

科技英语教案

授课教师		授课班级		授课地点	
教 材	《科技英语综合教程》. 刘爱军 王斌. 2011. 外语教学与研究出版社.				
授课内容	Unit 1 Text A Game Theory			学时	4 periods
教学目的	1. Analyzing game theory and its application in life 2. Mastering the key language points and grammatical structures in the text 3. Conducting a series of reading, listening, speaking and writing activities related to the theme of the unit. 4. Mastering the translating skills of nominalization				
教学重点与难点	Teaching emphasis: Understanding game theory and its application in life Mastering the key language points and grammatical structures in the text Teaching difficulties: Mastering the translating skills of nominalization				
教学方法与手段	Teaching method: heuristic teaching Teaching aids: Multi-media and blackboard	教学参考书	《科技英语综合教程》教师用书. 刘爱军 王斌. 2011. 外语教学与研究出版社.		
教 学 进 程					
<p>I. Teaching Plan (180 minutes)</p> <ol style="list-style-type: none"> 1. Warm-up (10 minutes) 2. Detailed Study (145 minutes) 3. Translating skills of nominalization (24 minutes) 4. Assignment (1 minute) <p>II. Teaching Steps</p> <p>1. Warm-up: (10 minutes)</p> <ol style="list-style-type: none"> 1). Have you ever watched the movie <i>A Beautiful Mind</i>? What is the story about? 2). What are the basic elements of games and what is the goal of the participants in the game? 3). In order to win in a game, what kind of approach or strategy should be applied? <p>2. Detailed Study (145 minutes)</p> <p>Step1. Text Organization</p> <p>Part One: paras. 1-3 Game theory can be defined as the science of strategy which studies both pure conflicts (zero-sum games) and conflicts in cooperative forms.</p> <p>Part Two: paras. 4-11 There are two distinct types of strategic imterdependence; sequential move game and simultaneous-move game.</p> <p>Part Three: paras: 12-19 The typical examples of game theory are given as basic principles such as prisoners' dilemma, mixing moves, strategic moves, bargaining, concealing and revealing information.</p> <p>Part Four: para. 20</p>					

The research of game theory has succeeded in illustrating strategies in situations of conflict and cooperation and it will focus on the design of successful strategy in future.

Step 2. Detailed study of part one

Terms: game theory, zero-sum game,

Words and phrases:

1) outcome: The outcome of an activity, process, or situation is the situation that exists at the end of it

E.g:

Mr. Singh said he was pleased with the outcome...

辛格先生说他对这一结果感到满意。

2) rear: v. bring up and educate children rear a family 养家

I was reared in east Texas.我在得克萨斯州东部长大。

n. [the rear] the back part 后部、背后、后面 a kitchen in the rear of the house

3) takeover: n. 公司的接收或并购

The economy of Hong Kong goes well after its ~.

4) implement: 1. V. 履行;实施 N-COUNT 可数名词 工具;器具;用具

e.g We need money to implement the program.

~ plans, policies, a program of reforms

knives and other useful implements. 刀子和其他有用工具

5) jointly: in collaboration or cooperation **adv.** 共同地, 联合地, 连带地

e.g The two boys owned the boat jointly.

joint: n. 关节, 连接处 adj. 共有的, 共同的

6) fight back: When an animal is under attack, it can run away or fight back. 抵抗, 反击, 强忍住

e.g If he hit you, why didn't you **fight back**?

7)cut down: 削减; 减少使用

e.g If you spend more than your income, can you try to cut down?

如果你入不敷出, 可以试着减少开支吗?

Content questions:

1. What kind of games did early game theory mathematicians emphasize? What is the current research focus?

2. Are game strategies different from decisions made in a neutral environment? Why or why not?

Step 3. Detailed study of part two

1) When thinking about how others will respond, one must put oneself in their shoes, and think as they would; one should not impose one's own reasoning on them.

- 在考虑其他博弈者会如何应对时, 博弈者必须能设身处地地换位思考, 而不能把自己的主观判断强加于人。

2) In contrast to the linear chain of reasoning for sequential games, a game with simultaneous moves involves a logical circle.

- Paraphrase: A game with simultaneous move requires a logical circular thinking, which is totally different from the linear chain of reasoning for sequential games
- 与连续策略博弈的线性思维不同, 联立策略的博弈涉及逻辑循环。

3) square: v. 与...一致, 符合

- That explanation squares with the facts, doesn't it... 那个解释和事实相符, 不是吗?
- Square the circle: to attempt sth. impossible 做(似乎是)不可能的事情

4) When we say that an outcome is an equilibrium, there is no presumption that each person's privately best choice will lead to a collectively optimal result.

- 当我们把博弈的结果表述为一种均衡的时候，并不能假定博弈的每个参与者的个人最佳策略将带来共同的最优化结果。

collectively: adv. 全体的，共同的

e.g. All members of the Cabinet are **collectively** responsible for decisions taken.

- 所有内阁成员对所作决定集体负责。

optimal: a. best or most favorable 最佳的

e.g. Aim to do some physical activity three times a week for **optimal** health.

- 为了达到最佳的健康状况，要力争每周进行3次身体锻炼。

Content questions:

- 1). What is the essence of the game?
- 2). In a sequential-move game, what do the players do? While in a simultaneous game, what do the players do?
- 3). What is the general principle for players in the simultaneous game?
- 4). Can you describe the concept of Nash equilibrium? How is it used in circular reasoning of games?

