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ДЕЛОВОЕ И НАУЧНОЕ ОБЩЕНИЕ НА АНГЛИЙСКОМ ЯЗЫКЕ

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Учебное пособие составлено с учетом модернизации программ обучения. Его цель - дальнейшее развитие навыков устной и письменной речи, чтения, перевода и рефериорации текстов профессиональной направленности. Пособие содержит 4 тематических блока по общим проблемам науки, научной и деловой коммуникации, а также текстовое приложение.

Предназначено для обучающихся по принятым в ИрГУПС направлениям подготовки магистрантов и аспирантов при организации аудиторной и самостоятельной работы по дисциплине «Профессиональный иностранный язык (английский)».

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PREFACE

Учебное пособие «Деловое и научное общение на английском языке» разработано на кафедре «Иностранные языки» и предназначено для обучающихся по принятым в ИрГУПС направлениям магистерской подготовки и магистрантов для организации аудиторной и самостоятельной работы по дисциплине «Профессиональный иностранный язык (английский)».

Цель учебного пособия – дальнейшее развитие навыков устной и письменной речи, чтения, перевода и реферирования текстов профессиональной направленности.


Вводный текст (Introductory Text) представляет собой описание базовых понятий. В нем вводится часть лексики, подлежащей активному усвоению. Для достижения наибольшей концентрации тематической лексики тексты подвергались сокращению. Цель последующих упражнений – достижение максимального количества повторных обращений к тексту и контроль понимания прочитанного.

Последующие упражнения (Vocabulary and Grammar) предназначены для закрепления лексики по теме, а также дальнейшего совершенствования грамматической стороны речи. Лексические упражнения данного раздела рассчитаны на активизацию и расширение словарного запаса за счет деривации, словосложения и т. д. Часть из них ставит целью раскрытие особенностей семантики лексических единиц, адекватный выбор артиклей и предлогов.

Блок Discussion Points обеспечивает прочное закрепление языкового материала и его использование в процессе речевого общения. Здесь развиваются навыки и умения свободного монологического и диалогического высказывания. Данный раздел содержит необходимый материал для развития навыков аргументированной речи: задания, отражающие проблемный характер той или иной обсуждаемой темы, а также языковой материал, необходимый для выполнения речевых действий, непосредственно вовлеченных в процесс аргументации – высказывание мне-
ния, запрос мнения, оценка мнения партнера, согласие/несогласие, убеждение/разубеждение и т. д.

Целью заданий раздела **Reading Comprehension** является развитие навыков и умений беспереводного чтения. Значительная их часть может быть использована для реферирования и аннотирования как на английском, так и на русском языке.

Задания блока **Tasks for Writing** направлены на овладение продуктивной письменной речью. В начале раздела приводится информация справочного характера и даются образцы композиционно-речевых форм, подлежащих усвоению. Данные образцы служат моделями для последующих письменных высказываний, а также выступают в качестве вспомогательных средств обучения письму как технике использования орфографической системы языка.

В приложении (**Supplement**) содержатся тексты по основным направлениям магистратуры и аспирантуры.

Важно иметь в виду, что способ подачи материала предполагает заданную последовательность в работе. Автор не рекомендует начинать работу над следующим уроком без тщательной проработки и усвоения предыдущего.

Учебное пособие апробировано на кафедре «Иностранные языки» и рекомендовано для использования в учебном процессе.
Most people have an understanding of what science has helped mankind achieve, we all know that science has had an impact on every facet of human life. Through science we have understood and been able to make better use of the world and its resources. However not many can competently describe what science is.

Science is the structured study of the naturally occurring elements, events and conditions in and around the world that we live in. It involves observing, experimenting, testing, concluding and applying knowledge of the natural world by use of systems that have been developed over time. Any scientific information must be systematic and verifiable via a logical process. Due to the growth that has been experienced in science, it has been split into three general fields as per the subject of focus. These three fields are biology, chemistry and physics. Biology is basically the study of living things. Chemistry is the study of substances, what they are composed of, their properties or characteristics and how they react with other substances. This includes both living and non living substances. Physics is the study of matter and its interactions with energy. Matter in any state will poses some sort of energy and there will be other energy sources around it, it is the interactions between the energy and matter that physics focuses on.

Now that we have established that science involves study and application, you may be wondering what is the purpose of all this. The purpose is actually the same as the process, to study and learn about our world and then apply this knowledge to make our lives better today and in the long term. Initially science was driven to finding the best way to exploit natural resources; this has however changed with the realization that the resources of the world are not infinite. Today science is all about finding sustainable ways of enjoying the resources available while preserving as much of nature as we possibly can. Science has since its inception been an expensive affair. Most new scientific facts take many years to verify and even longer to apply. At the time of their discovery they usually defy the accepted and established laws of science and seem controversial or even out right insane, the scientists of the past paid the ultimate price for their discoveries and theories.
Engineering has existed since ancient times as humans devised fundamental inventions such as the wedge, lever, wheel and pulley. Each of these inventions is essentially consistent with the modern definition of engineering.

The term *engineering* is derived from the word *engineer*, which itself dates back to 1390 when an *engine’er* (literally, one who operates an *engine*) originally referred to a constructor of military engines. “In this context an engine” referred to a military machine, *i.e.*, a mechanical contraption used in war (for example, a catapult).

Later, as the design of civilian structures such as bridges and buildings matured as a technical discipline, the term civil engineering entered the lexicon as a way to distinguish between those specializing in the construction of such non-military projects and those involved in the older discipline of military engineering. Engineering is often characterized as having four main ("Big Four") branches: Chemical engineering – the application of physics, chemistry, biology, and engineering principles in order to carry out chemical processes on a commercial scale, such as petroleum refining, micro fabrication, fermentation, and bimolecular production.

Civil engineering – the design and construction of public and private works, such as infrastructure (airports, roads, railways, water supply, and treatment etc.), bridges, dams, and buildings.

Electrical engineering – the design, study, and manufacture of various electrical and electronic systems, such as electrical circuits, generators, motors, electromagnetic/electromechanical devices, electronic devices, electronic circuits, optical fibers, optoelectronic devices, computer systems, telecommunications, instrumentation, controls, and electronics.

Mechanical engineering – the design and manufacture of physical or mechanical systems, such as power and energy systems, aerospace/aircraft products, weapon systems, transportation products, engines, compressors, power trains, kinematic chains, vacuum technology, vibration isolation equipment, manufacturing, and mechatronics.

*Ex. 1. Learn to pronounce the following words:*

resources; occur; verify; fundamental; logical; process; focus; energy; discipline; further; specific; area; initially; exploit; controversial; ultimate; theory; engineering; machine.
Ex. 2. Give the Russian equivalents for the following word-combinations:
an impact on every facet of human life; to make better use of the world and its resources; to competently describe; the naturally occurring elements; events and conditions in and around the world; a single subject; due to the growth; both living and non living substances; every single manmade or naturally occurring element; today and in the long term; practical knowledge; maintain; extremely broad; specific operating conditions; fundamental inventions.

Ex. 3. Find in the text the English equivalents for the following words and word-combinations:

Ex. 4. Answer the following questions:

with the help of modern science? 21. What challenges does modern science face nowadays?

**Vocabulary and Grammar**

*Ex. 1. Match the following words and word-combinations with their definitions:*

1. to achieve  
2. knowledge  
3. description  
4. evolve  
5. complex  
6. substance  
7. interaction  
8. application  
9. infinite  
10. insane  

- a. composed of two or more units  
- b. mutual or reciprocal action or influence  
- c. the act of putting smth to a special use or purpose  
- d. to gain with effort or despite difficulty  
- e. familiarity or understanding gained through experience or study  
- f. the act, process or technique of describing  
- g. characteristic of or associated with persons who are mentally deranged  
- h. having no boundaries or limits  
- i. to develop or achieve gradually  
- j. that which has mass and occupies space

*Ex. 2. Analyze the structure of the following words. State what part of speech they are. Give their Russian equivalents:*

1. science (n), scientist (n), scientific (adj); 2. state (v); statement (n); 3. discover (v), discovery (n); 4. describe (v), description (n); 5. theory (n), theoretical (adj), theoretically (adv); 6. illustrate (v), illustration (n); 7. use (v), use (n), useful (adj), useless (adj), usefully (adv); 8. structure (n), structural (adj); 9. verify (n), verification (n); 10. experiment (v, n); experimental (adj); 11. specify (v), specific (adj), specifically (adv); 12. logic (n), logical (adj), illogical (adj), logically (adv); 13. apply (v), application (n), applicable (adj); 14. characterize (v), characteristic (n), characteristically (adv).

*Ex. 3. Using a dictionary translate the following sentences from English into Russian. Remember the meaning of Latin prepositions commonly used in scientific prose:*

**Mind: via** – by the agency or instrumentality of; by means of.
1. Any scientific information must be systematic or verifiable via a logical process. 2. So the simple fact that all the information in the world may soon be available to everyone via the Internet does not end ignorance, just as the existence of a library in your city does not end ignorance. 3. A company, Econ Scrutiny, Inc. was established via a Chicago law firm. 4. Today they had conversed via a word processing program.

**Mind: as per** – consistent, or in accordance with

1. Due to the growth that has been experienced in science it has been split into three general fields as per the subject of focus. 2. They made payments of $1,000 a year, as per agreement. 3. As per our timetable, today we will approach two topics in our debates: compliance and verification. 4. As per recent assessments, the District has some 85,000 inhabitants.

**Mind: versus (vs)** – as compared to or one of two choices; in contrast with; against. It is commonly used in titles and sub-titles:

man-made fibers versus natural fibers; man versus woman; travelling by train versus travelling by plane; peace versus war; knowledge versus education.

Ex. 4. Use the verb in parenthesis in the correct tense:

1. If I have time, I (finish) … the report at home this evening. 2. How long (he/be) … Head of the laboratory? 3. Where (you/meet) … Prof. Brown for the first time? 4. What problems (you/work) at the moment? 5. I think they (finish) … the project by the end of November. 6. Tomorrow they (to leave) … for Vienna to take part in the workshop on internet and net economics. 7. … (they/ present) all the documents yet? 8. Since when (he/be interested) … in the problem? 9. He (get) his Master’s degree at the University of Mechanical Engineering in 2011. 10. The article surely (motivate) our interest in the problem. 11. You (take part) ever in the work of a conference, symposium, etc? 12. When (you/call) your scientific advisor?

Ex. 5. Translate the following sentences from English into Russian. Explain the use of the Present Perfect Tense:

1. Most people have an understanding of what science has helped mankind achieve, we all know that science has had an impact on every facet of hu-
man life. 2. Through science we have understood and been able to make better use of the world and its resources. 3. It involves observing, experimenting, testing, concluding and applying knowledge of the natural world by use of systems that have been developed over time. 4. Now that we have established that science involves study and application, you may be wondering what is the purpose of all this. 5. Initially science was driven to finding the best way to exploit natural resources, this has however changed with the realization that the resources of the world are not infinite. 6. Engineering has existed since ancient times as humans devised fundamental inventions such as the wedge, lever, wheel and pulley.

Ex. 6. Put the following sentences into the Passive Voice:

1. A group of scientists first recognized the problem in the 19th century.
2. The team analyzed a lot of possibilities for practical application.
3. The scientific community didn’t accept the idea as well as experimental results.
4. Prehistoric man invented first tools and weapons.
5. The Oxford group immediately took up and developed further every new idea.
6. They calculated the results of the experiments in a shorter time than it took to perform the experiment.
7. He has written a new computer programme.
8. Popov invented the radio in 1895.
9. The publication of Newton’s Principia traced the origin of science to 1987.
10. Computing can transform economic performance very significantly.
11. Webster’s New World Dictionary defines the word research as “the careful, systematic study and investigation in some field of knowledge”.

Discussion Points

Some people say there is no difference between a scientist and an engineer, while other people think the two careers are totally separate from each other. Scientists and engineers typically have strong opinions about what they do, but how would you describe the difference between a scientist and an engineer?

Now read some short texts where different people answer this question. Say whether you agree or disagree with them. Use some helpful expressions below (Expressing Agreement/Disagreement):
1

I’m a scientist who works daily with engineers. I’m generally treated as one of them and often perform the same duties. The main difference is that the scientist focuses on the unknown while the engineer focuses on the “known”.

2

There is hardly any difference between the two. In the end it is all mathematics and physics!

3

Science is more romantic, in a way, a never-ending search, engineering is limited to goals, profit margins and physical means.

4

I think there is no difference between science and engineering because both work for nature and humanity.

5

Engineers are Hard Workers, while scientists are Free Workers.

6

Scientists get PhDs, engineers get jobs!

7

Engineers just copy scientists!

8

Scientists and engineers are idealists and dreamers vs pragmatics and doers!

9

All engineers are scientists, but not all scientists are engineers!

Expressing Agreement/Disagreement

When arguing people often disagree with each other. To disagree in a pleasant way is not always easy, that’s why people try to use round-about ways to express disagreement. Here are some helpful expressions for you to remember and use.
**Ex. 1. Read the following quotations about science and express your own opinion using Table 1.**

1. No one should approach the temple of science with the soul of a money changer. – **Thomas Browne**.
2. Science is Nature’s interpreter. – **James Lendall Basford**.
3. Equipped with five senses, man explores the Universe around him and calls the adventure science. – **Edwin Powell Hubble**.
4. Nature composes some of her loveliest poems for the microscope and the telescope. – **Theodore Rozzak**.
5. Science is a great antidote to the position of enthusiasm and superstition. – **Adam Smith**.
6. Science has made us gods even before we are worthy of being men. – **Jean Rostand**.
7. Men love to wonder, and that is the seed of science. – **Ralph Waldo Emerson**.

**Ex. 2. Work with a partner to discuss the following questions:**

1. Scientists discover what already is. Engineers create which isn’t.
2. There is something integrally artistic about searching for knowledge.
3. Engineers solve practical problems, scientists solve theoretical problems.

**Reading Comprehension**

1. *Read the text “Building a better collective memory” and circle the letter next to the correct answer:*

   *The Future of Science. Building a better collective memory*
   
   *by Michael Nielsen*

   In your High School science classes you may have learnt Hooke’s law, the law of physics which relates a spring’s length to how hard you pull on it. What your High School science teacher probably didn’t tell you is that when Robert Hooke discovered his law in 1676, he published it as an anagram, “ceiiinos-sssttvu”, which he revealed two years later as the Latin “ut tensio, sic vis”, meaning “as the extension, so the force”. This ensured that if someone else made the same discovery, Hooke could reveal the anagram and claim priority, thus buying time in which he alone could build upon the discovery.

   Hooke was not unusual. Many great scientists of the age, including Leonardo, Galileo and Huygens, used anagrams or ciphers for similar purposes. The Newton-Leibniz controversy over who invented calculus occurred because Newton claimed to have invented calculus in the 1660s and 1670s, but didn’t publish until 1693. In the meantime, Leibniz developed and published his own version of calculus. Imagine modern biology if the human genome had been announced as an anagram, or if publication had been delayed thirty years.

