数字化系列教材》由纸质教材和配套教辅资源“金砖英语在线”（www.goldenenglishedu.cn）两个部分构成。纸质教材按读者对象分为“理工”、“医学”、“农林”、“社科”四大类。

读写教程		视听说教程	
1-2 册	通用（1-2 学期）	1-2 册	通用（1-2 学期）
3-4 册	理工（3-4 学期）	3-4 册	理工（3-4 学期）
3-4 册	医学（3-4 学期）	3-4 册	医学（3-4 学期）
3-4 册	农林（3-4 学期）	3-4 册	农林（3-4 学期）
3-4 册	社科（3-4 学期）	3-4 册	社科（3-4 学期）

四、教材文本

为了保证语言鲜活、地道、时尚,本套教材“视听说”全部文本由美国教师 Jeff Engell, Morgan Matens, Greg Hall 执笔编写;“读写教程”部分文本除了由上述美国教师所写外,另一部分由中方编者选编、改写。一、二册教材内容和文本侧重于通用的共性,三、四册教材文本内容侧重于专业个性。本教材所用的所有文本语言地道、规范、生动、时代性强。

五、编写团队

本套教材的编写得到了胡壮麟教授为主任的教材编写学术委员会各位专家的悉心指导,并获得了主编委员会二十余位教授的大力支持。来自吉林大学、东北大学、中国医科大学、华中科技大学、北京大学医学部等二十余所高校的有丰富教学经验的中、外英语教师,共计一百五十余人参加了本套数字化系列教材编写工作。

六、感谢

本套教材的音频、视频录制得到了下列单位的帮助和支持:

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燕山大学外国语学院

燕山大学车辆学院

沈阳大学

总主编 王正元

前言

《大学金砖英语读写教程》是以教育部制定的《大学英语课程教学要求》为指导，以大学生为读者对象，以满足不同层次、个性化需求为理念编写的一套数字化教材，包括纸质教材、MP3 光盘和网站三部分。本套读写教程共十册，由通用（1-2 册）和理工（3-4 册）、医学（3-4 册）、农林（3-4 册）、社科（3-4 册）四类个性化教材构成。

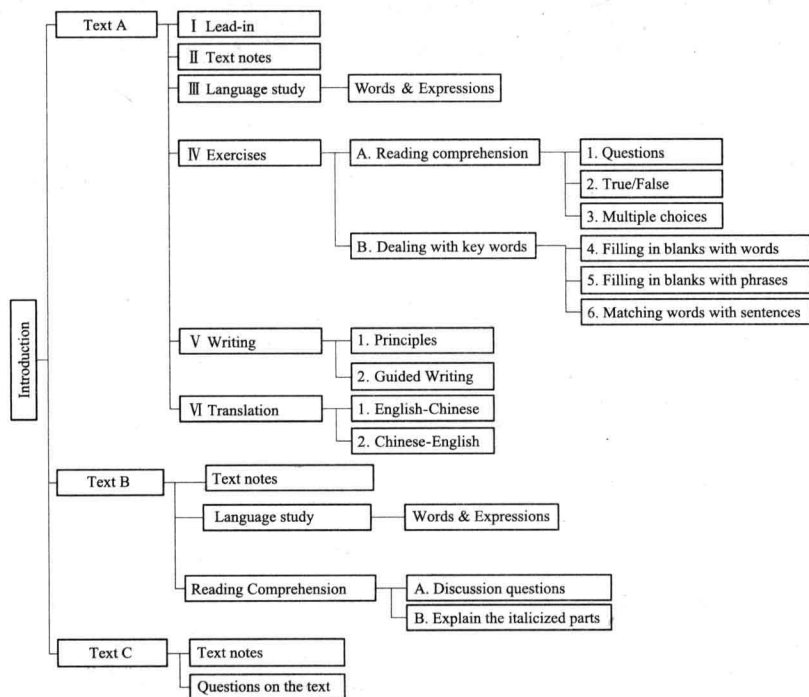
《理工类大学金砖英语读写教程 3》由吉林大学负责编写，供理工类大学二年级学生第一学期使用，内容包括编写说明、前言、目录、课文、附录（课文练习答案）。

