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МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ

МАТЕРІАЛИ

НАУКОВО-ТЕОРЕТИЧНОЇ КОНФЕРЕНЦІЇ ВИКЛАДАЧІВ, АСПІРАНТІВ, СПІВРОБІТНИКІВ ТА СТУДЕНТІВ ГУМАНІТАРНОГО ФАКУЛЬТЕТУ

21-25 КВІТНЯ 2008 РОКУ
Частина друга

Конференція присвячена Дню науки в Україні та 60-річчю Сумського державного університету

Суми
Вид-во СумДУ
2008

№ 24

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Україна
СУМСЬКИЙ ДЕРЖАВНИЙ УНІВЕРСИТЕТ
БІБЛІОТЕКА
Читальний зал № 4

ВИДАВНИЦТВО
СУМСЬКОГО
ДЕРЖАВНОГО УНІВЕРСИТЕТУ
2008

Сумський державний
університет

Шановні колеги та студенти!

Цей рік особливий для нашого навчального закладу, це рік 60-річного ювілею, і тому слід звітувати про свої наукові напрацювання.

Останнім часом на нашому гуманітарному факультеті значно поліпшилась ситуація з наукової роботи. Перш за все всі кафедри факультету мають затверджені теми другої половини дня.

Маємо в минулому році 147 статей в фахових виданнях, понад 250 тез доповідей на конференціях. Кафедри нашого факультету співпрацюють з Курським державним технічним університетом, Бєлгородським гуманітарним університетом, Вармінсько-Мазурським університетом в Ольштині, а також Університетом Марії Складовської-Кюрі в Любліні (Польща), є напрацювання по співпраці з вченими Словацької республіки м. Оломоуц. Подано заявки на участь у грантових програмах. З'явились госпрозрахункові теми, загальний обсяг тематики складає близько 100 тисяч гривень.

На факультеті в минулому році проведено 2 Міжнародні (по кафедрам філософії та історії) та 3 Всеукраїнські наукові конференції. Викладачі факультету прийняли участь в конференціях різного рівня, які проводились в Києві, Чернівцях, Харкові, Ялті, Одесі, Кіровограді, Донецьку, Бресті, Курську та в Польщі.

На факультеті видається 3 фахових видання.

З метою формування наукового резерву с перших курсів до наукової роботи залучаються найбільш талановиті студенти, як нашого факультету, так і інших факультетів, виходячи зі специфіки нашого факультету. Під керівництвом наших викладачів було отримано 10 перемог у Всеукраїнському конкурсі наукових робіт. Цьому сприяє робота студентського наукового товариства.

Враховуючи всі здобутки, хотілось би побажати усьому професорсько-викладацькому та студентському складу нових творчих досягнень, натхнення та наснаги.

КАФЕДРА ІНОЗЕМНОЇ МОВИ
Секція студентів І курсу
A VALUE OF FOREIGN LANGUAGES FOR LAW STUDENTS

Sachok M., *gr. Юм-72*, Zhuvak V., *gr. ФТ-72*

To know many languages means to have many keys to one lock
Volter

The study of foreign languages for our society has huge value, in fact language, as means of intercourse helps people from many countries to understand, but not to feel, like they were from different planets. In particular at this stage of development knowledge of English language competence has a great value, by the way, this competence is becoming more and more prestigious.

Note that a language is prestigious not only because of the amount of people using it. Though more than a milliard of people speak Chinese, it is not considered a prestigious language.

Sometimes the language prestige is provided by its functioning in a particular sphere. For example, Italian has been the most prestige language in the world of music almost for a few centuries.

A language prestige is often related to its sacral usage: like Sanskrit in India, Latin and Old Church Slavonic in Europe, Arabic – in the countries of moslem world. The separation of the language from prestige functions, for example, from being an official language, reduces its authority and diminishes its resistance to penetration of foreign elements. For example, all languages were officially banned in fascist Spain, except for Kastil language (Spanish).

A language prestige is a variable category. In history there were many examples of languages prestige raising and falling. It depends not on the language, but on the society which is a transmitter of the language, its place and role in mankind progress. There are two methods of increasing a language prestige.

First – through comprehensive development of society on the way of its progress. Second – through squizing other languages by political, military and economic pressure. The prestige of English is determined by the first method.

Pochatko T.V. *EL adviser*

SAFETY IN A NETWORK OF THE INTERNET

Fedorenko V.G.,*gr. FT-74*

Despite the huge means invested in the problem of computer safety, the quantity of safety in the networks connected to global network Internet grows. Both little-known sites and the whole networks of the large companies and the organizations are exposed to hacker attacks .

It occurs because of the infringement, if there no financial or political grounds and the motivation is connected with self-affirmation, thirst of knowledge or simply vandalism.

However, according to Defense Information Services Agency (DISA) 98 % of attacks remain unnoticed. For better safety no high qualification is required because of plenty of automatic means of infringement of safety. Owing to automation of means of attack, the qualification of the safety infringers goes down.

Now the majority of users are familiar with computer viruses and worms due to presence of destroying functions in them.. However it is necessary to note, that not destructive functions define a condition of technology of viruses creation because of the following:

- authors of original viruses seldom include destructive functions (they are added in most cases by unqualified hooligans);
- if your system is amazed by a virus, opportunities of infringement of information safety can vary.

From the above-stated reasons it follows that, speaking about a computer virus or a worm, it is necessary to consider the mechanism of infection and the mechanism of distribution.

Blossoming of viruses in their classical understanding has fallen to operational system MS DOS and occurred in 80s and in the early 90s. At that time viruses infected loading areas of stores on rigid and flexible disks and operation files. Viruses extended from a computer to a computer through the diskettes infected by viruses or containing infected files. During this period viruses have passed a way from the elementary viruses up to the coded ones. From the virus technologies developed during this period, it is necessary to note the following:

- «stealth» technology provided "invisibility" of viruses for standard means, delivering the information to the system;
- an orientation of some viruses to destruction or blocking of work of anti-virus programs in the amazed computer;

- development of generators of the viruses, which allowed unqualified users to create viruses automatically .

The Morris's worm is the best known worm. The virus appeared in 1988 and during a short time interval paralyzed work of many hosts of Internet network. This worm belongs to classical nocuous programs.

Morris's worm was a self-extending program which distributed the copies on the Internet, receiving exclusive access rights to hosts due to its "holes" in operational system. One of them, used by Morris's worm, was the vulnerable version of program Sendmail, and another of the program Fingerd. To defeat the systems the worm used also vulnerability of commands rexec and rsh, and also user passwords chosen incorrectly.

With the advent of family operational systems Windows in 90s the situation has changed.

In 1995 the virus Concept, the first macro-virus appeared. Since this moment the viruses infecting documents Microsoft Office became the most popular. After occurrence of the next version of product Microsoft Office in 1997, viruses have ceased to be specific to any separate office appendix, and became "general" for all products of the family, owing to the introduction of interpreted language Visual Basic.

Virus Melissa appeared in May, 1999 and amazed about 100000 hosts connected to the Internet, including the networks protected by gateway screens. The virus extended by means of the program attached to the post message. Even if in an attacked network there was a stock-taking of viruses at post messages, anti-virus means could not distinguish the signature of virus Melissa.

In January 1999 there appeared virus Caligula which extended by means of documents Microsoft Word / 97. The given virus tried to find out in the infected system a file containing the information, used by program PGP. Thus for communication with the infringer the session ftp, initiated with the infected machine was used. It allowed to bypass the gateway screen.

Thus, it is possible to ascertain, that the nocuous software, applying classical ideas, can use the opportunities which have been opened with the advent of new technologies.

Zolotova S.G. *EL adviser*

COMPUTER IN UNSEREM LEBEN

Lasorenko I., *gr. M-73*

Heutzutage ist es schwer, sich unser Leben ohne Computer vorzustellen.

Häufig sagt man, dass das Computerzeit erst begonnen hat.

Der Computer vereinfacht für uns das Leben. Er kann die Daten speichern und wiedergeben. Er kann auch schnell rechnen, programmieren.

Computer werden immer weiter entwickelt und können immer mehr leisten.

Computer werden in Zukunft den gleichen Stellenwert haben wie Autos. Jeder möchte sie haben.

Im Berufsleben wird fast nur mit Computern gearbeitet. Man verlangt jetzt Fachleute, die mit dem Computer umgehen können. Man braucht sie zum Beispiel, um Akten zu ordnen oder um Zeichen oder Texte zu drucken.

Man kann fast alles damit erledigen, zum Beispiel kann man verschiedene Programme ausarbeiten. Sie helfen die Fremdsprachen erlernen.

Man kann Bücher in elektronische Variante lesen.

Auch mit dem Computer kann man Filmen sehen, Musik hören.

Durch Internet kann man alles kaufen.

Dort mögt man verschiedene Information zu suchen.

Für die Lernenden kann der Zugang zum Internet neue Sprach und Kulturkontakte ermöglichen. Sie können direkten Kontakt mit deutschen Studentenen aufnehmen (e-mail), landeskundliche Informationen sammeln, sogar an Vorlesungen teilnehmen. Der Computer eröffnet dem Menschen große Perspektiven.

Es gibt aber Leute, die einen Computer als nutzlos betrachten. Meistens sind das ältere Menschen, die darin keinen Sinn sehen. Manchmal haben dise Leute Recht Der Computer bringt mit sich bestimmt einige Nachteile.

Die Kinder verbringen sehr viel Zeit vor dem Bildschirm. Für sie ist der Computer ein attraktives technisches Spielzeug. Sie arbeiten weniger mit dem Computer, sondern spielen lieber. Es gibt viele Computerspiele: logische, Kriegspiele.

Die Kinder können leicht mit verschiedenen Spielen den Bezug zur Umwelt und zur Realität verlieren. Sie können nicht mehr Phantasiewelt und Realität auseinander halten.

Oft sind das die Kinder, die keine Freunde haben oder deren Familienverhältnisse nicht günstig sind, und darum verbringen sie ihre Freizeit vor dem Bildschirm. Sie bevorzugen lieber am Computer zu spielen, als sich mit Freunden zu treffen. Jugendliche und Kinder brauchen menschliche Beziehungen
mehr als die Computerliebe.Computer fügen der Gesundheit der Jugendlichen aber auch Schaden zu: Schlafstörungen, Sehschwäche, Kopfschmerzen.

Darum muss man immer daran denken, dass alles Grenzen hat.

Saizewa I.O. *Wissenschaftsleiterin*

TO BE CLEVER TO BE MODERN

Kotlyar, *gr. JT-71*

Nowadays our world is too difficult to be not enough clever to live well. There can be different meanings of intellect, but the main sense is to be adapted for environment, be normally active and naturally contemporary. It should be mentioned at once we see modernism from beauty and mind sides simultaneously, so let's check the truth of our theme using these two criteria.

1. Modern beauty and fashion. What do they dictate? Foremost, probably, that style is talent. Right, but to look attractively becomes all more complicated and more expensive. Even if you are the one who prefer modest clothes (which is rarity!), it can cost much for label or/and quality of fabric and cutting. What's the decision, you ask? Everything is absolutely simply. Especially girls must remember firs of all, you are not plastic dolls with empty eyes, with dishevelled hair and low price! To be beautiful and modern at the same time you need the only thing .That is cleverness. I'm not talking about inspiring horror math equations, but the skill to find the golden middle with bright appearance and natural grace. Hyperbolizing each one of these is bad too. Being a gray mouse will make you invisible (may be even for your dream prince), being a moving rainbow will make you silly. In addition, you have to admit when you're too coloured and accessorized, men see you in different light; aren't you afraid of violence?

Don't wait anyone will enjoy your ideas, kindness, cooking masterpieces or smth else except your twentysantimitars suit. One day you'll become sad. Nobody will grasp you seriously any more; what cleverness can be talked about?

Think a little!

2. Intellect, mind… Thanks to god young people round the world understand gradually that dullness, uneducatedness mean bore. Most of us prefer clever friends, lovers, neighbours. And that's okay. In the high-tech society we must be adapted, active but the dearest people who are less quick- witters hamper and irritate us. We don't want our lives to lose usual rhythm. That's why I assure you to be clever is to be modern. Isn't it right to keep a skill to dispose your energy to be healthy and able to work a lot?

The sign of a modern human being is also eluding undesirable situations, which demand much time and nerves. Being clever includes the level of relationships with your parents, friends, wives, husbands and leaders. You have to know even elementary etiquette.

In conclusion, one must say to be clever is the most reliable credo for ambitious people.

E.L. advisor Marchenko D.O.

TYPISCH DEUTSCH UND TYPISCH UKRAINISCH?

Bobrowizkaja T.,*Gr.ЖТ-72*

Bei uns zu Hause sagt man, die Deutschen haben besonders viel Disziplin, aber das finde ich nicht. Nehmen wir zum Beispiel dieUniversitat: Die Studenten bringen oft Kaffee und Cola mit in den Unterricht oder stricken sogar. Manchmal sind auch Babys mit dabei. Wenn ein Student nicht mehr zuhören will, geht er und sagt nicht mal „Auf Wiedersehen"! Das ist in meinem Land anders.

Die Mädchen in Deutschland haben keine Angst, abends allein auszugehen. Sie machen sogar allein Reisen.

Aber ich kann nicht alles akzeptieren: Nehmen wir zum Beispiel das Wohnen. Oft wohnen Jungen und Mädchen zusammen! Oder etwas anderes: Oft möchten die Deutschen keinen Besuch. Sie bleiben lieber allein. Und noch etwas: In der Familie haben die Vater nicht immer Recht, und die Großeltern spielen auch keine so große Rolle wie in der Ukraine.

Viele Einwohner der Bundesrepublik bauen oder kaufen ein Einfamilienhaus, um nicht zur Miete wohnen zu mussen. Im *30* Gegensatz zu anderen Ländern Europas wechseln die Hauser in Deutschland nicht sehr oft ihre Besitzer.

Obwohl der Trend zum Single-Dasein (jemand, der allein lebt, ist ein Single) steigt, ist auch heute noch die Familie die verbreitetste Lebensform in Deutschland. Weit uber die Hälfte der Bevolkerung lebt in der traditionellen Gemeinschaft von Erwachsenen mit Kindern. Viele junge Deutsche schließen die Ehe, um eine Familie zu gründen. Häufig entscheiden sich Paare für die Heirat, nachdem sie langere Zeit ohne Trauschein zusammengelebt haben. Materielle Aspekte spielen dabei häufig eine Rolle, denn Verheiratete können steuerliche Vergunstigungen in Anspruch nehmen. Nach der Statistik hat eine deutsche Familie im Durchschnitt kann es für die Familie bei zwei Kinder.

Viele junge Menschen in der Ukraine schließen die Ehe, um eine Familie zu gründen. Die Zahl der Eheschlieääöüungen ist in der Ukraine nicht zurückgegangen:
1985 waren es 489 900.

Saizewa I.O.,*Wissenschaftsleiterin*

THE PROBLEMS OF THE BLACK SEA

Matyushenko I., *group EK-71*

The Black Sea is a very unique body of water. Only six countries surround it, however the catchment area is over five times larger than the sea and has a population of over 170 million people that live in 21 countries. We can easily see that an environmental problem cannot be considered only a separate problem of one country alone. For example, the polluted water released by industry in Hungary will travel down the Danube to the sea and be carried by currents into waters fished by Ukrainian fishing boats. Al the same way pollution from the Dnipro can affect the quality of water on the beaches and resorts of Romania and Bulgaria. The Black Sea is an internationally important area for fishing and also tourism. Almost 40 million people visit the coast every summer. The average depth of the Black Sea is about 1250 meters.

Large quantaties of pollution enter the Black Sea through the Danube and Dnipro rivers. The amount of metals in waters around some beaches is dangerously high. But the most serious problem is lack of oxygen in the water. Chemicals from agriculture, industry, and home waste water cause large increases in microscopic plant pollutions. When these plants die and start to rot, they use up all the oxygen and die. This is happening in most of the Black Sea. In 1970 there were 26 different kinds of fish that the fishermen can catch, and they are all small fish Thirty years ago the sun could shine through 60 meters of clear water. Now the water is clear for only 10 to 30 meters . The normal ecological balance has been distributed. Having so many microscopic plants as food, the number of jellyfish has exploded throughout the sea. Because swimming in water with many jellyfish is not very pleasant, the tourism economy is negatively affected. Solving these environmental problems will require international cooperation and much effort. International environmental agreements need to be made that require that polluted water can be cleaned before it is let into rivers that flow to the sea and also that limit the amount of fish that are caught.

As a result of last year accidents in the Black Sea the problem has became even graver.

Yarmak L.P. *EL adviser*

AUS DER GESCHICHTE DEUTHSCHLANDS: PREUßENS KRIEGE UND DIE REICHSGRŰN

Swiridok I., *Gr.ЖТ-72*

Als der preußische Kőnig Wilhelm 1. 1862 Otto von Bismack zum Ministerpräsidenten berief, wurde es klar, daß es um die Führung Preußens in Deutschland ging.Bismark wollte die Einheit Deutschlands unter der Führung Preußens herstellen Staates.

—1863 wollte der König von Dänemark das Herzogtum Schleswig seinem Königreich einverleiben.Das bedeutete den Bruch vertraglicher Abmachungen .Es kam zum Krieg.

—Dänemark konnte nicht gewinnen und trat die Herzogfümer Schleswig und Holstein an die Siegermächte ab.

—1866 kam es zum Krieg zwischen Preußen und Österreich, in dem Preußen den entscheidenden Sieg errungen hat.

—Preußen war nun der mächtigste deutsche Staat.Bismark sorgte dafür,dass sich 1867 alle deutschen Staaten nördlich des Mains zu einem "Norddeutschen Bund" zusammenschlossen, in dem die Stimme Preußens ein besonders Gewicht hatte.

—Frankreich, die stärkste Macht auf dem Kontinens,verfolgte voller Mißtrauen den Machtzuwachs Preußens. Bismark gelag es, den französischen Kaiser Napoleon 3. zu einem neutralen Verhalten zu bewegen. In der französchen öffentlichkeit wuchs die antipreußische Stimmung.

—Im Juni 1870 erreichen die Spannungen einen Höhepunkt.Die spanische Regierung hatte einen deutschen Prinzen zu ihrem König gewählt.

Obwohlt der deutsche Prinz daraufhin auf die Kandidatur verzichtete, verlangte Frankreich Garantien für die Zukunft.

—Bismark gab die Ablehnung des Königs in gekürzter und verschärfter Form an die Presse (Enser Depesche)

—Frankreich erklärte am 19. Juli 1870 Preußen den Krieg.

—Eine Welle nationaler Begeisterung vereinte die Deutschen nördlich und südlich der Mainlinie.

—Die Nigerlange führte Gespräche mit den süddeutschen Fürhsten , um ihre Zustimmung zur Gründung eines gmeinsamen deutschen Reiches zu erlangen.

Saizewa I.O., *Wissenschaftsleiterin*

RECYCLING GLASS

Baranov S. P., Perepadya O. V., *students I 71*

The subject under discussion is glass recycling. We don't want to be buried under tons of empty bottles and food containers. Besides, being environmentally friendly we think it's time to stop depleting our natural resources (as glass is a natural product) and to save energy needed for production. The manufacture of glass is a process which is far from being energy-saving.

Each day nearly 13 million glass jars and bottles are recycled in America, but not all types of glass can be recycled. Most soda bottles, food containers, beer, wine, and liquor bottles, and juice containers can be recycled - either through curbside recycling programs or community drop-off centers.

Nowadays glass is much less expensive and is taken for granted as a packaging material in addition to its use in windows and other applications. New glass is made from a mixture of four main ingredients: sand, soda ash, limestone and other additives. These additives include iron for colour (brown or green), chromium and cobalt for colour (green and blue respectively).

The manufacture of glass uses energy in the extraction and transportation of the raw materials, and during processing as materials have to be heated together to a very high temperature. Large amounts of fuel are used and the combustion of these fossil fuels produces carbon dioxide - a greenhouse gas. In 2002 the glass industry consumed a total of 8611,000,000 kWh of energy including electricity and carbon dioxide emissions totalled 1.8 million tonnes from the fossil fuels burnt in the factories. An efficient furnace will require 4 GJ of energy for each tonne of glass melted.

Glass can be recycled indefinitely as part of a simple but hugely beneficial process, as its structure does not deteriorate when reprocessed. In the case of bottles and jars, up to 80% of the total mixture can be made from reclaimed scrap glass, called "cullet". Cullet from a factory has a known composition and is recognised as domestic cullet from bottle banks it is known as foreign and its actual properties will not be known.

If recycled glass is used to make new bottles and jars, the energy needed in the furnace is greatly reduced. After accounting for the transport and processing needed, 315kg of CO_2 is saved per tonne of glass melted.

Glass cullet can be used in the production of new glass bottles. The rise in recycling means that in 2003 the average jar or bottle made in the UK contained 38 per cent recycled glass, four per cent up on 2002. There is also the option of reusing bottles and jars as storage containers for home made wine, beer or jam.

And now we would like to call the most important steps of glass production.

Glass and what it is made of:

Glass is a natural product. It's most important raw materials are quartz, sand, lime and sodium carbonate. To manufacture its glass products, the UK uses primarily recycled glass - depending on the colour, up to 80%.

The melting process:

The recycled glass, with the addition of new raw materials, is melted down at a temperature of 1'580°C. The most important source of energy for this process, depending on the glass works, is either natural gas or heavy oil.

Moulding the glass container:

Glowing-hot drops of glass, cut off from the continuously flowing mass of molten glass, are channeled through a gutter into the preliminary, or parison, mould. In the final mould, the preformed glass is given its definitive shape by adding air pressure.

Annealing:

The moulded bottle - still glowing red-hot - is then slowly and uniformly cooled off in the annealing oven, with adjustments made for any material imbalances. With a surface finishing process, the containers are given some additional protection from scratches, and their resistance to breaking is also improve.

Quality control checks:

After leaving the annealing furnace, all the glass containers are checked - optically, mechanically and electronically - for defects. If the quality is not up to standard, the run is returned to the melting furnace, no questions asked, and melted down once more.

Transport packaging:

After the quality control checks are completed, the glass containers are then loaded onto pallets in an automated process and then shrink-wrapped.

Bashlak I.A. E L adviser

SPEECH RECOGNITION

Yeskov I. E., *student*

Speech recognition technologies allow computers equipped with microphones to interpret human speech, e.g. for transcription or as a control method.

Such systems can be classified as to whether they require the user to "train" the system to recognize their own particular speech patterns or not, whether the system can recognize continuous speech or requires users to break up their speech into discrete words, and whether the vocabulary the system recognizes is small (in the order of tens or at most hundreds of words), or large (thousands of words).

Systems requiring a short amount of training can (as of 2001) capture continuous speech with a large vocabulary at normal pace with an accuracy of about 98% (getting two words in one hundred wrong), and different systems that require no training can recognize a small number of words (for instance, the ten digits of the decimal system) as spoken by most English speakers. Such systems are popular for routing incoming phone calls to their destinations in large organizations.

Commercial systems for speech recognition have been available off-the-shelf since the 1990s. However, it is interesting to note that despite the apparent success of the technology, few people use such speech recognition systems.

It appears that most computer users can create and edit documents more quickly with a conventional keyboard, despite the fact that most people are able to speak considerably faster than they can type. Additionally, heavy use of the speech organs results in vocal loading.