   Why were Hooke, Newton, and their contemporaries so secretive? In fact, up until this time discoveries were routinely kept secret. Alchemists intent on converting lead into gold or finding the secret of eternal youth would often take their discoveries with them to their graves. A secretive culture of discovery was a natural consequence of a society in which there was often little personal gain in sharing discoveries.

   The great scientific advances in the time of Hooke and Newton motivated wealthy patrons such as the government to begin subsidizing science as a profession. Much of the motivation came from the public benefit delivered by scientific discovery, and that benefit was strongest if discoveries were shared. The
result was a scientific culture which to this day rewards the sharing of discoveries with jobs and prestige for the discoverer.

This cultural transition was just beginning in the time of Hooke and Newton, but a little over a century later the great physicist Michael Faraday could advise a younger colleague to “Work. Finish. Publish.” The culture of science had changed so that a discovery not published in a scientific journal was not truly complete. Today, when a scientist applies for a job, the most important part of the application is their published scientific papers. But in 1662, when Hooke applied for the job of Curator of Experiments at the Royal Society, he certainly was not asked for such a record, because the first scientific journals weren’t created until three years later, in 1665.

The adoption and growth of the scientific journal system has created a body of shared knowledge for our civilization, a collective long-term memory which is the basis for much of human progress. This system has changed surprisingly little in the last 300 years. The internet offers us the first major opportunity to improve this collective long-term memory, and to create a collective short-term working memory, a conversational commons for the rapid collaborative development of ideas. The process of scientific discovery – how we do science – will change more over the next 20 years than in the past 300 years.

Ex. 1. Having discovered his law Robert Hooke published it as an anagram because:

a) he wanted other scientists to reveal it two years later;
b) it was a means to claim priority in case someone else made the same discovery:
c) he wanted to have more time to make experiments.

Ex. 2. Choose the answer (a, b, or c) which you think is a better reflection of the main idea in Paragraph 2:

a) In old times society motivated scientists not to share their discoveries;
b) Newton and Leibniz had a controversy over who invented calculus;
c) Alchemists never revealed the results of their experiments.
Ex. 3. The word a record (Paragraph 5) means:
   a) an application form;
   b) a scientific journal;
   c) the number of published scientific papers.

Ex. 4. This system in “This system has changed surprisingly little…” refers to
   a) the Internet
   b) shared knowledge
   c) scientific journal system

Ex. 5. Circle the letter next to the answer which best reflects the main idea of the whole text:
   a) The process of scientific discovery has been extremely slow.
   b) Creating better collective memory suggests sharing discoveries.
   c) Scientists appear slow to adopt many online tools.

Ex. 6. Read the texts below:

Famous Scientists of the 21 Century

The 21st Century is just beginning but science and technology are moving in blazing speeds. Without the scientists, how could we move? Today, we look at a few of the famous and popular scientists of the 21st century.

Who are the movers and shakers of this time? Let’s look at a sneak preview of the pioneers and explorers of science in the 21st Century. Some may not sound familiar, others may not show concrete discoveries but these people have brought science to the forefront either by their research or by their advocacy of promoting and spreading scientific knowledge to anyone and everyone.

Note: They are listed in no particular order.

Andre Geim

Andre Geim, born 21 October 1958 with Dutch, Russian, and British heritage. A physicist working at the University of Manchester, Geim was awarded Nobel Prize in Physics together with Konstantin Novoselov for his work on graphene in 2010. Graphene is a super-conductive form of carbon, made from single-atom-thick sheets. Graphene consists of one-atom-thick layers of carbon at-
oms arranged in a two-dimensional hexagon. It is the thinnest material in the world, as well as one of the strongest and hardest and is considered a superior alternative to silicon.

He also researched diamagnetic levitation and in a famous 1997 experiment, he managed to levitate a frog. He has also done research on mesoscopic physics and superconductivity. About his broad range of science that he studies, Geim says, “Many people chose a subject for their PhD and then continue the same subject until they retire. I despise this approach. I have changed my subject five times before I got my first tenured position and that helped me to learn different subjects.”

**Stephen Hawking**

Stephen Williams Hawking was born 8 January 1942. He is an English theoretical physicist and cosmologist. His scientific books (specially his runaway bestseller, Brief History of Time) and public appearances have made him a popular pop-icon and academic celebrity. In 2009, Hawking was awarded the Presidential Medal of Freedom, the highest civilian award in the United States.

He is known for his research and contributions to the science of cosmology and quantum gravity. He has also achieved success with works of popular science in which he discusses his own theories and cosmology in general. His contributions to science still keep coming in. Together with Roger Penrose, he provided theorems regarding gravitational singularities within the framework of general relativity. He also gave theoretical predictions about black holes emits radiation. This type of radiation is known as the Hawking radiation or the Bekenstein-Hawking radiation.

Currently, he is the Director of Research at the Centre for Theoretical Cosmology in the Department of Applied Mathematics and Theoretical Physics at the University of Cambridge as well as a Fellow of Gonville and Caius College, Cambridge and a Distinguished Research Chair at the Perimeter Institute for Theoretical Physics in Waterloo, Ontario.

**Konstantin Novoselov**

Konstantin Novoselov, born 23 August 1974. He is a Russian-British physicist at the University of Manchester as a Royal Society University Research Fellow. He is known for working together with Andree Geim in discover-
ing and studying graphene. Because of their work, they won the Nobel Prize in Physics in 2010. Novoselov is also a recipient of an ERC Starting Grant from the European Research Council.

Dr. Novoselov’s record includes 49 papers mostly in Physics and Materials Science and has also been cited 3,536 times in a span of twenty years. Dr. Novoselov is a Royal Society Research Fellow in School of Physics & Astronomy at the University of Manchester as well as the Langworthy Professor and director of the Manchester Centre for Mesoscience and Nanotechnology also at the University of Manchester.

He received a Diploma from the Moscow Institute of Physics and Technology, and undertook his Ph.D. studies at the University of Nijmegen in the Netherlands before moving to the University of Manchester in the United Kingdom with his doctoral advisor Andre Geim in 2001. According to the ISI Essential Science Indicator, his two papers in Science 2004 and Nature 2005 are the most cited papers on graphene and “have opened up a fast moving front”. The paper in Science 2004 is also acknowledged as “one of the most cited recent papers in the field of Physics”.

Make the following sentences complete using the information from the texts above:

1. Besides working on graphene, Andre Geim has also done research on …
2. Stephen Hawking’s public appearances and his books made him …
3. Stephen Hawking is known for …
4. His contribution to science …
5. Konstantin Novoselov is known for working together with …
6. Konstantin Novoselov received a Diploma from …
7. Konstantin Novoselov undertook his Ph.D. studies at …
8. His most cited papers are …
9. One of the most cited recent papers in the field of Physics is …

Tasks for writing: Extended Definition

What does the word “SCIENCE” mean to you? The answer to this question can be developed into an essay that is an extended definition. The definition must include all relevant features and exclude all others. There are many methods that can be used to develop an extended definition. Some of them are:
1. **Giving the dictionary definition, for example:** The British Heritage Dictionary defines *science* as: “knowledge or a system of knowledge covering general truths or the operation of general laws especially as obtained and tested through scientific method”.

2. **Giving the etymology, or origins and history of the word itself, for example:** The word “science” comes from the Latin word “*scientia*”, which means “knowledge”.

3. **Telling what the term is not, for example:** Science is not just obtaining of knowledge or skill through experimenting.

4. **Giving examples or an analogy.**

5. **Explaining the functions and effects of the term.**

*Now develop an extended definition of the term SCIENCE. Follow the list of components and ideas that could be included in your essay:*

The function of SCIENCE is to___________________________.

SCIENCE is_________________. SCIENCE is not________. The effects of SCIENCE are_______________________.

The process of SCIENTIFIC RESEARCH can be compared to______________. An example of a good SCIENTIST is_____. Most people think that SCIENCE is_______________. In reality, it is_______.

*Choose another term to define, for example: INGINEERING, SCIENTIST, ENGINEER, etc.*
UNIT 2. HIGHER AND FURTHER EDUCATION

Introductory Text

There are over forty universities in Britain. They can be divided into several types. The term “old universities” refers to Oxford and Cambridge which were the only two universities in England until the nineteenth century. Oxford is governed by a governing council, while each college is governed by its Fellows (the members of the governing body) who are responsible for teaching their own students through a tutorial system, whereby each student gets personal tuition once a week. Each college in Cambridge is largely independent and the university’s administration is run by a governing council called the Senate. Cambridge is more developed than Oxford in scientific studies. Other aspects are similar to those in Oxford.

The Open University. As the name suggests, it is open to everybody, and does not demand the same formal qualifications as the other universities. The university offers courses through one of the BBC’s television channels and by radio and has tutors and counselors all over Britain, who read papers written by students and discuss them at meetings or by correspondence.

Apart from the universities there are polytechnics (institutions for advanced full-time and part-time education, especially in scientific and technical subjects) and colleges of higher education for those who fail to get to university or who choose more practical courses.

The system of higher education in the USA comprises universities, four-year colleges, technical training institutions and community colleges (a community college is a junior college established to serve a certain community and sometimes supported in part by it, often focusing on career, rather than academic progress).

Unlike the European system of higher education, colleges and universities in the USA do not have their own entrance examinations. Rather, admission is based on scholastic achievement in high school and performance on standardized national tests (the SAT – the Scholastic Aptitude Test); a two-part examination which must be taken by all students who wish to attend US universities. Students in their senior year take the SATs and have the results sent to the colleges they want to attend or ACT – American College Testing.
In addition, colleges and universities may require applicants to submit samples of their writing.

Depending on the source of financing higher education institutions may be either state-supported or private. The tuition fee at a private university can be $20,000–25,000 a year. The fee at a state university can be ten times less as that. There is at least one university supported by public funds in each state. A group of old and highly-respected universities of the eastern USA is called Ivy League. They are Columbia, Harvard, Cornell, Princeton and Yale Universities, Dartmouth College and the University of Pennsylvania.

Church and state are separated in the USA therefore religion cannot be taught in state-supported schools.

Ex. 1. Learn to pronounce the following words:
refer to, to be governed by, tutorial, tuition, council, qualifications, counselors, technical, focus on, career, polytechnics, junior, standardized, samples, results, require, a group of, private, funds, highly-respected, to be taught.

Ex. 2. Give the Russian equivalents for the following word-combinations:
a governing council, Fellows, through a tutorial system, personal tuition, The Open University, formal qualifications, by correspondence, apart from, advanced, full-time and part-time education, community colleges, a junior college, academic progress, admission, scholastic achievement, high school, performance on standardized national tests, depending on, state-supported or private, ten times less as that.

Ex. 3. Find in the text the English equivalents for the following words and word-combinations:
единственный, посредством которого, раз в неделю, главным образом, более развитый, предлагать курсы, письменные работы, дневное обучение, особенно, технические дисциплины, частично, в отличие от, Европейская система высшего образования, вступительные экзамены, в добавок к, абитуриенты, в зависимости от источника финансирования, заведение высшего образования, плата за обучение, государственный университет, университеты, имеющие хорошую репутацию.
Ex. 4. Find in the text the following sentences. Translate them into Russian paying special attention to the words and word-combinations in bold type:

1. The term “old universities” refers to Oxford and Cambridge which were the only two universities in England until the nineteenth century. 2. Other aspects are similar to those in Oxford. 3. Each college in Cambridge is largely independent. 4. As the name suggests, it is open to everybody, and does not demand the same formal qualifications as the other universities. 5. Apart from the universities there are polytechnics (institutions for advanced full-time and part-time education. 6. The fee at a state university can be ten times less as that. 7. In addition, colleges and universities may require applicants to submit samples of their writing.

Ex. 5. Answer the following questions:

1. What are the so-called “old universities” in Great Britain characterized by? 2. What are Fellows responsible for? 3. What is Open University? 4. What is the characteristic feature of polytechnics? 5. What is a community college? 6. Why is the advanced-level examination very important in Great Britain? What are a) the SAT b) ACT? 7. What are the main types of university education in a) Great Britain b) the USA? 8. What are the highly-respected universities in the USA? What are they famous for?

Vocabulary and Grammar

Ex. 1. Underline the correct word (word-combination) after checking with a dictionary:

1. Someone who has already taken one degree and is studying for another, more advanced degree is – a graduate – a postgraduate – an undergraduate. 2. A special type of university (Great Britain) which uses radio and television for teaching is called – The Open University – The Polytechnic. 3. A course for adults, where students study a variety of things from French to flower arranging is called – an access course – an evening course – a vocational course. 4. Careful, detailed work that you do to discover new information or produce new ideas on a particular subject is – homework – paper work – a research.
5. The subjects that are taught by a school, college, etc are called – a course – a curriculum – a programme.

6. Something that must be done because the law dictates so is – compulsory – voluntary.

7. The number of people who drop out and do not finish their courses is – a drop-out rate – percentage of graduates.

8. An award to someone who has successfully finished a course is – a bonus – a degree – a prize.

9. Activities which are not directly a part of the curriculum of a school or college are – individual tuition – extra-curricular activities.

**Ex. 2.** In the following word-combinations the attribute is expressed by a compound adjective. Paying special attention to the underlined parts, give the Russian equivalents for the word-combinations:

full-time and part-time education; four-year colleges; a two-part examination; a part-time teacher; team-work activities; computer-literate students; a country-specific problem; a nation-wide curriculum; an Oxford-educated teacher; a state-supported college; a highly-respected university; a practically-oriented course; a universally-acknowledged scientist; a highly-motivated student; a five-year programme; a four-year plan; a three-level system.

**Ex. 3.** Fill in the blanks with articles where necessary:

1. Phil gave up his job, and he is going back to … school … next year.
2. She got … degree in … History last year and now she’s doing … postgraduate course.
3. He was born in … South Wales in 1941 and educated at … King’s School.
4. If you get … place at … university … tuition is free, and some students also get … grant as well.
5. Every term … parents are invited to … school to meet … teachers.
6. Frank is … student at … Liverpool university.
7. … college course was planned to run for … full academic year of forty-seven weeks.
8. She was … wife of … ordinary office-worker in … Ministry of Education.
9. Then Rudy saw … Professor Danton, head of History and Economics Department.
10. Her friend Herbert Halt is … professor of … English literature in one of … smaller universities of … Middle West.
11. She’d been to Oxford and she’d taken her degree in … Economics.
12. … fees at … secondary school
Ex. 4. Translate the following sentences. Mind the rules of translation (Forms and Functions of the Infinitive in a Sentence):

1. To make a choice between these two alternatives is not an easy task.
2. To establish cause-effect relationship between smoking and some health problems, extensive research is being carried on at several research centers.
3. He admits to have made a similar mistake in his earlier publication.
4. The train is to reach its destination in 52 hours.
5. The problem to be discussed is of great practical and theoretical significance.
6. The articles to be published next month were written by our colleagues.
7. Our plan was to go on experimenting that summer.
8. That regulation was the last to be adopted.