Step 4. Detailed study of part three and part four

1). confess: v. ①**confesses** to sth/doing sth 承认，供认坦白(自己做错的事)

- She finally confessed to having stolen the money.

②confess sth to sb(向神父)忏悔，告解

- You just go to the church and confess your sins... 你干脆去教堂忏悔自己的罪过吧。

2). outweigh: v. be greater in weight, value or importance than sth

e.g. The advantages far outweigh the disadvantages. 利远大于弊

- out- 为前缀,意为 exceeds, go beyond

3). Prisoners' dilemma : in game theory, the prisoners' dilemma is a type of non-zero game in which two players can cooperate with or defect the other player.

4) Game theory **quantifies this insight** and **details the right proportions** of such mixtures.

- 博弈论为提高洞察力和掌握混合性策略恰当的火候提供了参考。

5). deter: v. ~sb. from doing sth. 使某人决定不做某事

e.g. Failure did not deter him from making another attempt. 他并未因失败而畏缩不前。

6). credible: adj.可信的，可靠的

incredible: adj.不可思议的；惊人的；难以置信的；credibility: n.可靠性，可信性；确实性

7). renege: v. fail to keep a promise, one's word 食言，背信

If someone reneged on a deal, they could never trade here again.

谁要是违背了约定，就永远不能再在这里进行交易。

8). commit to: 对...作出承诺，担负责任；致力于...；把...固定在

e.g. He has committed himself to the cause of education. 他已决心献身教育事业。

9). monopoly: n. ①专卖权，专利权 gain a ~

- In some countries, tobacco is a government~专卖品

Content questions:

- 1). In tennis why is it crucial for players to mix their moves?
- 2). What is brinkmanship strategy in games of conflict?
- 3). What is the process of bargaining for players? What agreement can be reached?

3. The translating skills——nominalization (24 minutes)

Nominalization(名词化结构)

1)单纯名词化结构：指由一个或多个名词修饰一个中心名词构成的名词化结构。

water purification system

该结构的中心名词是 system, purification 修饰 water, 因此该结构相当于 a system for the purification of water

2)复合名词化结构: 指由一个中心名词和形容词、名词、副词、分词及介词短语等多个前置或后置修饰语构成。

acute bacterial peritonitis 急性细菌性腹膜炎

将名词化结构译为动词

All substances will permit the passage of some electric current, provided the potential difference is high enough.

这里的名词 passage 在翻译时要译为动词“通过”。

全句译为: 只要有足够的电位差, 电流便可通过任何物体。

将名词化结构译为动宾关系

As a small-scale illustration of the artificial modification of physical weather processes, take the frost prevention in an orchard.

划线部分的名词化结构译为“对天气的物理过程进行人工影响”

全句译为: 我们可举果园中防霜作为说明对天气的物理过程进行小尺度人工影响的例子。

4. Assignment (1 minute)

Do the exercises of multiple choice, blank filling, cloze.

大学英语读写四教案

授课教师		授课班级		授课地点	
教 材	《科技英语综合教程》. 刘爱军. 2011. 外语教学与研究出版社.				
授课内容	Unit 2 Medicine Text A Making a Little Progress	学时	4		
教学目的	1. Learn about some progress in Medicine. 2. Understand the structure of the text and the devices for developing it. 3. Grasp some keys words, phrases and some useful sentence patterns.				
教学重点与难点	Teaching emphasis: 1. 科技英语阅读方法 (二) 科技英语翻译技巧 (二); 2. key words, phrases and some useful sentence patterns; Teaching difficulties: some progress in Medicine				
教学方法与手段	Teaching method: lecture with pair work and group discussion Teaching aids: Multi-media and blackboard	教学参考书和网络资源	1. 范武邱. 《实用科技英语翻译讲评》. 外文出版社. 2001 年. 2. 冯志杰. 《汉英科技翻译指要》. 中国对外翻译出版公司. 2000 年. 3. 华先发. 《新适用英译汉教程》. 湖北教育出版社. 2001 年. On-line resources: English on line		
教 学 进 程					
<p>I. Teaching Plan (180 minutes)</p> <ol style="list-style-type: none"> 1. Lead in (5 minutes) 2. Specialized terms (30 minutes) 3. Text organization (10 minutes) 4. Text comprehension (35 minutes) 5. Detailed studies (30 minutes) 6. Reading Techniques for EST (25 minutes) 7. Translation Techniques for EST (25 minutes) 8. Assignment and Exercise (20 minute) <p>II. Teaching Steps</p> <p>1. Lead in (5 minutes)</p> <p>Ask them to give some examples of the nanomaterials in our daily lives and show the students some slides of pictures.</p> <p>Tips:</p> <p>The feet of the shore flies are tiny flies that can be found near seashores or at smaller inland waters, such as ponds. The polar bear is a bear native largely within the Arctic Circle encompassing the Arctic Ocean. Polar bear fur consists of a layer of dense underfur and an outer layer of guard hairs. The toes of the gecko have a special adaptation that allows them to adhere to most surfaces without the use of liquids or surface tension.</p>					

2. Specialized terms (30 minutes)

Ask students to discuss, finding out the connotations of these terms.