Some of the key technical problems in speech recognition are that:

- Inter-speaker differences are often large and difficult to account for. It is not clear which characteristics of speech are speaker-independent.
- The interpretation of many phonemes, words and phrases are context sensitive. For example, phonemes are often shorter in long words than in short words. Words have different meanings in different sentences, e.g. "Philip lies" could be interpreted either as Philip being a liar, or that Philip is lying on a bed.

Chuchilina L. M. EL *adviser*

THE INTERNET

Yelkanov A., *gr. IN-71*

The Internet is a worldwide, publicly accessible series of interconnected computer networks that transmit data by packet switching using the standard Internet Protocol (IP). It is a "network of networks" that consists of millions of smaller domestic, academic, business, and government networks, which together carry various information and services, such as electronic mail, online chat, file transfer, and the interlinked web pages and other resources of the World Wide Web (WWW).

An early popular web browser was ViolaWWW, based upon HyperCard. It was eventually replaced in popularity by the Mosaic web browser. In 1993, the National Center for Supercomputing Applications at the University of Illinois released version 1.0 of Mosaic, and by late 1994 there was growing public interest in the previously academic, technical Internet. By 1996 usage of the word Internet had become commonplace, and consequently, so had its misuse as a reference to the World Wide Web.

Examples of early university Internet communities are Cleveland FreeNet, Blacksburg Electronic Village and NSTN in Nova Scotia. Aside from the complex physical connections that make up its infrastructure, the Internet is facilitated by bi- or multi-lateral commercial contracts (e.g., peering agreements), and by technical specifications or protocols that describe how to exchange data over the network. Indeed, the Internet is essentially defined by its interconnections and routing policies.

As of December 30, 2007, 1,319 billion people use the Internet according to Internet World Stats. Writing in the Harvard International Review, philosopher N.J. Slabbert, a writer on policy issues for the Washington, D.C.–based Urban Land Institute, has asserted that the Internet is fast becoming a basic feature of global civilization, so that what has traditionally been called "civil society" is now becoming identical with information technology society as defined by Internet use.

There have been many analyses of the Internet and its structure. For example, it has been determined that the Internet IP routing structure and hypertext links of the World Wide Web are examples of scale-free networks.

Similar to the way the commercial Internet providers connect via Internet exchange points, research networks tend to interconnect into large subnetworks.

The Internet has made possible entirely new forms of social interaction, activities and organizing, thanks to its basic features such as widespread usability and access.

Social networking websites such as Facebook and MySpace have created a new form of socialization and interaction. Users of these sites are able to add a wide variety of items to their personal pages, to indicate common interests, and to connect with others. It is also possible to find a large circle of existing acquaintances, especially if a site allows users to utilize their real names, and to allow communication among large existing groups of people.

Some governments, such as those of Cuba, Iran, North Korea, Myanmar, the People's Republic of China, and Saudi Arabia, restrict what people in their countries can access on the Internet, especially political and religious content. This is accomplished through software that filters domains and content so that they may not be easily accessed or obtained without elaborate circumvention.

In Norway, Denmark, Finland and Sweden, major Internet service providers have voluntarily (possibly to avoid such an arrangement being turned into law) agreed to restrict access to sites listed by police. While this list of forbidden URLs is only supposed to contain addresses of known child pornography sites, the content of the list is secret.[citation needed]

Many countries, including the United States, have enacted laws making the possession or distribution of certain material, such as child pornography, illegal, but do not use filtering software.

According to a June 2007 article in Discover magazine, the combined weight of all the electrons moved within the Internet in a day is 0.2 millionths of an ounce. Others have estimated this at nearer 2 ounces (50 grams).

Alexahina T.O. *EL adviser*

WHAT DOES A TECHNOLOGICALLY LITERATE PERSON MEAN?

Shokolenko V.V., *gr. E-71*

As you well know we live in a high-tech world. There are so many different inventions and tools around us. They make our life easier, more different and more interesting. A man's intellect comes to such genial and progressive inventions like an engine of inner combustion, radio, television, computer and others. But inspire of their usefulness these genial creations have both good and bad sides of influence on people's health and environment.

I think a technologically literate person means one who understands all advantages and disadvantages of having some useful things for our mind. For example I am a technologically literate person so I have to understand that driving a car to my work is useless for my health but riding a bicycle improves our health level.

Knowledge of different device constructions is an integer part of being a technologically literate person but it doesn't give you a status of such a human.

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Everybody knows that chemical, industrial and energetic productions cause a lot of ecological problems like global warming or acid rains. It also causes a great damage on people's health and lives. To my mind a technologically literate person will try to avoid these problems using the way of improving or building purification plants.

Being a technologically literate person also means to be responsible for all technical inventions you have. It means you have to understand how to mend or use them. For example you have an MP3-player but it has broken because of your absent-mindness. But you are a technologically literate person so you can easily repair it and enjoy listening to your favourite music.

It's a fact that there are many technologically literate people but our fast-paced development requires more people like these.

Soon I think our lives will become much easier than it's now because they will be improved rather rapidly. These newest inventions will be reasons for cleaner air and water or other pieces of environment.

I am sure our world will change radically in future twenty years because we (I mean students) are bright and carefree future of our Earth. The future is impossible without technologically literate people.

Marchenko D.O.,EL *advisor*

Сумський державний університет

TO PROTECT OUR ENVIRONMENTt

Novatarska N., *group EK-72*

Our environment offers an abundance of subject matter for discussion. The problems and prospects of the blue planet interest not only scientist and futurologists, but also politicians, industry, the public-and above all, young people! There is hardly a young person who is not conserved with the preservation of our natural habitat. To recognize environmental problems and master them, to reduce and avoid environmental pollution, to discover and develop ecologically sound technologies- there are the essential building blocks for our future.

Whether scientist or politicians. Bankers or student, whether Greek, Norwegian, Hungarian, or Finn... all are encouraged to make a contribution towards protecting the environment. We are to stop pollution. So, we can grow plants and trees, to purify waste, to start urgent campaigns in order to preserve environment.

Nowadays there are many different pressure and interests groups in many countries, which try to find solutions to the problems of pollution at the national and international level. So they are groups of people with a common interest in trying to draw the public attention to environment problems, to influence the government decisions.

Greenpeace is a very famous pressure group. It started functioning in 1971. Its headquarters are at Amsterdam, but it operates in 25 countries worldwide. The aim of Greenpeace is to protect wildlife of toxic wastes, nuclear tests.

«Friends of the Earth» (FoE) is one of the British pressure groups with an international reputation. Its general aim to conserve the planet`s resources and reduce pollution. FoE was established in 1971 and now it operated in 44 countries worldwide. It campaigns among other things, for recycling and renewable energy, and the destruction of wildlife and habitat. The main campaigning issues of the FoE are:

- the protection of all animals and plants in danger of extinction;
- an end to the destruction of wildlife and habitants;
- a program of energy conservation measures, etc.

Yarmak L.P., *EL adviser*

EINE PRAGMATISCHE GENERATION DEUTSCHLANDS

Kalushna M.,*Gr.ЖТ-72*

Wer jung ist, hat die ganze Lebensperspektive noch vor sich. Das ist reizvoll. Aber Jungsein heißt auch, eine große Verantwortung für sich selbst zu haben. Wir leben in einer offenen Gesellschaft mit vielen unübersichtlichen Angeboten. Die Wahlmöglichkeiten sind schön, wenn man mit ihnen souverän umgehen kann. Für diejenigen, die daran scheitern, ist Jungsein sehr, sehr anstrengend und belastend. 69 Prozent der deutschen Jugendlichen haben Angst, ihren Arbeitsplatz zu verlieren beziehungsweise keine adäquate Beschäftigung zu finden, berichtet die neue Shell Jugendstudie. Die Jugend ist viel pessimistischer als noch vor vier Jahren bei Ihrer letzten Studie. In der allgemeinen Jugendarbeitslosigkeit-Statistik liegt Deutschland im europäischen Vergleich noch im besseren Drittel. Diese erklärt, warum hier nicht Hunderttausende Schüler und Studenten auf die Straße gehen und gegen Arbeitsmarktreformen demonstrieren, wie es in Frankreich im März 2006 zu beobachten war. Gebildete Jugendliche nehmen meist eine pragmatische Haltung ein. Leistung, Sicherheit und Macht sind ihnen wichtig. Die Werte Fleiß und Ehrgeiz gewinnen an Bedeutung. Die Jugendlichen wollen nicht die Gesellschaft verändern, sondern konkrete Probleme in Angriff nehmen, die mit persönlichen Chancen verbunden sind.Schätzungsweise zehn bis 15 Prozent der Jugendlichen sind schwer belastet. Der Druck sucht sich ein Ventil. Wer es nicht schafft, die Herausforderungen zu bewältigen, wird unter Umständen psychisch krank, greift zu Drogen oder wird gewalttätig. Im Osten Deutschlands äußern sich 57 Prozent der Jugendlichen unzufrieden mit dem Funktionieren der Demokratie. Das ist ein Warnsignal.Die deutschen Jugendlichen halten sich fern von Parlamenten und Parteien. Sie befürworten zwar demokratische Strukturen, wollen aber nicht in ihnen mitmachen. Durch unser in die Länge gestrecktes Ausbildungssystem haben wir in Deutschland eine besondere Form der Pazifizierung jugendlicher90 Prozent der Jugendlichen verstehen sich gut mit ihren Eltern. Im Alter von 18 bis 21 Jahren leben drei Viertel noch zu Hause. 71 Prozent würden ihre Kinder genauso erziehen, wie ihre Eltern es getan haben. In ökonomisch unsicheren Zeiten gibt die Familie Sicherheit, sozialen Rückhalt und emotionale Unterstützung.

Jugendkulturen waren lange Zeit "Jungskulturen". Gerade in Szenen, in denen es sportlich etwas anspruchsvoller oder gar gewalttätig zugeht, hatten Mädchen höchstens als optisch nettes Beiwerk etwas zu suchen. Immer mehr Mädchen schwingen sich selbst aufs Skateboard Eine deutsche erfolgreiche Skaterin ist Rodi Münzel. Auch für sie ist Eveline Bouillart ein Vorbild. Dabei

ist sie längst selbst eines, was Fliegen lernen von Kim Koch, der erste Film, der sich exklusiv mit skatenden Mädchen in Deutschland beschäftigt, dokumentiert. Neben Rodi kommen auch noch Nina Braun, die mit "Sumo" das erste und bisher einzige Skate-Label für Frauen gründete, und Ester Vonplon, Fotografie-Studentin und Skaterin, darin zu Wort. Insgesamt ist die Thematik "Mädchen in Jugendkulturen" in Deutschland noch nicht so gut erforscht und dokumentiert wie in den anglo-amerikanischen Ländern. Soziologen und Jugendforscher konstatieren gerade eine Eroberung der gesamten Street Art-Szene durch Mädchen und bewerten dies als positiven Akt der Emanzipation. Dagegen ist im Falle von rechtsextremen, prügelnden Mädchen noch nicht klar, ob hier auch von Emanzipation geredet werden kann. 57 Prozent der Gymnasiasten, aber nur 38 Prozent der Hauptschüler blicken zuversichtlich in die Zukunft. Die Jugend 2006 blickt nicht mehr so optimistisch in die Zukunft wie die Jugend 2002: 69 Prozent haben Angst vor Arbeitslosigkeit, vier Jahre zuvor waren es nur 55 Prozent. In als unsicher empfundenen Zeiten gewinnt die Familie an Bedeutung.

Saizewa I.O., *Wissenschaftsleiterin*

INNOVATIONS IN THE NEW INTEL'S PROCESSORS

Popov A., *gr. IN-71*

Marking the next step in Intel's "tick-tock" product strategy and cadence to deliver a new process technology with an enhanced microarchitecture or entirely new microarchitecture every year, Intel Corporation will begin producing its next-generation Penryn family of processors. These new processors benefit from enhancements to the Intel® Core™ microarchitecture and also Intel's industry-leading 45nm Hi-k process technology with its hafnium-based high-K + metal gate transistor design, which results in higher performance and more energy-efficient processors.

PENRYN FAMILY MICROARCHITECTURE INNOVATIONS

Technical Marvel -- 45nm next-generation Intel® Core™2 quad-core processors will have 820 million transistors. Thanks to our high-k metal transistor invention, think of 820 million more power efficient light bulbs going on and off at light-speeds. The dual-core version has a die size of 107mm2, which is 25 percent smaller than Intel's current 65nm products -- and quarter of the size of the average U.S. postage stamp -- and operate at the same or lower power than Intel's current dual core processors.

Deep Power Down for Energy Savings, Improved Battery Life -- The mobile Penryn processor has a new advanced power management state called

Deep Power Down Technology that significantly reduces the power of the processor during idle periods such that internal transistor power leakage is no longer a factor. This helps extend battery life in laptops. This is a major advancement over previous generation industry leading Intel mobile processors.

Intel Dynamic Acceleration Technology Enhanced Performance for Single Threaded Apps -For the mobile Penryn processor, Intel has enhanced the Intel® Dynamic Acceleration Technology available in current Intel Core 2 processors. This feature uses the power headroom freed up when a core is made inactive to boost the performance of another still active core.

Speeding Up Video, Photo Imaging, and High Performance Software -- Penryn includes Intel® Streaming SIMD Extensions 4 (SSE4) instructions, the largest unique instruction set addition since the original SSE Instruction Set Architecture (ISA). This extends the Intel® 64 instruction set architecture to expand the performance and capabilities of the Intel® Architecture.

Enhanced Intel® Virtualization Technology -- Penryn speeds up virtual machine transition (entry/exit) times by an average of 25 to 75 percent. This is all done through microarchitecture improvements and requires no virtual machine software changes. Virtualization partitions or compartmentalizes a single computer so that it can run separate operating systems and software, which can better leverage multicore processing power, increase efficiency and cut costs by letting a single machine act as many virtual "mini" computers.

Higher Frequencies -- Penryn family of products will deliver higher overall clock frequencies within existing power and thermal envelopes to further increase performance. Desktop and server products will introduce speeds at greater than 3GHz.

Fast Division of Numbers - Penryn-based processors provide fast divider performance, roughly doubling the divider speed over previous generations for computations used in nearly all applications through the inclusion of a new, faster divide technique called Radix 16. The ability to divide instructions and commands faster increases a computer's performance.

Larger Caches -- Penryn processors include up to a 50 percent larger L2 cache with a higher degree of associativity to further improve the hit rate and maximize its utilization. Dual-core Penryn processors will feature up to a 6MB L2 cache and quad-core processors up to a 12MB L2 cache. Cache is a memory reservoir where frequently accessed data can be stored for more rapid access. Larger and faster cache sizes speed a computer's performance and response time.

Alexahina T.O. *EL adviser*

THE ARTIFICIAL INTELLIGENCE

Yakushchenko I.V. *student, group PhT-71*

What do we mean by the creation of Artificial Intelligence? It is the science and engineering of making intelligent machines, especially intelligent computer programs. It is related to the similar task of using computers to understand human intelligence. Under the Artificial Intelligence we mean the computational part of the ability to achieve goals in the world. Varying kinds and degrees of intelligence occur in people, many animals and some machines. But the problem is that the scientists cannot yet characterize in general what kinds of computational procedures they want to call intelligent.Intelligence involves mechanisms, and AI research has discovered how to make computers operate some of them and not others. If doing a task requires only mechanisms that are well understood today, computer programs can give very impressive performances on these tasks. Such programs should be considered like ``somewhat intelligent".

The Artificial Intelligence sometimes but not always is simulation of the human intelligence. On the one hand, we can learn something about how to make machines solve problems by observing other people or just by observing peopple's own methods. On the other hand, most work in AI involves studying the problems the world presents to intelligence rather than studying people or animals. AI researchers are free to use methods that are not observed in people or that involve much more computing than people can do.

Why people want to create such thing? For what they need it?The answer is very simple - using the Artificial Intelligence will give us more abilities to auotimise the process; to control different process, like scientific researches, finding and modyfing information.

The Artificial Intelligence exists nowadays, but people need more. In ideal, the Artificial Intelligence must learn on its own mistakes, on the information which it gets from outside.

Chuchilina L.M.*EL adviser*

Секція студентів II курсу
MASS MEDIA IN BRITAIN

Chernova D., *gr. JT 61*

The media play a central role in Britain's daily life, informing and educating, questioning and challenging – and of course – entertaining. In recent years the availability of more radio frequencies, together with satellite, cable and microwave transmissions, has already made a greater number of local, national and international services possible. The transition from analogue to digital transmission technology is now expanding this capacity enormously. The Internet is providing, increasingly, an additional medium for information, entertainment and communication.

Television and Radio

Broadcasting in Britain has traditionally been based on the principle that it is a public service accountable to people. While retaining the essential public service element, it now also embraces the principles of competition and choice:

the BBC (British Broadcasting Corporation), which broadcasts television and radio programmes;

the ITC (Independent Television Commission), which licenses and regulates commercial television services, including cable and satellite services.

the Radio Authority, which licenses and regulates commercial radio services, including cable and satellite.

The three bodies work to broad requirements and objectives defined and endorsed by Parliament, but are otherwise independent in their daily conduct of business. Television viewing is by far Britain's most popular leisure pastime:

over 97 per cent of households have at least one TV set. British television productions are sold world – wide.

The BBC provides two complementary national terrestrial television networks: BBC 1 and BBC 2, which transmit 24 hours a day. It also provides a range of digital channels, including BBC News 24 and BBC Choice. BBC Network Radio serves an audience of 29 each week, transmitting 24 hours a day on its five national networks. BBC has 39 local radio stations serving England and the Channel Islands, and regional and community radio services in Scotland, Wales and Northern Ireland. BBC World Service broadcasts by radio in English and 42 other languages world – wide. BBC Worldwide Television is one of Europe's largest exporters of television programmes.

The ITC licenses and regulates three commercial television services – Channel 3 and Channel 4 (in Wales the corresponding service is S4C), which complement each other, and Channel 5 – all financed by advertising and sponsorship.

Nefedchenko O.I. *EL adviser*

FROM THE HISTORY OF LASERS

Dumchikov L, *ES-61*

A **laser** is a quantum-mechanical device that produces coherent radiation. A laser is composed of an active laser medium, or gain medium, and a resonant optical cavity. The gain medium transfers external energy into the laser beam. It is a material of controlled purity, size, concentration, and shape, which amplifies the beam by the quantum mechanical process of stimulated emission, predicted by Albert Einstein, while he studied the photoelectric effect. The gain medium is energized, or pumped, by an external energy source.

Some types of lasers, such as dye lasers and vibronic solid-state lasers can produce light over a broad range of wavelengths; this property makes them suitable for generating extremely short pulses of light, on the order of a few femtoseconds (10^{-15} s).

It is understood that the Acronym Light Amplification by Stimulated Emission of Radiation is typically used in the expansive sense, as photons of any energy; it is not limited to photons in the visible spectrum. Hence there are infrared lasers, ultraviolet lasers, X-ray lasers, etc. For example, a source of atoms in a coherent state can be called an atom laser. Because the microwave equivalent of the laser, the maser, was developed first, devices that emit microwave and radio frequencies are usually called masers. In early literature, particularly from researchers at Bell Telephone Laboratories, the laser was often called the optical maser. This usage has since become uncommon, and as of 1998 even Bell Labs uses the term laser.

The term "laser" was first introduced to the public in Gould's 1959 conference paper "The LASER, Light Amplification by Stimulated Emission of Radiation". The first working laser was made by Theodore H. Maiman in 1960 at Hughes Research Laboratories in Malibu, California, beating several research teams including those of Townes at Columbia University, Arthur L. Schawlow at Bell Labs, and Gould at a company called TRG (Technical Research Group). Maiman used a solid-state flashlamp-pumped synthetic ruby crystal to produce red laser light at 694 nanometres wavelength. Maiman's laser, however, was only capable of pulsed operation due to its three energy level pumping scheme.

When lasers were invented in 1960, they were called "a solution looking for a problem". Since then, they have become ubiquitous, finding utility in thousands of highly varied applications in every section of modern society, including consumer electronics, information technology, science, medicine, industry, law enforcement, entertainment, and the military.

In addition to movies and popular culture, laser misconceptions are present in some popular science publications or simple introductory explanations.

Supervisor Mulina N.I., *As. Prof.*

NANOTECHNOLOGY

Bulatov S., *Gr.EP-61*

The term "nanotechnology" was defined by Tokyo Science University Professor Norio Taniguchi in a 1974 paper (N. Taniguchi "On the Basic Concept of 'Nano-Technology'", 1974.) as follows: "'Nano-technology mainly consists of the processing of separation, consolidation and deformation of materials by one atom or by one molecule."

Using nanotechnology knowledge brought to life new ways of current research such as:

interface and Colloid science has given rise to many materials which may be useful in nanotechnology, such as carbon nanotubes and other fullerenes, and various nanoparticles and nanorods;

DNA nanotechnology utilizes the specificity of Watson-Crick basepairing to construct well-defined structures out of DNA and other nucleic acids;

nanoscale materials can also be used for bulk applications; most present commercial applications of nanotechnology are of this flavor;

synthetic chemical methods can also be used to create synthetic molecular motors, such as in a so-called nanocar;

programmable matter based on artificial atoms seeks to design materials whose properties can be easily and reversibly externally controlled and other researches;

programmable matter based on artificial atoms seeks to design materials whose properties can be easily and reversibly externally controlled;

In the same way were founded new tools and techniques to looking for nanomaterials. There are several important modern developments. The atomic force microscope (AFM) and the Scanning Tunneling Microscope (STM) are two early versions of scanning probes that launched nanotechnology. Atomic force microscopes and scanning tunneling microscopes can be used to look at surfaces and to move atoms around. There are other types of scanning probe microscopy, all flowing from the ideas of the scanning confocal microscope developed by Marvin Minsky in 1961 and the scanning acoustic microscope (SAM) .

Burenko T. N. *EL Adviser*

GLOBAL WARMING

Smetanenko J.Y., *student*

Global warming is the observed increase in the average temperature of the Earth's atmosphere and oceans in recent decades, and its projected continuation. Models referenced by the Intergovernmental Panel on Climate Change (IPCC) predict that global temperatures are likely to increase by 1.1 to 6.4 °C (2.0 to 11.5 °F) between 1990 and 2100. The uncertainty in this range results from both the difficulty of predicting the volume of future greenhouse gas emissions and uncertainty about climate sensitivity and feedback effects.

An increase in global temperatures can in turn cause other changes, including a rising sea level and changes in the amount and pattern of precipitation. These changes may increase the frequency and intensity of extreme weather events, such as floods, droughts, heat waves, hurricanes, and tornados. Other consequences include higher or lower agricultural yields, glacier retreat, reduced summer stream flows, species extinctions and increases in the ranges of disease vectors. Warming is expected to affect the number and magnitude of these events; however, it is difficult to connect particular events to global warming. Although most studies focus on the period up to 2100, even if no further greenhouse gases were released after this date, warming (and sea level) would be expected to continue to rise for more than a millennium, since CO2 has a long average atmospheric lifetime. Causes of global warming.

The climate system varies through natural, internal processes and in response to variations in external "forcing" from both human and natural causes. These forcing factors include solar activity, volcanic emissions, variations in the earth's orbit (orbital forcing) and greenhouse gases. The detailed causes of the recent warming remain an active field of research, but the scientific consensus identifies greenhouse gases as the main influence. The major natural greenhouse gases are water vapor, carbon dioxide, methane, and ozone.