Ex. 5. Translate the following sentences. Mind the rules of translation into Russian (Complex Subject):

1. A post-graduate student is expected to write a number of scientific papers.
2. The Earth is known to be a gigantic magnet.
3. Concurrently with the symposium it is also expected to organize the international school on information technologies.
4. Dozens of homes are reported to have been destroyed, and public health issues are reported to be mounting.
5. AIDS is thought to have originated in sub-Saharan Africa during the twentieth century.
6. Now these sculptures are thought to be the oldest existing historical artifacts.
7. Real water is assumed to be a homogeneous single phase.
8. Molecular biology is expected to dominate other sciences.
9. The data are assumed to correlate with the present theory.

2

1. Our findings suggest that stress at work is unlikely to be an important cancer risk factor.
2. These discoveries are sure to be beneficial to all humanity.
3. Needless to say, such a poor abstract is unlikely to encourage a potential reader or a journal editor.
4. The Editor is very likely to first consider a well-cited author and a valuable reviewer.
5. The conference is sure to give a new stimulus to further investigation of the problem.
1. There appears to be an error with the database. 2. The method proved to give encouraging results. 3. What do scientists think happened to cause the world to be created? 4. The new technique seems to be welcomed by many who have opposed human embryonic stem cell research.

Ex. 6. Translate the following sentences. Identify the function of Participles:

1. Using modern installations and techniques the researches managed to solve a complicated engineering problem. 2. At this stage innovation becomes a group and not an individual activity, involving both a new body of information and a new technology. 3. In 1913 Bohr proposed the solar theory of the atom, giving rise to still greater activity in both theoretical and practical fields. 4. To find out more about the space scientists sent satellites, circling in orbits above the Earth. 5. The congress attended by scientists from all the institutions concerned attracted much attention and was referred to as a most representative forum in this field. 6. Written in pencil the text was difficult to read. 7. When questioned he did not know what to answer. 8. Delivered goods will be stored in the warehouse.

Ex. 7. Translate the following sentences. Identify the function of Gerunds:

1. Are these prognoses really worth making? 2. The editor could not help detecting many errors both in fact and thinking. 3. His research resulted in establishing a new mechanism of the process. 4. If you never thought of asking a question you are not interested in having an answer. 5. It is no good arguing about this question now. 6. They didn’t succeed in gaining any reliable information. 7. They didn’t know anything about Steve Job’s being connected to Apples. 8. Following others is not advisable. 9. Reading improves your knowledge. 10. There is no point in applying for the grant this year. 11. I don’t remember saying anything like that. 12. I hate arguing with people.

Discussion Points

Ex. 1. Work in pairs or small groups to discuss the following questions:

A

1. Does education still remain a national value as it used to be in Russia? Does it always suggest a prestigious and well-paid job? 2. Should young people
become educated to get prepared to enter the workforce, or should the purpose of education be focused more on social, academic, cultural and intellectual development so that students can grow up to be engaged citizens?

3. Do you think education will help you reach a higher standard of living in the future?

4. Does the system of education in modern Russia encourage a competitive type of personality?

5. Are there any Open Universities in Russia? What is (are) their function(s)?

6. Do you think that admission to institutions of higher learning in Russia should be based on scholastic achievement in secondary school? Why or why not?

7. What are the forms of further education? What is its purpose?

B

1. When college/university graduates turn up for work, they often find that they have learned a lot of things in the classrooms they will never use and that they will have to learn a lot of things on the job that they have never been taught. Do you agree that a traditional education is insufficient preparation for life? Why? Should colleges/universities offer more practical courses?

2. Whatever college or university graduates want to do, most of them are going to accept what there is to do in the job market. Can you explain why it happens so? Why do you think so many university graduates choose jobs that don’t require qualifications they’ve got? Is it very typical of Russia (of the region where you live?) What should be done to change the situation?

3. Make up a list of all the subjects you study at the Magistracy. Which of them are a) the most interesting? b) the easiest? c) the most difficult? d) the most necessary in the future? e) the least necessary in the future? Discuss your answers with your partners. Give reasons for your choice.

Ex. 2. Use the information from the text below to speak about academic degrees in Great Britain:

*Academic Degrees in Great Britain*

After a course of studies lasting from three to four years the undergraduate students sit for a final examination which, if they pass it, entitles them to a first degree. In England, Wales and Northern Ireland the most usual titles for a first degree are Bachelor of Arts (B.A.) or Bachelor of Science (B.Sc.).
After taking a first degree the graduates who are interested in research work follow the postgraduate or advanced studies. The postgraduate studies lead to higher degrees most of which are Master’s or Doctor’s degrees. Postgraduate students are granted the Master’s degree by thesis or examination after a minimum of one or two years of advanced studies. The doctorate generally requires an outstanding proficiency in some specialized branch of research. (In Scotland Master is usually used for a first degree). The present first-degree system varies in both length and nomenclature. First-degree courses in Arts and Science are of two main kinds: those in which the student specializes with some intensity, and those which allow him or her to spread his or her studies over a wider field but less intensively. Universities use different names to describe the degrees to which these two types of course lead. The degree obtained at the end of a specialized course in a single subject is usually called a degree with Honours, although in some universities it may be called a Special degree. In addition, many universities offer specialized courses leading to degrees in two subjects, and the term Joint (or Combined) degree is sometimes used to distinguish them from single-subject degrees (here again the word Honours is sometimes also included in the description of the degree). The degree obtained at the end of the more general course is usually called either an Ordinary or a General degree (in some universities General degrees may be awarded with Honours). Some variation in degree classes is found among the universities, but most award their undergraduate degrees in five categories: First Class Honours, Upper Second, Lower Second, Third Class, and Pass or Ordinary.

Ex. 3. Do you agree or disagree with the following statements? Give your reasons:

1) “You can lead a boy to college but you cannot make him think.”
2) “Education is too important to be left solely to educators.” – Francis Keppel.
3) “He who opens a school door, closes a prison.” – Victor Hugo.
4) “Education is what remains when we have forgotten all that we have been taught.” – George S. Halifax.

Ex. 4. Read the text “Lifelong Learning”. Speak about the modern concept of “Lifelong Learning”:
**Lifelong Learning**

Lifelong learning is one of the most important concepts in modern society, being central not only to competitiveness and employability but also to social inclusion, active citizenship and personal development.

The latest successful practices suggest that lifelong learning is more than just education and training beyond formal schooling. A lifelong learning framework encompasses learning throughout the life cycle (for personal, civic and employment-related purposes), from birth to grave and in different learning environments, formal, non-formal and informal.

The aim of lifelong learning strategy is to provide people of all ages with equal access to high-quality learning opportunities and to a variety of learning experiences and thus implies:

- raising investment in people and knowledge;
- promoting the acquisition of basic skills, including digital literacy;
- broadening opportunities for innovative, more flexible forms of learning.

Today, there also exists such an essential element of lifelong learning as good-quality school programmes designed by the “Education For All” (EFA) initiative to introduce the new concept to children of primary school age.

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**Reading Comprehension**

1. Read the text “Problems in Education. Match the paragraphs (1-6) with the headings (A-F):

   **Problems in Education**

   The problems in education affect each one of us, whether directly or indirectly. Each of us has disappointments connected to our own education and there are also concerns tied to the present state of things in the very same field.

   Issues in education deserve all the attention they can get since education is a decisive factor in the formation of the new generation. This means that our future doctors, architects, teachers and thinkers will probably study in the public and private schools we know now. But even though the situation in education has improved significantly in the last three decades (the existence of alternative curricula and inclusion practices are evidence in that sense), there are still some aspects which need tweaking. So let us review the problems in education that are
left, you will notice that some while have been there since the beginning of time and others are quite new there is hope that bringing them into the spotlight will urge their solving.

1. One of the biggest problems in education is the insufficient number of teachers in public schools. The statistics have established that there is one teacher per 16 students in public schools compared to private schools where a teacher teaches on average only 13 students. This translates into children being treated with more attention. So, there is an aching need for teachers in all teaching subjects to be hired in public schools. That way, your children could receive more attention and guidance and their evolution could be supervised with more care. For this problem to be solved, each parent or concerned individual should support the increase in the number of professors, should support their training and their rights.

2. This issue really leaves its print on the students as in public schools every student has to take a limited number of classes which cover a restricted area of subjects. The teaching curriculum does not follow their interests or their needs, nor does it encourage the student’s individual talent or inclination towards a subject or another. This is definitely one of the hottest problems in education as it mostly prohibits a child to follow or express his passions in the institution of school, forcing him to search for alternative solutions. Independent study is also a good thing, it helps cultivate an independent side early on, but it would be best if extra-curricular activities became intra-curricular, if they were somehow integrated in the dogmatic type of learning. For this to take place, some action would be needed, again from the parents, an initiative for a program to focus on the child’s individual potential. In private schools, there is more emphasis on this matter, but the problem should be addressed in the case of public schools also.

3. This is one of the gravest problems in education today. It is highly dangerous and brings existential worries on a primary human level. There are some known cases of teenagers who took a gun to school and started shooting randomly. Or teenagers who take drugs to school and distribute them in the bathroom. Of course there is a matter of influence, everybody keeps wondering what they were thinking and what they were influenced about. But the most important thing is that they have to be stopped. Better security, more vigilant rules to be applied especially in the case of public institutions and some control from the parents over what their children watch and listen to.
4. Another scandalous problem which needs to be acknowledged is the early abandonment of schools by children with difficult family situations. These specials cases need all the attention they can get: from their school and their teachers, from their parents and even their community. They need to be encouraged to keep going as education is the key for getting far in life.

5. Even though inclusion practices have been engaged in a number of places with spectacular results, we are not nearly there. In some communities, students of color and students of different origins are still treated differently, equal practices haven’t been applied yet everywhere. It is a process that takes time, but we must do everything we can for the discrimination to stop as children especially are very fragile and easily influenced by unfair treatment.

6. This is one of the eternal problems in education, the fact that the environment that you grow up in decides how good your learning possibilities are. It is not fair that only the best and richest institutions can afford competitive learning materials and utensils. It is logical, but highly unfair as not everyone who is gifted can afford a Harvard education. We need to struggle to make this right, or to try to offer children everywhere decent computers and programs to work on.

Enumerated here were some of the most significant problems in education today. Some are caused by the structure of society, some exist because of the rigidity of our educational system and some because of the hieratic behavior a broken home can produce. We can’t realistically believe to solve them all at once, but we can hope that in time they will be cured.

A. Uneven access to technology
B. Early abandonment
C. Violence
D. The inflexible curricula
E. Racial and ethnic inequalities.
F. Not enough teachers

Tasks for Writing: Writing an Abstract

An abstract is a statement of what a written work contains, presented as a summary, usually by someone other than the author of the work. An abstract aims to present only the gist of the subject matter, stresses brevity, and makes no attempt to preserve the style of the original. While writing an abstract you should keep to the following structure:
Table 2

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>The headline / title / name of the article is …</td>
</tr>
<tr>
<td>Author</td>
<td>The author of the article is … The article is written by …</td>
</tr>
<tr>
<td>Subject matter</td>
<td>The article is about … / is devoted to … / describes … The article deals with … / touches upon … / raises the issue of … The purpose / aim of the article is to give the reader some information on …</td>
</tr>
<tr>
<td>Structure</td>
<td>The article can be divided into … parts. In the opening paragraph the author describes … The first part deals with … / touches upon … Further the author reports … / says that … In the closing paragraph … In conclusion the author states that …</td>
</tr>
<tr>
<td>Conclusions</td>
<td>I think / believe … that the main idea / the key point of the article is … The author comes to the conclusion that … Summarizing the information given in the article I can say that … In conclusion I can say that … I fully agree / disagree with the author. I think the author is totally right / wrong / to some extent. In my opinion … From my point of view … I liked … / disliked the article because … I find the article interesting / important / of great interest / unimportant too hard to understand / dull / of no interest / of some interest because …</td>
</tr>
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Ex. 1. Read the text below. Write an abstract of the text using Table 2:

**Adjusting to the Bologna Process**

September 3, 2012, Alexander Vostrov

Back in September 2003, Russia joined the Bologna Process aimed at harmonizing European education standards. Meanwhile, there is no consensus amongst those in Russia’s academia as to whether the move was justified.

Sept. 1, hundreds of thousands of students in Russia started their first year (or returned for yet another year) at a variety of higher educational institutions across the country. In quantitative terms, this marks a tremendous break from...
what we had some 20 years ago, when higher education seemed to have gone out of fashion forever. In the turbulent 1990s, teenagers fresh out of grade school wanted to do anything – set up their own private companies, join gangs, stage revolutions – other than wear out the seat of their pants in universities in the search for knowledge. These days, the trend is quite the opposite: higher education is back in vogue, and a degree has become almost a must-have for anyone’s life plan. What has remained unchanged, however, is that only a minimal percentage of school graduates are actually heading to universities for the knowledge. Most of them are only pursuing what is called “the sheepskin effect”, or a diploma.

Naturally, such aspirations were bound to devalue higher education in the eyes of potential employers. Consequently, where a university degree used to be a must for any job candidate, work experience has now become the most important criterion. With higher education institutions popping up across the country like mushrooms after the rain – producing batches of job candidates with identical resumes – it is extremely difficult to choose, out of a multitude of almost identical brands, those universities which actually prepare good specialists. Unfortunately, the Russian educational system is such that even a degree from a prestigious school (like the Moscow State University or the Higher School of Economics) does not guarantee a proper educational background. There are a number of reasons for this, not least of which are the widespread practice of cheating among students (which, mercifully, has been waning recently) and the protectionist practices among university administrations (typical of private educational institutions). Russia’s transition to the Bologna Process (next year it will be 10 years since Russia signed the declaration) smoothened the situation out to a certain extent, though it clearly did not have the miraculous effect officials had hoped for.

HR analyst Marat Valitov says: “In theory, the Bologna process is designed to help the employer. Supposedly, the employer can now see that this candidate has a bachelor’s degree, so he has a basic education, but his qualifications could be better; this candidate has a master’s degree, which means that he is trained in a narrow area of specialty, and is hence a far better professional. In reality, though, the situation is quite different. Many higher educational institutions regard master’s degree programs merely as a continuation of undergraduate programs, rather than a selection of specific specialties. So, in the end, a
bachelor has only one master’s program with a very general specialization to choose from, instead of three programs with a narrower focus.”

Simply put, most universities produce a string of so-called “jacks of all trades, but masters of none.” The situation is a fraction better with reputable state-run universities. They generally offer a wider selection of academic majors, where students can choose between a research specialties and specialties in highest demand on the market. Still, this is no more than a drop in the bucket of dreary uniformity produced by other institutions.

By the same token, Russia is in a similar position when it comes to another distinguishing feature of the Bologna process – education abroad. Celebrated universities have long since established international ties. Irina Ipatyeva, a graduate of the Higher School of Economics National Research University, says: “My university runs extensive student exchange programs with Great Britain, Germany, France, and a number of other countries. So when the time came to decide, this choice proved to be the most difficult matter.” Meanwhile, the chances of studying abroad with private universities, which have only existed for 10–15 years at the most, are often no more than fiction. Since the Bologna declaration was signed, no mechanisms have been introduced to ease the integration in Russia.