“次方，立方”

- ① 10 的-5 次方: ten to the negative five
- ② 10 的 5 次方: ten to the five
- ③ 正: positive
- ④ 负: negetive
- ⑤ 平方: square
- ⑥ 平方根: square root
- ⑦ 立方: cube
- ⑧ 10 的-1 次方: ten to the negative one 或 one over a (表示 a 分之 1 或 1 除以 a)

“Metric system”

Metric system is a decimal ['dɛsəmə] system of weights and measures based on the meter and the kilogram. Litre is a unit of capacity in the metric system. 升是公制测量中的一个单位。The kilometer is the biggest unit of length in the metric system. 公里是米制中最大的长度单位。

“Types of nanomaterials”

The first type is nanoparticle. The second is the nanotube. This passage talks about the appliance of Nano particles to the cancer detection and treatment. 纳米材料可简单定义为尺寸小于 100nm 的一种或多种的晶粒或颗粒所组成的材料，依其形态可区分为等轴(粉体)、层状(薄膜)及丝纤状(纤维或管)等(图 1)。纳米粉末：又称为超微粉或超细粉，一般指粒度在 100 纳米以下的粉末或颗粒，是一种介于原子、分子与宏观物体之间处于中间物态的固体颗粒材料。纳米纤维：指直径为纳米尺度而长度较大的线状材料。本文：人体修复材料；抗癌制剂等。

“Basic properties of nanometer materials”

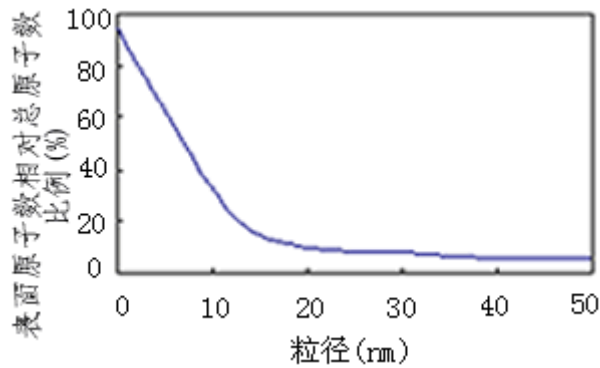
Basic properties of nanometer materials: surface effect, small size effect, quantum effect and macro quantum tunnel effect. 纳米生物材料基本效应: 小尺寸效应 (体积效应) 表面效应(重点)、量子尺寸效应、宏观量子隧道效应

① 小尺寸效应

When the size of the particle has been in the nanoscale, the physical properties would change a lot. For example, the melting point of gold decreased to the 327 degrees celcius when reduced to 2nm. And the melting point of silver decreased to the 100 degrees celcius when reduced to 5nm. 当颗粒尺寸处于纳米尺度时，由于粒子包含的原子数很少，使得材料的声、光、电、磁、热等物理性质发生变化，这样的效应称为小尺寸效应，也叫体积效应。由于金属纳米粒子对光的反射率极低，导致所有的金属在纳米颗粒状态下均呈黑色；相比于块体状态下，纳米金属颗粒的熔点要低得多，比如金的常规熔点为 1064℃，而当颗粒尺寸减小到 2nm 时熔点仅为 327℃，金属银的粒子尺度下降到 5nm 时熔点仅为 100℃。

② 表面效应:

纳米粒子的表面原子数与总原子数之比随粒径减小而急剧增大所引起的性质变化称为表面效应。如图所示随着粒子粒径的减小，表面原子数急剧增大。当纳米粒子的粒径为 10nm 时，表面原子数占总原子数的 20%；当粒径减小到 1nm 时，99%的原子都集中到了粒子的表面。



① 宏观量子隧道效应

宏观量子隧道效应是指纳米粒子的一些宏观量（如磁化强度）具有贯穿势垒的能力。这一效应限制了磁盘、磁带等存储介质的存储时间极限，因为它不但是未来微电子器件的发展基础，也是其进一步微型化的极限。例如，在制造半导体集成电路时，当电路的尺寸接近电子波长时，电子将通过隧道效应而穿透绝缘层，使器件无法正常工作。因此，宏观量子隧道效应已成为微电子学、光电子学中的重要理论。

“Targeting Drug Delivery System”

靶向给药系统或称靶向制剂，诞生于 20 世纪 70 年代，是指这种制剂能将药品运送到靶器药物通过局部或全身血液循环而浓集定位于靶组织、靶器官、靶细胞的给药系统官或靶细胞，而正常部位几乎不受药物的影响。

① Targeted drug delivery, sometimes called smart drug delivery,[1] is a method of delivering medication to a patient in a manner that increases the concentration of the medication in some parts of the body relative to others.

② The goal of a targeted drug delivery system is to prolong, localize, target and have a protected drug interaction with the diseased tissue.

③ The conventional drug delivery system is the absorption of the drug across a biological membrane, whereas the targeted release system is when the drug is released in a dosage form.

④ The advantages to the targeted release system is the reduction in the frequency of the dosages taken by the patient, having a more uniform effect of the drug, reduction of drug side effects, and reduced fluctuation in circulating drug levels. The disadvantage of the system is high cost which makes productivity more difficult and the reduced ability to adjust the dosages.

⑤ There are two kinds of targeted drug delivery, active targeted drug delivery, such as some antibody medications; and passive targeted drug delivery, such as the enhanced permeability and retention effect (EPR-effect).