Adding carbon dioxide (CO_2) or methane (CH_4) to Earth's atmosphere, with no other changes, will make the planet's surface warmer. Greenhouse gases create a natural greenhouse effect without which temperatures on Earth would be an estimated 30 °C (54 °F) lower, so that Earth would be uninhabitable. It is therefore not correct to say that there is a debate between those who "believe in" and "oppose" the greenhouse effect as such. Rather, the debate concerns the net effect of the addition of greenhouse gases when allowing for compounding or mitigating factors. Inevitable consequences of global warming: damage to human health; severe stress on forests, wetlands, and other natural habitats; dislocation of agriculture and commerce; expansion of the earth's deserts; melting of polar ice caps and consequent rise in the sea level; more extreme weather events. That's why global warming is a problem that worries a lot of scientists in all countries.

Morozova I.A. *EL adviser*

VIDEO CARD AS A PART OF A COMPUTER SYSTEM

Ilchyshyn B., *gr. IN-63*

A video card, also referred to as a graphics accelerator card, display adapter, graphics card, and numerous other terms, is an item of personal computer hardware whose function is to generate and output images to a display. It operates on similar principles as a sound card or other peripheral devices.

The term is usually used to refer to a separate card that is plugged into a slot on the computer's motherboard, as opposed to a graphics controller integrated into the motherboard chipset. An integrated graphics controller may be referred to as an "integrated graphics processor" (IGP).

Video cards' history starts in the 1960s, when printers were replaced with screens as visualization element. Video cards were needed to create the first images.

The first video card, which was released with the first IBM PC, was developed by IBM in 1981. The MDA (*Monochrome Display Adapter*) could only work in text mode representing 25x80 lines in the screen. It had a 4KB video memory and just one color.

A video card consists of a printed circuit board on which the components are mounted. These include:

Graphics processing unit (GPU). A GPU is a dedicated graphics microprocessor optimized for floating point calculations which are fundamental to 3D graphics rendering.

Video memory. If the video card is integrated in the motherboard, it will use the computer RAM memory (lower throughput). If it is not integrated, the video card will have its own video memory which is called Video RAM or VRAM.

Video BIOS. The video BIOS or firmware chip is a chip that contains the basic program that governs the video card's operations and provides the instructions that allow the computer and software to interface with the card.

Outputs. The most common connection systems between the video card and the computer display are SVGA, DVI, S-Video.

Plokhuta T. M., *EL adviser*

WIRELESS CONNECTION

Konic S., *Gr. ES-61*

Bluetooth is an industrial specification for wireless personal area networks (PANs). Bluetooth provides a way to connect and exchange information between devices such as mobile phones, laptops, PCs, printers, digital cameras, and video game consoles over a secure, globally unlicensed short-range radio frequency. The Bluetooth specifications are developed and licensed by the Bluetooth Special Interest Group.

Bluetooth is a standard and communications protocol primarily designed for low power consumption, with a short range based on low-cost transceiver microchips in each device. Bluetooth enables these devices to communicate with each other when they are in range. The devices use a radio communications system, so they do not have to be in line of sight of each other, and can even be in other rooms, as long as the received transmission is powerful enough. Bluetooth uses the microwave radio frequency spectrum in the 2.4 GHz to 2.4835 GHz range. Maximum power output from a Bluetooth radio is 1 mW, 2.5 mW, and 100 mW for Class 3, Class 2, and Class 1 devices respectively, which puts Class 1 at roughly the same level as cell phones, and the other two classes much lower.

The Bluetooth specification was developed in 1994 by Jaap Haartsen, who was working for Ericsson Mobile Platforms in Lund, Sweden. The specification is based on frequency-hopping spread spectrum technology.

The specifications were formalized by the Bluetooth Special Interest Group (SIG), organized by Mohd Syarifuddin. Nowadays we have such versions of Bluetooth specification: Bluetooth (1.0, 1.0B, 1.1, 1.2, 2.0, 2.1, 3.0), high speed, and ultra low power. In future we will have: broadcast channel (enables Bluetooth information points), topology management (enables the automatic configuration of the piconet topologies), alternate MAC PHY enables (the use of alternative MAC and PHY's for transporting Bluetooth profile data), QoS improvements (audio and video data to be transmitted at a higher quality). Bluetooth technology already plays a part in the rising Voice over IP (VOIP) scene, with Bluetooth headsets being used as wireless extensions to the PC audio system. As VOIP becomes more popular, and more suitable for general home or office users than wired phone lines, Bluetooth may be used in cordless handsets, with a base station connected to the Internet link. Pairs of devices may establish a trusted relationship by learning (by user input) a shared secret known as a *passkey*. In Bluetooth, key generation is generally based on a Bluetooth PIN, which has to be entered into both devices.

In order to use Bluetooth, a device must be compatible with certain Bluetooth profiles. These define the possible applications and uses of the technology.

Mulina N. I., *adviser As.Prof.*

POLLUTION OF ENVIRONMENT

Linnik O., *gr.ЕФ - 64*

Pollution is probably the most important problem in the world today. One of the reasons it is so important to human beings is that we know that we brought about pollution. Pollution is a human creation. Since the beginning of time, whenever human beings changed their environment, they were greatly affected.

Pollution itself is a very broad category, and there are many different kinds of pollution. One of those is air pollution. Air pollution is probably the longest lasting type of pollution there is. Air pollution occurs when wastes make the air dirty. People produce most of the waste that cause air pollution. Such waste can be in the form of gases or be particulates (particles of solid or liquid manner). These substance results chiefly from burning fuel to power motor vehicles and to heat buildings. Industrial processes and the burning of garbage also contribute to air pollution.

A further result of air pollution is acid rain. Acid rain basically appears when factories release high levels of sulfur into the air. The sulfur then combines with rainwater to form a weak sulfuric acid. Acid rain itself cannot harm humans, but it can harm our environment and our quality of life. Over time, the acid rain will kill plants, weaken structures and homes used by humans, and can even kill life in entire lakes and rivers. And since studies have yet to be completely conclusive, nobody knows how it affects us physically in the long run. Since acid rain can be prevented by government regulation, stopping the release of sulfur into the air is a definite first step to curbing acid rain.

The greenhouse effect is a benign feature of the ecosystem. Certain gases in the atmosphere, such as CO_2, CH_4, N_2O, O_3 allow the sunlight reach the earth but prevent the heat from escaping and thus the temperature of the earth remains stable. The sensitivity of the climatic system to greenhouse gases is such that the equivalent of a doubling of CO_2 could ultimately increase the average global temperature by somewhere between 1°C and 5°C.

Gladchenko O.R., *EL adviser*

COLOR SYSTEMS AND SPACES

Golovan A.,gr. IN-61

Color is the visual perceptual property of humans. Color derives from the spectrum of light. The science of color is called chromatics. Chromatics include the perception of color by the human eye, the origin of color in materials, color theory in art and the physics of light.

Light is electromagnetic radiation in the visible range. Electromagnetic radiation is characterized by its wavelength and its intensity. The familiar colors of the rainbow in the spectrum include all those colors that can be produced by visible light of a single wavelength only.

A color model is an abstract mathematical model describing the way colors can be represented as numbers.

A mathematical way to describe color information using color model is called color space.

The gamut is the set of possible colors within a color system. Gamut in combination with the color model, defines a new color space.

CIE XYZ color space is one of the first mathematically defined color spaces. CIE XYZ color space can be represented as a prism.

There are many various types of color systems in the world. The RGB color model is an additive color model in which red, green, and blue light are added together in various ways to reproduce a broad array of colors. With red, green and blue the largest portion of the human color space can be captured.

RGB model is poorly aligned with the color-making attributes recognized by human vision.

HSV color model is a transformation of an RGB color space and often used by artists.

CMYK is a subtractive color model, used in color printing, also used to describe the printing process itself. To save money on ink, and to produce deeper black tones, unsaturated and dark colors are produced by substituting black ink for the combination of cyan, magenta and yellow. In the CMYK model, white is the natural color of the paper background, while black results from a full combination of colored inks.

Lab color model was designed to approximate human vision.

Plokhuta T. M., *EL adviser*

THE CONCEPTUAL CELL PHONES ARE NEW WONDERS OF ENGINEERING

Klipa K., *gr.ЕФ-62*

The technology does not stand on one spot, it develops very quickly. Every year due to the scientists' elaborations more and more new inventions appear in the world making our life easier and better. Cell phones can be considered to be a usual thing nowadays, everyone has it, and, besides, they are not prefect. But these conceptual phones are the latest technique thing. The inventors used all their fantasy to create the phones, which would take into account our needs and wishes.

1. Tarati is a very strange conceptual cell phone: it does not have function keys at all. In their place one can find simple holes. Just poke your finger into a certain hole and Tarati dials a chosen number obediently. The authors of this a bit absurd phone consider that it will be much more interesting to dial numbers in such a way.

2. Nokia designed a new cell phone – Scentsory (a puzzling name was formed from two English words: "scent" and "scensory"). Don't even doubt- this is a true mobile phone! It reminds a paper airplane only when it is folded. But unfolded (unpacked) it contains both keyboard and display inside. Besides, Nokia specialists, who had created such a "wonder", made it possible to exhale a pleasant scent. And every number from the telephone notebook can have its own aroma.

3. The conceptual cell phone Domino from the design studio Syntes, is obviously destinated for the inveterate dominoes players. Instead of numbers one can find dots on its function keys, the same as on the dice. The amount of dots corresponds to the certain number. This "dominoes" phone is very thin and has a fitted camera (unfortunately, the authors say nothing about its capability).

4. We should save the electric energy. So Chinese scientists presented the first cell phone in the world on the solar battery. It is quite clear from the name of the phone that you don't have to charge it with the electric power; it derives energy from the sun. However, one can charge this device from any other source of light.

5. Freedom Phone function is to be the disposable (valid for one occasion only) telephone for the travellers.

Gladchenko O.R. *EL adviser*

POLLUTION OF OUR PLANET

Zhuravel V., *gr.EF-61*

Pollution is the introduction by man into the environment of contaminants that causes harm or discomfort to humans or other living organisms, or damages the environment. Pollution can be in the form of chemical substances, or energy such as noise, heat, or light. Pollution is often categorized into point source and nonpoint source pollution.

In the hierarchy of controls, pollution prevention and waste minimization are more desirable than pollution control. Motor vehicle emissions are one of the leading causes of air pollution. China, the United States, Russia, Mexico, and Japan are the world leaders in air pollution emissions; however, Canada is the number two country, ranked per capita. Principal stationary pollution sources include chemical plants, coal-fired power plants, oil refineries, petrochemical plants, nuclear waste disposal activity, incinerators, large livestock farms (dairy cows, pigs, poultry, etc.), metal production factories, plastics factories, and other heavy industries.

Pollution can also be the consequence of a natural disaster. For example, hurricanes often involve water contamination from sewage, and petrochemical spills from ruptured boats or automobiles. Larger scale and environmental damage is not uncommon when coastal oil rigs or refineries are involved. Some sources of pollution, such as nuclear power plants or oil tankers, can produce widespread and potentially hazardous releases when accidents occur. In the case of noise pollution the dominant source class is the motor vehicle, producing about ninety percent of all unwanted noise worldwide.

Adverse air quality can kill many organisms including humans. Ozone pollution can cause respiratory diseases, cardiovascular diseases, throat inflammation, chest pain, and congestion. Water pollution causes approximately 14,000 deaths per day, mostly due to contamination of drinking water by untreated sewage in the developing countries. Oil spills can cause skin irritations and rashes. Noise pollution induces hearing loss, high blood pressure, stress, and sleep disturbance.

Gladchenko O.R., *EL adviser*

THE TRUTH OF EMOTIONAL INTELLECT

Kobzar Anastacia, *student*

The level of person development we determine by IQ results. But nowadays further with IQ, another characteristic is important. Emotional Intellect (EQ) helps in work which connected with people. Successful companies, firms and corporations pay a great attention to EQ. Scientists supposed that EQ is an essential part in achievement of general success. The Emotional Intellect consists of five components:

1. consciousness;
2. self-control;
3. motivations;
4. skills to put oneself on other people's place;
5. skills to work with different people.

All five features sound attractive practically for each person.

Skills of managing oneself.

1. The consciousness. The Emotional Intellect begins from this feature. The person who has a high degree of consciousness knows about his own weakness and doesn't scruple to speak about it.

2. The self-control. This feature, however, develops in other direction. People, possessing this feature, can control their own impulses, but often even direct them into needed direction.

3. The motivation. The desire to reach anything is such type of motivation, which leader greatly needs.

Skills to work with other people.

1. The skill to put oneself on place of other people. Further with skills of managing oneself, emotional intellect requires presence of mechanism of the interaction with people. Such mechanism begins with skills to put oneself on place of others – to pay attention to other people feelings when you make a decision. For example: let's imagine two leaders in one company, which have to dismiss some people. One of the leaders pronounces the bitter speech, in which informs an exact amount of workers will be dismissed. The second leader, he also doesn't hide bad news, takes into consideration workers' feelings. He promises to inform them and be honest. The manager, who showed strictness to workers, demoralized talented workers. Many of them were dismissed on their own desire.

Pronyaeva V.E., *EL adviser*

KLEINE GESCHICHTE DER DEUTCHEN SPRACHE

Gontscharenko J.,*Gr.ЖT-61*

Für die deutschen Sprachforscher im 17. Jahrhundert war die teutsche - so schrieb man damals meist das Adjektiv deutsch - Sprache so alt wie die Sprachen der Bibel, Hebräisch und Griechisch. Sie war eine der Ursprachen, die in der Sprachenteilung beim Turmbau zu Babel, das heißt nach der damaligen Auffassung von Geschichte im Jahr 2347 vor Christus entstanden. Doch war sie ihrer Ansicht nach reiner erhalten, besser gebaut sowie ausdrucksstärker als alle anderen Sprachen.Wie viel Phantasie diese Ideen enthielten, hat die Sprachforschung in den letzten 150 Jahren gezeigt. Das abgesicherte Wissen über die Geschichte der deutschen Sprache beginnt streng genommen erst mit dem Auftreten schriftlicher Dokumente in deutscher Sprache im 8. Jahrhundert nach Christus. Allenfalls kann man heute die germanischen Sprachen Mitteleuropas seit der Völkerwanderung (5. Jahrhundert) als „vordeutsch" bezeichnen.Jahrhundert hinein ist Deutsch eine überwiegend gesprochene Sprache, geschrieben wird in vielen Lebensbereichen meist Latein. Im Laufe der gesellschaftlichen, wirtschaftlichen und technischen Entwicklung nehmen aber die Kontakte zwischen den einzelnen Regionen immer weiter zu, sodass auch die deutschen Dialekte zunehmend geschrieben werden. Dabei nähern sich die verschiedenen Schriftdialekte immer weiter an bzw. die Dialekte der politisch und wirtschaftlich bedeutenden Regionen beeinflussen die anderen.Ein wichtiger Einschnitt in der Entwicklung der deutschen Sprache ist die Übersetzung der Bibel ins Deutsche durch Martin Luther(1522-1534).Luthers Sprache ist,abgesehen von bestimmten Wörtern und Redewendungen,dem heutigen Deutsch schon so änlich,dass man sie noch heute ohne größere Mühe lesen kann.Der nächste Schritt,die orthographische Vereinheitlichung,kommt 1901 auf einer Konferenz der deutschen Länder,Österreichs und der Schweiz zustand.Was die Aussprache des Deutschen betrifft, so merkt man heute noch.

Saizewa I.O.,*Wissenschaftsleiterin*

CHEMICAL PRODUCTION AND ENVIRONMENTAL PROBLEMS

Kharchenko V.V., Jakimenko M.A., *group M-62*

Modern type of economy and environmental and economic development can be identified as a technogene one. It possesses external effects. Those effects may be characterized as a negative impact of economic activities in the environment Usually they are not taken into account by the initiators of those activities. A rapid development of the technological world economy is leading to global economic problems, and many of them are causing a degradation of human civilization.

The traditional model of economic growth of the developed countries has exhausted itself and should not be proposed to other countries as an example. Steady economic growth must become a basis for a new type of ecological and economic development.

There are a lot of determinants for steady growth: "steady growth is a kind of development, that satisfies the present demands but does not threaten the ability of coming generations to satisfy their own needs. It includes two main concepts:

• Concept of demand for goods and services, in particular of those which are necessary for existence of the poorest citizens must be of paramount priority;

• Concept of restrictions, which are stipulated by technology and society and the environment's ability to satisfy the needs of today and future generations" (Report of Brundtland Commission, Rio de Janeiro,1992).

One of such steady development criteria is that all kinds of environmental pollution should not exceed its today's level in the future. The possibility to minimize environmental pollution must be socially and economically admissible (it is not possible to predict no pollution at all). This criteria is very relevant for production associations in the world and in Ukraine in particular.

On the one hand everybody knows that chemical production can impact the environment substantially. On the other hand, it is extremely needed. Hence, our task is to find a compromise, i. e. the best decision for the chemical production - environment - health equilibrium.

Impact of chemical production to the environment consists of soil pollution, water pollution, and air pollution.

There are several industrial enterprises, which to some extent pollute the environment and are injurious to the health of the people, work for

decreasing the emissions per unit of production should be continued. The morbidity first of all includes diseases of blood circulation system, then stomach ulcer and gastritis. Nowadays, tuberculosis and oncology diseases are on the increase.

Morozova I.A. *EL Adviser*

RAM. WHAT IS IT?

Bezverkhiy Kostya, *student*

- RAM is random access memory. It takes the form of integrated circuits that allow the stored data to be accessed in any order.

- The word "random" refers to the fact that any piece of data can be returned in a constant time, regardless of its physical location and whether or not it is related to the previous piece of data.

- Acronym "RAM" is used in the names of physical devises which can emulate true RAM.

- "Random access" is also the name of an indexing method: hence, disk storage is often called "random access" because the reading head can move relatively quickly from one piece of data to another, and does not have to read all the data in between.

- SRAM caches, DRAM, paging systems, and virtual memory or swap space on a hard-drive may be referred to as "RAM" by many developers, even though the various subsystems can have very different access times, violating the original concept behind the "random access" term in RAM.

- Micron Technology, Samsung, Kingston Technology, Corsair Memory, Mushkin, Apacer are common manufactures which produce RAM.

- There are different types of RAM: SDRAM, RDRAM, DDR, DDR 2, DDR 3.

Plokhuta T. M. *EL adviser*

THE MANAGEMENT AND DEVELOPMENT OF ORGANIZATION

Bozhko O., *Gr.M 61*

Development of organization is a long-time work in increasing the ability of organization to restructure and renew itself, meet the needs and quickly react for inside and outside changes. We can match the effective management of culture in organization, especially in formal work groups, using scientific methods of behaviour.

Taking part in development of organization means itself different planned actions, in which the organization takes a part. There are some types of taking part in development of organization:

- *Actions in developing of effective relations between the groups.*
- *Actions in forming of effective groups.*
- *Actions in learning and increasing of qualification.*
- *Actions in restructuring of organization* – used in improving of organization structure or executing solutions.
- *Actions in using the results of monitoring* - include transfer of information, received as a result of diagnostic actions, to the members of organization and designing the plans of action, using this information.
- *Consulting in group processes* - used in helping the members of organization to understand better the actions in organization.
- *Diagnostic actions* – include gathering information about organization, using interviews, meetings, documents, materials, monitoring .

To be successful in the development of organization you must know such rules:

- All actions must be agreed with employer politics.
- Top – managers must take part in basic diagnostic actions.
- Top – managers must take part in program of development and fully be agree with it.
- Use the help of psychologist (or consultants in human behaviour) to understand better the actions in organization.
- Work-groups must take part in program as much as manager.

Burenko T.N. *EL Adviser*

EXTENSIVE TECHNOLOGY PROGRESS IN UKRAINE AND ITS EFFECTS

Marochko Sergei, *gr.EF-61*

Nowadays effectiveness of technology depends not only on the power of production and the cost of a product, but on the environment. Technology, its use, progress, were studied by many famous scientists (E.Lowings, L.Lowings, E.Waitszekker, L. Melnick, M. Shapochka and I.Laptev).

However, in spite of a great technological potential, important achievements of our scientists and convincing facts about considerable harm of a big quantity of technologies, our own country is lagging behind. The reasons for this lie in the contemptuous relationship of the people to nature.

There are so many technologies around us, that they have began to hinder each other. At the same time this correlation is so high, that to provide their non-stop performance we are building new and new ones. In economics there is a rule: a quantity of using any resource (including technologies) has a limit, after which its effectiveness begins to reduce and it can be harmful.

The more technologies used, the faster they are exhausted. This fact has been understood in Europe very well: people, that live there, begin to get rid of old and outdated technologies, to replace them with the better ones. This step has brought very good results: many foreign countries have total control on all technologies and use them more effectively.

In Ukraine everything is on the contrary. After withdrawal of Ukraine from the USSR, there is in country a continuing piling up of technologies, most of which are outdated. The level of technological loading is considered as high and very high in Ukraine.

An extensive use of technologies can't give good results for nature and humanity. Our country is lagging behind in the development of ecologically safe technologies, which do not correspond to the European standards (most of cars and devices, that are working in Ukraine, are not allowed in Europe). Our economy is losing millions of dollars every year, which could help to solve a lot of important socio-economic problems.

Lytvynenko Galina *EL*

GREENHOUSE EFFECT

Naidenko M.S., *student*

The poisoning of the world's air and water is the fastest-spreading disease of civilization. It probably produces fewer headlines than wars, earthquakes and floods, but it is potentially one of history's greatest dangers to human life on earth. If present trends continue for the next several decades, our planet will become uninhabitable. Overpopulation, pollution and energy consumption have created such planet-wide problems as massive deforestation, ozone depletion, acid rains and the global warming that is believed to be caused by the greenhouse effect. The atmosphere is a blanket of gases around the Earth. For thousands of years these gases have kept the planet's temperature at about 15°C. How? By trapping some of the sun's heat. But now, because of pollution, there are more and more gases in the atmosphere. This means that the Earth is getting hotter. A greenhouse becomes hot for the same reason. Its glass lets the sun's heat pass through, then stops some of it from leaving. That's why scientists call the problem of Earth's rising temperature 'The Greenhouse Effect'.

Few people are unfamiliar with the term "greenhouse effect" and unaware of its association with the negative consequences human intervention can have on environment and climate. Nevertheless, the greenhouse effect is first and foremost an entirely natural phenomenon. So-called greenhouse gases (which include water vapour, carbon dioxide, methane, nitrous oxide, ozone and fluorohydrocarbons) are found in the earth's atmosphere. The greenhouse gases allow incoming short-wave solar radiation to pass through unhindered on its way to the earth. On reaching the earth's surface, a small portion is reflected back, but most is absorbed before being conducted back into the atmosphere in the form of long-wave heat radiation. It is then absorbed by the greenhouse gases and released in all directions in the form of heat radiation. Thus, some of it passes into space and the rest finds its way back to earth where it contributes to global warming.

The greenhouse effect is unquestionably real, and is essential for life on Earth. It is the result of heat absorption by certain gases in the atmosphere (called greenhouse gases because they trap heat) and re-radiation downward of a part of that heat. Water vapor is the most important greenhouse gas, followed by carbon dioxide and other trace gases. Without a natural greenhouse effect, the temperature of the Earth would be about zero degrees F (-18°C) instead of its present 57°F (14°C).If there were no natural greenhouse effect, we would be in the middle of an extreme ice age.