一、编写原则

本教材旨在指导学生在自主学习的基础上，从词、句、语篇等角度进行读、写、译等方面的语言操练，着重培养学生的英语语言能力和综合应用能力。每一单元设一特定主题，均选自当代科技生活中的热门题材，这样可以将语言学习贯穿于了解、思考、探讨现实生活中的科技问题的过程中，充分体现交际法的教学原则。

二、全书框架

本教材共有十个单元，每个单元 3.5 万字左右，由 A（精读）、B（泛读）、C（扩展阅读）三篇课文及练习组成。每单元框架如下：



三、本书特色

本教材选用的课文除部分由外籍教师所写外，均选编自国内外知名网站来源文章。内容涵盖科学人物、核能、汽车、机器人、可视电话、风能、光波、纳米技术、气象学及远程控制等方面，能够在内容上满足理工类学生专业发展的个性化需求。此外，纸质教材配以 MP3 光盘和网站资源，充分注意课堂教学与课外自学相结合，使课堂教学的内容在课外得以延伸。

四、使用建议

本教材不配参考书，以降低学生的购书成本。课文附有注释（Text notes）和单词短语（Words & Expressions）讲解，书后附有课文练习答案（Key to Exercises）供学生参考，并随教材配送教师参考课件。同时，师生可以通过本教材的金砖英语网络（www.goldenenglishedu.cn）进行在线练习、搜索获取自定义英语学习资料，充分利用本网络提供的英语数字化资源。

五、鸣谢

《理工类大学金砖英语读写教程 3》的编写工作由来自吉林大学公共外语教育学院、多年工作在大学英语教学第一线的十名教师负责完成。其中，冯彦担任主编，赵桂英、朱丽娟、绪可望担任副主编，潘国际（第 1、3 单元）、高杨（第 2、6 单元）、张磊（第 4、10 单元）、王颖鹏（第 7、8 单元）、王丽君（第 5、9 单元）负责具体的编写工作，王聪负责前期的资源搜集工作，美国专家 Greg Hall 协助编写。

本书的编写是我们在大学英语教学内容和课程体系改革方面所作的一次大胆尝试，但因水平所限，书中错漏之处在所难免，恳请专家和读者批评指正。

主编 冯 彦

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Unit 1

People of Science



A The Most Original Mind

Nobel Prize winner Richard Phillips Feynman was widely known for his insatiable curiosity, gentle wit, brilliant mind and playful temperament. He worked in quantum electrodynamics (QED) and introduced important new techniques for studying the electromagnetic interactions between subatomic particles. He was acclaimed by his contemporaries as “the most brilliant, iconoclastic, and influential of the post war generation of theoretical physicists” and “the most original mind of his generation”.

B Thomas Hunt Morgan at Columbia University

Thomas Hunt Morgan was an American evolutionary biologist, geneticist and embryologist and science author who won the Nobel Prize in Physiology or Medicine in 1933 for discoveries relating to the role the chromosome plays in heredity.

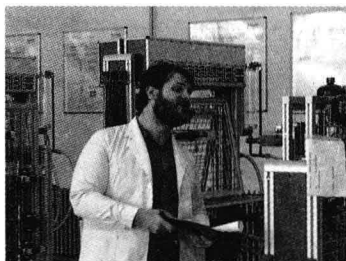
C The Giant on Wheels

Stephen William Hawking is an English theoretical physicist and cosmologist, whose scientific books and public appearances have made him an academic celebrity. He is an Honorary Fellow of the Royal Society of Arts, a lifetime member of the Pontifical Academy of Sciences, and in 2009 was awarded the Presidential Medal of Freedom, the highest civilian award in the United States.

Text A The Most Original Mind

I Lead-in

Think about the following questions before you read the text.



1. What do you know about Richard Phillips Feynman?
2. Why is he called the Most Original Mind?
3. What's your general impression of him?

insatiable *adj.* always wanting more; not able to be satisfied 极其贪心的, 永不满足的
e.g. Her desire for knowledge was *insatiable*.

temperament *n.* people's usual mood 性格, 性情, 气质
e.g. Success often depends on *temperament*.

electromagnetic *adj.* pertaining to or exhibiting magnetism produced by electric charge in motion 电磁的
e.g. Her hypothesis concerns the role of *electromagnetic* radiation.

subatomic *adj.* of dimensions smaller than atomic dimensions 小于原子的; 亚原子的, 次原子的
e.g. Many physicists are devoted to the research of *subatomic* particles.

consist of to be composed or made up of 由……组成或构成
e.g. The committee *consists of* ten members.