⑥ Delivery vehicles

There are different types of drug delivery vehicles, such as, polymeric micelles, liposomes, lipoprotein-based drug carriers, nano-particle drug carriers, dendrimers etc. An ideal drug delivery vehicle must be non-toxic, biocompatible, non-immunogenic, biodegradable and avoid recognition by the host's defense mechanisms.

Liposomes are composite structures made of phospholipids and may contain small amounts of other molecules. Though liposomes can vary in size from low micrometer range to tens of micrometers, unilamellar liposomes, as pictured here, are typically in the lower size range with various targeting ligands attached to their surface allowing for their surface-attachment and accumulation in pathological areas for treatment of disease. The most common vehicle currently used for targeted drug delivery is the liposome. Liposomes are non-toxic, non-hemolytic and non-immunogenic even upon repeated injections; they are biocompatible and biodegradable

and can be designed to avoid clearance mechanisms (reticuloendothelial system (RES), renal clearance, chemical or enzymatic inactivation, etc.)

Dendrimers are also polymer-based delivery vehicles. They have a core that branches out in regular intervals to form a small, spherical and very dense nanocarrier.

⑦ Artificial DNA nanostructures

The success of DNA nanotechnology in constructing artificially designed nanostructures out of nucleic acids such as DNA, combined with the demonstration of systems for DNA computing, has led to speculation that artificial nucleic acid nanodevices can be used to target drug delivery based upon directly sensing its environment. These methods make use of DNA solely as a structural material and a chemical, and do not make use of its biological role as the carrier of genetic information. Nucleic acid logic circuits have been demonstrated that could potentially be used as the core of a system which releases a drug only in response to a stimulus such as a specific mRNA.[13] Additionally, a DNA "box" with a controllable lid has been synthesized using the DNA origami method. This structure could encapsulate a drug in its closed state, and open to release it only in response to a desired stimulus.

⑧ Applications

Targeted drug delivery can be used to treat many diseases, such as the cardiovascular diseases and diabetes. However, the most important application of targeted drug delivery is to treat cancerous tumors.

3. Text organization (10 minutes)

Ask students to discuss, finding out the organization of the text.

Part One: para.1

The government decided to take an initiative to fight against cancer by means of nanotechnology.

Part Two: para. 2

Nanotechnology holds promise for cancer treatment on account of two main reasons: size and function.

Part Three: paras. 3-8

Two kinds of nanoparticles—nanocrystals of iron oxide and quantum dots—have been used for cancer detection in tests on mice.

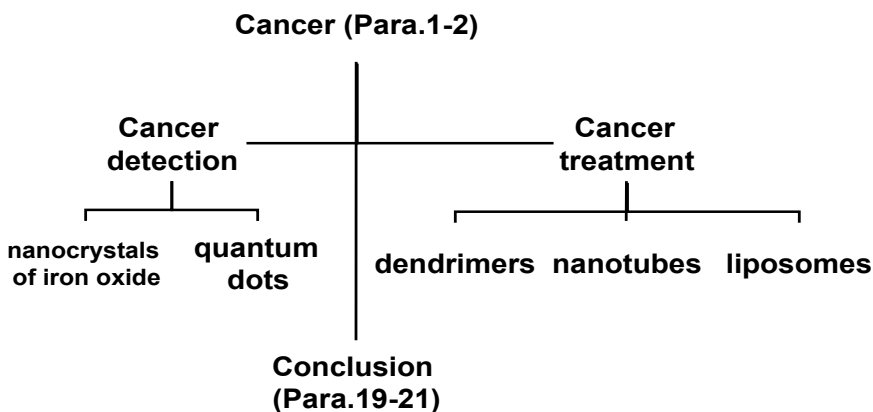
Part Four: paras. 9-18

Three kinds of nanoparticles—dendrimers, carbon nanotubes and liposomes—have been used in tests for cancer killing.

Part Five: paras. 19-21

In spite of great progress in cancer nanotechnology, there are still many problems to solve.

The structure is shown as the following.



4. Text comprehension (35 minutes)

Ask the students to read the text and discuss the following questions.

- 1) What did NCI announce?

Tips: (Para.1) nanotech solutions to cancer

- 2) What is nanotech?

- 3) Why does it hold promise for cancer detection and therapy?

Tips: (Para.2) Size and function.

Targeted Drug Delivery System

- 4) What are the delivery vehicles for cancer detection?

Tips: two kinds of nanoparticles

nanocrystals of iron oxide (Para.3-5)

quantum dot-probes (Para.6-8)

- 5) Please find out the related researchers and the discoveries of their research.