Most scientists agree that the Greenhouse Effect will change the weather everywhere. For example, the ice at the North and South Poles will start to melt. And when that happens the level of the sea will rise.

Morozova I.A. *EL adviser*

JAPANESE ROBOTICS

Krets A.K., gr.*PM-61*

While robots often elicit ambivalent reactions in the west, because of the possibility that they may displace humans in the future or may cause fake emotions, Japanese society generally shows high enthusiasm for all kinds of robots. The popular Japanese manga and anime series Astro Boy featuring a robot boy as hero may have contributed to this sentiment.

To dwell on the history of Japanese robotics we should say that Among Japan's oldest robots are the karakuri ningyo, or mechanical dolls. Karakuri ningyo are believed to have originated in China. During the Edo period (1603-1867), Takeda-za developed a mechanical-puppet theater which flourished in Osaka's Dotonbori district.

In the middle of 20-th century, Ichiro Kato professor of Waseda University studied humanoid robot. He made "WABOT-1" the full scale humanoid robot in 1973. WABOT-1 has two arms, walks by two legs, watches with two camera eyes.

In 1996, Honda announced P2 humanoid robot. After that, a number of companies and institutes started to develop humanoid robots for many purposes.

Nowadays there are many different kinds of robots. Human entertainment robots have obtained great popularity lately, many people actually buy them instead of pets. There are even animal robots to remind people of different animals. Many other kinds of robots are available today, such as: guard, domestic, social and even rescue robots, not to mention androids (robots designed to strongly resemble humans).

Talking about androids, Japanese scientists developed an Actroid. It is a humanoid robot with strong graphic human-likeness developed by Osaka University and manufactured by Kokoro Company Ltd. (the animatronics division of Sanrio). It was first unveiled at the 2003 International Robot Exposition in Tokyo, Japan. Several different versions of the product have been produced since then. In most cases, the robot's appearance has been modeled after an average young woman of Japanese descent.

Eventually robots spread all over the globe. Some people consider it being dangerous, saying that robots may sooner or later start some sort of rebellion against people.

Plokhuta T. M. *EL adviser*

NON-VERBAL COMMUNICATION

Fedchenko O., *group ЖТ-62*

Effective communicators have many tools at their disposal when they want to get across a message. Whether writing or speaking, they know how to put together the words that will convey their meaning. They reinforce their words with gestures and actions. They look you in the eye, listen to what you have to say, and think about your feelings and needs. At the same time, they study your reactions, picking up the nuances of your response by watching your face and body, listening to your tone of voice, and evaluating your words. They absorb information just as efficiently as they transmit it, relying on both non-verbal and verbal cues.

Non-verbal communication differs from verbal communication in fundamental ways. For one thing, it is less structured, which makes it more difficult to study. A person cannot pick up a book on non-verbal language and master the vocabulary of gestures, expressions, and inflections that are common in our culture.

Although non-verbal communication is often unplanned, it has more impact than verbal communication. Non-verbal cues are especially important in conveying feelings; accounting for 93 percent of the emotional meaning that is exchanged in any interaction.

The functions of non-verbal communication

Experts in non-verbal communication suggest that it have six specific functions:

- To provide information, either consciously or unconsciously
- To regulate the flow of conversation
- To express emotion
- To qualify, complement, contradict, or expand verbal messages
- To control or influence others
- To facilitate specific tasks, such as teaching a person to swing a golf club.

Cultures differences arise because of our unconscious assumptions and non-verbal communication patterns. We ignore the fact that people from other cultures differ from us in many ways: in their religion and values, their ideas of status, their decision-making habits, their attitude toward time.

Pronyaeva V.E: *EL adviser*

RESOURCE SAVING IN COUNTRY ECOLOGICAL SECURITY MAINTENANCE

Smirnova N., *gr. EF-64*

A problem of resource saving is the generation of economic conjuncture in the XX-XXI centuries. Term „ resource saving" determined as one of forms of realization of backlogs of production, which is related to the maximal economy in the production of financial resources. Carried out after such basic directions: a decline of material capacity unit of products is on the basis of the use of the newest technique and technology; an increase of output of eventual products is from the used raw material; reduction of losses of materials and labour in a production process; maximal use of the second resources.

The rational use of different types of resources (raw material, facilities and tools) in the process of production has an especially important value in an economy. Through diminishing of specific charges, decline of amount of wastes which appear, growth of the productivity of labour, capital productivity, profitability of production and increase of income is arrived at. Resources are basic part of circulating assets. The acceleration of their circulating allows to free financial resources for the extended recreation. The economy of financial and power resources provides the economy of investment resources. Decline material capacity and energyintensity of products, expansion of the use of the second resources to diminishing of negative influence on an environment.

Thus, at expense of the economy of financial resources the increase of efficiency of the use of all of types of resources is arrived at on the whole.

The following resource savings include: 1) scientific and technical progress which results in the continuous improvement of all of sides of public production on the base of development and drawing on accomplishments of science and technique; 2) structural policy which determines the rational use of elements of production forces: production funds, financial, fuel and energy, labour and financial resources.

These problems are the national problems in Ukraine.

Sazonova N.Y. *EL adviser*

THE PULITZER PRIZE

Chelyadina A., *group ЖТ-62*

In the latter years of the 19th century, Joseph Pulitzer stood out as the very embodiment of American journalism. Pulitzer was the first to call for the training of journalists at the university level in a school of journalism. Pulitzer made provision for broad changes in the system of awards. More than 2,000 entries are submitted each year in the Pulitzer Prize competitions, and only 21 awards are normally made. In early March, 77 editors, publishers, writers, and educators gather in the School of Journalism to judge the entries in the 14 journalism categories. From 1964-1999 each journalism jury consisted of five members. Due to the growing number of entries in the public service, investigative reporting, beat reporting, feature writing and commentary categories, these juries were enlarged to seven members beginning in 1999. The jury members, working intensively for three days, examine every entry before making their nominations. Since the inception of the prizes the journalism categories have been expanded and repeatedly redefined by the board to keep abreast of the evolution of American journalism. The cartoons prize was created in 1922. The prize for photography was established in 1942, and in 1968 the category was divided into spot or breaking news and feature. With the development of computer-altered photos, the board stipulated in 1995 that "no entry whose content is manipulated or altered, apart from standard newspaper cropping and editing, will be deemed acceptable."

These are the Pulitzer Prize category definitions in the competition:

1. For a distinguished example of meritorious public service by a newspaper through the use of its journalistic resources which may include editorials, cartoons, and photographs, as well as reporting.
2. For a distinguished example of local reporting of breaking news.
3. For a distinguished example of investigative reporting by an individual or team, presented as a single article or series.
4. For a distinguished example of explanatory reporting that illuminates a significant and complex subject, demonstrating mastery of the subject, lucid writing and clear presentation.
5. For a distinguished example of beat reporting characterized by sustained and knowledgeable coverage of a particular subject or activity.
6. For a distinguished example of reporting on national affairs.

7. For a distinguished example of reporting on international affairs, including United Nations correspondence.
8. For a distinguished example of feature writing giving prime consideration to high literary quality and originality.
9. For distinguished commentary.
10. For distinguished criticism.
11. For distinguished editorial writing, the test of excellence being clearness of style, moral purpose, sound reasoning, and power to influence public opinion in what the writer conceives to be the right direction.
12. For a distinguished cartoon or portfolio of cartoons published during the year, characterized by originality, editorial effectiveness, quality of drawing, and pictorial effect.
13. For a distinguished example of breaking news photography in black and white or color, which may consist of a photograph or photographs, a sequence or an album.
14. For a distinguished example of feature photography in black and white or color, which may consist of a photograph or photographs, a sequence or an album.

The Who's Who of Pulitzer Prize Winners is more than simply a roster of names and biographical data. It is a list of people in journalism:

PUBLIC SERVICE - Washington Post
BREAKING NEWS REPORTING - Staff of Denver Post
INVESTIGATIVE REPORTING - Sang-Hun Choe, Charles J. Hanley and Martha Mendoza of Associated Press
EXPLANATORY REPORTING - Eric Newhouse of Great Falls (Mont.) Tribune
BEAT REPORTING - George Dohrman of St. Paul Pioneer Press
NATIONAL REPORTING - Staff of Wall Street Journal
INTERNATIONAL REPORTING - Mark Schoofs of Village Voice
FEATURE WRITING - J.R. Moehringer of Los Angeles Times
COMMENTARY - Paul A. Gigot of Wall Street Journal
CRITICISM - Henry Allen of Washington Post
EDITORIAL WRITING - John C. Bersia of Orlando Sentinel
EDITORIAL CARTOONING - Joel Pett of Lexington (Ky.) Herald-Leader
BREAKING NEWS PHOTOGRAPHY - Photo Staff of Denver Rocky Mountain News.

Pronyaeva V.E: *EL adviser*

JOURNALISM ETHICS AND STANDARDS

Toshchev M.G., *group ЖТ-62*

"Every news organization has only its credibility and reputation to rely on",-Tony Burman, editor-in-chief of CBC News.

Journalism ethics and standards comprise principles of ethics and of good practice as applicable to the specific challenges faced by professional journalists. Historically and currently, this subset of media ethics is widely known to journalists as their professional "code of ethics" or the "canons of journalism." The basic codes and canons commonly appear in statements drafted by professional journalism associations and individual print, broadcast, and online news organizations.

While various existing codes have some differences, most share common elements including the principles of — truthfulness, accuracy, objectivity, impartiality, fairness and public accountability — as these apply to the acquisition of newsworthy information and its subsequent reportage to the public.

Like many broader ethical systems, journalism ethics include the principle of "limitation of harm." This often involves the withholding of certain details from reports such as the names of minor children, crime victims' names or information not materially related to particular news reports release of which might, for example, harm someone's reputation.

In countries without freedom of the press, the majority of people who report the news may not follow the above-described standards of journalism. Very often non-free media are prohibited from criticizing the national government, and in many cases are required to distribute propaganda as if it were news. Various other forms of censorship may restrict reporting on issues the government deems sensitive.

One of the primary functions of journalism ethics is to aid journalists in dealing with many ethical dilemmas they may encounter. From highly sensitive issues of national security to everyday questions such as accepting a dinner from a source, putting a bumper sticker on one's car, publishing a personal opinion bloc, a journalist must make decisions taking into account things such as the public's right to know, potential threats, reprisals and intimidations of all kinds, personal integrity, conflicts between editors, reporters and publishers or management, and many other such conundrums.

Pronyaeva V.E: *EL adviser*

SOME PROBLEMS OF POLLUTION OF OUR PLANET

Baranova A., *gr. EF-64*

Ecology is the study of the ways in which organisms (plants and animals) depend upon each other and upon their surroundings. Each organism requires conditions in order to be able to live and breed. These conditions are its environment by changing the ecological conditions.

So, pollution is one of the most burning problems of nowadays. Now millions of chimneys, cars, buses, trucks all over the world exhaust fumes and harmful substances into the atmosphere. These poisoned substances pollute everything: air, land, water, birds and animals people. So, it is usually hard to breathe in the large cities where there are lots plants. Everything there is covered with soot and dirt. All these affect harmfully.

Water pollution is very serious, too. Ugly rivers of dirty water polluted with factory waste, poisoned fish are all-round us. And polluted air and poisoned water lead to the end of the civilization. So, nowadays a lot of dead lands and lifeless areas have appeared. Because our actions and dealings can turn the land to a desert.

The Black Sea is a special case. Because it is such a small sea and it becomes dirty very easily. Its waster changes slowly through the shallow straits. As many as 25 rivers run into the Black. There are hundreds of factories situated on the Black Sea coast and millions of people live along them. Quite a lot of big cities lie on its coast. All these combined with the active navigation of the sea naturally affects the state of the sea water and the shore line flora and fauna. People suffer from the waster pollution; cancer deaths increase people's concern. And there is no escape from this ecological crisis without organizing a single body dealing with the environmental problems, developing and carrying out a nationwide program of environmental protection and co- operating with international schemes.

Scientists now predict that by the year 2050 the population will be doubled what is today. The fact remains that the rate of food production fell behind population growth in many of developing countries. The annual fish catch already exceeds what the world 's oceans can successfully sustain. If we go on using our natural recourses at today's rates, we will have used up the intire reserves of cooper, natural gas and oil by the year 2054.

But the problem ahead lie not so much in what we use but in what we waste. What faces us is not so much a recourse crisis as a pollution crisis. The only solution is to try to change the areas of consumption, technology and population.

Gladchenko O.R. *EL adviser*

GLOBALIZATION.
ONE WORLD - ONE ECONOMY?

Sigida L., *student*

The world is in various stages of social, economic and demographic transition. Economically and politically, the world has changed more rapidly in the past few years than at any time. The emerging global economy is both competitive and interdependent. It reflects the availability of modern communications and production technologies in most parts of the world. So, do we need to be concerned about our future?

The 21st century is associated with such process as globalization and hi-tech industry. Globalization happens to be the modern stage of civilization maturing. It means expanding of international relations, economic co-operation of countries, implementation of new technologies, common standards of life, homogeneous mass culture and ideologies. Motive forces of this process there are the usual human needs, such as leadership, greed, imitation, curiosity characteristic also for countries and transnational corporations.

Like in everything, there are some pluses and minuses in the globalization.

1. The world economic system, provided with plenty of international agreements, promotes exchange of goods and capital between countries and accelerates the maturing of poor countries.
2. The same is true about science and technique: trade, communication systems, transnational corporations, patens, Internet distribute modern technologies throughout the world.
3. The some processes affect politics: all countries are inclined to democracy and civil rights. Through it is not always true but the tendency is sure to exist.
4. UN is happened to be a consolidating force. It renders and coordinates the humanitarian aid, influences (together with the European Bank for Reconstruction and Development) the development processes in emerging markets and poor countries.
5. The countries with similar economic systems and ideologies strive for deep integration. (EC).

Gavrilova V.V., EL *adviser*

CONTROL UNIT AS A PART OF A COMPUTER SYSTEM

Buzov A., *IN-62*

Each computer is a system, parts of what work together as a whole. But the main part of this system is CPU (Central Processor Unit). And CPU is also a system that can be broken down into smaller subsystems. One of them is control system of the CPU represented by Control Unit.

A control unit is the part of a CPU (or other device) that directs its operation. The output of the unit control is activity of the rest of the device.

The control unit is the circuitry that controls the flow of data through the processor, and coordinates the activities of the other units within it. In a way, it is the "brain within the brain", as it controls what happens inside the processor, which in turn controls the rest of the PC.

The control unit (often called a control system or central controller) directs the various components of a computer. It reads and interprets (decodes) instructions in the program one by one. The control system decodes each instruction and turns it into a series of control signals that operate the other parts of the computer. Control systems in advanced computers may change the order of some instructions so as to improve performance.

A key component common to all CPUs is the program counter, a special memory cell (a register) that keeps track of which location in memory the next instruction is to be read from.

The control system's function is as follows — note that this is a simplified description and some steps may be performed concurrently or in a different order depending on the type of CPU.

Since the program counter is (conceptually) just another set of memory cells, it can be changed. Instructions that modify the program counter are often known as "jumps" and allow for loops (instructions that are repeated by the computer) and often conditional instruction execution (both examples of control flow).

It is noticeable that the sequence of operations that the control unit goes through to process an instruction is in itself like a short computer program and, indeed, in some more complex CPU designs.

Plokhuta T. M. *EL adviser*

ECONOMIC DEVELOPMENT AND ENVIRONMENT

Baranova A., *gr. EF-64*

Ecological problems for the last five decades caused the great number of questions concerning intercommunication between economic development and environment. Many states add all of efforts for permission of local ecological problems and improve the nearest surroundings, because a planet becomes less suitable for life. Fundamental ecological problems, such as destructions of ozone layer, global hotbed effect and reduction of biological variety, resulted in strong criticism of strategies which chosen countries for providing of economic development.

History of economic development of leading industrial economies contains the great number of contradictions, related to the tasks of improvement of welfare. Contradictions arise up mainly from the serious miscalculations of leaders and administrators as between economic development, welfare and quality of environment. A fundamental factor which is instrumental in this situation is difficult in itself nature of conception of development of environment. If the world countries arrive at development which is steady in a long-term prospect, these intercommunications must be accepted in a calculation in planning and realization of any type of human activity.

The complexity of environment and growings ecological problems require alteration of mutual relations between economic development and providing of ecological quality. A general economic situation has a considerable influence on activity of ecological subjects. An ecological policy is exposed to the special pressure in periods of slump, and also interested in economic development and can take advantage in a global market economy.

Connection between economic development and environment is a very delicate issue. Aspiring to the economy growing and development in the process of exploitation and processing of natural resources in commodities in time brought considerable harm quality of environment. Consequences have economic and ecological nature. From the economic point of view, exhaustion of basic natural resources, such as crude oil, water and forest, present a serious danger in the future in case non-acceptance of the proper measures.

Gladchenko O.R. *EL adviser*

UMWELTSCHUTZ. ÖKOLOGISCHE PROBLEME IN DEUTSCHLAND UND IN DER UKRAINE

Nedokus J., *gr. ЖТ-62*

- die Natur hat keine Sprache, aber sie hat das Herz und die Lungen;
- die ökologischen Probleme gehören zu den wichtigsten;
- die Luft, das Wasser, der Boden... sind verschmutzt;
- nach der Tschornobylkatastrophe sind 7 Procent der Gesamtfläche der Ukraine radioaktiv versucht;
- die Kindersterblichkeit ist sehr hoch;
- die wirtschaftlichen Krise in der Ukraine ist auch die Folge der ökonomischen Krise;
- die Tiere werden nach der Katastrophe als Mutanten geboren;
- als Industrieland kann Deutschland ohne sichere Energiequellen nicht auskommen;
- Deutschland erhebt der Umweltprobleme zum Staatsziel;
- Deutschland beteiligt sich aktiv an Realisierung der internationalen Naturschutzübereinkommen;
- unser gemeinsames Haus, die Erde, muss gerettet werden.

Natur! Wir sind von ihr umgeben und umschlungen. Wir leben mitten in ihr und sind ihr fremde. Sie spricht unaufhörlich mit uns und verrät uns ihr Geheimnis nicht. Die Menschen bauen immer und zerstören immer... Die Natur hat keine Sprache, aber sie hat das Herz und die Lungen. Wir wissen das Sprichwort: "Wie man sich bettet, so liegt man!" Und warum die Menschheit verschmutzen die Umwelt?

Wir leben in der Zeit, wenn die ökologische Krise ist der wichtigsten Probleme. Und sie bedürft die sofortige Lösung! Verunreinigte Gewässer, Luft, Wälder und Bodenflächen bilden heutzutage eine groze Gefachr für die Gesundheit der Menschen. Die Ukraine hat als hochindustrialisiertet Staat eine Menge Probleme geerbt. Enorm sind die Umweltschäden in den Industriegebieten, besonders in Donbass, dem industriellen Herz des Landes. 7 Millionen Tonnen Schadstoffe nehmen die Gewässer jährlich auf und transportieren sie. Das gefährdet die Versorgung der Bevölkerung mit dem Trinkwasser. Aber die Tschornobylkatastrophe vom 26.April 1986 ist das größte Unglück. Immer mehr wird die Zahl der

Sajzeva I.O., *Wirtschaftsleiterin*

Секція студентів III курсу
SYSTEM CONTROL IN MODERN TECHNOLOGY

Skubak L., *student*

A control system is a device or set of devices to manage, command, direct or regulate the behavior of other devices or systems. There are two common classes of control systems, with many variations and combinations: logic or sequential controls, and feedback or linear controls. There is also fuzzy logic, which attempts to combine some of the design simplicity of logic with the utility of linear control. Some devices or systems are inherently not controllable. The term "control system" may be applied to the essentially manual controls that allow an operator to, for example, close and open a hydraulic press, where the logic requires that it cannot be moved unless safety guards are in place.

An automatic sequential control system may trigger a series of mechanical actuators in the correct sequence to perform a task. For example various electric and pneumatic transducers may fold and glue a cardboard box, fill it with product and then seal it in an automatic packaging machine.

In the case of linear feedback systems, a control loop, including sensors, control algorithms and actuators, is arranged in such a fashion as to try to regulate a variable at a setpoint or reference value. An example of this may increase the fuel supply to a furnace when a measured temperature drops. PID controllers are common and effective in cases such as this. Control systems that include some sensing of the results they are trying to achieve are making use of feedback and so can, to some extent, adapt to varying circumstances. Open-loop control systems do not directly make use of feedback, but run only in pre-arranged ways.

Many processes around us require the precise control. Therefore studying of systems which helps to supervise is the important part of a science. Work of control systems is adjusted by people therefore it is necessary to develop the knowledge in this sphere.

Zolotova S.G., *EL adviser*

CULTURAL ASPECTS OF THE MODERN MARKETING

Samoylikova A.V., *gr. F – 51*

In the modern conditions of globalization culture and art are going beyond national limits. They become the object of purchase-sale on the world market. The scales of cultural sphere strike us.

The problem of consumer's goods deficit is almost fully solved in the developed countries, the sphere of services develops widely. Therefore every country tries to make such a product, which would satisfy not only a material necessity, but also contains a cultural component, for example, information about ethnic traditions and national features. It should influence the emotional state, self-affirmation and self-perfection. When we speak about culture and art, we mean a result of cultural production – creation of feelings, values and standards. It also means saving of the past – base myths, stereotypes, legends, priorities, models of life. One of the most important functions of culture is a design of reality and future.

Recently the combination of words "economy of culture and art" wasn't used. Nobel laureate William Baumol is considered to be the founder of economics of culture. In 1966 together with William Bouen he published a work "The Performance Arts: Economic Dilemma".

A tendency of nowadays is an active introduction of marketing's technologies to the sphere of culture and art. At the same time there is their transferring to the virtual world of Internet. As a result there are modern global markets and the information society, which create conditions for marketing's technologies of the "next" generation.

One of the priorities of marketing is an increase of social importance of the organization activity, its public necessity, creation of attractive and reliable partner. This type of marketing is called imaginary.

A modern cultural resource is very dynamic. What was a novelty yesterday, doesn't interest anybody today. The commodity is most dynamically consumed, if it becomes the sign of the certain vital style.

Some of today's brands have been known only for 10 years. It's a short period for the world market, but not for Ukraine. Such brands, as "Morshinska", "Truskavetska", "Mirgorodska", "Kraft Foods Ukraina", "Svitoch", "Obolon", "Nemiroff", "Soyuz-Victan" are known in the world and make great profits.

Morozova I.A *EL adviser*

STAGES AND GUIDELINES OF INPUT PROCESSING

Samgin D. *Student*

Input processing refers to the different ways in which we use social knowledge to understand other people's messages. The stages of input processing are: selective exposure, selective attention, interpretation, and inference.

When we go out of our way to place ourselves in or to avoid situations where we will be certain to encounter a certain event or person, we have engaged in selective exposure. The decision to enter or to avoid is based on your social knowledge of what you believe is likely to happen in situation. We selectively attend to, or focus on, some aspects of a situation, while we ignore other aspects of that situation completely. The schema that is currently invoked in our mind determines where we will search for the information that we do attend to in the situation. This stage is called selective attention. The information to which you did selectively attend would then be decoded. This means that you would transform the actual object or event you observed into a mental picture. People interpret or make sense, of new information by matching it with social knowledge held in the schema activated at the time of processing. If this match is ambiguous or incomplete inconsistencies are resolved and missing pieces of the puzzle are filled by interference. Interpretation involves classifying and labeling ambiguous behavior so that its meaning is clear.