1 Nobel Prize winner Richard Phillips Feynman (May 11, 1918—February 15, 1988) was widely known for his **insatiable** curiosity, gentle wit, brilliant mind and playful **temperament**. He worked in **quantum electrodynamics**¹ (QED) and introduced important new techniques for studying the **electromagnetic** interactions between **subatomic** particles. One of his many labor-saving inventions is the *Feynman diagram*, a graphical method of representing the interactions of elementary particles. A Feynman diagram **consists of** two axes, one representing space and the other representing time. Straight lines represent

electrons and wavy lines represent **photons**². The exchange of particles is described by the **junction** of three lines, or a **vertex**³. His research tied together all the varied phenomena at work in light, radio, electricity, and **magnetism**, resulting in an **alteration** in the way scientists understood the nature of waves and particles. Feynman was a best-selling author, a **legendary** and **outrageous** teacher, and a musician. Extremely informal, Feynman didn't like ceremony or **pomposity**, and he was **celebrated** for his **irreverent** approach to physics.

② Feynman was born in Far Rockaway, New York, the descendant of Russian and Polish immigrants who moved to the United States in the latter part of the 19th century. He was raised in a loving Jewish household, although his family did not practice **Judaism**⁴ as a religion. His father, a maker of uniforms, demonstrated basic principles of physics to his son, emphasizing the importance of logical observation. At the age of 10 Feynman began to buy old radios to use in his "personal laboratory", and by 12 he was repairing radios for his neighbors. Rather than learning **trigonometry**⁵ from a book, he **reinvented** all the **formulas**. By age 15 he had mastered **differential and integral calculus**⁶. After being rejected by Columbia University for

junction *n.* the place where two or more things come together 接合点, 枢纽
e.g. There's a bridge at the *junction* of the two rivers.

magnetism *n.* (science of the) properties and effects of magnetic substances 磁性;
great personal charm and attraction 个人魅力, 个人吸引力
e.g. Gravity is a form of *magnetism*.
His success showed his *magnetism* of courage and devotion.

alteration *n.* act or result of changing 改动, 更改, 改变
e.g. We are making a few *alterations* to the house.

legendary *adj.* celebrated in fable or legend 传奇的
e.g. *Legendary* stories are passed down from parents to children.

outrageous *adj.* very unusual and unconventional 反常的, 不依惯例的
e.g. Her *outrageous* behaviour at the party offended everyone.

pomposity *n.* lack of elegance as a consequence of being pompous and puffed up with vanity 自大, 自负, 浮夸
e.g. Nobody liked her due to her *pomposity*.

celebrated *adj.* widely known and esteemed 有名的, 著名的
e.g. Three *celebrated* singers sang at the president's inauguration.

irreverent *adj.* showing lack of due respect or veneration 不敬的, 无礼的
e.g. I find your irresponsible behaviour, coupled with your *irreverent* attitude, quite irreconcilable with your position.

reinvent *vt.* to bring back into existence; to create anew and make over 重复发明; 重新使用
e.g. The candidate *reinvented* the concept of national health care so that he would get elected.

formula *n.* a group of symbols that make a mathematical statement 公式;
a representation of a substance using symbols for its constituent elements 配方, 处方
e.g. The chemical *formula* for water is H₂O.
The company has succeeded in developing a *formula* for a new drug.

set...on to make somebody determine to do something 使某人决心做某事
e.g. It *set* the boy *on* becoming an airline pilot.

quest *n.* the act of searching for something 探求, 寻找;
v. to make a search (for) 寻找, 探索
e.g. Her constant *quest* for wealth takes her farther and farther away from happiness.
The animal came *questing* through the forest.

clarify *v.* to make clear by removing impurities or solids (使) 纯净, 净化;
to become clearer or easier to understand 澄清, 阐明
e.g. This is the most advanced equipment to *clarify* butter.
Can you *clarify* this long sentence?

unprecedented *adj.* having no precedent; novel 前所未有的, 史无前例的
e.g. Many countries have to deal with *unprecedented* levels of unemployment because of the recession.

dissertation *n.* long essay on a particular subject, esp. one written for a doctorate or similar degree; thesis 专题论文; (尤指博士学位之类的) 论文
e.g. She wrote a *dissertation* on Arabic dialects.

