大学科技英语

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COLLEGE ENGLISH OF SCIENCE AND TECHNOLOGY

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前　　言

　　科学技术的传播与发展，离不开语言这个基本工具。而在科学技术日益迅速发展的今天，科技英语在现实生活中已起着十分重要的作用。本教材主要编录了1998年以来在英美主要杂志上发表的科技文章，侧重于机械、材料、电器、计算机、法律、经贸等诸多学科的基础知识，力求一个"新"字。与此同时，为适应学生在英语基础阶段学习之后准备参加四、六级英语考试的需要，我们在本教材中增加了补充英语阅读部分。

　　多年的教学实践告诉我们，大学英语基础阶段结束后，一下子转入专业英语阶段的学习，学生们普遍感到不适应，似乎缺少了中间环节，这个中间环节就是起着过渡阶段作用的科技英语。为了能够更好地保证大学英语四年不断线，保证基础阶段英语到专业英语的顺利过渡，我们组织编写了这本"承上启下"、"瞻前顾后"的科技英语教材。

　　全书共分16个单元，每单元包括课文、阅读理解、词汇、翻译等练习，并对课文中比较疑难的句子、短语和词汇加以注释。作为专业课教师，我们编写这本书是一种尝试，由于时间短、任务急，加之水平有限，书中的错误在所难免，敬请读者指正。

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编　者

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Unit One

4TH GENERATION MANAGEMENT

Fourth Generation Management recognizes the basic problems with the first three generations and incorporates methods for overcoming them. It avoids the limited capacity of 1st Generation, the micromanagement of 2nd Generation, and the distorted system and figures of 3rd Generation. Fourth Generation managers care greatly about results but know that better results can reliably be obtained only through fundamental improvement. They become the champions of customer needs, the drivers of real improvement. They work together with other employees as partners to help develop better and better methods to get better and better results.

Over the years, Brian L. Joiner and his wife searched for a way to describe the essence of 4th Generation Management. The

Quality

Scientific Approach   All One Team

Figure 1 – 1   Joiner Triangle

following Figure 1-1 is now referred to as the Joiner Triangle:

Quality—Understanding that quality is defined by the customer; developing an obsession for delighting customers—not being satisfied with merely getting rid of what annoys them but going beyond to understand their current and future needs deeply, to surprise them with products and services they didn't even know were possible. This understanding is no longer the domain of special groups within an organization; rather, it is shared with and further developed by every employee.

Scientific Approach—Learning to manage the organization as a system, developing process thinking, basing decisions on data, and understanding variation.

All One Team—Believing in people; treating everyone in the organization with dignity, trust, and respect; working toward win-win instead of win-lose for all stakeholders, customers, employees, shareholders, suppliers, the communities in which we live.

This model is simple, which is one of its strengths. Anyone can quickly sketch it on a notebook or flipchart as a quick reminder of the core elements of 4th Generation Management. Without a simple model like this, it's easy to forget key elements. When faced with a difficult problem, managers can work their way around the trian-

gle, looking for a critical point they may have forgotten: "Have we considered the customer's viewpoint? Do we know what the process is? Do we have any data? Are we acting as if we believe in people?"

Using a triangle reinforces the notion that the elements are interdependent: taken separately, they are not as powerful as when used together. The failure to recognize the interdependence of the elements is why so many other management initiatives have ultimately failed in the workplace. When you look closely at companies that really drove "teams" and "teamwork" in the 1980s, for instance, you find that many efforts produced mediocre results at best because the efforts, were not directed toward customer-defined issues, and employees lacked the knowledge and training to use data effectively. Their efforts thus had little perceptible effect in the eyes of customers. A surge in "the customer is #1" rhetoric also seldom led to recognizable improvements because the efforts were not driven by data or an understanding of processes; decisions were based on opinion or presumed knowledge; and improvements that were identified were never captured or preserved as methods that would reliably achieve the needed results.