The guideline, then, is to realize that our snap judgments or first impressions can be inaccurate, and that we should give others the opportunity to violate our expectations. Stereotyping occurs when we assume that every member of a social group possesses all of the attributes we associate with that group.

Podolkova S.V.*EL adviser*

MODERN TECHNOLOGY AND HEALTHY SLEEP

Velytchenko Alla, *group FE-51*

All of an about 30% grown man population snore in sleep. Snoring creates not only certain social problems but also is a precursor and one from the basic symptoms of syndrome of obstructive apnea sleep.

Concept "apnea" means the stop of breathing. In medicine distinguish two forms of apnea of sleep: central and obstructive origin. At "obstructive apnea of sleep" stop of breathing arises up because of obstruction (narrowing) of overhead respiratory tracts. During sleep the musculature of body, including musculature of gullet and soft palate, is weakened, that results to falling (западение) the root of tongue and to corking of overhead respiratory tracts.

At the same time a diaphragm continues to get respiratory impulses from a brain, hereupon, abbreviated intensively. Thus there is negative pressure in respiratory tracts, it causes the falling (западение) of respiratory tracts and their corking. In case of stopping of breathing in sleep over 10 sec. of repetitive from 5 to 10 times per hour, an organism begins in earnest to suffer from hypoxia for lack of enough body of oxygen. Because of these episodes of apnea and hypoxia a brain gets signals alarms, causing the urgent awakenings.

At the difficult forms of syndrome of apnea of sleep to 400-500 stops of breathing can be counted for night by general duration to 3-4 hours, that results in sharp or chronic lack of oxygen during sleep. This factor in same queue not only worsens quality of life but also substantially increases the risk of development of hyperpiesis (гипертензия), violations of rhythm of heart, heart attack of myocardium, stroke, unexpected stop of heart in sleep.

Presently diagnostics and treatment of parahypnosis are the article of intensive scientific researches. Most success in treatment of obstructive apnea sleep is arrived at application of nasal respiratory vehicles of increased pressure (NCPAP, auto-CPAP, BiLevel). These devices prevent corking of respiratory tracts through the permanent adjusted current of air, which straightens respiratory tracts and retains their opened, forced individually.

At application of preparations of NCPAP (nasal continuous positive airway pressure), patient constantly gets on an entrance air with enhanceable pressure, for example, 8 mbar. This parameter of pressure, set during the inspection of patient in the laboratory of sleep, is programed in a vehicle.

Some patients with it is needed obstructive apnea of sleep changing parameters of pressure on an entrance. In this case apply the vehicles of auto-CPAP. They in good time recognize the volume of nascent obstruction and compensate its proper pressure, shutting out closing of respiratory tracts.

Other patients for prevention of corking of respiratory tracts high pressure is constantly required on an entrance. Some of them all more difficult to do exhalation at enhanceable pressure of air. The two-tier vehicles of type of Bilevel are used in parallel instances. In such vehicles pressure of air is considerably mionectic during the phase of output.

In order that air-blasted got in skyways, a nasal mask is needed. This mask is a basic link in treatment of stops of breathing. A blast from a vehicle gets through the system of hoses in a mask, fastened on a head through the special little cap or ribbons. Masks, supplied a spherical hinge, do not limit motion of patient in sleep.

The obligatory condition of the conducted respiratory therapy is the reliable taking of expirate with high maintenance of carbonic acid. For this purpose there are the special adaptations for an output, where through the lateral openings, circular openings or special pores the effective taking of exhaust gases is guaranteed. For achievement of maximal comfort very important is the noiseless functioning of devices. A nasal mask is fastened on a head through the system of fixing.

Patients with sensible, subject to the rapid drying out of mucous membrane of nose, need additional humectants of air. Humectants satiate a blast aquatic steam, protecting skyways from drying out. The so-called humectants with warm air, which the additional heating of the air saturated water is in, are especially effective. This is arrive at more high humidity of air, as compared to humectants with cold air. The selection of humectant is carried out in every case individually.

Dyadechko A.M., *EL adviser*

SIEMENS IN UKRAINE AND IN MY LIFE

Berest O., *student*

From a small workshop in Berlin to a global company – very few companies can look back on such a long and successful history as Siemens can.Since its founder years under Werner von Siemens, a visionary inventor and entrepreneur who made an enormous contribution to technological progress in the nineteenth century, the company has grown into a GLOBAL NETWORK OF INNOVATION uniting more than 400,000 people in over 190 of the world's countries.

The innovation of Industry & Automation Department of Siemens:
Automation and Drives (A&D); Integrated Solutions (I&S); Building Technologies (SBT); Logistic and automation (L&A).

The Siemens electrical installation technology group has been working in this sector for more than 110 years and company is constantly developing new products – innovations, which make the use of electricity increasingly safer and more cost effective. Ideal for residential, non-residential or industrial buildings. In accordance with all internationally valid regulations and standards. Using new technologies, such as instabus EIB, company has opened up whole new worlds of possibilities in the area of private housing. In addition, company is also building bridges between factory automation and building management in the industrial and non-residential building sector.

Siemens Ukraine company has extensive experience of carrying out long-term projects in the area of higher technical education.

One example of successful integration of Ukraine's engineering education into the pan-European education network is multiyear operation of the German Technical Faculty (GTF) created in 1992 at Donetsk Technical University with the assistance of Siemens.

Currently, over 300 students are receiving education at GTD in five specialities. The university's graduates who undergo training under this programme gain up-to-date technical knowledge and practical know-how on the basis of Siemens products and solutions and study two foreign languages. Our pulpit is connected with them too. We have certain equipment which helps students in education and researches new technology.

Start of the Siemens activities in Ukraine connected with the unleash of the Crimean War between Russia and Turkey.

Dyadechko A.M., EL adviser

MOBILE REVOLUTION

Koval N., *E - 51*

As more and more people use mobile handsets, a revolution is taking place in computing and telecommunications. Two extraordinary industries — the Internet and mobile communications — are converging.

No consumer product in history has caught on as quickly as the mobile phone, global sales of which have risen from 6 million in 1991 to more than 400 million a year now. Innovation in mobile phones has been happening so fast that it's difficult for consumers to change their behaviour.

The arrival of the mobile phone has transformed our lifestyles. According to the results of special opinion poll men spend more time on the phone than women. The survey found that men with mobile phones (75% of all men) spend more than an hour a day making calls on an average weekday. The average man spends sixty-six minutes on his landline or his mobile, compared with fifty-three minutes before the mobile revolution.

But the poll reveals that, while men are using their phones a lot more. Women are actually spending less time on the phone. Slightly fewer women (67%) have a mobile phone, and the survey shows that the average amount of time they spend on the phone on a weekday has gone down from sixty-three minutes before they got a mobile to fifty-five minutes now. The explanation might lie in the fact that men love to play with techno toys while women may be more conscious of the bills they are running up.

Phones are constantly swallowing up other products like cameras, radios, digital music players. There are more than 20 different products that previously might have been bought separately that can now be part of a mobile phone.

Mobiles have changed the way people talk to one another, they have generated a new type of language, they have saved lives and become style icons.

Dyadechko A.M., *EL adviser*

THE FUTURE OF ADVERTISING

Linnik J., *student*

Skeptics who forecast the demise of advertising ignore the fact that business and other enterprises have an innate need to communicate with their publics. Hence, the real question is not will advertising continue to be an important tool of business communication (the answer to that question is yes!) but simply,

What Forms Will Advertising Take in the Future?

As the means or media through which advertising messages are conveyed evolve, it is important to stress that the fundamentals of effective communication simply need to be adapted and expanded to fit these new forms. For example, the fundamental principles of effective persuasion articulated by Aristotle 2,350 years ago can be applied just as directly to selling high tech gadgetry via interactive advertising on the Internet as they can to a public debate in ancient Athens.

Rather than dreary, the future of advertising is bright and unlimited. As unlimited as the imaginations of the marketing communication professionals who are constantly seeking more effective and efficient means to promote the brands and companies they represent. Advances in computer and communication technologies are opening up an unprecedented opportunities for advertising people. Now is a time of great excitement and opportunity for the advertising industry..

The function of the economic system is to supply products and services for the use and enjoyment of the consumer. A substantial portion of our economic system is devoted to the fulfillment of wants and desires which go well beyond the basic necessities of life. Advertising is an integral part of this activity and one of the most visible elements of the mass distribution system.

One of the primary roles of advertising is to provide information about products or services to potential buyers. The classified sections in newspapers represent advertising in this most basic form. This type of advertising effectively improves the operation of marketplace and can therefore be regarded as playing a useful role in the economy and to society.

Annual advertising expenditures total over 132 billion dollars. It is important to recognize, however, that most of this money does not go to the advertising industry. The majority of these funds are used to subsidize the communication's media, an industry which has become dependent upon these essential advertising revenues. For example, this is virtually the only source of income that commercial radio and television stations have, and it constitutes about two-thirds of the income for newspaper and magazine publishers. Without this

financial support, the media communications industry would cease to operate in the manner in which it exists today.

As companies attempt to reach their consumers more effectively, database marketing, home shopping channels, infomercials, and electronic couponing are emerging as the most cost effective way to deliver their message. These new channels of information distribution offer variety, convenience, flexibility, and customization. While traditional print and broadcast are becoming more customized too, they have not moved at the pace of these new technologies.

The fastest growing new information channel today is the Internet.. Unlike interactive cable television which seems to be getting more expensive and complicated all the time, the Internet offers two-way, graphical, worldwide communication with technology-oriented early adopters. These users are well-educated, upscale individuals who have chosen to access information from a worldwide web.

This is the first medium to deliver an almost instant global audience. It is the new form of mass communication and provides users with a new economy of information distribution and acquisition. Advertising on the Internet has become the most significant new development within the industry. Much of the interest is being fueled by small entrepreneurial companies who are able to take advantage of change much faster than their larger corporate competition.

As this new information delivery system grows and is able to effectively and efficiently deliver information to a mass market, advertising will be a part of the future for two reasons. First, the fact is that for products and services directed to mass markets, advertising is the most cost effective means of promotion. Second, the financial subsidy that advertising will provide this new mass medium will be as important as it was for the traditional media that operate today. Advertising will provide the primary source of income for the future expansion of the Internet. Advertising will continue to be an economic fact of life in a mass distribution economy because it has consistently worked better and cost less over the long run than other alternatives.

It is inevitable that certain advertising media decline over time (e.g., network television) and others flourish (e.g., data base marketing communication). Such ebb and flow in terms of the media available to advertisers is predictable and healthy just as the evolution of a species is in the natural world. So, advertising is a kind of combination of psychology, art and economics, and we can only predict what forms it will take in a couple of decades.

Dyadechko A.M., *EL adviser*

ECOLOGICAL PROBLEMS

Seroshtan J.V. ,*group IN-52*

The harmful effect on the environment of by-products of human activity, principally industrial and agricultural processes - noise, smoke, car emissions, chemical and radioactive effluents in air, seas, and rivers, pesticides, radiation, sewage, and household waste.

Air pollution is especially severe in the heavily industrialized cities. Coal-using industries are major sources of high levels of uncontrolled emissions of harmful substances. Over one-third of the emissions into the atmosphere originate from automobile transport. It is aggravated by the use of leaded gasoline and different engines as well as a lack of catalytic converters.

Acid rain is linked with damage to and the death of forests and lake organisms in Scandinavia, Europe, and eastern North America. It also results in damage to buildings and statues. US and European power stations that burn fossil fuels release about 8 g of sulphur dioxide and 3 g of nitrogen oxides per kilowatt-hour.

Every day a hectare of the word's forests is being destroyed forever. There are two reasons - land and wood. When we destroy the forest, we lose not only the trees but the homes of millions of animals and plants together with them. At the moment there are between five and ten million species of animals and plants on the Earth. One million of these is extinct. All kinds of species are in danger - fish, reptiles, birds, insects - as well as thousand of plants.

Phenomenon of the Earth's atmosphere by which solar radiation, trapped by the Earth and re-emitted from the surface, is prevented from escaping by various gases in the air. The result is a rise in the Earth's temperature (global warming). The main greenhouse gases are carbon dioxide, methane, and chlorofluorocarbons. Fossil-fuel consumption and forest fires are the main causes of carbon dioxide build-up; methane is a byproduct of agriculture (rice, cattle, and sheep). Water vapour is another greenhouse gas.

Chuchylina L.M.*EL adviser*

SMILEY AS A MEAN OF COMMUNICATION

Mulin D., *ES - 51*

How great is modern communication! Put some dots and round brackets and in a jiffy all the environment knows that you are in a good mood ... or out of humour!

The smiley, smiley face, or happy face, is a stylized representation of a smiling human face, commonly represented as a yellow button with two dots representing eyes and a half circle representing the mouth.

But let's dip into the story of the smiles. Once there lived a man whose name was Harvey Ball and he decided to earn a lot of money. He thought what he could invent, machines and tanks had already exist, aircraft flew in the sky. But people needed something else. And then happened such a story.

In the 60-s in America two big insurance companies decided to merge. The process was long and boring. The employees didn't know who would be discharged and who wouldn't. Because of this the staff fell into depression and lost the motivation to work. In the December of 1963 the management of already united company, State Mutual Life Assurance, appealed to an advertising agency to make an action to raise the morale of the staff. And Harvey Ball got down the task. He thought a little... and he invented a yellow badge with a smiling face. These badges were given to the staff... and it worked: the mood of the badge was transmitted to the employees and then to the clients. Harvey earned his $45 and continued to invent some new interesting things.

But only in the 70-s the Smiley leaked out all over the world when two brothers, whose names were Murray and Bernard Spain, invented the Smiley's slogan "Have a Happy Day". This symbol and phrase became so popular that it appeared on the emblems, post cards, T-shirts, in a word, on all the things which could be sold. But the most interesting thing was that nobody registered the Smiley as a trade mark. Only in 1971 a French businessman Frank Loufani did it and initiated his big fortune. Now he controls Smileyworld Ltd., a company whose mission is to make the world a happier place to live.

Some people, Harvey Ball the first, tried to take away the rights going to the law. Another candidate was David Stern of David Stern Inc., a Seattle-based advertising agency also claimed to have invented the Smiley. Stern reportedly developed his version in 1967 as a part of an ad campaign for Washington Mutual, but said he did not think to trademark it. But only the early bird catches the worm.

In the middle of the 80-s, our dear and inimitable Smiley reached the Internet where has been still living. The Smiley's settling in the Net happened thanks to a wit from Carnegie Mellon University, which posted up notice on the public bulletin board of the university net that one of the lifts in the building is very dangerous because of spilled mercury after one physical experiment. The joke was appreciated high but later people considered the way to tell pranks from real notices. Some signs, such as "*", "%" or even "#" (as smiling teeth), were proposed. But the best idea belonged rightfully to Scott Fahlman. He offered two combinations of marks, which became generally accepted all around the world: colon-hyphen-right round bracket, which symbolized "joke" and colon-hyphen-left round bracket, which meant "nothing like as ridiculous". For example, "You're a bit slow, aren't you? :)" is less likely to be interpreted as an insult than without the Smiley. And then it went on like there was no tomorrow. This graphic gismos were called "emoticons" – the symbols which reflect emotions and first they were used in computer communication on 19 September 1982.

And now some words about unusual appearances of the Smileys. A certain species of Hawaiian spider, Theridion grallator, a.k.a. the Happyface Spider, has some morphs which display an uncanny smiley-face pattern on its yellow body. The 230km (143 mile) wide Martian crater Galle very strongly resembles a Smiley face. The smallest incarnation of the Smiley was created by Paul Rothemund of the California Institute of Technology. He used strands of DNA in a method he called DNA origami to construct a complex two-dimensional nanostructure in the shape of a Smiley face.

In May 2002, Luke Helder, a midwestern pipe-bomber, tried to replicate a smiley face in his pattern of pipe bombs. His first 16 bombs formed circles, the first in Nebraska and the second on the border between Illinois and Iowa. Those bombs completed the eyes. Two other bombs in Texas and Colorado were apparently the beginnings of the smile. However, he was captured before being able to complete it.

Nowadays the Smiley name and logo are registered and used in over 100 countries for 25 classes of goods and services. More than 1200 Smiley emoticons are registered by the Washington Library of Congress and protected by the Universal Copyrights Convention. For the last 10 years, Smileyworld Ltd. has signed more than 800 licensing contracts worldwide and has been using its rights in most classes of goods and services on the five continents. Smileyworld Ltd works with over 60 law firms to protect its IP.

Dyadechko A.M., *EL adviser*

TYPES OF COMMUNICATION GOALS

Leus P. *Student*

Communication goals can be divided into primary and secondary goals. The primary goal is what compels you to say something in the situation, it tells what the situation is about. Imagine that you worked very hard on an essay for your English composition course only to receive a grade of "C" for your effort. You decide to discuss this grade with your English professor during her office hours. If I interrupted you during the middle of this conversation and asked "What are you trying to accomplish in this situation?" you might reply "I'm trying to get my professor to raise my grade". Persuading the professor to raise your grade is your primary goal. Both you and your professor realize that this is what the conversation is about.

Aside from primary goals people also pursue secondary goals during conversation. Secondary goals arise from concerns that are common across individual and situations. In most cases you want to avoid becoming too anxious to make a positive impression to act consistently with your values and to maintain important friendships. These secondary goals often hold you back from saving certain things, or lead you to say them with tact. For example, you want to convince your English professor to raise your grade but you also may want to keep a favorable impression in the professor's eyes, especially if you are going to have this professor for several additional classes in the future.

Here is another example. Imagine that you are attracted to another student who sits close to you in this class. You had never met this person before this class and you only have talked to him/her a few times before class. You decide to ask this person out on a date in order to get to know him/her better. You hope the person will say "yes" to your request because you will be embarrassed if he/she turns you down. Getting the person to go out with you is tour primary goal, while avoiding embarrassment is your secondary goal. Notice that the primary goal motivates you to talk to the other person, while the secondary goal holds you back or leads you to say some things rather than others.

Podolkova S.V. *EL adviser*

THE UNBELIEVABLE SUCCESS OF HENRY FORD

Kuzmenko A., *E - 51*

Henry Ford was the American founder of the Ford Motor Company and father of modern assembly lines used in mass production. He was a prolific inventor and was awarded 161 U.S. patents. As owner of the Ford Company he became one of the richest and best-known people in the world

Ford was born July 30, 1863, on a farm next to a rural town west of Detroit, Michigan.In 1879, he left home for the nearby city of Detroit to work as an apprentice machinist, first with James F. Flower & Bros., and later with the Detroit Dry Dock Co. In 1882, he returned to Dearborn to work on the family farm and became adept at operating the Westinghouse portable steam engine. He was later hired by Westinghouse company to service their steam engines.

In 1891, Ford became an engineer with the Edison Illuminating Company, and after his promotion to Chief Engineer in 1893, he had enough time and money to devote attention to his personal experiments on gasoline engines. These experiments culminated in 1896 with the completion of his own self-propelled vehicle named the Ford Quadricycle, which he test-drove on June 4

Ford went to work building a racer. With the help of C. Harold Wills, he designed, built, and successfully raced a 26HP automobile in October 1901. With that success, Murphy and other stockholders in the Detroit Automobile Company formed the Henry Ford Company on November 30, 1901, with Ford as chief engineer.

On June 16, 1903, Ford & Malcomson was reincorporated as the Ford Motor Company, with $28,000 capital.

Ford astonished the world in 1914 by offering a $5 per day wage, which more than doubled the rate of most of his workers. The move proved extremely profitable; instead of constant turnover of employees, the best mechanics in Detroit flocked to Ford, bringing in their human capital and expertise, raising productivity, and lowering training costs. It also set a new, reduced workweek, although the details vary in different accounts. Ford and Crowther in 1922 described it as six 8-hour days, giving a 48-hour week, while in 1926 they described it as five 8-hour days, giving a 40-hour week.

The Model T was introduced on October 1, 1908. The entire engine and transmission were enclosed; the four cylinders were cast in a solid block; the suspension used two semi-elliptic springs. It had many important innovations—such as the steering wheel on the left, which every other company soon copied. The car was very simple to drive, and—more importantly—easy and cheap to

repair. It was so cheap at $825 in 1908 (the price fell every year) that by the 1920s a majority of American drivers learned to drive on the Model T.

Ford was always eager to sell to farmers, who looked on the vehicle as a commercial device to help their business. Sales skyrocketed—several years posted 100% gains on the previous year. Always on the hunt for more efficiency and lower costs, in 1913 Ford introduced the moving assembly belts into his plants, which enabled an enormous increase in production

Ford's philosophy was one of economic independence for the United States. His River Rouge Plant became the world's largest industrial complex, even able to produce its own steel. Ford's goal was to produce a vehicle from scratch without reliance on foreign trade. He believed in the global expansion of his company. He believed that international trade and cooperation led to international peace, and he used the assembly line process and production of the Model T to demonstrate it. He opened Ford assembly plants in Britain and Canada in 1911, and soon became the biggest automotive producer in those countries.

Sales passed 250,000 in 1914. By 1916, as the price dropped to $360 for the basic touring car, sales reached 472,000. The final total production was 15,007,034. This record stood for the next 45 years.

Ford, like other automobile companies, entered the aviation business during World War I, building Liberty engines. After the war, it returned to auto manufacturing until 1925, when Henry Ford acquired the Stout Metal Airplane Company.

In 1918, President Woodrow Wilson personally asked Ford to run for the United States Senate from Michigan as a Democrat. Although the nation was at war, Ford ran as a peace candidate and a strong supporter of the proposed League of Nations.

By the mid-1920s, sales of the Model T began to decline due to rising competition. Henry pursued the project with a great deal of technical expertise in design of the engine, chassis, and other mechanical necessities, while leaving the body design to his son. The result was the successful Ford Model A, introduced in December 1927 and produced through 1931, with a total output of more than 4 million.

When Edsel, president of Ford Motor Company, died of cancer in May 1943, the elderly and ailing Henry Ford decided to assume the presidency.

He died in 1947 at age 83 in Fair Lane, his Dearborn estate, and he is buried in the Ford Cemetery in Detroit.

Dyadechko A.M., *EL adviser*

THE STUDENTS' VIEW OF BOLOGNA PROCESS

Opanasyuk Sergiy, *FE – 51*

Pre-condition of joining Ukraine to the unique European educational area is alteration of the own educational system in accordance with the requirements of Bologna declaration.

The primary purpose of European reform of education is an increase mobility of students, teachers and institute of higher researchers, academic and professional confession of diplomas in all European space of labour-market, free employment of graduating students in any country. These priorities are conditioned the attempt of the European countries to cover the lack of own labour force, attract more talented foreign students and especially young researchers in their own institutes. However, central in any educational reform is however a problem of increase its quality which quite is not the primary purpose of the offered transformations.

The necessity of alteration in the system formation of Ukraine is conditioned high-quality changes in society and science, it needs complexity, system and integrity of reforms. It means that tasks must make some package and contact with each other. This reforms can not be limited only scopes own teaching, they must spread far outside the system of higher education, passing to the strategic setting of society in education during all their life. In an order to co-ordinate the educational programs with interests of students and requirements and necessities of informative society time and large financial resources is needed. The created system must provide both growth of professional level of student and harmonious development him as personalities.