lymphatic *adj.* of or relating to or produced by lymph 淋巴的, 分泌淋巴的
e.g. There seems to be something wrong with his *lymphatic* gland.

estimate *v. & n.* (to form) a calculation of the approximate size, cost or value of something 估计, 估价;
(to make) a judgment of the character or qualities of somebody/something (对人或物的性格或质量的) 判断, 评价
e.g. I *estimate* the cost to be five thousand dollars.
We need to make an accurate *estimate* beforehand.
We *estimated* his character highly.

uranium *n.* a heavy toxic silvery-white radioactive metallic element 铀
e.g. They went over nationwide in search of *uranium* mines.

procedure *n.* a particular course of action intended to achieve a result 程序, 过程, 步骤
e.g. There is a set *procedure* for making formal complaints.

being Jewish, in 1935 Feynman attended the Massachusetts Institute of Technology and took every physics course offered.

His interests in subatomic physics **set him on** a lifelong **quest** to **clarify** the mathematics of the subatomic world. After graduation from MIT, he went to Princeton University with a perfect score in mathematics and physics on the graduate school entrance exams—an **unprecedented** feat—even though being rather poor on the history and English portions, and was awarded his doctorate in 1942. His **dissertation**, supervised by John A. Wheeler, was a new approach to **quantum mechanics**⁷ using the principle of subatomic particles.

3 After finishing his Ph.D., Feynman married his longtime sweetheart Arlene Greenbaum, although she was suffering from fatal **tuberculosis**⁸ of the **lymphatic** system. In 1942 Feynman was encouraged by the physicist Robert R. Wilson, a professor at Princeton, to participate in the Manhattan Project—the wartime U.S. Army project at Los Alamos, New Mexico, developing the atomic bomb before Nazi Germany developed their own bomb. Though only 24, he was named a group leader in the theoretical division. His job was to **estimate** how much **uranium** was necessary to achieve **critical mass**⁹. He devised **procedures** to

protect the staff at Los Alamos from radiation poisoning. As serious as the project was and despite the grave illness of his wife, Feynman found time to be **mischievous**, causing **consternation** for his **superiors** and colleagues. He **figured out** how to pick the locks on **filing cabinets** and safes that contained classified information. Without removing anything, he would leave them open with **taunting** notes inside, letting officials know that their security system had been **breached**. He also enjoyed **sneaking out** through a hole in the fence and going around to the front of the **compound** to surprise the guards.

4 In 1945 Arlene died. Feynman never **got over** his grief of losing her. He later wed Mary Louise Bell, a marriage that ended in divorce. In 1960, he married for the third time to Gweneth Howarth, with whom he had a son and an adopted daughter. After the war Feynman became a professor of theoretical physics at Cornell University, followed in 1951 by a similar appointment at California Institute of Technology (Caltech), where he remained the rest of his life. Feynman successfully developed the rules that all quantum field theories must obey, and in the process, discovered how to **renormalize** the theory of quantum electrodynamics. For this work, in 1965 he was

mischievous *adj.* naughtily or annoyingly playful 顽皮的, 捣蛋的

e.g. He was saucy and *mischievous* when he was working.

consternation *n.* fear resulting from the awareness of danger 惊愕, 惊恐, 惊慌失措

e.g. There is some *consternation* among business leaders.

superior *adj.* better than average 优秀的, 优等的;

higher in rank or position 级别或地位较高的;

n. a combatant who is able to defeat rivals 较好的人或事物, 优胜者

one of greater rank or station or quality 上级, 长官, 上司

e.g. This book is *superior* to that one.

A soldier must obey his *superior* officers.

As a violin player, he has no *superior*.

John was his direct *superior*.

figure out to calculate something 计算出;

to come to understand something by thinking 理解, 弄明白

e.g. I have *figured out* how much I spent during the week.

I can't *figure out* what he was hinting at.

filing *n.* the entering of a legal document into the public record; preservation and methodical arrangement as of documents and papers etc. 文件归档, 整理成档案

e.g. I have some *filing* to do.

cabinet *n.* piece of furniture with shelves or drawers for storing or displaying things 橱, 陈列柜;

persons appointed by a head of state to head executive departments of government and act as official advisers 内阁

e.g. I keep my collection of old china in the *cabinet*.