“The system of bachelor/master programs only works on paper in Russia,” says Aleksandr Malyshev, Doctor of Pedagogy. “It grants officials and inspectors a sense of absolute control over the situation: here’s the first degree, and the second, and everything’s on record. In reality, the situation is somewhat different: leading universities can make full use of all the features of this system, which gives them a giant competitive edge. But second-tier universities had to rebrand their five-year curricula to match the four-plus-two-year timeline, without actually bringing in anything new. Is there any wonder, then, that employers can often see no fundamental difference between bachelors and masters in professional skills?”

Ex. 2. Read the text below. Write an abstract of the text in English:

Магистратура и бакалавриат в сравнении со специалитетом

С 2009 года в России официально действует двухуровневая система высшего образования «бакалавриат (4 года) – магистратура (2 года)», что
соответствует принципам Болонской системы, распространенной в Европе и Северной Америке. Однако, еще недавно высшее образование в России (и Советском Союзе) было построено по совсем иной системе: все вузы готовили студентов по программам специалитета в течение 5–6 лет, после чего студенты могли обучаться в магистратуре или аспирантуре. В чем же разница между «старой» и «новой» системами?

**Преимущества магистратуры и бакалавриата**

Двухуровневая система «бакалавриат – магистратура» имеет ряд преимуществ. Главное – это возможность после 4 лет обучения в бакалавриате более четко очертировать свои интересы и потребности и, исходя из этого, выбрать более узкую специальность магистратуры, а в некоторых случаях даже получить две разные специальности, что является важным преимуществом на рынке труда. Кроме того, учиться в магистратуру можно пойти в другой вуз – условия приема для всех одинаковы. Еще одно преимущество состоит в упрощении признания дипломов бакалавра и магистратуры за рубежом. Распространена схема, когда человек заканчивает бакалавриат в России, а в магистратуру поступает в зарубежный вуз (в этом случае, правда, за вторую ступень обучения приходится платить).

**Конфликт перехода от специалитета к магистратуре и бакалавриату**

Изначально планировалось, что специалитет со временем уступит место двухуровневой системе, однако уже после введения принципов Болонской системы выяснилось, что по ряду специальностей (прежде всего, сюда относятся технические и медицинские специальности) подготовить полноценного выпускника за 4 года невозможно. Поэтому на многих технических специальностях до сих пор учатся по программе специалитета, в то время как большинство гуманитарных и естественно-научных специальностей перешли на «бакалавриат – магистратуру». Такое положение вещей создает конфликтную ситуацию. Бакалавриат был призван полностью заменить специалитет, но сегодня получается, что они существуют параллельно.
UNIT 3. SCIENTIFIC AND BUSINESS COMMUNICATION

Introductory Text

The main goal of scientific communication is to convey clear information to an audience, so its members can understand, use and build on it. Although that much is clear, and depending on whom you ask, few seem to agree on what defines the different types of scientific communication. That is mainly because scientific communication is a type of communication in itself. However, it is possible to take a look at how types of scientific communication can differ, depending on the channel used and the specific purpose of the communication material.

Popular scientific communication generally refers to public media discussion about science topics to a non-scientist, general audience. This audience can be composed of children, teenagers and adults. Often, scientists are involved, in order to ensure the correctness of the information transmitted; but the communication is done in terms that the general public can understand. Scientific communication can be done through events, television programs, journal and magazine articles, as well as science-related programs and policies. Scholarly communication is the most formal type of scientific communication. It normally leads to a formal publication of the results, findings, observations and views arising from a scientist’s research project. Most often, the official results are published in the form of printed materials, such as academic journals. Verbal communication channels, such as personal contacts with colleagues and teachers, seminars, workshops, lectures, and conferences, are also vital to the exchange of information among scientists. These types of communications work toward the advancement of the various scientific disciplines. Science communication is also an academic discipline, on its own, because of a large demand for participatory models of communication. Students and researchers in this field are often closely linked to the natural sciences, but can also come from other departments – including media studies, psychology, sociology or literature. For example, media studies students are looking into the impact of social media and the internet on the general public’s understanding of science communication. More information about research and advancements in science communication can be found in two key academic journals, Public Understanding of Science and Science Communication.
Business communication (or simply “communication”, in a business context) encompasses topics such as marketing, brand management, customer relations, consumer behavior, advertising, public relations, corporate communication, community engagement, reputation management, interpersonal communication, employee engagement, and event management. It is closely related to the fields of professional communication and technical communication. Media channels for business communication include the Internet, print media, radio, television, ambient media, and word of mouth. Business communication can also be said to be the way employees, management and administration communicate in order to reach to their organizational goals.

Business communication is a common topic included in the curricula of Undergraduate and Master’s degree programs at many colleges and universities. There are several methods of business communication, including:

- Web-based communication – for better and improved communication, anytime anywhere...
- Video conferencing which allow people in different locations to hold interactive meetings;
- Reports – important in documenting the activities of any department;
- Presentations – very popular method of communication in all types of organizations, usually involving audiovisual material, like copies of reports, or material prepared in Microsoft PowerPoint or Adobe Flash;
- Telephone meetings, which allow for long distance speech;
- Forum boards, which allow people to instantly post information at a centralized location; and
- Face-to-face meetings, which are personal and should be succeeded by a written follow-up.

Ex. 1. Learn to pronounce the following words:
audience, colleagues, media, through, scholarly, views, publication, verbal, journal, vital, various, discipline, participatory, psychology, encompass, commercial, consumer, behavior, advertising.

Ex. 2. Give the Russian equivalents for the following word-combinations:
the main goal; to convey information; specific purpose; public media discussion; general audience; non-scientist; events; scholarly scientific communication; ex-
change of information; among scientists; toward the advancement; a large demand; sharing of information; commercial benefit; brand management; customer relations; consumer behavior; reputation management; employee engagement; event management; web-based communication; long-distance speech; forum boards; a written follow-up.

Ex. 3. Find in the text the English equivalents for the following words and word-combinations:

Ex. 4. Using a dictionary translate the following sentences. Pay special attention to the words and word-combinations in bold type:

1. That is mainly because scientific communication is a type of communication in itself. 2. However, it is possible to take a look at how types of scientific communication can differ, depending on the channel used. 3. Popular scientific communication generally refers to public media discussion about science topics to a non-scientist, general audience. 4. Scientific communication can be done through events, television programs, journal and magazine articles, as well as science-related programs and policies. 5. Scholarly communication is the most formal type of scientific communication. It normally leads to a formal publication of the results, findings, observations and views arising from a scientist’s research project. 6. Business communication can also be said to be the way employees, management and administration communicate in order to reach to their organizational goals. 7. Business communication is a common topic included in the curricula of Undergraduate and Master’s degree programs at many colleges and universities.

Ex. 5. Answer the following questions:

1. What is the main goal of scientific communication? 2. What does popular scientific communication generally refer to? 3. Who is the audience of popu-

**Vocabulary and Grammar**

*Ex. 1. Match the following words and word-combinations with their definitions:*

1. to convey a. all the courses of study offered by an educational institution
2. to refer to b. a periodical containing articles, stories, poems and often illustrated
3. journal c. a group of persons having managerial, investigatory or advisory powers
4. magazine d. a brief educational programme for a relatively small group of people that focuses especially on techniques and skills in a particular field
5. workshop e. the act of following up
6. academic f. relating to an academy or school especially of higher learning
7. consumer g. to communicate or make known
8. curriculum h. to have relation or connection
9. board i. a periodical presenting articles on a particular subject
10. follow-up j. one that acquires goods or services for direct use or ownership

*Ex. 2. Analyze the structure of the following words. State what part of speech they are. Give their Russian equivalents:*

1. communication (n); communicator (n); communicate (v); communicative (adj);
2. consumer (n); consumerism (n); consume (v);
3. relation (n); inter-
relation (n); relationship (n); relate (v); related (adj); 4. include (v); inclusive (adj); inclusively (adv); 5. organization (n); organizer (n); organize (v); organizational (adj); 6. dependence (n); independence (n); interdependence (n); depend (v); dependent (adj); independent (adj); independently (adv); 7. composition (n); decomposition (n); compose (v); composed (adj); 8. observation (n); observer (n); observe (v); observantly (adv); 9. purpose (n); purposeful (adj); purposeless (adj); purposefully (adv).

Ex. 3. Translate the following sentences. Identify the type of Subjunctive Mood:

1. If she finished her research, she would take part in the conference. 2. If Professor Brown hadn’t taken the same plane, we would have never met. 3. If Alfred Einstein had never been born, would we still have nuclear weapons? 4. If scientists could not trust each other to report the results of their work honestly then the whole basis of research would be ruined. 5. I never would have published the report without your permission. 6. I wouldn’t have called you if the problem hadn’t been so serious. 7. There would be no progress without science. 8. Had we known all these facts, this might have stimulated our interest in the problem.

2. We would have never made any major decisions but for your assistance. 2. But for modern computers a large number of technological advances would not have taken place. 3. But for great scientists of the past the laws of the universe would not have been investigated. 4. But for your support the workshop wouldn’t have been arranged.

3. 1. If I were a businessman, perhaps I would choose to develop a quality commercial Internet. 2. If I were a scientist I would carry on my work in the field of micro technology. 3. If I were you, I would participate in the programme. 4. If I were you, I would continue the project until it is done. 5. If I were you I would surely allow reprints of my papers.

Ex. 4. Translate the following texts. Mind the meaning of the constructions in Subjunctive Mood:
The World Without Us

The World Without Us is a non-fiction book about what would happen to the natural and built environment if humans suddenly disappeared, written by American journalist Alan Weisman and published by St. Martin’s Thomas Dunne Books. It is a book-length expansion of Weisman’s own February 2005 Discover article “Earth Without People”. Written largely as a thought experiment, it outlines, for example, how cities and houses would deteriorate, how long man-made artifacts would last, and how remaining life forms would evolve. Weisman concludes that residential neighborhoods would become forests within 500 years, and that radioactive waste, bronze statues, plastics, and Mount Rushmore would be among the longest-lasting evidence of human presence on Earth.

If Not Darwin, Who?

What would physics look like if Einstein had never existed, or biology without Darwin? In one view, nothing much would change – the discoveries they made and theories they devised would have materialized anyway sooner or later. That’s the odd thing about heroes and heroines of science: They are revered, they get institutions and quantities and even chemical elements named after them, and yet they are also regarded as somewhat expendable and replaceable in the onward march of scientific understanding.

But are they? One way to find out is to ask who, in their absence, would have made the same discovery. This kind of “counterfactual history” is derided by some historians. It allows us to scrutinize and maybe challenge some of the myths that we build around scientific heroes. And it helps us think about the way science works: how ideas arise out of the context of their time and the contingencies and quirks of individual scientists.

Discussion Points

Ex. 1. Discuss the following questions:

1. One of the ethical aspects of science is ‘Science’s image suffers when scientific findings reported in haste turn out to be mistaken”. It erodes the public’s trust in science. For example, the two scientists who had discovered cold fusion, S. Pons and M. Fleishman held a press conference to announce their
“discovery” before it was verified. Their main motivation was to establish priority. In the days that followed, scientists tried to replicate the experiment and failed. **What other cases of carelessness and self-deception in science can you talk about?**

2. Another ethical problem is the existence of the so-called junk science. Examples of junk science include astrology, UFO research, the list goes on and on. Although most people agree that we can distinguish between good science and junk science, the phrase junk science is not easy to define. Junk scientists present a serious problem, because their words and writings are sometimes taken seriously. **What is your attitude to junk science? Can you talk about some particular examples of junk scientists and their ideas which harmed people and society?**

3. Science’s methods are public in that scientific experiments should be able to be replicated, data are not kept secret, the rules of logic and statistics are impersonal and apolitical. **Say whether you agree or disagree with it. Give some particular examples to illustrate your point.**

**Ex. 2. Read the following statements and say whether you agree or disagree with them. Say why or why not:**

1. Science is public knowledge: it is not private, personal opinions of one scientist.
2. Communication problems in business typically stem from misunderstandings.
3. Communication problems in the sphere of business waste time, money and productivity.
4. Good business communication requires everyone to participate fully.
5. People’s opinion of a company is very often influenced by the way the telephone is answered.
6. A true scientist is interested in being told about his/her mistakes.

**Ex. 3. Read the text “The Internet”. Answer the questions below:**

Until quite recently Silicon Valley and its innovations had little effect on teaching and learning. But with the rise of the Internet, information technology
is beginning to have much more influence on education. Two areas which are becoming more and more significant are “blogs” and “wikis”.

The word “blog” is short for “weblog”. A blog is an online diary of or “log” of someone’s life, thoughts, opinions. Anybody can create their own “blog” and blogging is becoming extremely popular – type “blog” into Google and you’ll get over 500 million results. For educational purposes, academics, teachers, and students create blogs as personal online study sites: places to work together and share information and ideas.

“Wikis” are websites where anyone can add content and make changes, so that the site becomes a group creation – “wiki” stands for “What I Know Is”. These sites can be a valuable source of information and opinion for students, though the information may not be totally accurate – some academics refuse to use them. Perhaps the best known wiki is the online encyclopedia, Wikipedia. Wikipedia is working hard to make sure that its information is completely accurate, so students will be able to use it with confidence, and there’s no doubt that it is incredible resource.

Answer the following questions:
1. Is information technology more or less important in education than before?
2. Where does the word “blog” come from?
3. What is a “blog”?
4. What are blogs used for at universities?
5. What does the abbreviation “WIKI” mean?
6. Who posts the information on this kind of website?
7. Why do students need to be careful if they use “Wikis” when they study?
8. What is Wikipedia?

Ex. 4. Give your comments on the quotations below:

1. Communication works for those who work on it. – Author unknown.
2. Many can argue – not many converse. – A. Bronson Alcott.
3. The difference between a smart man and a wise man is that a smart man knows what to say, a wise man knows whether or not to say it. – Author unknown.
4. Everything becomes a little different as soon as it is spoken out loud. – Author unknown.
5. The most valuable of all talents is that of never using two words where one will do. – *Thomas Jefferson.*

6. To effectively communicate we must realize that we are all different in the way we perceive the world and use this understanding as a guide to our communication with others. – *Tonny Robins*

**Reading Comprehension**

*Ex. 1. Read the text. Match the paragraphs (1–6) with the headings (A–F):*

**Simple Secrets of Great Communicators: You Can Improve Your Workplace Communication Skills**

By Susan M. Heathfield

1. When a great communicator approaches a coworker, he takes the time to say, “good morning” and “how’s your day going?” “Did you have a great weekend?” The effect of the relationship-building forays is incalculable. He sends the message, each time he communicates, that he cares about the receiver of the message. He demonstrates that, no matter how busy or overextended he is, he has time to care about you.

2. Obtain the knowledge, insight, and forward thinking ability necessary to earn the respect of your colleagues for your industry or subject area expertise. Your coworkers won’t listen if they don’t believe that you bring expertise to the table. Your successful coworkers spend time with you because they respect your knowledge and the value that you bring to the conversation. They won’t respect or listen to, let alone be influenced by, individuals who do not know what they are talking about. So, when you think about secrets of great communicators, subject matter expertise may head the list.