In fact we can see reverse process: teaching quality goes down to very low-level. If we explode the reasons it is possible to select such: reduction of amount of audience clock, increase of loading on teachers and students, absence students possibility to choose interesting disciplines, absence of the whole students stimulation system. Also in this system a student is overloaded of independent tasks.

Reformation of the educational system in Ukraine can be effective, if there will be the stored and developed positive European properties taking into account national features and interests of country.

Dyadechko A.M., *EL adviser*

DESIGNS OF SPATIAL TURBULENT FLOWS IN DEVICES OF INTRICATE FORM

Scherbakov O.M. *student*

Thermal machines, such as turbines, pumps, compressors, so widely widespread in industry, that modern society will not be able to exist without them. The modern planning of economical thermal machines is based on implementation of both physical and calculable experiment which takes into account the features of viscid three-dimensional flow of liquid or gas. It allows already on the initial stages of planning to carry out the search of rational form of elements thermal machines without bringing in of physical experiment.

The system of equalizations, that allows to execute the calculations of parameters of stream, is folded:

from equalization of maintenance of impulse

$$\frac{\partial K}{\partial \tau} + \int_f \rho \cdot c_n \cdot \vec{c} \cdot df = \int_V \rho \cdot \vec{F} \cdot dV + \int_f \vec{p}_n \cdot df ,$$

equalization of maintenance of moment of impulse

$$\frac{\partial M}{\partial \tau} + \int_f \left[\vec{r} \times \vec{c}\right] \cdot \rho \cdot c_n \cdot df = \int_V \left[\vec{r} \times \vec{F}\right] \cdot \rho \cdot dV + \int_f \left[\vec{r} \times \vec{p}_n\right] \cdot df$$ equali

zation of conservation of energy

$$\frac{d}{d\tau} \int_V \rho \cdot \left(U + \frac{c^2}{2} \right) \cdot dV = \int_f \left[\vec{p}_n \cdot \vec{c}\right] \cdot df + \int_V \left[\vec{F} \cdot \vec{c}\right] \cdot \rho \cdot dV + \int_V \rho \cdot q \cdot dV$$

equalization of unbreak

$$\frac{\partial \rho}{\partial \tau} + div(\rho \cdot \vec{c}) = 0 ,$$

equalization of the state

$$\left(\frac{\partial v}{\partial T}\right)_p \cdot \left(\frac{\partial T}{\partial p}\right)_v \cdot \left(\frac{\partial p}{\partial v}\right)_T = -1 ,$$

equalization of process

$$\frac{dp}{p} + n \cdot \frac{dv}{v} = 0.$$

In general case such system of differential equalizations can not be decided even numeral.

There is a row of difficulties at the design of stream, which are related both to complication of physical processes which take a place in the probed vehicles and with the problems of adequacy of mathematical models. Calculations are executed with the use of the application programs, intended for the design of spatial turbulent flows in the devices of difficult form, for example, ANSYS/Flotran, Fluent, CFX-TASCflow, Flower but other

In these programs Nav'e –Stoks's equalization is decided numeral :

$$\frac{du_i}{d\tau} = \rho \cdot F_i - \frac{\partial p}{\partial x_i} + \frac{\partial}{\partial x_j}\left[\mu \cdot \left(\frac{\partial u_i}{\partial x_j} + \frac{\partial u_j}{\partial x_i} - \frac{2}{3}\frac{\partial u_k}{\partial x_k}\delta_{ij}\right)\right],$$

where $\delta_{ij} = \begin{cases} 1 \text{ ï ðè } i = j \\ 0 \text{ ï ðè } i \neq j \end{cases}$.

Often averaged by Reynolds equalization of motion is decided:

$$\frac{\partial \overline{c_i}}{\partial \tau} + \overline{c}_j \cdot \frac{\partial \overline{c_i}}{\partial x_j} = \vec{F} - \frac{1}{\rho} \cdot \frac{\partial \overline{p}}{\partial x_i} + \frac{\partial}{\partial x_j}\left(\nu \cdot \frac{\partial \overline{c_i}}{\partial x_j} - \overline{c_i' c_j'}\right).$$

As a rule, programs of such complexes has a general kernel and can be divided into 4 groups :

1) the programs of preparations of geometrical and gas-dynamic basic data, workings in the conversational mode with visualization of geometry of running part;
2) programs of construction of calculation area: calculation of co-ordinates of knots and birth-certificate of net with visualization of net surfaces;
3) gas-dynamic programs: initial approaching and flowing around;
4) programs of visualization of results of gas-dynamic_calculations: construction of the graphs, isolines and vectors of streamline.

Dyadechko A.M., *EL adviser*

ENGINE MODIFYING

Krivonos D.V., *gr. TM-51*

An engine whose purpose is to produce kinetic energy output from a fuel source is called a prime mover; alternatively, a motor is a device which produces kinetic energy from a preprocessed "fuel" (such as electricity, a flow of hydraulic fluid or compressed air).

For more conventional, reciprocating internal combustion engines, the fundamental theory for two-stroke engines was established by Sadi Carnot, France, 1824, whilst the American Samuel Morey received a patent on April 1, 1826. Sir Dugald Clark (1854 – 1932) designed the first two-stroke engine in 1878 and patented it in England in 1881. Automotive production has used a range of energy-conversion systems. These include electric, steam, solar, turbine, rotary, and piston-type internal combustion engines. The petrol internal combustion engine, operating on a four-stroke Otto cycle, has been the most successful for automobiles, while diesel engines are used for trucks and buses. Karl Benz was one of the leaders in the development of new engines. In 1878 he began to work on new designs. He concentrated his efforts on creating a reliable gas two-stroke engine that was more powerful, based on Nikolaus Otto's design of the four-stroke engine. Karl Benz showed his real genius, however, through his successive inventions registered while designing what would become the production standard for his two-stroke engine. Benz was granted a patent for it in 1879.

In 1896, Karl Benz was granted a patent for his design of the first engine with horizontally-opposed pistons. Many BMW motorcycles use this engine type. His design created an engine in which the corresponding pistons move in horizontal cylinders and reach top dead centre simultaneously, thus automatically balancing each other with respect to their individual momentums. Engines of this design are often referred to as flat engines because of their shape and lower profile. They must have an even number of cylinders and six, four or two cylinder flat engines have all been common.

The most well-known engine of this type is probably the Volkswagen beetle engine. Engines of this type continue to be a common design principle for high performance aero engines (for propeller driven aircraft) and, engines used by automobile producers such as Porsche and Subaru.

The first half of the twentieth century saw a trend to increasing engine power, particularly in the American models. Design changes incorporated all known methods of raising engine capacity, including increasing the pressure in the cylinders to improve efficiency, increasing the size of the engine, and increasing the speed at which power is generated. The higher forces and pressures created by these changes created engine vibration and size problems that led to stiffer, more compact engines with V and opposed cylinder layouts replacing longer straight-line arrangements. In passenger cars, V-8 layouts were adopted for all piston displacements greater than 250 cubic inches (4 liters).

The design principles favored in Europe, because of economic and other restraints, leant toward smaller cars and corresponding design principles that concentrated on increasing the combustion efficiency of smaller engines. This produced more economical engines with earlier four-cylinder designs rated at 40 horsepower (30 kW) and six-cylinder designs rated as low as 80 horsepower (60 kW), compared with the large volume V-8 American engines with power ratings in the range from 250 to 350 hp (190 to 260 kW).

Earlier automobile engine development produced a much larger range of engines than is in common use today. Engines have ranged from 1 to 16 cylinder designs with corresponding differences in overall size, weight, piston displacement, and cylinder bores. Four cylinders and power ratings from 19 to 120 hp (14 to 90 kW) were followed in a majority of the models. Several three-cylinder, two-stroke-cycle models were built while most engines had straight or in-line cylinders. There were several V-type models and horizontally opposed two- and four-cylinder makes too. Overhead camshafts were frequently employed. The smaller engines were commonly air-cooled and located at the rear of the vehicle; compression ratios were relatively low. The 1970s and '80s saw an increased interest in improved fuel economy which brought in a return to smaller V-6 and four-cylinder layouts, with as many as five valves per cylinder to improve efficiency.

Chuchilina L.M. *EL adviser*

ENVIRONMENTALLY SOUND MANAGEMENT OF SOLID WASTES AS AN IMPORTANT STEP TO SUSTAINABLE DEVELOPMENT

Belopolskaya O., Boronos D., *student*

A widely-used and accepted international definition of sustainable development is: *'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'*. Globally we are not even meeting the needs of the present let alone considering the needs of future generations. The past 20 years have seen a growing realization that the current model of development is unsustainable. Our way of life is placing an increasing burden on the planet. The increasing stress we put on resources and environmental systems such as water, land and air cannot go on forever. We all need to make different choices if we are to achieve the vision of sustainable development. This is particularly true for our everyday actions.

Environmentally sound management of wastes is among the environmental issues of major concern in maintaining the quality of the Earth's environment and especially in achieving environmentally sound and sustainable development in all countries. The household solid waste (HSW) and dust are daily collect in every occupied item, and derivate huge problems, their concerning recycling.

"Ukraine can sink in waste"- to such conclusion there came the participants of a round table on ecological questions, which was held in "Ukrinform". Every year on garbage dumps acts of 26-27 millions tons household waste, which total makes more than 35 billions tons. They occupy of 130 thousand hectares. 90% of these territories do not meet basic environmental standards and are polluting air, water and soil. Paper, scrap metal, and glass are used as recyclable wastes, but the percentage of recovered (recycled) waste is obviously not sufficient. Moreover, in Ukraine there is no system of separate waste collection, so sorting of waste at the collection stations or landfills is necessary.

The situation is critical. There are many different reasons, which have resulted in it:

- the weak nature protection legislation;
- there is no interest at the investors to give money for processing waste;
- insufficient ecological education in our society.

There are some ways correctly to act with waste. They are:

- burial place;
- burning ;
- processing;

The most widespread way is a burial place of waste. Approximately 90 percents wastes dig in before this time in USA. But even the large areas of ground are necessary for a usual burial place, and it promotes pollution of underground waters and top layers of ground by connections of heavy metals, it dangerously for the people's health and threat for an environment (as for restoration of a layer of ground by thickness of 15 centimeters, without intervention of the men, 3000 years are necessary approximately).

Therefore in western and central Europe the way of a burial place was replaced with burning. The burning has reduced volume of dust on 70-90 of percents. Heat at burning dust used for reception of the electric power. But in cities, which used these burning furnaces for dust, the structure of air became worse. Therefore burial place of waste remained by the most popular method of the decision of a problem with waste. The most perspective way of the decision of a problem is the processing of waste. The basis of processing is sorting of dust and development of technological level of processing.

As to Ukraine that almost 100 percents of dust are dig in. Before this time the tariffs for accommodation of waste are not given in the order. If in Europe pay for it 40 dollars for ton, in USA – 90 dollars for ton, in our city (Sumy) it is 4 hryvnas for ton(over 1 dollar).

Abroad tax, storage, recycling of waste is favorable business, and for us is unprofitable. Ukraine should take for a basis the European slogan: *"With waste the incomes"*. In its realization the main purpose is not a raising of the tariffs, and creation of a complete productive chain: *the tax, sorting, recycling, processing.* With the waste it is possible to receive the cheap petroleum, synthetic fabrics, and goods of daily demand. That is not subject to processing should be burnt.

At the present stage Ukraine should put before itself such tasks:

- Selection of dust. It will be by the important step for introduction in Ukraine not burial places, and processing of waste. As only then the investments on construction of factories on processing dust will act in our country, when the system of selection of dust will be adjusted.
- To reduce weight of waste at the expense of increase of culture of manufacture
- To give credit and tax advantages to the enterprises, which are engaged in processing of waste.
- To strengthen ecological education of the population

Zolotova S.G., *EL adviser*

Секція студентів IV курсу
THE ECONOMIC ESTIMATION OF ENVIRONMENTAL QUALITY

Marekha I.S., gr. *E-42*

Environmental valuation is largely based on the assumption that individuals are willing to pay for environmental gains and, conversely, are willing to accept compensation for some environmental losses. The individual demonstrates preferences, which, in turn, place values on environmental resources. That society values environmental resources is certain; monetizing the value placed on changes in environmental assets such as coastal areas and water quality is far more complex. Environmental economists have developed a number of market and non-market-based techniques to value the environment.

The value of a natural resource can be monetized based on its value as a factor of production. When a natural resource has direct value as a factor of production and the impact of environmental degradation on future output of that resource can be accurately measured, the resultant monetary value of the decline in production or higher cost of production can be measured. Because many goods and services produced by the environment are not sold in markets, the factor of production method generally fails to capture the total value of the resource to society.

The standard method used to measure the net economic benefit of a good or service in a market involves an examination of consumer and producer surplus.

A final market-based valuation method is that of Defensive Expenditures, which are made on the part of industry and the public either to prevent or counteract the adverse effects of pollution or other environmental stressors. The defensive expenditures method, also known as the averting behavior approach, monetizes an environmental externality by measuring the resources expended to avoid its negative impacts on a surrounding community.

The Hedonic Price Method of environmental valuation uses surrogate markets for placing a value on environmental quality. The real estate market is the most commonly used surrogate in hedonic pricing of environmental values. Air, water, and noise pollution have a direct impact on property values. By comparing properties with otherwise similar characteristics or by examining the price of a property over time as environmental conditions change and correcting for all no environmental factors, information in the housing market can be used to estimate people's willingness to pay for environmental quality.

The Travel Cost method is employed to measure the value of a recreational site by surveying travelers on the economic costs they incur when visiting the site from some distance away. These expenditures are considered an indicator of society's willingness to pay for access to the recreational benefits provided by the site.

The Contingent Valuation Method (CVM) is a non-market-based technique that elicits information concerning environmental preferences from individuals through the use of surveys, questionnaires, and interviews. When deploying the contingent valuation method, the examiner constructs a scenario or hypothetical market involving an improvement or decline in environmental quality.

In Choice Experiments respondents are presented with a menu of alternatives relative to environmental policy options, such that preferences for various components or attributes can be examined at a more refined level. Choice experiments provide independent values for the individual attributes of an environmental program. The emphasis on examining the attributes of the program reduces bias attributed to yea-saying (simply approving of the general policy and agreeing to fund it at an excessively high level) and provides the analyst with a more complete understanding of individual preferences.

Environmental valuation techniques are primarily driven by the principle that individuals are self-interested and demonstrate preferences that form the basis of market interactions. These market interactions demonstrate how individuals value environmental goods and services. The market-based nature of economic theory emphasizes the maximization of human welfare. The market, in turn, determines resource allocation based on the forces of supply and demand. The environment, thus, is used as an instrument to achieve human satisfaction. In turn, the environment can be treated like any other commodity and its associated value can be broken down into many elements. In this manner, environmental valuation can be viewed as a mechanistic approach in which the total value of an environmental system is assessed in terms of the value of its individual parts.

Lytvynenko G.I., *ELA*

THE TIME MANAGEMENT AND LEADERSHIP

Holets T. A.,gr. *M-43*

Time in the organization is constant and irreversible. Nothing can be substituted for time. Worse, once wasted, it can never be regained. Leaders have numerous demands on their limited time. Time keeps getting away and they have trouble controlling it. No matter what their position, they cannot stop time, they cannot slow it down, nor can they speed it up. Yet, time needs to be effectively managed to be effective.

On the other hand, you can become such a time fanatic convert by building time management spreadsheets, creating priority folders and lists, color coding tasks, and separating paperwork into priority piles; that you are then waste more time by trying to manage it. In addition, time management techniques may become so complex that you soon give up and return to your old time wasting methods.

Effective time management is crucial to accomplishing organization tasks as well as to avoiding wasting valuable organizational assets. The following nine rules will aid you:

Get Started - This is one of the all time classic time wasters. Often, as much time is wasted avoiding a project, as actually accomplishing the project. A survey showed that the main difference between good students and average students was the ability to start their homework quickly.

Get into a routine - Mindless routines may curb your creativity, but when used properly, they can release time and energy. Choose a time to get certain task accomplished, such as answering email, working on a project, completing paper work; and then sticking to it every day. Use a day planning calendar. There are a variety of formats on the market. Find one that fits your needs.

Do not say yes to too many things - Saying yes can lead to unexpected treasures, but the mistake we often make is to say yes to too many things. This causes us to live to the priorities of others, rather than according to our own. Every time you agree to do something else, something else will not get done. Learn how to say no.

Do not commit yourself to unimportant activities, no matter how far ahead they are - Even if a commitment is a year ahead, it is still a commitment. Often we agree to do something that is far ahead, when we would not normally do it if it was in the near future. No matter how far ahead it is, it will still take the same amount of your time.

Divide large tasks - Large tasks should be broken up into a series of small tasks. By creating small manageable tasks, the entire task will eventually be accomplished. Also, by using a piecemeal approach, you will be able to fit it into your hectic schedule.

Do not put unneeded effort into a project - There is a place for perfectionism, but for most activities, there comes a stage when there is not much to be gained from putting extra effort into it. Save perfectionism for the tasks that need it.

Deal with it for once and for all - We often start a task, think about it, and then lay it aside. This gets repeated over and over. Either deal with the task right away or decide when to deal with it.

Set start and stop times - When arranging start times, also arrange stop times. This will call for some estimating, but your estimates will improve with practice. This will allow you and others to better schedule activities. Also, challenge the theory, "Work expands to fill the allotted time." See if you can shave some time off your deadlines to make it more efficient.

Plan your activities - Schedule a regular time to plan your activities. If time management is important to you, then allow the time to plan it wisely.

No doubts, that the observance of these rules will enable you to operate time more effectively. And it, in its turn, is the keystone to successful realization of any activity or project.

Lytvynenko G. I., *ELA*

INTERNET SECURITY AND PRIVACY

Pelepei R.L., *IN-41*

Most of the security problems encountered on the Internet are due to human mistakes.

The first level of security "leaks" usually occurs during the development of the website. If a website developer doesn't correctly plan or proof test his scripts, an eventual hacker could extract confidential information from the website itself. This is usually done by exploiting particular errors or by inserting some particular code snippets into an input field or website url.

The usual way to fix this problem is to make better planning when coding your website and to further test your scripts, especially those dealing with private data.

Another kind of security problem are problems due to users neglecting their own private information. A good example of this kind of neglecting is when someone gives away his or her email address on a public forum. Some "crawler bots" (small programs coded to collect email addresses) could find the address and add it to a mass-mail list, sending spam to the user. This may not be a dangerous "security" problem but the same can also happen with user names and passwords. Most of the big hacking cases occur simply because an important user of a particular network gave away his private information.

The main way to fix this problem is to be very careful to who and how you display confidential data. The best way being - simply not to display them.

Another big security problem is the download of virus-infected files. Most of the virus will usually not affect your computer; still, some of them might contain damageable programs for your computer or even allow a distant user to take control of your computer. These programs are called a "Trojan Horse". While some people may believe the opposite, it is impossible for someone to download potentially damaging files to your computer without your content, as long as you don't let your computer filter your downloads. At the same time, it is barely impossible to simply "get a virus" by surfing on the Internet. Virus mostly come with downloaded files that you usually consented to download or in attached email files that you opened without previously checking it.

That being said, the trick here is again to be extremely careful when you download a file. Peer-to-peer networks are also good virus hives and it is preferable to stay away from them.

The last and probably most uncommon internet security problem is hacking itself. True hacking usually means that the hacker had no or few information on his target and does most of the breakthrough with his own knowledge. Common users are usually not the target of hackers; hackers will usually try to get through security barrier of big organization's Internet servers or try to hack Website Servers. They usually get to do so by using some software engineering flaws that have yet to be fixed (most of Windows XP auto patching aims to fix these flaws for example).

At large, there is no particular way to help in this case, unless you're the developer of that software. Simply report the case to the developer and wait for a security fix or a new version with better security.

Hopefully, some companies actively work at the elimination of all these problems. For example, Norton provides users with a whole array of security tools (e.g.: Norton Antivirus) that do make a difference when it comes to clean up (virus-wise) your computer. Microsoft is also developing software called "Microsoft Antispyware" that aims to help the users keep their privacy, eliminating history data and Spywares.

What you need to keep in mind is that most of the security problems on the Internet are due to the users' misunderstanding of the media or human mistakes. You need to be extremely careful when transferring files or displaying private information and pay close attention to new kinds of virus or security leaks. It's best to also keep in mind that the Internet is not the only network, local or wireless networks are as much vulnerable as is the Net.

Lytvynenko G. I., *ELA*

BANKRUPTCY: CAUSES AND RISKS

Saban L., *gr. F-42*

More and more these days, people at first sign of financial trouble consider bankruptcy as an end-all solution for their credit problems. But bankruptcy is not only a solution - it is long and difficult process.

And what is bankruptcy? Bankruptcy is one of the most complex areas of law, incorporating elements of contract law, corporate law, tax law and real estate law. **Bankruptcy** is a legally declared inability or impairment of ability of an individual or organizations to pay their creditors.

The primary purpose of bankruptcy is:

(1) to give an honest, but unfortunate, debtor a "fresh start" in life by relieving the debtor of most debts, and

(2) to repay creditors in an orderly manner to the extent that the debtor has the means available for payment. Bankruptcy allows debtors to be discharged from the legal obligation to pay most debts by submitting their non-exempt assets, if any, to the jurisdiction of the bankruptcy court for eventual distribution among their creditors.

What circumstances lead a company to file for bankruptcy? Sometimes debt grows over time until the business owners realize they have no hope of paying it off.

Companies sometimes face a sudden loss of revenue that prevents them from paying their suppliers. For example, a printing company might draw 30 percent of its revenue from a single publisher. If that publisher moved its contract to a different company, the printer would lose almost a third of its revenue. However, it would still have to pay employee wages, health care plans, taxes, suppliers and all of its other bills.

A sudden, massive financial loss can result in instant debt without the revenue to pay for it. This is often the result of some wrongdoing on the company's part. A lawsuit or government fines can cost a company millions or billions of dollars. Scandals can also cause stock prices to drop.

Dyadechko A.M., *ELA*

ENVIRONMENTAL ASPECTS OF THE SOCIAL-ECONOMIC DEVELOPMENT OF UKRAINE

Poduzhailo O.V., *gr. E-43*

Environmental crisis is a phenomenon of global world-wide importance. In Ukraine this crisis takes place under the crash of the former regime with fundamental changes in all spheres of life. Nowadays, environmental safety in Ukraine is determined, not only by the evident problems themselves but equally, by the specifics in the solving of these problems on route to the market.

The transition from an administrative-command to a market economy in Ukraine is taking place with great social losses. The increasing number of old technologies and equipment and the revival of existing production, due to the economical crisis, is increasing the risk of technological catastrophes in Ukraine.

Problem of environmental security for Ukraine will become unprecedented. Existing are realistic threats that the resulting combination of political or other contributing factors over a period of time will appear in such market economical forms that will undermine the ecological safety of Ukraine.

Environmental-safe strategy of social-economical development of Ukraine should include:

- taking into consideration all natural recourses as the bases for determining of the measures and their periodical reconsideration related to exploitation of objects in association with technical and ecological changes, considering that there are regions which are undergoing the most dangerous ecological changes;
- accepting the principle of the integrated use of natural resources;
- the most economical mastering and exploitation of natural resources, accounting for the inter-relational influence, it is necessary to implement these rules at local and governmental levels;
- development of an integrated research program, which will cover all aspects of the rational utilization of water, soil and biological resources, accounting for social-economic factors;
- implementation of scientific and technical approaches for rational exploitation of the environment.