The *cabinet* meets tomorrow to discuss this problem.

taunt *vt.* to harass with persistent criticism or carping 嘲讽, 嘲弄, 辱骂, 奚落

e.g. Some of the girls *taunted* her about her weight.

breach *vt.* to act in disregard of laws and rules 破坏, 违反, 违背;

n. a failure to perform some promised act or obligation 破坏, 违反

e.g. These commitments have already been *breached*.

We won't have any *breach* of discipline.

sneak out to leave furtively and stealthily 蹑手蹑脚地出来, 溜出来

e.g. The lecture was boring and many students *sneaked out* when the instructor turned towards the blackboard.

compound *n.* an area formed or fenced by a union of two or more elements or parts (筑有围墙的) 院子, 有围栏 (或围墙) 的场地

e.g. The *compound* was subdivided into four living areas.

get over return to one's usual state of health, happiness etc. 从……中恢复过来

e.g. She seemed to have *got over* her distress.

renormalize *v.* to make normal again or cause to re-conform to a norm or standard (尤指国家间的关系) (使) 正常化, 恢复友好状态

e.g. The two countries didn't *renormalize* relations with each other until a decade after the war ended.

presidential *adj.* relating to a president or presidency 总统的, 总统选举的, 总统制的

e.g. Both *presidential* candidates have promised to make a pitch for better roads and schools.

evasive *adj.* deliberately vague or ambiguous 逃避的, 推托的, 规避的, 回避的
e.g. She gave an *evasive* answer, when I asked where she had been the previous night.

bureaucratic *adj.* of or relating to or resembling a bureaucrat or bureaucracy 官僚的, 官僚主义的, 官僚作风的
e.g. In this company you have to go through complex *bureaucratic* procedures just to get a new pencil.

impromptu *adj. & adv.* with little or no preparation or forethought; without advance preparation 临时的 (地), 事先无准备的 (地)
e.g. The announcement was made in an *impromptu* press conference at the airport.

stunning *adj.* strikingly beautiful or attractive 了不起的, 出色的, 漂亮的; causing great astonishment and consternation 令人惊奇的, 令人震惊的
e.g. The audience was awed into silence by her *stunning* performance.
AVATAR is a visually *stunning* piece of movie.

dunk *v.* submerge (somebody/something) briefly in water 将 (某人/某物) 在水中浸一下, 蘸一下
e.g. They *dunked* her in the swimming pool as a joke.

gasket *n.* seal consisting of a ring for packing pistons or sealing a pipe joint 垫圈, 密封垫
e.g. The engine had blown a *gasket*.

resiliency *n.* quality of being springy 弹力, 弹性
e.g. He bounced on the mattress to demonstrate its *resiliency*.

exhaust *n.* system consisting of the parts of an engine through which burned gases or steam are discharged 排气装置, 排气管 (孔); gases ejected from an engine as waste products 机器排出的废气
e.g. The factory has an advanced *exhaust*.
Industrial *exhaust* must be well treated.

abdominal *adj.* of or relating to or near the abdomen 腹部的
e.g. *Abdominal* tissues sometimes adhere after an operation.

awarded the Nobel Prize for Physics (which he called “a pain in the neck”), shared jointly with Julian S. Schwinger and Sin-itiro Tomonaga, who had made independent contributions in the same area of research.

5 Feynman played a vital role as a member of the **presidential** commission investigating the 1986 **Space Shuttle Challenger**¹⁰ disaster. Frustrated by the **evasiveness** of witnesses' answers and slow **bureaucratic** procedures, he conducted an **impromptu** experiment before a nationally televised audience that proved the key to the investigation. He demonstrated with **stunning** simplicity the physics of the disaster. He **dunked** a piece of the rocket booster's rubber O-ring **gasket** into a cup of ice water and quickly showed that it lost all **resiliency** at low temperatures allowing the rocket **exhaust** to burn a hole in the rocket.

6 On February 15, 1988 his decade-long battle with **abdominal** cancer ended, two weeks after he taught his last class at Caltech. Feynman developed two rare forms of cancer, **Liposarcoma**¹¹ and **Waldenstrom's macroglobulinemia**¹², dying shortly after a final attempt at surgery for the former, aged 69. His last recorded words are noted as “I'd hate to die