Tips:

Nanocrystals of iron oxide:

Researcher: Jinwoo Cheon, a chemist at Yonsei University in Seoul, South Korea

reported in the Sept. 7 Journal of the American Chemical Society

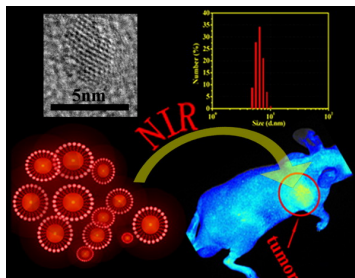
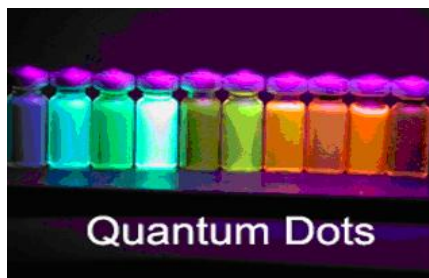
His report: It can make MRI pick out smaller tumors (Para 3-4); An experiment. (Para 5)

Quantum Dot-probes:

Researcher: Shuming Nie, a biomedical engineer and a chemist

reported in the August 2004 Nature Biotechnology

His report: It can detect multiple tumor cells by using multiple colors. (Para 6-7); An experiment. (Para 8)
the limit of the research

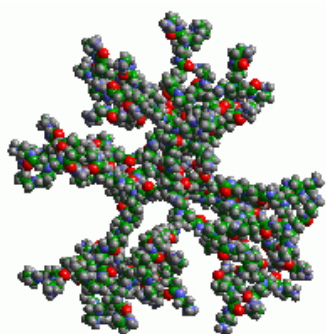


Dendrimers:

Researcher: Baker and his team (Para 10)

reported in the June 15 Cancer Research

Their experiment: attached the vitamin folic acid to the particles (Para 10) added the chemotherapy drug methotrexate to the folio acid-loaded dendrimers (Para 11)



Carbon Nanotubes:

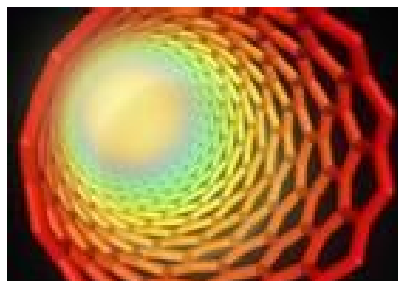
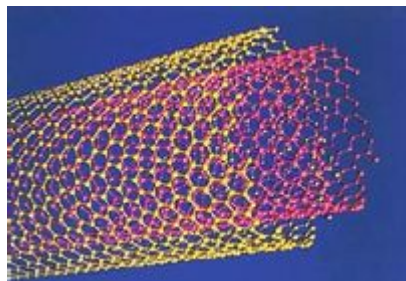
Researcher: Hongjie Dai and his group

reported in the Aug.16 Proceedings of the National Academy of Sciences

The methodology:

absorb near-infrared light and target nanotubes to cancer cells and kill the cells with heat (Para 12)

turned to folic acid molecules for their cancer-seeking talents. (Para 13)



Liposomes:

Researcher: Esther Chang and Kathleen Pirollo (Para. 14)

the result of the experiment (Para. 18): The mice died of old age, cancer-free.

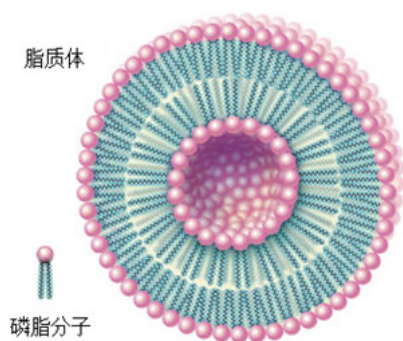
The methodology:

···use liposomes to discover a gene called p53 (Para. 15)

···adding functioning p53 to cancer cells can resensitize tumors to cancer treatments. (Para. 16)

···attached to liposomes an antibody fragment which will be received by the cells (Para. 17)

experiment to prove this discovery (Para. 18);



6) What are the problems and promising future?

Tips: (Para.19-21)

5. Detailed studies (30 minutes)

Show the meaning and usage with the help of the slide.

- new blood: n, new member, new comer (=fresh blood)
We need to bring in some new blood to brighten up our image.
The company certainly needs some fresh blood with new ideas.
- emit: v. to give out; to make a sound
Madam Curie found that radium emitted a faint blue light.
The face of the girl turned white and she emitted a low moan.
- Revert to: to return to a previous state
If you revert to your eating habit, you' ll put on weight again.
The house reverted to its former state of wreck.

- | | | |
|------------|-----------------------------------|--------|
| b) 形容词+名词 | synchronous orbit | 同步轨道 |
| c) 分词+名词 | combined carbon | 结合碳 |
| d) 名词+动名词 | altitude charging | 高空增压 |
| e) 形容词+动名词 | dynamic programming | 动态规划 |
| f) 多词复合名词 | industrial distribution equipment | 工业配电装置 |

2. 复合形容词的构成:

- | | | |
|--------------------|----------------|-------|
| a) 名词/形容词/副词+形容词 | red-hot | 炽热的 |
| b) 形容词/数词+名词 | high-frequency | 高频的 |
| c) 名词/形容词/数词+名词-ed | medium-sized | 中型的 |
| d) 名词/代词/形容词/副词+分词 | well-equipped | 设备精良的 |
| e) 多词复合形容词 | out-of-date | 过时的 |

3. 复合动词的构成

- | | | |
|----------------|-----------------|------|
| a) 动词+介词/连词+动词 | point-and-click | 点击 |
| b) 动词+介词 | sign-on | 登录 |
| c) 形容词+动词 | mass-produce | 成批生产 |

7. Translation techniques for EST (25 minutes)

Ask the students to learn and practice the techniques.