Dyadechko A.M., *ELA*

QUANTUM COMPUTERS

Polevik S.I., *E-43*

A quantum computer is any device for computation that makes direct use of distinctively quantum mechanical phenomena, such as superposition and entanglement, to perform operations on data. In a classical (or conventional) computer, information is stored as bits; in a quantum computer, it is stored as qubits (quantum bits). The basic principle of quantum computation is that the quantum properties can be used to represent and structure data, and that quantum mechanisms can be devised and built to perform operations with this data. A classical computer has a memory made up of bits, where each bit holds either a one or a zero. A quantum computer maintains a sequence of qubits. A single qubit can hold a one, a zero, or, crucially, a quantum superposition of these, allowing for an infinite number of states. A quantum computer operates by manipulating those qubits with quantum logic gates. An example of an implementation of qubits for a quantum computer could start with the use of particles with two spin states: "up" and "down" .But in fact any system possessing an observable quantity A which is conserved under time evolution and such that A has at least two discrete and sufficiently spaced consecutive eigenvalues, is a suitable candidate for implementing a qubit. This is true because any such system can be mapped onto an effective spin-1/2. Although quantum computing is still in its infancy, experiments have been carried out in which quantum computational operations were executed on a very small number of qubits. Research in both theoretical and practical areas continues at a frantic pace, and many national government and military funding agencies support quantum computing research to develop quantum computers for both civilian and national security purposes, such as cryptanalysis. If large-scale quantum computers can be built, they will be able to solve certain problems much faster than any of our current classical computers (as Shor's algorithm). Quantum computers are different from other computers such as DNA computers and traditional computers based on transistors. Some computing architectures such as optical computers may use classical superposition of electromagnetic waves, but without some specifically quantum mechanical resources such as entanglement, hey have less potential for computational speed-up than quantum computers.

Dyadechko A.M., *ELA*

ARCHITECTURAL VISUALIZATION

Sulim Vladimir, *IN-43*

Visualization is any technique for creating images, diagrams, or animations to simplify data understanding. In architectural design visualization is the creation of building or landscape image enough close to reality. The image is built according to general layouts, fronts and profiles of a structure, topographical maps and other drawings.

Visualization helps to visually represent shapes and sizes of designed building, materials of which it is composed and helps to imagine it in the existing environment. This, in turn, permits to optimally satisfy requests to structure appearance taking into account architectural standards.

Now visualization is used in many architectural and engineering design firms. It is made with the help of computers and special CAD and three-dimensional modeling software. It becomes very effective in cases of complex structures. So studying the principles and methods of visualization is an enough actual problem. The process of visualization includes three main steps. The first one supposes the digitization of necessary parts of structure drawings if they were made on paper. The next step is building of the 3d structure model. In our work the Autodesk AutoCAD software was chosen for these two steps as enough universal and functional. All parts of building can be obtained using a set of simple operations such as contour extruding, subtraction, union, rotation, translation, mirroring etc.

The third step includes material design and its assignment to the corresponding group of building parts. Each material in graphical software is an analog of a real material and has the same properties as color, transparency, reflectivity, refractivity, roughness etc. It can be represented with a texture which then particularly covers the whole surface of building parts. Then virtual light sources, cameras and environmental elements are added to the scene with building, shooting foreshortening and background are selected. For the purposes of this step the Autodesk 3ds max software was used. It permits to reach enough reality of building images after appropriate settings.

The last step of visualization is scene rendering which goes without manual intervention. It is a process of surface brightness computation called ray tracing and final image preparation.

Dyadechko A.M., *ELA*

MONEY AND MONEY SUBSTITUTES

Tokar Yuliya, *E-41*

All of us know that a word of "money" means. But not everyone knows why money uses.

Where the free exchange of goods and services is unknown, money is not wanted.

In the present stage of economic development, the occasions when direct exchange is both possible and actually effected have already become very exceptional.

In the first place, money is especially well adapted to constitute the substance of a generic obligation. Whereas the fungibility of nearly all other economic goods is more or less circumscribed and is often only a fiction based on an artificial commercial terminology, which of money is almost unlimited. Only that of shares and bonds can be compared with it.

We may give the name commodity money to that sort of money that is at the same time a commercial commodity; and the name fiat money to money that comprises things with a special legal qualification. A third category may be called credit money, this being that sort of money which constitutes a claim against any physical or legal person.

Those who need money are willing to pay for it and those who lend money expect to be compensated. The interest rate is the cost of money.

Money would still be unnecessary if the means of production were socialized, the control of production and the distribution of the finished product were in the hands of a central body. But it cannot be in a modern society.

The money market is a market in which the cash requirements of market participants who are long cash are met along with the requirements of those that are short cash.

There are three types of money market funds: (1) general money market funds, which invest in wide variety of short-term debt products; (2) U.S. government short-term funds, which invest only in U.S. Treasury bills or U.S. government agencies; and (3) short-term municipal funds.

The largest players in the global money markets are financial institutions — namely depository institutions (i.e., commercial banks, thrifts, and credit unions), insurance companies, and investment banks.

Lytvynenko G.I., *EL4*

POWER BATTERY THAT LASTS FOR 30 YEARS

Yankov D.S., *DM-41*

Your next laptop could have a continuous power battery that lasts for 30 years without a single recharge thanks to work being funded by the U.S. Air Force Research Laboratory. The breakthrough beta voltaic power cells are constructed from semiconductors and use radioisotopes as the energy source. As the radioactive material decays it emits beta particles that transform into electric power capable of fueling an electrical device like a laptop for years.

Although beta voltaic batteries sound Nuclear they're not, they neither use fission/fusion or chemical processes to produce energy and so (do not produce any radioactive or hazardous waste). Beta voltaic generates power when an electron strikes a particular interface between two layers of material. The Process uses beta electron emissions that occur when a neutron decays into a proton which causes a forward bias in the semiconductor. This makes the beta voltaic cell a forward bias diode of sorts, similar in some respects to a photovoltaic (solar) cell. Electrons scatter out of their normal orbits in the semiconductor and into the circuit creating a usable electric current.

The profile of the batteries can be quite small and thin, a porous silicon material is used to collect the hydrogen isotope tritium which is generated in the process. The reaction is non-thermal which means laptops and other small devices like mobile phones will run much cooler than with traditional lithium-ion power batteries. The reason the battery lasts so long is that neutron beta-decay into protons is the world's most concentrated source of electricity, truly demonstrating Einstein's theory E=MC2.

The best part about these cells are when they eventually run out of power they are totally inert and non-toxic, so environmentalists need not fear these high tech scientific wonder batteries. If all goes well plans are for these cells to reach store shelves in about 2 to 3 years.

Lytvynenko G.I, *ELA*

CONTROL BALL VALVES

O.I.Sidorets, *DM-41*

Pompazh is a transient in centrifugal compression facility and expressed in a burble fluid through the driving wheel of compression facility. This process comes, when energy, transferrable the buckets of driving wheel to the gas current, unsuffices for overcoming of resistance head a gridiron from the side of blowing of compression facility during work on behaviors of low charges, here are tearing away of gas current from the buckets of driving wheel. It results in arrival of bands underpressured and вихреобразованием in межлопаточном space, as a result there are an enhanceable jarring action and noise in the beginning. Further development of попажа (on frequencies from 0,5 there are to a few Hertzs) often results in breakages with the large breaks of centrifugal compression facility, drive engine of GPA and other installation.

For the decision of this problem different methods and facilities of anti-surge guard, the task of which is taken to non-admission of approaching of duty compression facility to the bound of помпажа due to control of characteristics of compression facility, were designed (pressure and gas consumption before and after compression facility). Presently on OAO by him. Frunze is designed антипомпажный regulative flap on the basis of construction of ball cock.

Basic principles and constructions of антипомпажной guard are in-process considered. And also by the programmatic package of ANSYS CFX the running feature of антипомпажного flap was projected on the basis of ball cock and its numeral calculation is made. As a result got high-quality picture of gas flow through a flap, card of dependence of expenditure from the corner of turn.

EL advisor, S.G.Zolotova

Секція студентів V курсу
COMPARING MAC AND PC

Prokhnenko Y., *student*

Nowadays you can see computers in all spheres of our life. Most of the users, however, don't even imagine the computers that are different from the widespread ones. But there is another choice! Apple Macintosh (Mac) and Personal Computer (PC) platforms started approximately at the same time. As for now, Apple has less than 3% of the computer market, so it is obvious that most purchasers buy PCs. There are, however, still reasons to buy a Mac.

Macintosh operating system, so called Mac OS has several advantages over Windows. First of all, I find the Mac OS more intuitive. Once you get used to it, it is easier to find the functions that you want.

Second, the Mac OS is more secure. There are no where near the number of malicious programs out there for the Mac OS. You are constantly hearing about this virus or that virus affecting Windows. None of them are dangerous for the Mac OS. OS X has been out for over 5 years and it was just this year when the first virus for it was reported.

There are two reasons why the Mac OS is more secure. First of all, Apple does a better job of closing security holes in its OS than Microsoft does. The second reason is Mac constitutes a much smaller part of the computer market and, therefore, makes much smaller target for malware developers and hackers.

The third advantage is its elegance and functionality. For example, suppose you want to open multiple folders that are in the same window and you want them to be open at the same time. In Windows, you have to open each one individually. In the Mac OS, you can do it by selecting them and double-click. Another nice feature is the system-wide spelling check function, which is available to all programs. If I were writing for example an e-mail on Mac, I could tell my browser to check the spelling as I type it. While writing it on Windows PC, I have to compose it in MS Word to make sure that I get the spelling correct.

The only significant advantage that I see in Windows is that it is more common OS. Therefore, there are more programs available for it. Now, there is a lot of software for Mac in the internet, but it is quite difficult to find something special, for example professional environments. Besides, there aren't many games for the Mac. When Macs first came out, there was an attitude that for playing games you go for Mac while for work to be done, you go for PC. Now the situation has been reversed.

That's why "To Mac or not to Mac – this is a question!"

Zolotova S.G., *EL adviser*

MOBILE PHONE RADIATION

Oleshko A., *student*

What is radiation?

Radiation is energy travelling through space in the form of waves or particles. It occurs naturally and has always been around, we've evolved with it and we're bombarded with it in one form or another every day of our lives – from the earth, from space and even within our own bodies. Some experts suggest a little radiation is a good thing and we all know of its uses in medical science to combat and diagnose some illnesses.

There are various types of radiation but we won't get into the physics of atoms, neutrons and protons (there are plenty of websites that explain it if you want the scientific stuff) – but we will tell you why radiation is in mobile phones and whether or not you need to worry about it.

Radiation and your mobile

The type of radiation emitted from mobile phones is electromagnetic radiation. It's present in mobiles because they use radio frequency (RF) waves to make and receive calls. The doses are considered to be very small as the emissions are low power (short range). Nevertheless, there are ways in which you can reduce exposure to these waves.

The health risks

Despite extensive research on the subject, there has been no conclusive evidence that using a mobile phone causes long term harmful effects in humans.

The pace of mobile phone technology is advancing at a far quicker pace than the research required into the potential harm they can cause; much more research is needed (and is being undertaken) before we can know for certain the effects they have on human health. Nevertheless, mobiles do emit low doses of radiation so common sense dictates precaution should be taken when using them.

Studies have shown that exposure to the RF waves emitted from mobiles can cause:

- slightly raised blood pressure at the time of use, pressure returning to normal when use is stopped (to put this into perspective, our blood

pressure changes regularly throughout the day and is even affected by tasks such as speaking)

- direct brain warming after prolonged use, which disperses as soon as you stop using your phone and causes no harm
- mild fatigue after prolonged use
- a recent study in Sweden suggested that acoustic neuromas (benign tumours of the acoustic nerve) are twice as common in mobile phone users than in those who do not use mobiles

There is no evidence that using a mobile phone causes tumours, memory impairment, cancer, brain damage, foetal damage.

The health risk is considered to be very, very small, although some individuals may be more susceptible to radiation than others. Whilst it's true that excessive exposure to RF waves causes heating, the spoof claims you may have heard about being able to cook an egg using a mobile phone are entirely false.

Reduce exposure

Whilst there's no evidence that mobiles produce sufficient levels of radiation to cause any lasting ill effects, there's no harm in taking simple precautions to reduce the levels of radiation you absorb from using your phone:

- moving your phone 20cm away from your head reduces radiation doses by about 98%
- hands free headsets dramatically reduce radiation emissions into the brain
- try not to chat for hours on end or, if you must, get a hands free kit
- there are a few devices on the market that you can fit to your phone that reduce the emissions of radiation or allow the body to neutralise the effects, but beware of over-hyped promotions by these manufacturers using scare tactics to market their products
- it's always sensible to take precautions where children are concerned as their developing brains and bodies are far more susceptible to radiation effects than adults, absorbing radiation at three times an adult's rate. Find out more about mobile phones and protecting your children

Zolotova S.G., *EL adviser*

AMAZING POSSIBILITIES OF NANOTECHNOLOGY

Pafrenenko K.O., *gr.FE – 31*

Nanotechnology originates from the Greek word meaning "dwarf". A nanometre is one billionth (10^{-9}) of a metre, which is tiny, only the length of ten hydrogen atoms, or about one hundred thousandth of the width of a hair! Although scientists have manipulated matter at the nanoscale for centuries, calling it physics or chemistry, it was not until a new generation of microscopes were invented in the nineteen eighties in IBM, Switzerland that the world of atoms and molecules could be visualized and managed.

In simple terms, nanotechnology can be defined as 'engineering at a very small scale', and this term can be applied to many areas of research and development – from medicine to manufacturing to computing, and even to textiles and cosmetics. It can be difficult to imagine exactly how this greater understanding of the world of atoms and molecules has and will affect the everyday objects we see around us.

Because of the opportunities nanotechnology offers in creating new features and functions, it is already providing the solutions to many long-standing medical, social and environmental problems. Because of its potential, nanotechnology is of global interest. It is attracting more public funding than any other area of technology, estimated at 3.8 billion euros worldwide in 2005. It is also the one area of research that is truly multidisciplinary. The contribution of nanotechnology to new products and processes cannot be made in isolation and requires a team effort, which may include life scientists – biologists and biochemists – working with physicists, chemists and information technology experts. Consider the development of a new cochlear implant, and what that might require – at least a physiologist, an electronic engineer, a mechanical engineer and a biomaterials expert. This kind of teamwork is essential, not only for a cochlear implant, but for any new, nano-based product whether it is a scratch-resistant lens or a new soap powder.

Nano scientists are now enthusiastically examining how the living world 'works' in order to find solutions to problems in the 'non-living' world. The way marine organisms build strength into their shells has lessons in how to engineer new lightweight, tough materials for cars; the way a leaf photosynthesizes can lead to techniques for efficiently generating renewable energy; even how a nettle delivers its sting can suggest better vaccination techniques. These ideas are all leading to what is termed 'disruptive' solutions, when the old ways of making things are completely overtaken and discarded,

in much the same way as a DVD has taken over from videotape, or a flat screen display from a cathode ray tube.

Carbon nanotubes are a recently discovered unique material possessing amazing electronic, thermal, and structural properties They are highly conductive both to electricity and heat, with an electrical conductivity as high as copper, and a thermal conductivity as great as diamond. They offer amazing possibilities for creating future nanoelectronic devices, circuits and computers. Carbon nanotubes also have extraordinary mechanical properties – they are 100 times stronger than steel, while only one sixth of the weight. These mechanical properties offer huge possibilities, for example, in the production of new stronger and lighter materials for military, aerospace and medical applications. Other applications include lubricants, coatings, catalysts and electro-optical devices.

The cost, purification, separation of nanotube types (Single Walled NanoTubes from Multi Walled NanoTubes), constraints in processing and scaling up and assembly methods are still hurdles for some applications. However, there are already products containing nanotubes on the market, for example, in some tennis racquets nanotubes are used to reinforce the frame and improve the racquet's ability to absorb shocks.

Some engineered nanoparticles, including carbon nanotubes, although offering tremendous opportunities also may pose risks which have to be addressed sensibly in order that the full benefits can be realized. We have all learned how to handle electricity, gas, steam and even cars, aeroplanes and mobile phones in a safe manner because we need their benefits. The same goes for engineered nanoparticles. Mostly they will be perfectly safe, embedded within other materials, such as polymers. There is some possibility that free nanoparticles of a specific length scales may pose health threats if inhaled, particularly at the manufacturing stage. Industry and government are very conscious of this, are funding research into identifying particles that may pose a hazard to health or the environment, and how these risks may be quantified, and minimized over the whole lifecycle of a given nanoparticle. There is no doubt that nanotechnology has great potential to bring benefits to society over a wide range of applications, but it is recognised that care has to be taken to ensure these advances come about in as safe a manner as possible.

Zolotova S.G. *EL adviser*

COMPUTATIONAL MODELING IN NANOMETER-SCALE TRIBOLOGY

Prodanov, N.V., *gr.FE – 31*

Tribology is the science about friction. Friction and wear have long been recognized as limiting factors to numerous applications and many areas of technology. Thus, there has been significant interest in understanding and controlling these processes. Some historical examples include the ancient Egyptians, who invented new technologies to move the stones used to build the pyramids; Coulomb, whose studies of friction were motivated by the need to move ships easily and without wear from land to the water; and Johnson, whose study of automobile windshield wipers led to a better understanding of contact mechanics and surface energies. Today, research and development is focused on microscale and nanoscale machines with moving parts, which continue to challenge our fundamental understanding of friction and wear. This has motivated researchers to study friction on ever-smaller scales to determine its fundamental cause. The study of atomic-scale friction has also paved the way for new innovations, such as the development of self-lubricating surfaces and wear-resistant materials. The mechanisms that lead to friction at the atomic scale can sometimes be quite distinct from the mechanisms that dominate at the macroscale. This has implications for nanometer-regime devices such as magnetic storage disks, which have been shrinking in size steadily over the last few years, and microelectromechanical systems where atomic-scale friction, adhesion and wear are the dominant processes.

The scientific study of atomic-scale friction has been on the rise since the late 1980's. This is due to the simultaneous development of sophisticated new experimental tools to measure friction over nanometer-scale distances at low loads, the rapid increase in computer power and processing speed, and the maturation of theoretical methods needed to study material processes in a realistic manner. For example, the surface force apparatus has provided new information related to friction and lubrication for many liquid and solid systems with unprecedented resolution. The friction-force and atomic-force microscopes allow the frictional properties of solids to be characterized with atomic-scale resolution under single asperity contact conditions. Other methods, such as the quartz crystal microbalance, also can be used to provide insight into the origin of friction. With the experimental apparatus currently available, it is possible to study sliding surfaces at the atomic-scale, and ultimately relate observed behavior to macroscopically-observed phenomena.

Theoretical models and simulations assist in the interpretation of experimental data and provide predictions of phenomena that the experiments can subsequently confirm or refute. These include analytic models and large-scale molecular dynamics (MD) simulations, among others. Analytic models have long been used to study friction. The strength of these idealized models is that they can be used to divide the complex motions that create friction into basic components defined by quantities such as spring constants, the curvature and magnitude of potential wells, and bulk phonon frequencies. The main weakness of these approaches is that simplifying assumptions must be made to apply these models to study friction that may lead to incorrect results.

Molecular dynamics computer simulations represent a compromise between analytic models and experimental conditions. For instance, MD simulations rely on approximate interatomic forces and classical dynamics, which is similar to what is needed for analytic models. In addition, simulations can reveal unanticipated phenomena that require further exploration, which is similar to what occurs in experiments. Moreover, a poor choice of simulation conditions can result in meaningless result, which is also the case in experimental studies. Thus, a thorough understanding of the strengths and weaknesses of MD simulations is crucial to both successfully implementing this approach and understanding its results.

Atomistic computer simulations appear, on the surface, to be rather straightforward to carry out: given a set of initial conditions and a way of describing interatomic forces, one simply integrates Newton's classical equation of motion using one of several standard methods. The simulations yield new relative atomic positions, velocities and forces and the atomic responses can be followed using animated movies. However, the effective use of MD simulations to study atomic-scale friction requires an understanding of many details not apparent in this simple analysis.

MD simulations of molecularly thin water film confined between two atomically flat diamond plates are described in the present work. The TIP4P rigid model is used for water molecules. Crystalline or glassy order is induced across the film when high pressure is applied. The onset of the glassy phase is characterized by rapidly increasing relaxation times. These manifest themselves through changes in the diffusion constant.

Zolotova, S.G. *EL adviser*

HISTORY OF CRYPTOGRAPHY

Chernyakova M., *student*

Cryptography (or cryptology; derived from Greek κρύπτω *kryptó* "hidden" and the verb γράφω *gráfo* "to write" or λέγειν *legein* "to speak") is the practice and study of hiding information. It's is one of the oldest fields of technical study we can find records of, going back at least 4 000 years. Ciphering has always been considered vital for diplomatic and military secrecy. Cryptography probably began in or around 2000 B.C. in **Egypt**, where hieroglyphics were used to decorate the tombs of deceased rulers and kings. These hieroglyphics told the story of the life of the king and proclaimed the great acts of his life.

The **ancient Chinese** used the ideographic nature of their language to hide the meaning of words. Messages were often transformed into ideographs for privacy, but no substantial use in early Chinese military conquests is apparent.

In **India**, secret writing was apparently more advanced, and the government used secret codes to communicate with a network of spies spread throughout the country.

The cryptographic history of **Mesopotamia** was similar to that of Egypt, in that *cuneiforms* were used to encipher text. This technique was also used in Babylon and Assyria. In the Bible, a Hebrew ciphering method is used.

The **Greek writer Polybius** invented the 5 x 5 Polybius Square, widely used in various cryptographic systems.

During the **Middle Ages**, cryptography started to progress.

By 1860 large codes were in common use for **diplomatic communications**, and cipher systems had become a rarity for this application. **The invention of telegraph and radio pushed forward the development of cryptographic protection of telecommunications**: the speed and the volumes of data traffic became considerable and more vulnerable to interception and decryption.

In the 20th century mathematical theory and computer science have both been applied to cryptanalysis. As the science of cryptology becomes increasingly sophisticated, most nations have found it necessary to develop special governmental bureaus to handle diplomatic and military security (the National Security Agency in theUnited States).

Great minds in Cryptography

Julius Caesar used his famous substitution cipher (the 'Caesar Cipher'), which shifted each letter four places further through the alphabet. **Sir**

Francis Bacon celebrated bilateral cipher. The 'wheel cipher' was invented by **Thomas Jefferson** around 1795, and although he never did very much with it, a very similar system was re-invented for use in World War II by the US Navy, which then called it the Strip Cipher. **Ronald L. Rivest, Adi Shamir** and **Leonard M. Adleman** invented the RSA computer-encryption algorithm. It was published in the September 1977 issue of Scientific American. Even today, it is used to keep text secret. Pretty Good Privacy (PGP) was released in 1991 by American **Phil Zimmerman**. To this day, it is considered a very secure way of communication across the Internet.

Did you know: CryptoBytes

In the period of **Renaissance** the creativity in many spheres also gave impulse to cryptography as a science and as an art of secret communications between the monarchs and emperors, like **Leonardo da Vinci, Cardinal Richelieu** and the **Kings of France Louis XII-XIV**. The «coding of messages», the substitution of words and figures by symbols and numerals of previously agreed character became wisely used in government correspondence. And the services of specialists in coding and decoding of secret letters became available as a result of this practice.