Seeing these failures time and time again was what inspired creation of the triangle. The companies making
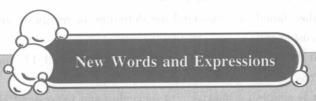
the most progress focused on quality as defined by the customer, used and understood data, processes, and variation, and built cooperation rather than competition. They were expanding markets, delighting more customers, streamlining their systems, sharply reducing wasted efforts, and increasing revenue while reducing costs. They came to understand that their customers' definition of quality weren't the same as their own.

Many customers even had fundamentally different views of basic industry terms such as "reliability". The company defined it as the length of time a product could be used without failure under standard operating conditions. Many customers interpreted as having a product work no matter what the environmental conditions were. Still others thought of reliability as having phone calls returned promptly from technical support staff. Only a small fraction of customers interpreted reliability the same way as the company did. In short, any time and money spent improving "reliability" using the company's definition would have been largely wasted because few of their customers would have noticed.

By arming themselves with understanding of its customers' perceptions, these companies were able to make improvements in "reliability" that customers noticed and appreciated. This new understanding of customer

needs also allowed the sales and technical staffs to point out advantages of their products that their customers had previously overlooked. Simply being able to talk the customer's language had immediate benefits: customers began reporting much higher satisfaction with the service received from both the sales and technical support staffs.

The results are substantially increased sales and happier customers, with no increase in their costs. That's focusing on the right things in the right way.

New Words and Expressions

micromanagement *n.* 微观管理
distort *vt.* 歪曲,扭曲,曲解
champion *n.* 战士,倡导者,冠军
essence *n.* 中心,基础,关键
obsession *n.* 着迷,缠住
domain *n.* 领域,范围
win-win *n.* 常胜,不败
win-lose *n.* 时赢时输
stakeholder *n.* 赌金保管者
shareholder *n.* 持股人,股票拥
　有者
interdependent *adj.* 相互依存

的,相互依赖的
interdependence *n.* 互相依存
initiative *n.* 发起,启动
workplace *n.* 工作场所,车间
mediocre *adj.* 平庸的
perceptible *adj.* 可感知的,显
　著的
surge *n.* 巨浪,波涛
rhetoric *n.* 修辞学
presume *vt.* 假设,假定
streamline *vt.* 使(事业、组织等)
　简化而更有效率

Exercises

1. *Reading Comprehension*:
   Choose the best answer to the questions.

1) According to the passage, many initiatives have failed in the workplace because _____ .
   A. they haven't enough experience in dealing with customers
   B. they failed to realize the interdependence of the elements involved in 4th Generation Management
   C. they didn't know how to use data
   D. they failed to understand the definition of reliability given by customers

2) What do you think of the Triangle given in Figure 1-1? (multiple choices)
   A. It is simple for managers to remember and understand key elements.
   B. It emphasis on the interdependence of the three elements.
   C. It is a good way to describe the essence of 4th Generation Management.
   D. The three elements of it can work better when taken separately.

3) According to the first paragraph, the 4th Generation Management _____ .
   A. recognizes all the problems with the first three generation management
   B. only stresses on better results
   C. takes the same kind of system as that is taken in 3rd Generation Management
   D. avoids the limited capacity of 1st Generation

4) From the passage, we know that the better way to delight the cus-

tomers is _____ .

A. to get rid of what annoys them

B. to promise good quality and better services

C. to go beyond to understand their current and future needs deeply

D. to surprise them with products and services that are difficult and even impossible

5) From the last but third paragraph, we draw the conclusion that a company should define reliability the way as _____ .