1. 意译: 通过对原词的仔细推敲和理解, 准确地译出其表达的科学概念。

deep space 航天术语: 外层空间, 而非“深层空间”

2. 音译: 根据英语单词的发音译成读音与原词大致相同的中文。

hertz 赫兹 (频率单位)

e-mail 伊妹儿—电子邮件

3. 意音结合译: 在音译之后加上一个表示类别的词, 或者把原词的一部分音译, 而另一部分意译。

Kuru 库鲁病

4. 直译: 在科技文献里, 有些词可以直接使用原文, 如商标、牌号、型号和表示特定意义的字母。

IBM system IBM 系统

8. Assignments and exercises (20 minutes)

- 1) Reading: the development of nanotechnology
- 2) Exercises after each lecture
- 3) Writing: Write a brief report about the appliance of nanotech. (500 words)
- 4) Self-study of Text B and its exercises

大学英语读写教案

授课教师		授课班级		授课地点	
教 材	《科技英语综合教程》. 刘爱军. 2011. 外语教学与研究出版社.				
授课内容	Unit 3 Genetic Engineering Text A Human ES Cells head toward the clinic	学时	4		
教学目的	1. Learn something about Genetics Engineering 2. Understand the structure of the text and the devices for developing it. 3. Grasp some keys words, phrases and some useful sentence patterns.				
教学重点与难点	Teaching emphasis: 1. 科技英语阅读方法 (三) 科技英语翻译技巧 (三) 2. key words, phrases and some useful sentence patterns; Teaching difficulties: Genetics Engineering				
教学方法与手段	Teaching method: lecture with pair work and group discussion Teaching aids: Multi-media and blackboard	教学参考书和网络资源	1. 范武邱. 《实用科技英语翻译讲评》. 外文出版社. 2001 年. 2. 冯志杰. 《汉英科技翻译指要》. 中国对外翻译出版公司. 2000 年. 3. 华先发. 《新适用英译汉教程》. 湖北教育出版社. 2001 年. On-line resources: English on line		
教 学 进 程					
<p>I. Teaching Plan (180 minutes)</p> <ol style="list-style-type: none"> 1. Lead in (5 minutes) 2. Specialized terms (30 minutes) 3. Text organization (10 minutes) 4. Text comprehension (35 minutes) 5. Detailed studies (30 minutes) 6. Reading Techniques for EST (25 minutes) 7. Translation Techniques for EST (25 minutes) 8. Assignment and Exercise (20 minute) <p>II. Teaching Steps</p> <p>1. Lead in (5 minutes)</p> <p>Ask the students to discuss the following question. What can a person do if he is told that he got sick and might not walk for ever? Options: taking drugs? Do a surgery? ES cells therapy</p> <p>2. Specialized terms (30 minutes)</p> <p>Ask students to discuss, finding out the connotations of these terms. “Stem Cells” Stem cells are biological cells found in all multicellular organisms. They can divide and differentiate into diverse specialized cell types and can self-renew to produce more</p>					

stem cells.

In mammals, there are two broad types of stem cells: [embryonic stem cells](#), and [adult stem cells](#), which are found in various tissues.

In [adult](#) organisms, stem cells act as a repair system for the body, replenishing adult tissues.

In a developing embryo, stem cells can differentiate into all the specialized cells (these are called pluripotent cells), but also maintain the normal turnover of regenerative organs, such as blood, skin, or intestinal tissues.

“Embryonic stem (ES) cells”

- ① derived from the inner cell mass of the blastocyst
- ② can be grown in their undifferentiated state
- ③ be capable of differentiating into all cells of the adult body.

Pluripotent, **embryonic stem cells** originate as inner cell mass (ICM) cells within a blastocyst. 胚囊
 These stem cells can become any tissue in the body, excluding a placenta. 胎盘 Only cells from an earlier stage of the embryo are able to become all tissues in the body.



“Stem cell division and differentiation”

A: stem cell;

B: progenitor cell;

C: differentiated cell;

1: symmetric stem cell division;

2: asymmetric stem cell division;

3: progenitor division;

4: terminal differentiation

A: 干细胞;

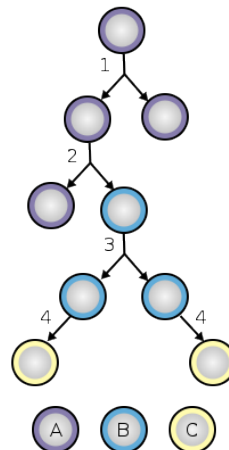
B: 祖细胞;

C: 分化细胞;

1: 对称干细胞分裂;

2: 不对称干细胞分裂;

3: 祖细胞分裂;



To ensure self-renewal, stem cells undergo two types of cell division. Symmetric division gives rise to two identical daughter cells both endowed with stem cell properties. Asymmetric division, on the other hand, produces only one stem cell and a [progenitor cell](#) with limited self-renewal potential. Progenitors can go through several rounds of cell division before terminally [differentiating](#) into a mature cell.

“The value of hES cells in recovering spinal cord injuries”

Highly plastic adult stem cells are routinely used in medical therapies, for example in [bone marrow transplantation](#). 骨髓移植

Embryonic [cell lines](#) have also been proposed as promising candidates for future therapies.

Diseases and conditions where stem cell treatment is promising or emerging. Bone marrow transplantation is, as of 2009, the only established use of stem cells.

This passage talks about the possibility of the clinical trial of ES cells therapy in recovering SCI.