3. I received feedback recently that a manager held a performance development planning meeting with an employee and talked 55 minutes of the hour. This is an egregious example of a manager dominating a discussion, but it serves as a reminder. Great communicators listen more than they speak. When they speak, they are frequently asking questions to draw out the knowledge and opinions of their coworkers. When you allow yourself to listen, you often hear what
is not being said. You can read between the spoken lines to understand the whole context of the other person’s thinking and needs.

4. When a colleague is speaking, don’t spend the time preparing your response in your mind. Instead, ask questions for clarification and to make certain that you thoroughly understand what the other person is communicating. Focus your mind on listening and understanding. If you find yourself (and that little voice in your head) arguing, prepping your response, or refuting what your colleague is saying, you are not focused on thoroughly understanding her communication. You have stopped listening and have refocused the discussion on your needs.

5. Say, “here is what I heard you say” and repeat the gist of the content of the message that you received from the other person’s communication. Don’t ascribe meaning to your coworker’s communication. You are using a feedback loop to check your understanding and to make sure you shared meaning.

When you check your understanding, you avoid miscommunication and misunderstanding. You circumvent hard feelings and protracted explanations about what your coworker meant.

6. Nonverbal communication is a powerful voice in any interaction. The voice tonality, body language, and facial expressions speak more loudly than the verbal communication (sending) or the actual words in many communication exchanges. Your coworker’s posture, how he holds the whiteboard marker, and his distance from you as he speaks are all powerful messengers.

This is why you find that great communicators seek in-person interaction. They know the amount of information that they lose when they communicate via email, phone, IM, or texting. The youngest generation at work may not recognize the importance of talking with coworkers in person.

7. In any communication, the opportunity for misunderstanding is ever present. A key indicator that your coworker is not stating her true feelings or that she is going along with the group, rather than agreeing with the decision, is a combination of factors that you can observe. You want to watch for patterns (is this how your coworker typically reacts) and inconsistencies (is this consistent with what you expect from this person).

You also want to watch for matching words, message, the tone of voice, and body language. If any of these verbal and nonverbal communication factors are inconsistent or sending different messages, communication failure is imminent.

8. You are the person who is bothered by the action or communication of your coworker. His actions or communication may have triggered your reaction,
but the response belongs to you. You will never effectively communicate if you
are pointing your finger and trying to make it your coworker’s issue. He was just
trying to communicate.

You need to take responsibility for owning your own emotional reactions. Use “I’ messages to demonstrate that you know that you are responsible for the reaction. For example: “You really messed up that customer interaction” is much less effective and honest than, “I was upset watching you interact with that customer for these reasons…”

9. If you are going to say anything critical or controversial, or if you’re angry or emotional, wait 24 hours before you say it, send it, or post it to see if you still feel that way. Pausing before communicating is an under-appreciated skill of great communicators. You don’t need to communicate what you think or feel immediately. In fact, your communication will be more powerful and thoughtful if you allow the circumstances to marinate for a period of time. In this era of immediate and constant communication, thoughtful communication goes by the wayside. The instantaneous reaction is promoted and reinforced. It is often ineffective and demeaning. Great communicators collect their thoughts and develop significant “I messages.”

10. New ideas live or die in their first communication to a person who has power in an organization. Using the other communication skills presented here, you can make a new idea flourish or fail in an instant.

Rather than immediately rejecting a new idea, approach, or way of thinking, pause and consider the possibilities. Consider what might work in your organization rather than what will fail. Think about the possibility rather than the impossibilities.

11. You gain trust in your everyday interactions with people when you tell the truth – even when it’s difficult. When you consistently exhibit integrity and trustworthiness in your daily interpersonal conversations and actions, you build your ability to be an excellent communicator.

The coworkers with whom you interact will open up to you. They will be more likely to problem solve with you without concern for losing, and they won’t fear to look bad, stupid, or uninformed if they trust you. Do you see the power of communicating when you have the other party’s trust? It’s amazing.

A. Know What You’re Talking About

B. All Communication Will Go Better if Your Coworker Trusts You
C. Open Your Mind to New Ideas
D. Watch for Patterns, Inconsistencies, and Consistencies
E. Build the relationship first – always
Wait to Give Critical or Controversial Feedback
G. If Something that Another Employee Is Doing or Saying Bothers You, It’s Your Issue
H. Use a Feedback Loop
I. Focus on Understanding What the Other Person Is Saying
J. Listen to the Nonverbal Communication the Other Person Exhibits
K. Listen More Than You Speak

Tasks for Writing: Professional Business Letter

Ex. 1. Professional business letter if a form of business letter. Now study the rules of writing a business letter:

Here are guidelines for writing a business letter, so all your correspondence makes the best impression.

**Margins**

Business letter margins should be about 1" all around. This gives your professional letter an uncluttered look. You should align your text to the left; this is how most documents are aligned, so it will make your letter readable.

**Letter Spacing**

Leaving space in your letter creates a clear, uncluttered and easy to read look that the reader will appreciate. Your letter should be in block format: the entire letter should be aligned to the left and single-spaced except for a double space between paragraphs.

**Font Size**

The traditional font size for a professional letter is 12. The font should be Times New Roman or Arial. However, if you are using a letterhead, the letterhead may be in a different font size and style.

**Font Style**

There is no need to use different styles within a professional letter. Use a uniform font (a book print font such as Times New Roman or Arial) and avoid underlining, italicizing, or bolding. However, if you are using a letterhead, the letterhead may be in a different font style.
**Letter Text**

Business letter text should be clean and readable. Avoid writing your letter in one large block of text.

Break your text into several concise paragraphs. These paragraphs should be aligned to the left; this allows for easier reading. When you have completed your letter, ask someone else to read it for you. Have them glance briefly at the letter. Is there too much text on the page? Is it easy to see the distinct paragraphs?

**Contact Information**

The first section of your letter should include your contact information and the contact information of the person you are writing, too. Also include the date you are writing at the top of your letter.

**Letter Salutation**

Unless you know the reader well and typically address them by their first name, you should include the person’s personal title and full name in the salutation (i.e. “Dear Mr. James Franklin”). If you are unsure of the reader’s name, include his or her title (i.e. “Dear Executive of Marketing”). If you are unsure of the reader’s gender, simply state their full name and avoid the personal title (i.e. “Dear Jamie Smith”). If you are unsure of the reader’s gender, name, and title, simply write, “To Whom It May Concern.” Leave one line blank after the salutation.

**Letter Paragraphs**

Professional letter paragraphs should be relatively concise. The first paragraph may include a brief friendly opening and a concise explanation of your reason for writing. The second paragraph (and any subsequent paragraphs) should expand upon your reason for writing. The final paragraph should restate your reason for writing and, if applicable, state your plan of action (or request some type of action be taken by the reader).

**Closing**

When you’re writing a business letter or email message it’s important to close your letter in a professional manner so you’re letter, in it’s entirety, is well-written and professional.

**Signature**

When you are sending a paper letter, finish the letter with your signature, handwritten, followed by your typed name. If this is an email, simply include your typed name.
Finally, don’t forget to spell check and proofread your letter before you send it. Again, ask a family member, friend or colleague to review it for you. It’s always good for another pair of eyes to take a look because it’s hard to catch our own mistakes.

A Professional Business Letter Sample

XXX Corporation  
5689 Avenue Street  
Quadrangle Park, NY 56986  
21\textsuperscript{st} April, 2010  
Mrs. Mary Susan  
1563 Lattice Street  
Chicago, CL 69856  
Reference: CD  

Dear Mary  

It was very nice to meet you at the XXX conference in Texas. I appreciate that you liked the CD’s that were spotted on our stall. However we are very sorry that you dint get a chance to purchase the CD’s. We were running short of stock.

I have sent the CD’s at your address. I hope you liked them. The CD’s have all the information that you had asked for. We appreciate that you liked what our company had placed before you.

Please do send in your feedback. You can contact us any time in regards with any kind of queries. Our contact number and email address is on the CD’s.

Thanking you  
Yours sincerely  
Mathews Davidson  

(Signature should be attested along with the letter)

Sample 1

Now write a professional business letter to your imaginary partner using the information which is true for you. Make use of Sample 1.
Writing an Email

Ex. 2. Study the rules of writing an email in academic context:

Just imagine you have to write an email to your professor. It might seem daunting, especially if he or she does not know you individually among the hundreds of other students in your lecture class or college. But following a few general principles will help you establish communications with your professors without worrying that you’ve lost face.

Keep these five things in mind when emailing your professor.

1. Be Formal

Always use a proper salutation when emailing a professor – even if you know the professor personally or professionally. Use “Dear” to begin the email and address him or her by the name you would use if speaking to the professor in person (Dear Dr. ____ or Dear Ms. ______). If you do address the professor by first name, still use “dear” to set up a respectful tone for the letter.

2. Specify

Specify who you are by first and last name, and specify which class you are taking before diving into the specifics. Professors often teach anywhere from two to six classes per semester and usually have hundreds of students to serve. State your name, the class you are taking and the course section (the professor might teach three sections of your course and will need to know which one you attend).

3. Be thorough

Any time you send a message, you should have two things in mind: goal and audience. Your audience here is a professor, who is an authority figure. Your goal could be any number of things, from clarifying the reading assignment to asking for an extension. Whatever your goal may be, you’ll want to anticipate any questions the professor may have and incorporate the information into your message. For example:

Dear Professor Smith,

My name is John Green and I attend your ENC4214 section 9 course. I missed class on Tuesday and would like to find out the assignment for Thursday. The syllabus only lists a reading assignment, but I wanted to make sure nothing is due to hand in Thursday. Thank you for your help.

Sincerely,

John Green

Sample 2
The example above shows that John indicated that he had already checked the syllabus. This saves time and allows the professor to simply respond, “Yes, there is a written assignment and it is _____” or “No, there is no written assignment,” knowing that John has already gone to the syllabus.

4. Be kind

Professors are people, too. They have friends, families, hobbies and favorite foods. So when you email a professor, remember that you are not writing to an entity, a building or a computer – you are communicating with a real person. Be kind, be thankful and never come across as demanding. This can be accomplished with the “Your Attitude,” a concept that asks you to consider yourself as the reader. What words or sentences would be off-putting? For example:

“Get back to me as soon as possible.” This sentence is demanding, pushy and gives a direct command – something you want to avoid. After all, you are communicating with a higher-up.

“Please advise me at your convenience.” This conveys respect and awareness. The professor is not a public servant and doesn’t need to do anything as soon as possible for you.

Using the “You Attitude” establishes goodwill and respect and increases the chances you will receive the help you need. It also won’t hurt to thank the professor at the end of the email, which establishes good rapport (see the example above).

5. Proofread

Perhaps the most important and final step, proofreading ensures that you come across as professional and caring. An email full of errors and faulty sentence structure is sure to enflame a busy professor. After all, if your writing is unclear, the reader has to work to understand what you want. Do the work on your end and make the message is clear and easy to read. For a short message, don’t get fancy. Use simple syntax (subject-verb-object) and proofread for run-on sentences, misspellings and other errors.

*Now write an email to your imaginary addressee using the information which is true for you. Make use of Sample 2.*
Research is an often-misused term, its usage in everyday language very different from the strict scientific meaning.

Often, we will talk about conducting internet research or say that we are researching in the library. In everyday language, it is perfectly correct grammatically, but in misleading impression. The correct and most common term used in science is that we are conducting a literature review. For a successful career in science, you must understand the methodology behind any research and be aware of the correct protocols. Science has developed these guidelines over many years as the benchmark for measuring the validity of the results obtained. Failure to follow the guidelines will prevent your findings from being accepted and taken seriously. These protocols can vary slightly between scientific disciplines, but all follow the same basic structure.

**Aims of research**

The general aims of research are: Observe and Describe; Predict; Determine the Causes; Explain

**Elements of scientific research**

**Setting a goal**

Research in all disciplines and subjects, not just science, must begin with a clearly defined goal. This usually, but not always, takes the form of a hypothesis.

The whole study is designed around this clearly defined goal, and it should address a unique issue, building upon previous research and scientifically accepted fundamentals. Whilst nothing in science can be regarded as truth, basic assumptions are made at all stages of the research, building upon widely accepted knowledge.

**Interpretation of the results**

Research does require some interpretation and extrapolation of results. In scientific research, there is always some kind of connection between data (information gathered) and why the scientists think that the data looks as it does. Often the researcher looks at the data gathered, and then comes to a conclusion of why the data looks like it does.
A history paper, for example, which just reorganizes facts and makes no commentary on the results, is not research but a review. If you think of it this way, somebody writing a school textbook is not performing research and is offering no new insights. They are merely documenting pre-existing data into a new format.

If the same writer interjects their personal opinion and tries to prove or disprove a hypothesis then they are moving into the area of genuine research. Science tends to use experimentation to study and interpret a specific hypothesis or question, allowing a gradual accumulation of knowledge that slowly becomes a basic assumption.

**Repetition and Gradual Accumulation**

For any study, there must be a clear procedure so that the experiment can be replicated and the results verified.

Again, there is a bit of a grey area for observation-based research, as is found in anthropology, behavioral biology and social science, but they still fit most of the other criteria. Planning and designing the experimental method, is an important part of the project and should revolve around answering specific predictions and questions. This will allow an exact duplication and verification by independent researchers, ensuring that the results are accepted as real.

Most scientific research looks at an area and breaks it down into easily tested pieces. The gradual experimentation upon these individual pieces will allow the larger questions to be approached and answered, breaking down a large and seemingly insurmountable problem, into manageable chunks.

True research never gives a definitive answer but encourages more research in another direction. Even if a hypothesis is disproved, that will give an answer and generate new ideas, as it is refined and developed. Research is cyclical, with the results generated leading to new areas or a refinement of the original process. The final element is making conclusion.

**Ex. 1. Give the Russian equivalents for the following word-combinations:**
a misused term, usage, the strict scientific meaning, a common term, to be aware of the correct protocols, guidelines, the benchmark for measuring the validity, a unique issue, previous research, basic assumptions, widely accepted knowledge, extrapolation of results, new insights, pre-existing data, to disprove a hypothesis, an exact duplication and verification.
Ex. 2. Find in the text the English equivalents for the following words and word-combinations:

обзор литературы, успешная карьера в науке, незначительно различаться, по всем дисциплинам, четко поставленная цель, признанные в научном со обществе положения, на всех стадиях научного исследования, экстраполяция результатов научного исследования, исследование, основное на наблюдении, исследователи, ведущие самостоятельный поиск, определенный ответ, в другом направлении, генерировать новые идеи.

Ex. 3. Find in the text the following sentences. Translate them into Russian:

1. In everyday language, it is perfectly correct grammatically, but in misleading impression. 2. Research does require some interpretation and extrapolation of results. 3. The gradual experimentation upon these individual pieces will allow the larger questions to be approached and answered, breaking down a large and seemingly insurmountable problem, into manageable chunks.