A. the length of time a product should be used without failure

B. the shortening of delivery cycle

C. the customers do

D. having phone calls returned promptly from technical staff

2. *True or false exercises*:

1) The understanding of customer needs only shared among managers. （　　）

2) Only a small part of customers have the same interpretation of reliability as the company do. （　　）

3) Quality is defined mainly by a company. （　　）

4) By talking the customers' language, a company will greatly increase its sales volume. （　　）

5) "The customer is #1"rhetoric will surely lead to the sales increase. （　　）

3. *Column A is a list of words from the passage. Find a word from Column B which is similar in meaning to one of the words in Column A.*

A	B
1)perceptible	a. include
2)presumed	b. strengthen

3) incorporate   c. eventually
4) reliably   d. quickly
5) reinforce   e. noticeable
6) ultimately   f. income
7) inspire   g. dependably
8) promptly   h. encourage
9) revenue   i. quite a lot
10) substantially   j. supposed

4. *Translation*:

Translate the following sentences into Chinese.

1) Using a triangle reinforces the notion that the elements are interdependent: taken separately, they are not as powerful as when used together. The failure to recognize the interdependence of the elements is why so many other management initiatives have ultimately failed in the workplace.

2) When you look closely at companies that really drove "teams" and "teamwork" in the 1980s, for instance, you find that many efforts produced mediocre results at best because the efforts, were not directed toward customer-defined issues, and employees lacked the knowledge and training to use data effectively. Their efforts thus had little perceptible effect in the eyes of customers.

3) The companies making the most progress focused on quality as defined by the customer, used and understood data, processes, and variation, and built cooperation rather than competition.

4) By arming themselves with understanding of its customers' perceptions, these companies were able to make improvements in "reliability" that customers noticed and appreciated. This new understanding of customer needs also allowed the

sales and technical staffs to point out advantages of their products that their customers had previously overlooked.

Supplementary Reading Exercises

A

As he grew older Leonardo become sullen and gloomy. At about the age of sixty-two he made the red-chalk drawing of himself (the only likeness of him available today), and added at the bottom of the picture, "Leonardo da Vinci, portrait of himself as an old man." The final years of his life were spent in Amboise, France, in an honorary position under King Francis I.

Besides painting and music, Leonardo is famous for his notebooks, which are filled with ideas and sketches. They number 7,000 pages of mechanical concepts, medical studies, optics, mathematics, maps, plans for cities and irrigation canals, and painting and drawing techniques. In them he foretold flying-machines, mass-production machines, and a host of other inventions, made drawings of plant life so accurate that they could still be used in textbooks today, and produced anatomical (解剖学的) studies far in advance of his time. He was extremely attracted by sophisticated puzzles. He thought proportions had fundamental importance not only for measurement and numbers but also in weights, sounds and almost everything else.

To him, painting was "the queen of all sciences" and art and science were inseparable. When he began his Treatise on painting, he may have been planning to write down instructions for the correct representation of objects, but that led to considera-

tions of perspective, proportion, geometry, and optics, and then further to anatomy and the mechanics of living and nonliving things, and ultimately to a search for principles underlying the operation of the universe itself. Sometimes such intellectual pursuits led him away from finishing a project, but they also earned him a reputation as one of the great geniuses of all time.

1. Of Leonardo's many talents, one is central. It is _____ .
   A. foretelling the future
   B. making inventions
   C. writing textbooks on anatomy
   D. drawing

2. The sentence "painting was 'the queen of all sciences'" (Para. 3) most probably means that _____ .
   A. science has much to do with painting
   B. the queen of his times preferred science to painting
   C. drawing is part life of a scientist
   D. painting has plenty to do with science

3. Leonardo is considered as one of the great geniuses of all time for _____ .
   A. he drew the portrait of himself
   B. he's attracted by the idea of flight
   C. he's skilled and well-versed in many others of the arts
   D. he has a lot of interests

4. Which of the following statements is NOT true?
   A. Leonardo didn't produce many paintings for some reasons.
   B. He's reserved, but capable and knowledgeable.
   C. He spends his final years depressed.
   D. "Last Supper", one of his paintings, is still alive today.

5. The word "sullen" in the first sentence of the passage can be replaced by _____ .