Spinal cord injury (SCI) is an insult to the spinal cord resulting in a change, either temporary or permanent, in its normal motor, sensory, or autonomic function.

Patients with spinal cord injury usually have permanent and often devastating neurologic deficits and disability.

“Cells culture”

Stem cells can now be artificially grown and transformed (differentiated) into specialized cell types with characteristics consistent with cells of various tissues such as muscles or nerves through [cell culture](#).

Typically, stem cells have been maintained using tissue culture methods that essentially date from the 1950s.

In particular, they are often "fed" using mouse embryonic [fibroblasts](#) ("feeder cells") while being simultaneously suspended in a nutrient solution ("media").

However, many scientists are recognizing the importance of using media that is completely free of animal ingredients. This not only liberates cell lines from animal feeder cells, but also brings the [in vivo](#) 活的有机体 therapeutic use of stem cells one step closer to reality.

3. Text organization (10 minutes)

Ask students to discuss, finding out the organization of the text.

Part One: paras.1-6

Although hES cells hold promise for the clinic, they still carry some risks in practice that discourage most groups from clinical trials except one company—Geron.

Part Two: paras. 7-12

Keirstead and his colleagues have chosen spinal cord injuries as the first trial and carried out several experiments with the main purpose to indicate that the treatment can be safe.

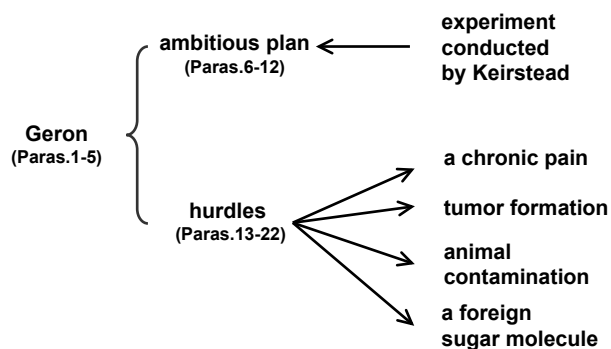
Part Three: paras. 13-22

Some potential problems may turn up with the clinical trials, such as improper differentiation, tumor formation, animal contamination and new mutations in culture.

Part Four: paras. 23-26

There is still a long way to go before cell therapies come onto the stage.

The structure is shown as the following.



4. Text comprehension (35 minutes)

Ask the students to read the text and discuss the following questions.

- ① Who is James Langevin?
- ② What is James Langevin's plea?
- ③ Why did he plead with his colleagues to vote with him?
- ④ what is stem cell research?
- ⑤ what is the strength of the stem cell research/ hES cells?
- ⑥ what are the problems of the stem cell research/ hES cells?
- ⑦ What do people think of hES cell therapy?
- ⑧ What makes Geron feel confident in the plan?
- ⑨ What is the experiment conducted by Keirstead?
- ⑩ What are the problems for the clinical trial?

Explain the the pattern “problem+solution+evaluation”

Para 15-17

problem: It will spur the tumor formation.

solution: Putting in the specialized cells rather than the naive cells.

evaluation: If the animals live for a year without the signs of teraomas, he will feel confident that the cells are safe to try it in humans.

Para 18-20

problem: To date, almost all hES cell lines have been exposed to animal products, which may introduce animal viruses into patients.

solution: growing these cells for more than 1 year without any feeder cells

evaluation: Geron can demonstrate that its cells are uncontaminated.

5. Detailed studies (30 minutes)

Show the meaning and usage with the help of the slide.

- plead with: to ask for; to beg

He pleaded with her to stay, but she refused.

I was surprised that she pleaded with me to go to see the film.

- trait: characteristic

Generosity is one of his personality traits.

It' s a genetic trait that causes her deafness at an early age.

- caution: v fml to warn

The policeman cautioned the prisoners not to play any trick.

Researchers cautioned that the drug is only partially effective.

- plausible: adj likely to be true, reasonable
A bomb was the only plausible explanation for the plane crash.
The story was plausible but that didn' t necessarily mean it was true.
- tackle: v to deal with; to handle
I don' t think I can tackle the problem until next week.
We' ll have to tackle the informal essay at the end of this term.
- circumvent: v fml to avoid cleverly; to bypass
Ships are registered abroad to circumvent employment and safety regulations.
Motorists attempted to circumvent traffic jams.
- highlight: v to emphasize
The report on the traffic accident just highlights the importance of safety.
Could you please highlight the problems of urban poverty at the meeting?
- culture: v to grow in a specially prepared nutrient medium
Scientists have succeeded in culturing these microorganisms in the lab.
Sometimes you cannot tell a cultured pearl from the one growing in an oyster.
- exotic: a from outside; foreign
Now there are various kinds of exotic fruits on our markets.
Have you ever seen these exotic tropical plants?
- prerequisite: n prior condition
This course is a prerequisite to more advanced studies.
Public support is a prerequisite for/ to the success of the project.
prerequisite course 预修课程 先修课程 先修科目
Prerequisite Programs 必备程序

6. Reading techniques for EST (25 minutes)

Ask the students to learn and practice the techniques.

Abbreviation (缩略词)

1. 截短词
cpd-- compound
maths-- mathematics
2. 字母缩略词
AMPS -- advanced mobile phone system)
3. 首字母拼音词
NATO-- North Atlantic Treaty Organization

7. Translation techniques for EST (25 minutes)

Ask the students to learn and practice the techniques.