Ex. 4. Match the following words and word-combinations with their definitions:

1. common a. a copy
2. protocol b. an inference about some hypothetical situation based on known facts
3. guideline c. to reduce to a purestate; purify
4. manageable d. an original draft, minute, or record of a document or transaction
5. disprove e. to make certain or sure; guarantee
6. refine f. capable of being managed or controlled
7. ensure g. an indication or outline of policy or conduct
8. extrapolation h. proceeding by steps or degrees
9. duplication i. prove negative; show to be false
10. gradual j. belonging to or shared by two or more individuals or things or by all members of a group
Ex. 5. Comment on the following sentences from the text:

1. Whilst nothing in science can be regarded as truth, basic assumptions are made at all stages of the research, building upon widely accepted knowledge.  
2. Science tends to use experimentation to study and interpret a specific hypothesis or question, allowing a gradual accumulation of knowledge that slowly becomes a basic assumption.

Vocabulary and Grammar

Ex. 1. Learn the following words and word-combinations by heart:

Magistracy
postgraduate student
entrance examinations
Candidate for Master’s degree
A scientific advisor
GCE – general certificate of education
Doctor of Science=ScD=DSc
Assistant Professor
interdisciplinary research
basic research
advanced research
to be engaged in research
pilot study
thorough study
comparative (experimental) method of investigation
data for study
laboratory data
adequacy of data
to back up a theory by facts
the backbone of the theory
to approximate to a solution of the problem
to contradict a theory

магистратура
аспирант
вступительные экзамены
кандидат на соискание ученой степени
магистра
научный руководитель
свидетельство об общем образовании
доктор технических наук
доцент
подход с точки зрения разных наук
фундаментальное исследование
перспективное исследование
заниматься научно-исследовательской работой
экспериментальное исследование
всестороннее изучение
сравнительный (экспериментальный) метод исследования
материал исследования
лабораторные данные
достоверность данных
подкрепить теорию фактами
основа теории
подойти к решению проблемы
опровергнуть теорию

54
A List of Clichés

1. The research I am doing now is within the framework of academic research conducted by Professor N … a group of scientists…
2. The major interest is in the field of …
3. My scientific advisor is …
4. Earlier studies of the subject show that the problem has not been yet properly explored …
5. My paper touches upon the problem of …
6. The main aim of my research and the tasks to complete are …
7. It is aimed at …
8. The research covers a wide range of …
9. My thesis consists of an introduction, the main part (that is, two or three chapters), conclusions and references…

Ex. 2. Translate the following sentences into Russian. Mind the meaning of Modals:

A

1. In order to become effective in a career and perform your job duties with competence, you need to possess a certain set of skills. 2. In order to be valid, a contract must be entered into both willingly and freely. 3. The level of accuracy in measurement may differ very widely. 4. May I interrupt the discussion to report the latest news? 5. We are having a good year and sales may exceed our forecast by 15 %. 6. Might I suggest that we postpone this matter till later? 7. What time shall we meet? 8. Scientists ought not do research that causes unjustified risks to people. 9. This subject is to be discussed by the committee. 10. Professors must typically meet the requirements for appointment. In addition they must have a distinguished list of written works.

B

1. Similar results might have been obtained by other scientists. 2. The delegates cannot have arrived yet. It’s too early. 3. Experiments on animals should have been banned long time ago. 4. Sorry, I might have used the wrong word to describe my problem. 5. The company can’t have neglected to pay their taxes. 6. They must have given you the wrong address. 7. The annual report should have been presented to the plenary meeting of the General Assembly. 8. They must have changed the curriculum. 9. They shouldn’t have sent the report off for
printing yet. There is still time to make changes. 10. I might have made a mistake.

Ex. 3. Read the text. Find the sentences containing Modal Verbs. Translate them into Russian:

**Scientists’ powers and ways they shouldn’t use them:**

**Obligations of scientists**

Scientists can build specialist knowledge that the rest of us (including scientists in other fields) cannot, and many of them have access to materials, tools, and social arrangements for use in their knowledge-building that the rest of us do not. That may fall short of a superpower, but we shouldn’t kid ourselves that this doesn’t represent significant power in our world.

In her book *Ethics of Scientific Research*, Kristin Shrader-Frechette argues that these special abilities give rise to obligations for scientists. We can separate these into positive duties and negative duties. A positive duty is an obligation to actually do something (e.g., a duty to care for the hungry, a duty to tell the truth), while a negative duty is an obligation to refrain from doing something (e.g., a duty not to lie, a duty not to steal, a duty not to kill). There may well be context sensitivity in some of these duties (e.g., if it’s a matter of self-defense, your duty not to kill may be weakened), but you get the basic difference between the two flavors of duties.

Let’s start with ways scientists ought not to use their scientific powers. Since scientists have to share a world with everyone else, Shrader-Frechette argues that this puts some limits on the research they can do. She says that scientists shouldn’t do research that causes unjustified risks to people. Nor should they do research that violates informed consent of the human subjects who participate in the research. They should not do research that unjustly converts public resources to private profits. Nor should they do research that seriously jeopardizes environmental welfare.

Finally, scientists should not do biased research. One common theme in these prohibitions is the idea that knowledge in itself is not more important than the welfare of people. Given how focused scientific activity is on knowledge-building, this may be something about which scientists need to be reminded. For the people with whom scientists share a world, knowledge is valuable instrumentally – because people in society can benefit from it.
What this means is that scientific knowledge-building that harms people more than it helps them, or that harms shared resources like the environment, is on balance a bad thing, not a good thing. This is not to say that the knowledge scientists are seeking should not be built at all. Rather, scientists need to find a way to build it without inflicting those harms – because it is their duty to avoid inflicting those harms.

**Discussion Points**

*Ex. 1. Speak about the scientific problem you are working at. If necessary make use of the List of Clichés (p. 53).*

*Ex. 2. Read the beginning of the text “What does choosing a Magistracy course mean to a person?”*

**What does Choosing a Magistracy Course Mean to a Person?**

First, it is surely an intellectual challenge, just working with concepts, ideas, approaches and methods, developing skills of analyses and research.

Second, it is the personal challenge, as the Magistracy course specifies perfection, responsibility, independence of one’s own learning.

Next, it is a problem of career prospects, more interesting and highly-paid job.

*Now complete the text speaking about the reasons why you chose this form of further education. Use the information which is true for you.*

*Ex. 3. Make up a dialogue using the models below:*

1

A: Why did you choose to take a post-graduate course?
B: Well, I’m sure I’ll be able to improve my knowledge and upgrade my qualifications.
A: What is your field?
B: It’s Global Economy.
A: Have you chosen the subject for your thesis?
B: Not yet, but I think it will touch upon the problem of banking.
A: Is your research anyhow related to your graduation paper?
B: Oh, yes, it is. In fact, it’s continuation of my graduation project. I’ve been trying to expand the area of study, but still consider the problem from another point of view.

A: Who is your scientific advisor?
B: Professor N. He is a Doctor of Economics, academician, a corresponding-member of Russian Academy of Sciences. He’s a well-known expert in his field.
A: How often do you consult him?
B: Once or twice a week.

A: Have you participated in any scientific conference?
B: Yes, I have. Last year I took part in the National Economic Forum held in Moscow.

A: What is the goal of your research?
B: Well, I think I’ll be able to improve the technology of …, to develop a new material for…, to work at a new approach to increase labour productivity, the output of…, to cut the time/the cost of …, to decrease the effects of production upon the environment…

A: Is your field important for national/regional economy?
B: Sure it is. It is extremely important as it makes possible to …, provides the country/region with …

Reading Comprehension

The Establishment of the Nobel Prize

On November 27, 1895, Alfred Nobel signed his third and last will at the Swedish-Norwegian Club in Paris. When it was opened and read after his death, the will caused a lot of controversy both in Sweden and internationally, as Nobel had left much of his wealth for the establishment of a prize. His family opposed the establishment of the Nobel Prize, and the prize awarders he named refused to
do what he had requested in his will. It was five years before the first Nobel Prize could be awarded in 1901.

Now the Nobel Prize is the most coveted award of the world. It has been honoring men and women from all corners of the world since 1901, for their outstanding achievements in Literature, Physics, Chemistry, Medicine and the work for Peace. In 1968, the Sveriges Roksbank instituted the Nobel Prize in Economic sciences, making the number of disciplines 6. The award was started to be presented in 1969. The laureates of Nobel are announced at the beginning of October each year and awarded on 10th December, the death anniversary of Alfred Nobel. All the prizes are awarded in Stockholm, the capital of Sweden, except the Nobel Peace Prize, which is presented in Oslo, Norway.

The Nobel Foundation, however, does not select the award winners, nor it influences the selection process. The nomination and selection of the laureates are the responsibility of various institutions, as per the will of Alfred Nobel. The Literature prize winner is selected by The Swedish Academy. The Royal Swedish Academy of Sciences select Nobel laureates in Chemistry and Physics. The Nobel Assembly at Karolinska Institute for the Nobel Prize choose the laureates in Physiology or Medicine. The Peace Prize laureate is selected by a committee of five persons established by the Norwegian parliament. The laureates of Economics Nobel, instituted by Sveriges Riksbank, are also selected by the Royal Swedish Academy of Sciences.

The selection process is a tough task, as there are about 200 nominations in each discipline every year. The awards are not free from criticism either, triggered by some choices and omissions. The omission of Mahatma Gandhi and Leo Tolstoy and the selection of Barrack Obama and Henry Kissinger have triggered controversies. Many of the critics also pointed out that the selection process is non-transparent as the committee never announces the nominations and reveal any information on the selection procedures. However, despite all the criticism, the Nobel Prize continues to be the most prestigious award in the world.

Ex. 1. Mark the following statements as True (T) or False (F):

1. The family fully agreed with the idea of establishing a prize.
2. The laureates of Economics Nobel were first awarded in 1901.
3. All the prizes in all the disciplines are awarded in the capital of Sweden.
4. The Nobel Assembly at Karolinska Institute chooses the laureates in Chemistry and Physics.
5. There have been about 200 Nobel Prize nominations so far.
6. The committee announces the nominations and reveals all the information on the selection procedures.
7. The selection process is transparent and widely discussed by scientific community and public.

Ex. 2. Read the text “Alfred Nobel’s Will”. Summarize the main facts in writing (6-8 sentences):

Alfred Nobel’s Will

“The whole of my remaining realizable estate shall be dealt with in the following way: the capital, invested in safe securities by my executors, shall constitute a fund, the interest on which shall be annually distributed in the form of prizes to those who, during the preceding year, shall have conferred the greatest benefit to mankind. The said interest shall be divided into five equal parts, which shall be apportioned as follows: one part to the person who shall have made the most important discovery or invention within the field of physics; one part to the person who shall have made the most important chemical discovery or improvement; one part to the person who shall have made the most important discovery within the domain of physiology or medicine; one part to the person who shall have produced in the field of literature the most outstanding work in an ideal direction; and one part to the person who shall have done the most or the best work for fraternity between nations, for the abolition or reduction of standing armies and for the holding and promotion of peace congresses. The prizes for physics and chemistry shall be awarded by the Swedish Academy of Sciences; that for physiology or medical works by the Karolinska Institute in Stockholm; that for literature by the Academy in Stockholm, and that for champions of peace by a committee of five persons to be elected by the Norwegian Storting. It is my express wish that in awarding the prizes no consideration be given to the nationality of the candidates, but that the most worthy shall receive the prize, whether he be Scandinavian or not.”

Making a Presentation

This is a list of phrases to help you make a professional presentation in English:
**Clear structure, logical progression**

Good presenters always use language (sometimes single words, sometimes phrases) which shows where they are in their presentation. These ‘signposts’ make it easier for the audience to:

- follow the structure of the presentation,
- understand the speaker more easily,
- get an idea of the length and content of the presentation.

The phrases and sentences are divided into sections which follow the logical progression of a well-balanced presentation.

**Welcoming**

Good morning and welcome to [name of company, name of conference hall, hotel, etc.].

Thank you all very much for coming today.

I hope you all had a pleasant journey here today.

**Introducing yourself**

*My name is Mark Watson and I am responsible for ….*

*My name is Mark Watson from [name of company], where I am responsible for ….*

*Let me introduce myself; my name is Mark Watson and I am responsible for ….*

**Introducing your presentation**

The purpose of today’s presentation is to ….

In today’s presentation I’d like to … show you … / explain to you how ….

In today’s presentation I’m hoping to … give you an update on… / give you an overview of ….

In today’s presentation I’m planning to … look at … / explain ….

You can also outline your presentation to give the audience a clear overview of what they can expect:

In today’s presentation I’m hoping to cover three points: firstly, … , after that we will look at … , and finally I’ll ….

In today’s presentation I’d like to cover three points: firstly, … , secondly … , and finally ….
Explaining that there will be time for questions at the end
If you have any questions you’d like to ask, please leave them until the end, when I’ll be happy to answer them.
If there are any questions you’d like to ask, please leave them until the end, when I’ll do my best to answer them.
Here are some more phrases to help you make a great and professional presentation in English, from starting to concluding and summarizing.

Starting the presentation
To begin with …
To start with … .
Let’s start/begin by looking at …
I’d like to start by looking at … Let’s start with / start by looking at …

Closing a section of the presentation
So, that concludes [title of the section] …
So, that’s an overview of … I think that just about covers …

Beginning a new section of the presentation
Now let’s move on to …
Now let’s take a look at …
Now I’d like to move on to … Next I’d like to take a look at …

Concluding and summarizing the presentation
Well, that brings us to the end of the final section.
Now, I’d like to summarize by …
That brings us to the end of the final section.
Now, if I can just summarize the main points again. That concludes my presentation.
Now, if I can just summarize the main points. That’s an overview of …
Now, just to summarize, let’s quickly look at the main points again.
REFERENCES


SUPPLEMENT

Railway surveys

The importance of railways in urban economics and society development

Late Tony Judt was a professor at NYU. He wrote a wonderful essay on railways in New York Review of Books. The essay comes in two parts. First is The Glory of the Rails and second part is called Bring Back the Rails!

In the first part he explains how railways grew in importance and their role in urban development. Urban cities came up with importance of railways and railways stations in particular. Moreover, unlike other industries which become modern over a period of time, railways changed technology at a much faster scale. It bought distant towns closer to mainstream cities and helped bigtime in commerce.

More than any other technical design or social institution, the railway stands for modernity. No competing form of transport, no subsequent technological innovation, no other industry has wrought or facilitated change on the scale that has been brought about by the invention and adoption of the railway. Peter Laslett once referred to “the world we have lost” – the unimaginably different character of things as they once were. Try to think of a world before the railway and the meaning of distance and the impediment it imposed when the time it took to travel from, for example, Paris to Rome – and the means employed to do so – had changed little for two millennia. Think of the limits placed on economic activity and human life chances by the impossibility of moving food, goods, and people in large numbers or at any speed in excess of ten miles per hour; of the enduringly local nature of all knowledge, whether cultural, social, or political, and the consequences of such compartmentalization.