1. Conversion (词的转译)

a) 动词---名词

The addition of 2 percent sodium carbonate to boiling water increase the bactericide effect.

b) 具体---抽象词义

The study of the brain is one of the last frontiers of human knowledge and of much more immediate importance than understanding the infinity of space or the mystery of the atom.

c) 抽象--具体

The pupil of the eye responds to the changes of light intensity. 具体化转译 “随…扩大或缩小”

2. Amplification (词的增译)

semi-permanent coupler

半永久性结构

infinite adjustment

将 adjustment 的含义补充为 speed adjustment, 译为 “无极调速”

3. Omission (词的省译)

Best varieties have good resistance to loading.

最好的品种抗倒伏力强。

8. Assignments and exercises (20 minutes)

Text A: Exercises

Text B: Self-study

Discussion: Discuss a brief report about the concerns about the hES cells research

科技英语教案

授课教师		授课班级		授课地点	
教 材	《科技英语综合教程》. 刘爱军 王斌. 2011. 外语教学与研究出版社				
授课内容	Unit 4 Text A 10 Hottest Technologies of the Year	学时	4 periods		
教学目的	1. Analyzing <i>10 Hottest Telecom Technologies of the Year</i> . 2. Mastering the key language points and grammatical structures in the text. 3. Conducting a series of reading, listening, speaking and writing activities related to the theme of the unit. 4. Mastering the reading skill of blending and translating skill of comparative degree.				
教学重点与难点	Teaching emphasis: Understanding 10 hottest telecom technologies of the year Mastering the key language points and grammatical structures in the text Teaching difficulties: Mastering the reading skill of blending and translating skill of comparative degree				
教学方法与手段	Teaching method: heuristic teaching Teaching aids: Multi-media and blackboard	教学参考书	《科技英语综合教程》教师用书. 刘爱军 王斌. 2011. 外语教学与研究出版社.		
教 学 进 程					
<p>I. Teaching Plan (180 minutes)</p> <ol style="list-style-type: none"> 1. Warm-up (10 minutes) 2. Detailed Study (145 minutes) 3. Reading skill of blending (12 minutes) 4. Translating skill of nominalization (12 minutes) 5. Assignment (1 minute) <p>II. Teaching Steps</p> <p>1. Warm-up: (10 minutes)</p> <ol style="list-style-type: none"> 1). Can you name some of the hot telecom technologies? 					

2). Telecom technologies have developed rapidly in China. Can you give an example of a dramatic technological change?

3). How do telecom technologies influence our daily life?

2. Detailed Study (145 minutes)

Step1. Text Organization

Part One: paras.1-3

The industry is thinking technology again and it's time to check out 10 hottest technology picks for the year.

Part Two: paras. 4-8

PacketCable Multimedia sets cable operators' offering from a basic telephony service from an ILEC .

Part Three: paras. 9-12

Wi-Fi roaming technology allows wireless user to wander from a narrowband cellular network onto a broadband Wi-Fi network without changing handsets.

Part Four: paras. 13-16

Meshed networks provide city-or metro-wide broadband wireless coverage without requiring wired backhauls.

Part Five: paras. 17-19

With the advent of hosted BoIP telephone, users will be able to manege all their calling feature over a web-based interface and gain access to productivity-enhancing applications.

Part Six: paras. 20-23

Active Ethernet is offered as as alternative to PON and it leverages the best of Ethernet and IP.

Step 2. Related Information

1) Telecommunications Magazine:

Telecommunications Magazine is owned by Horizon House, Inc. It is the global authority on the business of telecom. Through monthly print magazines, *Telecommunications Americas* and *Telecommunications International* and their website and a series of push e-mail products, interactive webinars and live events, *Telecommunications* plays a leading role in informing agenda-setting service providers around the globe on the technology and business issues that affects their businesses, their networks and their bottom lines.

2) VoIP(网络电话)(Para.4):

VoIP (Voice over IP) is an IP telephony term for a set of facilities used to manage the delivery of voice information over the Internet. VoIP involves sending voice information in digital form in discrete packets rather than by using the traditional circuit-committed protocols(协议) of the public switched telephone network (PSTN). A major advantage of VoIP and Internet telephony is that it avoids the tolls charged by ordinary telephone service.

3) ILEC(本地交换运营商)(Para.4):

An ILEC (incumbent local exchange carrier) is a telephone company in the U.S. that was providing local service when "The Telecommunications Act of 1996" was enacted. ILECs include the former Bell operating companies (BOCs) which were grouped into holding companies known collectively as the regional Bell operating companies (RBOCs) when the Bell System was broken up by a 1983 consent decree. ILECs are in contradistinction to CLEC (competitive local exchange carriers).

4) DOCSIS(缆上数据接口规范)(Para.6):

Now known as CableLabs Certified Cable Modems, DOCSIS (Data Over Cable Service Interface Specifications) is a standard interface for cable modems (调制解调器), the devices that handle incoming and outgoing data signals between a cable TV operator and a personal or business computer or television set. DOCSIS 1.0 was ratified by the International Telecommunication Union (ITU-TS) in March of 1998. Although

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。

如要下载或阅读全文，请访问：

<https://d.book118.com/966212235043010213>