It then goes on to tell you how railways have brought about this economic revolution:

Railway tracks were purpose-built: nothing else could run on them – and trains could run on nothing else. And because they could only be routed and constructed at certain gradients, on limited curves, and unimpeded by interference from obstacles like forests, boulders, crops, and cows, railways demanded – and were everywhere accorded – powers and authority over men and nature alike: rights of way, of property, of possession, and of destruction that were (and remain) wholly unprecedented in peacetime. Communities that accommodated
themselves to the railway typically prospered. Towns and villages that made a show of opposition either lost the struggle; or else, if they succeeded in preventing or postponing a line, a bridge, or a station in their midst, got left behind: expenditure, travelers, goods, and markets all bypassed them and went elsewhere.

Railways led to developing timetables in our lives. The railway stations were a major attraction around which towns developed:

*The railway station became a new and dominant urban space: a large city terminus employed well over one thousand people directly; at its peak Penn Station in New York employed three thousand people, including 355 porters or “redcaps.”* The hotel built above or adjacent to the station and owned by the railway company employed hundreds more. Within its halls and under the arches supporting its tracks the railway provided copious additional commercial space. From the 1860s through the 1950s, most people entered or exited a city through its railway terminuses, whose size and splendor – whether seen at close quarters or at the distant end of a new avenue built to enhance its significance (the new Boulevard de Strasbourg ending at the Gare de l’Est in Paris, for example) – spoke directly and deliberately to the commercial ambitions and civic self-image of the modern metropolis.

The second article talks about the decline in railways as a mode of transport because of cars and airports. The reason which made railways popular became its demise as well. As people came from villages to cities they moved to faster and personal mode of transport. Great insights…

Then there has been a revival because of rising oil prices and railways seen as a safe and least costly mode of transport.

*The cost of oil – effectively stagnant from the 1950s through the 1990s (allowing for crisis-driven fluctuations) – is now steadily rising and unlikely ever to fall back to the level at which unrestricted car travel becomes economically viable again. The logic of the suburb, incontrovertible with oil at $1 a gallon, is thus placed in question. Air travel, unavoidable for long-haul journeys, is now inconvenient and expensive over medium distances: and in Western Europe and Japan the train is both a pleasanter and a faster alternative. The environmental advantages of the modern train are now very considerable, both technically and politically. An electrically powered rail system, like its companion light-rail or tram system within cities, can run on any convertible fuel source whether conventional or innovative, from nuclear power to solar power. For the foreseeable
future this gives it a unique advantage over every other form of powered transportation.

It is not by chance that public infrastructural investment in rail travel has been growing for the past two decades everywhere in Western Europe and through much of Asia and Latin America (exceptions include Africa, where such investment is anyway still negligible, and the US, where the concept of public funding of any kind remains grievously underappreciated). In very recent years railway buildings are no longer buried in obscure subterranean vaults, their function and identity ingloriously hidden under a bushel of office buildings. The new, publicly funded stations at Lyon, Seville, Chur (Switzerland), Kowloon, or London Waterloo International assert and celebrate their restored prominence, both architectural and civic, and are increasingly the work of innovative major architects like Santiago Calatrava or Rem Koolhaas.

Why this unanticipated revival? The explanation can be put in the form of a counterfactual: it is possible (and in many places today actively under consideration) to imagine public policy mandating a steady reduction in the nonnecessary use of private cars and trucks. It is possible, however hard to visualize, that air travel could become so expensive and/or unappealing that its attraction for people undertaking nonessential journeys will steadily diminish. But it is simply not possible to envision any conceivable modern, urban-based economy shorn of its subways, its tramways, its light rail and suburban networks, its rail connections, and its intercity links.

In the end he says, if people lose railways it will be a major loss:

If we lose the railways we shall not just have lost a valuable practical asset whose replacement or recovery would be intolerably expensive. We shall have acknowledged that we have forgotten how to live collectively. If we throw away the railway stations and the lines leading to them as we began to do in the 1950s and 1960s – we shall be throwing away our memory of how to live the confident civic life. It is not by chance that Margaret Thatcher who famously declared that “there is no such thing as Society. There are individual men and women, and there are families” made a point of never traveling by train. If we cannot spend our collective resources on trains and travel contentedly in them it is not because we have joined gated communities and need nothing but private cars to move between them. It will be because we have become gated individuals who don’t know how to share public space to common advantage. The implications of such a loss would far
transcend the demise of one system of transport among others. It would mean we had done with modern life.

Railways surely play a great role. We are now seeing more advanced versions of railways like metros and monorails in cities. They are seen as a major way to decongest and clean/green the cities.

Apart from this they play a role in society as well. People in India usually ponder on the high adjustment qualities in people of Mumbai compared to other cities. I would think the local trains here have played a major role. So many people travel with same train everyday and have their own set of friends where they play cards, music and entertain themselves. These people become their extended families as well.

So, there are some interesting aspects as well apart from economic development.

Amberg Technologies

Amberg Technologies has been a leading provider of specialized rail and tunnel measurement systems for more than 25 years. A unique combination of industry knowledge and engineering expertise has produced innovative and flexible systems, based on practical designs and user-friendly software. With worldwide support and service, these railway surveying solutions have won the trust and respect of both the rail and tunneling industry.

Amberg Rail is the new solution for comprehensive railway surveying. Amberg Rail’s extensive functionality consists of the proven and established hardware configuration GRP System FX, new application-specific software, the GRP Fidelity integrated quality management system and a unique global support network.

Amberg Rail is based on the three application-specific solutions Amberg Slab Track, Amberg Tamping and Amberg Clearance. A dependable partner of the international railway industry, Amberg Technologies’ Amberg Rail application provides project-specific system solutions for the highest possible efficiency and flexibility in surveying for track construction and maintenance, and for clearance profile surveying.

- One unique, new software platform for all railway applications
- Specific modules per application with focus on application needs
- Clear split between office work and trackwork
- Proven hardware system GRP System FX for specific applications
New technology enables automatic comprehensive railway surveys
High quality technology with high return on investment

Track-alignment data and control-point-based tamping survey system:
Amberg Tamping is a high-performance system solution for track-alignment data or control-point-based tamping survey. Features include:
- New project base data management for track design and measurement data
- Project data based on 3D track design or datum point track layout
- Correction data (lift and slew) in real time or as data disk for the track tamper
- Versatile tamping data editor
- Comprehensive reporting
- Option: integrated control point surveying and reporting

Real-time rail clearance assessment system:
This modular system solution for automatic clearance surveying is completed by typical railway analyses and documentation. Features include:
- One software suite with scalable functionality (Basic and Plus)
- Powerful management of project data
- Two different types of clearance measuring devices (motorised distometer Profiler 110 FX or high-speed laser scanner Profiler 5002/5003)
- System ready for 2D clearance gauging or 3D infrastructure gauging
- Results in real time
- Comprehensive evaluation, analyses and reporting

Railway Design

Railway Station Design

There was a time (in the UK at least) when the word “station” would only ever be taken to refer to a railway station. For some reason, nowadays people insist on referring to a station as a “train station”, as if there was any other sort of station. Whatever it is called, the station can often be a neglected part of the railway scene but they are the usually first point of contact the passenger has with the system and they ought to be well designed and pleasing to look at. This page offers some insights into the design of stations and show some examples of how they have evolved.
Stations are the places where trains stop to collect and deposit passengers. Since the station is the first point of contact most passengers have with the railway, it should be regarded as the “shop window” for the services provided. It should therefore be well designed, pleasing to the eye (photo left), comfortable and convenient for the passenger as well as efficient in layout and operation. Stations must be properly managed and maintained and must be operated safely.

There are two differing views about passenger safety at stations which have dictated station design for the last 150 years or more. For most of the world, it has been assumed that passengers (and other members of the public) will take care of their own safety when walking on or near a railway. Because of this, it is not considered necessary to segregate passengers from trains. Passengers will look out for passing trains when crossing tracks and will take care not to leave luggage, children, cars or anything else which could damage or be damaged by a train. Station design has reflected this so that platforms were often not raised very much above rail level. Passengers were forced to climb up to trains, usually with the help of a plentiful staff and portable steps carried on vehicles. Passengers were free to wander across tracks, usually at walkways specially provided for them and any road vehicles which needed to cross the line. Railways were not fenced. Only at terminals and very busy stations was any attempt at segregation made.

In the UK, railways were always fenced and passengers and the public were invariably kept away from the tracks as far as possible. Platforms were built to a level which allowed a reasonable step up into a train without help and bridges or underground passages (called “subways” in the UK) were provided to allow people to cross the line unhindered by the movement of trains. The high platform also permitted quicker loading and unloading of trains.

In the US, the rise in the popularity and numbers of automobiles was matched by a decline in the use of railroads. The decline in the use of railroads meant there was also a decline in the awareness of the public of the nature of railroads or of the power and speed of trains and the distances they required to stop. The result has been an increase in the number of crossing accidents, where cars or trucks have been hit by trains. There have also been incidents where passengers have been struck by passing trains while crossing the tracks to reach a station exit.
Platforms

The term platform is worth explaining. In the US, the position of a train in a station is referred to as the “track”, as in “The train for San Diego is on Track 9”. This is very logical as the raised portion of the ground next to the track is actually the platform and may well be used by passengers boarding a train on a track along the opposite edge of the platform. For this reason, the British way of referring to the “Train at Platform 4”, referring to the platform “face”, sometimes confuses foreign visitors, who see two trains, one on each side of the platform.

It is a feature of station design in the UK and railways designed to UK standards, that platforms are built to the height of the train floor, or close to it. This is now also adopted as standard on metro railways throughout the world. The rest of the world has generally had a train/station interface designed on the basis that the passengers step up into the train from a low level platform or even straight off the ground. To this end, passenger vehicles were usually designed with end entrances, having the floor narrower then the rest of the car body so that a set of steps could be fitted to either side of the entrance gangway. However, high platforms are now seen in many countries around the world.

Platform width is also an important feature of station design. The width must be sufficient to accommodate the largest numbers of passengers expected but must not be wasteful of space – always at a premium for station areas in expensive land districts of a city. The platform should be designed to give free visual areas along its length so that passengers can read signs and staff can ensure safety when dispatching trains. Columns supporting structures (photo) can often seriously affect the operation of a station by reducing circulating areas and passenger flows at busy times. Platform edges should be straight to assist operations by allowing clear sight lines.

There has been a trend recently in modern metro systems towards incorporating glazed screens along platform edges (photo left). This is only possible where sliding powered doors are available on trains and where the location of these doors is always consistent, which is why screen doors do not appear on main line railways. There are a number of interesting points to remember when considering platform screen doors.

Platform screen doors (sometimes called “platform edge doors”) were first introduced in St Petersburg (then Leningrad) on the metro to reduce heat losses on station platforms of underground stations. They were also fitted to the Lille
VAL driverless system but, in this case, as a way of preventing passengers from getting onto the line where there were no drivers to stop the train. It too allowed a better degree of climate control within stations. Climate control was also the reason why doors were introduced for underground stations in Singapore when its metro system was started in 1989.

On most lines equipped with platform screen doors, the space between the sliding doors has emergency doors that can be pushed open onto the platform, so if the train stops out of position, there is still emergency access to the platform. There are also local station door controls provided at the platform ends, in case the automatic system fails.

**Economics**

*Supply-Side Economics (1975)*

Supply-side economics is a school of macroeconomic thought that argues that economic growth can be most effectively managed using incentives for people to produce (supply) goods and services, such as adjusting income tax and capital gains tax rates. This can be contrasted with the classic Keynesian economics or demand side economics, which argues that growth can be most effectively managed by controlling total demand for goods and services, typically by adjusting the level of Government spending. Supply-side economics is often conflated with trickle-down economics.

The term was coined by journalist Jude Wanniski in 1975, and further popularised by the ideas of economists Robert Mundell and Arthur Laffer. Supply-side economics is controversial because its typical recommendation, reduction of the higher marginal tax rates, offers benefits to the wealthy, which commentators such as Paul Krugman see as politically rather than economically motivated.

This may have marked the beginning of the advancement of artificial inflation. By placing incentives to produce (supply) goods and services into the market, a host of things were inspired to change. Legislative manipulation and even the production of things that were not needed can easily spawn from such an idea. If the idea was introduced in 1975 and took a little while to catch hold it may not be unreasonable to assume that this policy direct may have led to or be a principle factor in the legislative changes that have enabled the conditions described above.
Reaganomics (1981)

Reaganomics (a portmanteau of “Reagan” and “economics”, coined by radio broadcaster Paul Harvey) is a term that has been used to both describe and decry free market advocacy economic policies of U.S. President Ronald Reagan, who served from 1981 to 1989 and economic policies perceived as similar. A term parallel in use and import is Thatcherism, which refers to the economic philosophy of British Prime Minister Margaret Thatcher (1979–1990), who was Reagan’s contemporary. Reaganomics is most closely associated with neoliberal economic thought.

Trickle-down Economics (1981)

Trickle-down “economics” and “trickle-down theory,” in political rhetoric, are characterizations by opponents of the policy of lowering taxes on high incomes and business activity. Proponents of these policies claim that they will promote new investment and economic growth, thereby indirectly benefiting people who do not directly pay the taxes. Opponents characterize this as a claim that the people who would otherwise pay the tax will distribute their benefit to less wealthy individuals, so that a fraction will reach the general population and stimulate the economy. Proponents of the policies generally do not use the terms “trickle-down economics” themselves.

Today “trickle-down economics” is most closely identified with the economic policies of the Ronald Reagan administration, known as Reaganomics or supply-side economics. A major feature of these policies was the reduction of tax rates on capital gains, corporate income, and higher individual incomes, along with the reduction or elimination of various excise taxes. David Stockman, who as Reagan’s budget director championed these cuts but then became skeptical of them, told journalist William Greider that the term “supply-side economics” was used to promote a trickle-down idea.

Market Economy

Definition: A market economy is when competition from free enterprise makes economic decisions. It allows the laws of supply and demand to direct the production of goods and services. Supply includes natural resources, capital, and labor. Demand includes purchases by consumers, businesses and the government.
Producers sell their wares at the highest price consumers will pay. At the same time, shoppers look for the lowest prices for the goods and services they want.

Workers bid their services at the highest possible wages that their skills allow. Employers seek to get the best employees at the lowest possible price. Capitalism requires a market economy to set prices and distribute goods and services. Socialism and communism use a command economy to set a central plan. Market economies evolve from traditional economies. Most societies in the modern world have elements of all three types of economies. That makes them mixed economies.

Six Characteristics of a Market Economy

The following six characteristics define a market economy.

1. Private Property. Most goods and services are privately-owned. The owners can make legally-binding contracts to buy, sell, or lease their property. In other words, their assets give them the right to profit from ownership. But U.S. law excludes some assets. Since 1865, you cannot buy and sell human beings. That includes you, your body, and your body parts.

2. Freedom of Choice. Owners are free to produce, sell and purchase goods and services in a competitive market. They only have two constraints. First, is the price at which they are willing to buy or sell. Second is the amount of capital they have.

3. Motive of Self-Interest. Everyone sells their wares to the highest bidder while negotiating the lowest price for their purchases. Although the reason is selfish, it benefits the economy over the long run. That’s because this auction system sets prices for goods and services that reflect their market value. It gives an accurate picture of supply and demand at any given moment.

4. Competition. The force of competitive pressure keeps prices low. It also ensures that society provides goods and services most efficiently. As soon as demand increases for a particular item, prices rise thanks to the law of demand. Competitors see they can enhance their profit by producing it, adding to supply. That lowers prices to a level where only the best competitors remain. This force of competitive pressure also applies to workers and consumers. Employees vie with each other for the highest-paying jobs. Buyers compete for the best product at the lowest price. For more, see What Is Competitive Advantage: 3 Strategies That Work.
5. System of Markets and Prices. A market economy relies on an efficient market in which to sell goods and services. That’s where all buyers and sellers have equal access to the same information. Price changes are pure reflections of the laws of supply and demand. Find out the Five Determinants of Demand.

6. Limited Government. The role of government is to ensure that the markets are open and working. For example, it is in charge of national defense to protect the markets. It also makes sure that everyone has equal access to the markets. The government penalizes monopolies that restrict competition. It makes sure no one is manipulating the markets and that everyone has equal access to information. (Source: National Council on Economic Education.)

_Four Market Economy Advantages_

Since a market economy allows the free interplay of supply and demand, it ensures the most desired goods and services are produced.

That’s because consumers are willing to pay the highest price for the things they want the most. Businesses will only create those things that return a profit.

Second, goods and services are produced in the most efficient way possible. The most productive companies will earn more than less productive ones.

Third, it rewards innovation. Creative new products will meet the needs of consumers in better ways that existing goods and services. These cutting-edge technologies will spread to other competitors so they, too, can be more profitable. For more, see Silicon Valley: America’s Innovative Advantage.

Fourth, the most successful businesses invest in other top-notch companies. That gives them a leg up and leads to increased quality of production.

_Four Market Economy Disadvantages_

The key mechanism of a market economy is competition. As a result, it has no system to care for those who are at an inherent competitive disadvantage. That includes the elderly, children and people with mental or physical disabilities.

Second, the caretakers of those people are also at a disadvantage. Their energies and skills go toward caretaking, not competing. Many of these people might become contributors to the economy’s overall comparative advantage if they weren’t caretakers.
That leads to the third disadvantage. The human resources of the society may not be optimized. For example, a child who might otherwise discover the cure for cancer might instead work at McDonald’s to support her low-income family.

Fourth, the society reflects the values of the winners in the market economy. That’s why a market economy may produce private jets for some while others starve and are homeless. A society based on a pure market economy must decide whether it’s in its larger self-interest to care for the vulnerable. If it decides it is, the society will grant the government a significant role in redistributing resources. That’s why there are so many mixed economies. Most so-called market economies are mixed economies.

**Ways to avoid indebtedness and be more financially independent**

Follow these advices to avoid credit and debt rule your life:

Excessive indebtedness is a serious problem in the modern world. People who accumulate debt will wake up one day realizing that the main reason they are working is to pay for consumer goods they already own. At this stage, the person becomes a slave of his goods, has no control over his life and can’t make good career choices; credit dictates his life and they can never stop working, even for just a few weeks. It is the paycheck to paycheck syndrome.

Personal indebtedness as well as household indebtedness is in part linked to the fact that consumers are not purchasing goods, but payments, whether by increasing the balance on a credit card or line of credit, or by adding a term loan. Consumers search for ways to fit a payment in their budget, without questioning the total cost and the long term consequences of such a decision. An accumulation of payments forces an individual to maintain a constant flow of income without having any possibility of skipping weekly pay.

**Keep one credit card as a transaction tool:** To begin with, one credit card is more than enough to fulfill your needs. That way, a person keeps a better control of their expenses. Eliminating other credit cards take away the possibility, or should I say the temptation, to increase your debt, since your only card will reach its limit sooner and will force you to pay the balance before using it again. You will therefore keep better control on your spending and put yourself in better position to negotiate good interest rate.

If you think that one credit card is too little to build a good credit, think again, you can get an excellent credit score with only one credit card with a limit
of $500.00 that you pay regularly on time. It is unnecessary to have a collection of cards and increase the risk of getting more debt.

Make a cash flow budget after every paycheck: When receiving your paycheck or cashing any other type of income, anticipate the inevitable payments you are going to make with it until your next paycheck, such as the rent, mortgage, car, energy... By subtracting your regular fix payments from your recent cashed paycheck, you can immediately know the amount you have available for other more volatile purchases, such as groceries, leisure, clothing... This very short term plan is a way to easily know where you stand financially on a daily basis, but moreover, it holds you from blindly using your credit card. Save money before buying or take advantage of credit promotions: The idea of inserting a monthly payment in your budget, whether by increasing the balance on your revolving credit or by getting a term loan, and telling yourself that you can afford it because it is only small payments, is dangerous. You can accumulate purchases that can last on your credit for months, if not years. And if you think you win by minimizing payments, think again, the more you stretch your loan, the more you pay interest, you could end up paying your goods double the original price. Bottom line, purchasing a good with a credit card because of a lack of funds is often a sign that you can’t really afford it and it is the beginning of indebtedness.

If you are already in heavy debt, follow these three tips and pay your balance with the highest interest rate first and consolidate everything else in a lower interest account. Know that the less you go into debt, the easier it is to make your payments and the better your credit rating will be. A good financial health and credit report will attract lower interest rates, which is important when you negotiate for your mortgage. Entering into the vicious cycle of excessive indebtedness will only cancel this advantage.

Taking control over your personal finance also means taking control of your life. When you free yourself from the obligation of constantly generating income, you will make a better career choice and be happier. You will be surprised to what extend these three tips will help you gain control of your finances and give you the freedom to make the right choices in your life.

How to finance your business with carbon credits

Carbon credits were created with the objective to fight greenhouse gases using market based instruments; they are the core of the carbon market ex-
change. This system, which aims to fight Global Warming, emanates from the Kyoto protocol and is based on the polluter payer principle. It is a market exchange that works the same way as a traditional stock exchange, except instead of trading stocks, companies trade carbon emissions; they can buy or sell them. Its coordination follows the cap-and-trade approach.

It is a source of financing for businesses polluting less since they can trade their emissions.

To begin with, companies’ participation in the trading emission is voluntary, and once in, the central authorities cap their carbon emission by giving them a limit. Inside this limit, they count the six greenhouse gases responsible for climate change. If the business lowers its emission under its limit, it can sell what is left, and on the other hand if it surpasses it, it has to buy additional emissions; the participant is then always encouraged to lower its greenhouse gases emission. With the opportunity to trade carbon emission in a market following the supply and demand law, the carbon exchange is able to price a quantity of greenhouse gases emission, taking normally one tone as a measurement.

It is a source of financing for businesses polluting less since they can trade their emissions. It is also a way to finance new equipments that reduce pollutants, since direct profit arise from an investment in such a technology. Indeed, it raises the quantity of emissions available for sale or lowers the need to buy additional emissions, on top of what the government can do in order to help your business fight greenhouse gases. Carbon market manages to diminish the total quantity of carbon emission by giving the business an opportunity to improve its profitability.

There are national and international carbon exchanges you can join, find out which one better suit your company. The criteria to enter depend on which carbon exchange you choose, but normally they first require the company to be public. It is possible, in the case of international trading emission, to reduce the quantity of greenhouse gases in another country. When we take the global problem of climate change, we have a problem that concerns the entire planet, so the emissions can be reduced anywhere on Earth. What counts is the result. Finally, consider that not only can you get additional financing for your company by joining the carbon exchange, but you are also entering a system of the future, not only because of its innovating aspect, but also for its missionary aspect that aims to develop the world while keeping an ecological balance.
Information systems

Information systems and information technologies as a strategic weapon

When an advantage is truly sustainable then it crosses the domain from merely functional to strategic and it must be utilized properly by top level management. This section examines what enables IS and IT to make the transformation from a competitive weapon to a strategic weapon.

In order for a firm to achieve a sustainable competitive advantage it must endure 3 challenges:

- It must focus its IS efforts to support business strategies and use IT innovations to develop new, superior strategies,
- It must devise and manage effective strategies for the delivery of low-cost, high quality services, and
- It must choose the correct technical platform on which to mount its IS services (Feeny and Willcocks, 1998)

Some essential capabilities such as business system thinking, architecture planning, and informed buying are the core requirement to address these challenges. These capabilities along with technical, business and interpersonal skills are necessary for a company to sustain a competitive advantage by means of its IT.

IT has changed the competitive environment in six basic ways:

- Products and services enhanced with computer capability,
- Cost displacement,
- Enhanced decision support,
- Revision of the mission or objectives of the enterprise,
- Business interrelationships, and
- Creation of new products and services (Diebold, 1986).

Of these 6 ways the creation of new products and services along with the revision of the mission or objectives of the firm represent the long term focus and ultimately leads to the use of IT as a strategic weapon.

Companies such as United Airlines Inc. and American Hospital Supply Corp. (AHS) are very successful because they have recognized the need, power and usage of IT to achieve and sustain a competitive advantage. Efficient and effective planning systems are also essential for a company to maximize its IT potential. One of the ways that this is best accomplished is by means of value added to current goods and services. For example, additional features at the
same cost, better guarantee of quality and service and superior customer service. Japanese companies such as Sony and Honda are very famous for this type of value adding. The customer is not only satisfied but will not hesitate to purchase again and even recommend purchasing to their friends. Global competition, shorter product life cycles, stricter performance standards and demands by customers for better service and quality have all contributed to increase pressure on the marketplace. Therefore, in order for a firm to be competitive and to remain competitive, it must use IT as its differentiation tool. No longer can companies compete on the 3 P’s of price, product and process. As was demonstrated in the previous section, all of these attributes are easily imitated and cannot serve as differentiation tools. However, the resource that will provide the sustainable competitive advantage will be the human resource.

The increasing trend towards outsourcing has more companies concentrating on their core IS and IT capabilities. Some companies are divesting their activities to world class suppliers and partners in order to focus more narrowly on their core competencies. It is not advantageous or even possible in some cases for manager to focus their attention across many diverse and far-flung markets but rather to concentrate on a narrow domain (Feeny, 1998). The three challenges in exploiting IT to create a sustainable advantage must have a general long-term focus in mind. Firms should be able to be dynamic and respond rapidly to changes in their business and in the global environment. If this involves a readjustment of the firms chosen business strategy then the firm must be confident that its IT department and senior management are competent enough to whether the storm.

IT has transformed the entire corporate strategy of some firms and as a consequence, their business and functional strategies have had to be revised. While this may be disastrous for some companies, if a company excels at this then it would have dramatically positioned itself as a leader in the 21st century. IT along with electronic commerce has transformed the common market space to the boundary less world of cyberspace. This rapid response to change has put more pressure on IS departments to develop new systems faster and to demonstrate superior existing systems.

The other challenge that IT developers face is the choice of platforms. Would an Intranet be better than a client server platform? Or is Groupware a better choice than individual workstations? The platform must have extensive capabilities and should also be very dynamic in order to respond to the changing
global environment. As has been demonstrated on numerous occasions by many case studies and research, the choice of platform often plays the most deterministic role in the diffusion of the IT process and this in turn affects the strategy of the company. If its own employees are unhappy with their IS and IT then this in turn will be transferred onto their customers. Therefore, a company should carefully consider its strategic choices.

Software engineering

When the first digital computers appeared in the early 1940s, the instructions to make them operate were wired into the machine. Practitioners quickly realized that this design was not flexible and came up with the “stored program architecture” or von Neumann architecture. Thus the division between “hardware” and “software” began with abstraction being used to deal with the complexity of computing.

Programming languages started to appear in the early 1950s and this was also another major step in abstraction. Major languages such as Fortran, ALGOL, and COBOL were released in the late 1950s to deal with scientific, algorithmic, and business problems respectively. Edsger W. Dijkstra wrote his seminal paper, “Go To Statement Considered Harmful”, in 1968 and David Parnas introduced the key concept of modularity and information hiding in 1972 to help programmers deal with the ever increasing complexity of software systems.

The origins of the term “software engineering” have been attributed to different sources, but it was used in 1968 as a title for the World’s first conference on software engineering, sponsored and facilitated by NATO. The conference was attended by international experts on software who agreed on defining best practices for software grounded in the application of engineering. The result of the conference is a report that defines how software should be developed. The original report is publicly available.

The discipline of software engineering was created to address poor quality of software, get projects exceeding time and budget under control, and ensure that software is built systematically, rigorously, measurably, on time, on budget, and within specification. Engineering already addresses all these issues, hence the same principles used in engineering can be applied to software. The widespread lack of best practices for software at the time was perceived as a “software crisis”.

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In 1984, the Software Engineering Institute (SEI) was established as a federally funded research and development center headquartered on the campus of Carnegie Mellon University in Pittsburgh, Pennsylvania, United States. Watts Humphrey founded the SEI Software Process Program, aimed at understanding and managing the software engineering process. His 1989 book, Managing the Software Process,[18] asserts that the Software Development Process can and should be controlled, measured, and improved. The Process Maturity Levels introduced would become the Capability Maturity Model Integration for Development (CMMi-DEV), which has defined how the US Government evaluates the abilities of a software development team.

Modern, generally accepted best-practices for software engineering have been collected by the ISO/IEC JTC 1/SC 7 subcommittee and published as the Software Engineering Body of Knowledge (SWEBOK).

**Information Security**

Information Security Components: or qualities, i.e., Confidentiality, Integrity and Availability (CIA). Information Systems are decomposed in three main portions, hardware, software and communications with the purpose to identify and apply information security industry standards, as mechanisms of protection and prevention, at three levels or layers: physical, personal and organizational. Essentially, procedures or policies are implemented to tell people (administrators, users and operators) how to use products to ensure information security within the organizations.

Information security means protecting information and information systems from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction.

The terms information security, computer security and information assurance are frequently incorrectly used interchangeably. These fields are interrelated often and share the common goals of protecting the confidentiality, integrity and availability of information; however, there are some subtle differences between them.

These differences lie primarily in the approach to the subject, the methodologies used, and the areas of concentration. Information security is concerned with the confidentiality, integrity and availability of data regardless of the form the data may take: electronic, print, or other forms.
Computer security can focus on ensuring the availability and correct operation of a computer system without concern for the information stored or processed by the computer.

Governments, military, corporations, financial institutions, hospitals, and private businesses amass a great deal of confidential information about their employees, customers, products, research, and financial status. Most of this information is now collected, processed and stored on electronic computers and transmitted across networks to other computers.

Should confidential information about a business’ customers or finances or new product line fall into the hands of a competitor, such a breach of security could lead to lost business, law suits or even bankruptcy of the business. Protecting confidential information is a business requirement, and in many cases also an ethical and legal requirement.

For the individual, information security has a significant effect on privacy, which is viewed very differently in different cultures.

The field of information security has grown and evolved significantly in recent years. There are many ways of gaining entry into the field as a career. It offers many areas for specialization including: securing network(s) and allied infrastructure, securing applications and databases, security testing, information systems auditing, business continuity planning and digital forensics science, etc.
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