The writer **Edgar Allan Poe** had a great fascination with cryptography. Besides numerous references to it in his stories, he conducted his own cryptographic challenge in December 1839.

The workload of **(Russian)** code machine operators was enormous: between 1941 and 1945 they coded and decoded more than 1,6 million messages (or 1500 telegrams in cipher per day).

During WW2, **the neutral country Sweden** had one of the **most effective cryptanalysis departments** in the world. It was formed in 1936, and by the time the war started, employed 22 people. The department was divided into groups, each concerned with a specific language. The Swedes were very effective in interpreting the messages of all the warring nations. They were helped, however, by bungling cryptographers.

In a short story by Sir Arthur Conan Doyle, *The Adventure of the Dancing Men*, **Sherlock Holmes** is confronted by a simple substitution cipher. He solves the crime by deciphering a code in which the cipher text elements are hieroglyphics of little dancing men. Holmes figures these symbols are some kind of secret code.

Zolotova S.G., *EL adviser*

MERCHANDISING IS A MODERN TRADE OF SALES, MARKETING, PROMOTING, DISTRIBUTING, RETAILING, ADVERTISING, PUBLISIZING

Karpenko O., *student*

What is merchandising? Merchandising – is a part of marketing process, a modern technology of retail selling used by supermarkets, planning the best ways to do maximum sales.

It is widespread and popular nowadays and determines the methods of products selling, so the questions of Merchandising - are very actual. Merchandising origins from English word – «merchant», that means – seller.

Merchandising takes an interest of eventual buyers to the certain brands or groups in the places of sales without help of special shop assistants.

Due to Merchandising supermarkets use less sale peoples to sell products in the best way.

Purpose of Merchandising - to cause a desire of potential costumer to choose your commodity exactly.

Merchandising has own principles and rules. The Rule of presence, The Rule of location on shelves, The Rule of priority places, The principle of help a buyer, The Rules of placing of price-lists, The Rule of cleanness and exactness are the main rules of Merchandising.

The most interesting rule is The Rule of priority places. It provides that the priority place – is a place in the center of the supermarket, where near 80% of goods are selling. If I talking about alcoholic beverages, it would be situated straight to the movement, in place the most noticed for buyers. Buyers notice more goods which are situated to the right of them then to the left.

Merchandising gives answers for the great number of interesting questions! For example, how is it correct to place commodities on shelves that can considerably influence on the level of his sales?

How to do laying out and dispose selling aids so that a buyer pay on them attention and be able to read all publicity information?

What side to place a commodity to the buyer? How is it correct to compel the commodities of shelf?

Zolotova S.G., *EL adviser*

PUBLIC CHOICE THEORY: DEVELOPMENT ANT CONTEMPORARY APPLICATIONS

Tkachenko A., *student*

Public choice theory is the use of modern economic tools to study problems that are traditionally in the province of political science.

James M. Buchanan and Gordon Tullock coauthored The Calculus of Consent: Logical Foundations of Constitutional Democracy (1962), considered one of the landmark works that founded the discipline of public choice theory.

Public choice theory is often referenced when discussing how individual political decision-making results in policy that conflicts with the overall desires of the general public. For example, many special interest and pork barrel projects are not the desire of the overall democracy. However, it makes sense for politicians to support these projects. It may benefit them psychologically as they feel powerful and important. It can also benefit them financially as it may open the door to future wealth as lobbyists (after they retire). The project may be of interest to the politician's local constituency, increasing district votes or campaign contributions. The politician pays little to no cost to gain these benefits, as they are spending federal public tax money. Special interest lobbyists are also behaving rationally. Each citizen pays only a few pennies or a few dollars for any given government favor, while the costs of ending that favor would be many times higher. Everyone involved has rational incentives to do exactly what they're doing, even though the desire of the general constituency is opposite.

Public choice's application to government regulation was developed by George Stigler and Sam Peltzman.

William Niskanen is generally considered the founder of Public Choice literature on the bureaucracy.

Several notable Public Choice scholars have been awarded the Nobel Prize in Economics, including James Buchanan (1986), Stigler (1982), and Gary Becker (1992). In addition, Vernon Smith (2002) was President of Public Choice Society from 1988 to 1990.

Zolotova S.G., *EL adviser*

INCREASING OF MACHINE DETAILS' WEAR RESISTANCE BY MEANS OF REGULAR MICRORELIEF APPLICATION

Rudko A., *gr.TM-31*

The subject of the article is the formation of regular microrelief on different working surfaces.

The article is concerned to the following problems:

a) to find out the possibilities of achieving the best wear resistance of friction surfaces;
b) to find out the possibilities of increasing the wear resistance of friction surfaces by means of regular microrelief application.

It tells about the theory of parameters of microgeometry calculation and their technological support.

The problem of extending the useful life of machines and equipments is one of the most important tasks. By now more than 20 milliard tons of iron have been smelted. The whole world metal fund used in constructions, machines and equipments is 6 milliard tons. Thus 14 milliard tons of worn-out parts and machines are "lost" as a result of corrosion and wear in the process of exploitation. The average time of using steel articles is from several hours to 15 years.

At present we know the following methods of increasing wear resistance and extending the useful life of machines: sound design; choice of materials; increasing the wear resistance by thermal and chemicothermal treatment; hardfacing; plastic deformation; special methods.

Vibration rolling refers to special methods. The features of this process are following: independent regulation of roughness width and height as opposed to abrasive and edge cutting machining; independent regulation of the direction of grooves or ridges of the new microrelief; formation of microrelief radius of peaks and valleys much more than with all known methods of treatment.

The state standard specification 24773-81 (Surfaces with regular microshape. Classification, parameters and characteristics) resulted from a large body of Schneider's research.

The vibration rolling is used to diametrical surface treatment. If plain surface treated with tool makes oscillation movement and billet makes translation movement. Quantity values of vibration rolling process vary with the relative movement speed of billet and tool.

Sazonova N. *El adviser*

ARTIFICAL INTELLIGENCE: THREATS AND PROMISES

O. Snytnikova, *IN-33*

According to some authors, who research the field of Artificial Intelligence (AI), one of the greatest dangers of AI is that people conclude too early that they understand it. The critical inference is not that AI is hard, but that, for some reason, it is very easy for people to think they know far more about Artificial Intelligence than they actually do.

Artificial Intelligence is not settled science. And on the topic of global catastrophic risks of Artificial Intelligence, there is virtually no discussion in the existing technical literature. When something is universal enough in our everyday lives, we take it for granted to the point of forgetting it exists. But when something new appears, it may cause some difficulties.

We can observe many threats and promises in different fields of its influence. But it is a risky intellectual endeavor to predict specifically how a benevolent AI would help humanity, or an unfriendly AI harm it. Another important point is the possibility of technical and philosophical failures.

It would be a very good thing if humanity knew how to choose into existence a powerful optimization process with a particular target. Or in more colloquial terms, it would be nice if we knew how to build a nice AI.

To describe the field of knowledge needed to address that challenge, scientists have proposed the term "Friendly AI". But common reaction is that people immediately declare that Friendly AI is an impossibility, because any sufficiently powerful AI will be able to modify its own source code to break any constraints placed upon it.

There are any number of vaguely plausible reasons why Friendly AI might be humanly impossible, and it is still more likely that the problem is. But one should not so quickly write off the challenge, especially considering the stakes.

Lytvynenko G.I. EL *advisor*

THE HISTORY OF CODING THEORY

Petrov V.V., ES-32

It is not any doubts that many fundamental notions and concepts of the modern computers and modern information technology so as the Binary Coding and Binary Arithmetic, Cryptography Techniques take their origin in the Elementary Mathematics dating back almost 4000 years when the Babylonians created the Positional Principle of Number Presentation, but the Egyptian discovered the "Doubling Method" underlying the modern computer arithmetic and used a hieroglyphic code for inscriptions on tombs. It is clear that the creators of the Elementary Mathematics could not take in account any requirements and needs of the modern Information Technology so as a speed of information processing.

Perhaps, the most astonishing mathematical discovery of the ancient mathematics was the discovery of irrational numbers. As is well known a number of irrationals is infinite. However, some of them take a special place in the mathematics history, moreover in the history of material and spiritual culture.

The π-number and Euler's number e are two important irrational numbers. The π-number, which expresses the ratio of the circle length to its diameter, entered mathematics in the ancient period along with trigonometry, in particular spherical trigonometry considered as applied mathematical theory intended for calculation of the planet coordinates.

The "Golden Section" is one more fundamental irrational number. It entered the science in the Egyptian period along with the π-number. Hence, dating back from the ancient Egyptian period in the mathematical science of nature there came into being two trends of the science progress based on different ideas as to the Universe harmony, viz. the trend of the π-number, basing on the idea regarding to the spherical character of planets' orbits, and the trend of the golden section basing on the do-decahedron-icosahedronical idea about the Universe structure. The latter idea emerged from the analysis of cyclic processes within the Solar system and underlies the calendar systems and the time and geometric angle measurement systems based on the fundamental numerical parameters of the dodecahedron and icosahedron, i.e. on the numbers 12, 30, 60 and 360 generating by the golden section.

Zolotova S.G., *adviser*

THE CREATION AND DISTRIBUTION OF PROFIT IN THE FIRM

Nilova S., *F-34*

Profit is considered to be one of the main factors of industrial production. Using profit, we can investigate efficiency of economic activities.

The urgency of the problem consists in profit maximization. In this terms firms worked out some conceptions, which lead to the reduction of costs.

The aim of the paper is to investigate the theoretical questions concerning to the profit creation and profit distribution.

What is a firm's profit? Revenue is the total amount of money that flows into the firm. This can be from any source, including product sales, government subsidies, venture capital and personal funds. The amount that the firm pays to buy input (land, capital, workers) is known as total cost.

That is,

Profit = Total revenue - Total cost

If all revenues do not cover total cost, in that case we receive negative profit. On the contrary, if total revenues do cover cost firm we obtain positive profit, and firm receives an opportunity to stay in business.

Usually the firm's earnings are distributed between government (in view taxes) and the owners of that firm (in form of dividends). The size of the dividend depends on two factors. First it depends on the amount of profit that has been made, and secondly it depends on how much of the profit is distributed to the development of the business (investment, leasing, research, etc). Since the shareholders are the owners of the business, they are entitled to the share of the profits in the form of dividends.

The amount of the profit that each shareholder receives depends on how many shares they own. The more shares they own, the larger the proportion of the company they own and therefore the more of the profit they should receive.

Profit is a vital source of funds for investment of any company and if it is all distributed to the shareholders, it would damage the long-run firm performance. However, at the same time the shareholders are entitled to the profit as the reward for the risk that they have taken investing in the company.

EL Advisor Lytvynenko G.

NOBEL FOUNDATION

V. Verbitskay, *group PM-31*

Everybody knows that Nobel Prize is the greatest award, which all scientists would like to get. So, today I'll tell you something about founder of it – Alfred Nobel and about mathematicians, whose are connected with this prize. Alfred Nobel was very versatile person. He had gotten a love to explosive from his father, who produced equipment and naval mines for Russian army. But his primary interests were in chemistry and physics as well as in English literature and poetry. He was fluent in Swedish, Russian, French, English and Germany by the age of 17. Alfred's father, who wanted his sons to join his enterprise as engineers, disliked Alfred's interest in poetry and found his son rather introverted.

Alfred was studying abroad during 2 years. He met the young Italian chemist Ascanio Sobrero, who had invented nitroglycerine, a highly explosive liquid, at that time. Nobel became very interested in that invention and how it could be put to practical use in construction work. That invention had a big problem – uncontrolled detonation. So, Nobel admitted that the safety problem had to be solved.

After returning to Russia, he with his father made experiments to develop nitroglycerine as a commercially and technically useful explosive. From the one hand their experiments were successful – they had got a needed explosive, from the other hand their experiments were tragical – during one of them his brother was killed among uncontrolled detonation. So, he had invented dynamite and detonation device. Alfred Nobel was not only very literate person, he was an excellent businessman. Thus, he could to use his inventions for earning wealth.

He worked very hard during all his life. He had made all his inventions for useful positive using, but humanity become to use them for enemy's defeat. The fact that he earned all his money on deaths waved him. And as results of this, last Nobel's will was to found a Nobel Prize.

N. Sazonova, *English Language Advicer*

THE INTERESTING FACTS ABOUT MATHEMATICS

J. Prokopenko, *group PM-31*

Mathematics occupies a crucial and unique role in the human societies and represents a strategic key in the development of the whole mankind. The ability to compute, related to the power of technology and to the ability of social organisation, and the geometrical understanding of space-time, that is the physical world and its natural patterns, show the scientific and cultural role of Mathematics in the history of Civilisation and in the future development of the Information Society.

The number 10 is used as a convenient base to count with, but the Gauls of ancient France, the Mayas of Central America, and other people used a base of 20. The Sumerians, the Babylonians, and others after them used a base of 60—convenient because 60 can be evenly divided by 2, 3, 4, 5, 6, 10, 12, 15, 20, and 30. The use of base 60 survives in the division of hours into minutes and minutes into seconds, and the division of the circle into 360 degrees.

The earliest known unit of length was used around 2,300 B.C. by megalithic tomb builders in ancient Britain. The name of the unit is not known, but its length was about 2.72 feet.

Syracuse's leading citizen in the third century B.C. was the greatest scientist and mathematician of ancient times, Archimedes, nine of whose famous treaties on geometry and hydrostatics survive. When the Roman consul Marcellus conquered Syracuse, he instructed his men that Archimedes was not to be harmed. But Archimedes was run through by a sword when he begged a Roman soldier not to destroy geometrical figures he had drawn in the sand.

A theory put forward by Polish mathematicians Steven Banach and Alfred Tarski in the early 20th century states that there is a way of dividing a sphere into separate parts and rearrange them so that they fill all of a larger.

Leonhard Euler (1707-1783) was probably the most productive mathematician of all time, publishing enough mathematical papers to fill 90 volumes of books. Even though he became completely blind at the age of 60, he still published over 400 mathematical papers, most of which he dictated to a servant untrained in mathematics.

A trick question! There is no Nobel Prize in mathematics. Why not? That question has created numerous stories, myths, and anecdotes. The most popular is that Nobel's wife had an affair with a mathematician, usually said to be Mittag-Leffler, and in revenge Nobel refused to endow one of his prizes in mathematics.

N. Sazonova, English Language Advicer

SOCIAL RESPONSIBILITY AS A FACTOR OF SUSTAINABLE DEVELOPMENT OF ENTERPRISE

O.V. Dudkin, *postgraduate student,*

In a global economy, increasingly organizations take obligations to facilitate, demonstrate and promote social responsibility. Long-term sustainability demands that organizations rethink their business goals and objectives from solely focusing on making a profit to corporate citizenship.

One of the challenges in considering reason "pro" and "contra" social responsibility is the wide variety of definitions that people use. We assume here we are talking about responsibility in how the company carries out its main function.

In the modern conditions, many owners begin to understand all advantages of social responsible behavior. The main reasons for this:

- it is in their interest don't pollute more, lower risk of prosecutions and fines and don't attract the attention of environmental pressure groups;
- they cannot afford to lose some of their talented people - serving or potential. Moreover, they cannot afford employment tribunals occur because of their poor employment practices;
- they need to watch closely changing values in a customer base towards socially responsible goods and services. They cannot keep making things just the way they do before;
- they cannot ignore the fact that the local communities around their plants are poor living environments with low education achievement, meaning that their best staff won't want to live in them and their future staff will need supplementary training in basic skills which they should be getting at school.

If social responsibility is seen as a process by which the business manages its relationships with a variety of influential stakeholders who can have a real influence on its license to operate, the business case becomes immediately apparent. Social responsibility is about building relationships with customers, about attracting and retaining talented staff, about managing risk, and about assuring reputation.

The market capitalization of a company often far exceeds the tangible assets value of the company. For instance, as much as 96% of Coca Cola is made up of "intangibles" - a major part of which rests on the reputation of the company. Only a short-sighted person would run risks with a company's reputation when it is so large a part of it value.

You can consider that of all the institutions, which are currently getting more powerful in the world, they are essentially the global players - the multinational corporations and the non-governmental organizations. The institutions, which are decreasing in power and influence, are those tied to the jurisdiction of the nation state - governments primarily. It is tempting therefore, to look towards the multinationals to take a lead in creating solutions for global problems where the governments seem incapable of achieving co-operative solutions.

Either the solutions to these common problems will be common solutions or they won't be solutions. Business has to recognize social responsibility as a business framework that enables the common solution of wealth creation as if people and the environment mattered.

In the short-term, shareholder interests are best served when profits are maximized. Business success is evaluated on the basis of financial measures of profit, such as return on investment, assets, sales, and equity. This view has been enshrined in the public mindset and in almost all corporate documentation.

Nevertheless, there is also an ethical argument that says that firms are morally obliged to give back to the societies in which they exist. This responsibility arises for at least two reasons. First, firms are obliged to make a payment in kind for using society's infrastructure, land, air, water, plants, and animals to generate profit. Second, they have a duty to reimburse society for the negative externalities their activities generate (e.g. noise, smell, congestion, toxic emissions, etc.).

Corporations have been given the rights of an individual, and they have commensurate responsibilities. Just as it is a moral duty for individuals to contribute to the community in which they live, corporations are also obliged to contribute to their community through volunteering, charitable donations, sponsoring community and cultural events, and so forth.

There does not say about a tradeoff between economics and ethics. The arguments have been unnecessarily polarized. There is a compelling business case for firms to operate in the space where activities are both financially profitable, and socially and environmentally responsible. In this middle position, firms reduce costs, mitigate risks, protect their reputations, stimulate innovation, and find new, sustainable sources of economic well-being.

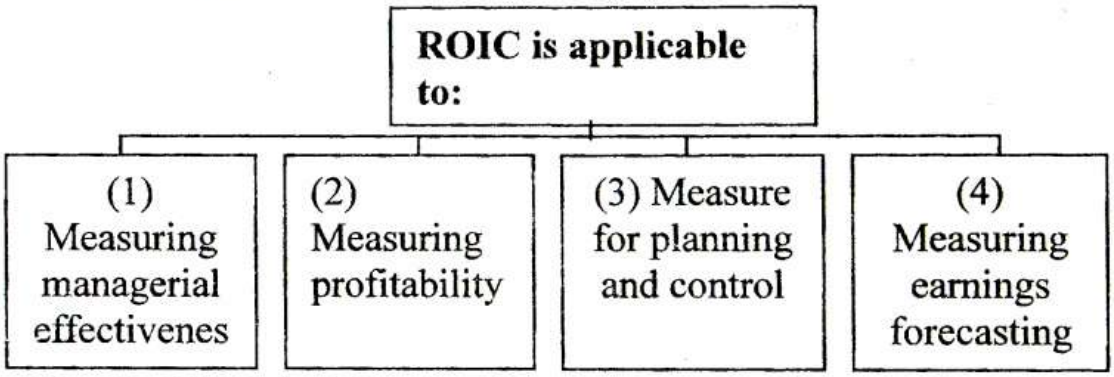
A.M. Dyadechko, *ELA*

PREDICTION OF RETURN ON INVESTED CAPITAL INDEX

J. A. Myroshnychenko, *postgraduate student*

Return on invested capital, or ROIC, is one of the most fundamental financial metrics. In economics, it is a financial measure that quantifies how well a company generates cash flow relative to the capital it has invested in its business. Fig. 1 shows the directions of ROIC index use.

Figure 1. Application of return on invested capital.



Usually ROIC is defined as Net operating profit less adjusted taxes divided by invested capital and is usually expressed as a percentage. In this calculation, capital invested includes all monetary capital invested: shareholders' equity plus financial debt.

$$ROIC = \frac{\text{Net Income After Tax}}{\text{Invested Capital}} = \frac{\text{After Tax Operating Earnings}}{\text{Total Assets - Excess Cash - Non - Interest - Bearing Current Liabilities}}$$

Even more adequately, ROIC for a single time period:

$$ROIC = \frac{\text{Net Operating Earnings before Interest and Amortization Charges, but after Cash Taxes}}{\text{Total Assets - Excess Cash - Non - Interest - Bearing Current Liabilities}}$$

But some researches shows that ROIC index its not enough useful for practice. That's why in our investigation profitability of capital (or ROIC) is considered as a complex parameter dependent on macroeconomic, branch-wise and subjective factors. The main accent in the research is made on the investigation of the following macroeconomic factors: inflation,

cyclic recurrence of macroeconomic and microeconomic processes and instability in political situation.

An influence of inflation on the capital's profitability have been calculated using a Savchuk's model in Matlab environment. The following conclusions have been made:

1) inflation always reduces profitability of own capital invested in the project;

2) for extra resources there is an optimum level of inflation at which the size of extra capital' s profitability reaches the maximal value.

This behaviour can be explained by the fact that the speed of cash resources generation by the investment project is higher than growth of credit rate when inflation is low. With further increasing of inflation the given rate(speed) ratio is reversed.

It is necessary to consider, displacement of inflation optimum level in which profitability of extra capital is maximized is influenced by:

- inflation unpredictability in time;
- ratio of own and extra capital involved for investment project realization;
- values ratio of cost of extra capital, reinvestment rates and profit tax rates;
- time between realization expenses and income reception after project realization.

But enough easy to predict inflation changes, but it's quite another matter to predict economic risk, sovereign risk and political risk. The risk of further Ukrainian political instability is still high, given that the president now shares power uncomfortably with a heterogeneous coalition drawn primarily from groups that until recently opposed him. Government effectiveness risk is high. The leadership and the bureaucracy have traditionally performed poorly and erratically. Corruption is widespread and red tape is pervasive.

Taking into account the revealed impact of various factors on capital's profitability the economic-mathematical model for the estimation and forecasting of company's capital profitability has been developed. Using this model allow to make conclusions about low, practically negative capital's profitability of the chosen Sumy's enterprises. This results can be explained by unprofitability activity of the enterprises or they shadow activities.

A.M. Dyadechko, *ELA*

REGULATORY AND ECONOMIC INSTRUMENTS TO CONTROL POLLUTION AND MANAGE WASTE

I.P.Kulieshova, *postgraduate student*

The are two principal approaches to pollution control and waste management: the command- and-control and economic strategies. Since the inception of environmental policy in most developed countries, the command-and-control approach has been the predominant strategy. This involves direct regulation, along with monitoring and enforcement systems and relies primarily on applications of regulatory instruments, such as standards, permits and licenses, as well as land and water use controls. The command-and-control approach shows how much pollution levels will be reduced. Although this approach has been criticized for being economically inefficient and difficult to enforce, command-and-control strategies have made significant progress in meeting the objectives of environmental legislation and policies.

In recent years, many countries, primarily industrialized ones, have adopted economic instruments to introduce more flexibility, efficiency, and cost-effectiveness into pollution control measures. These instruments act as incentives to polluters to choose their own means of pollution control. To various degrees, they incorporate the polluter-pays and user-pays principles. According to the polluter-pays principle, the polluter pays a financial penalty for higher levels of pollution and pays a smaller penalty or receives a financial reward for lower levels of pollution. According to the user-pays principle, the user of a resource pays the full social cost of supplying the resource, such as for water and related services including treatment costs.

Overall, the economic approach has several advantages. When properly implemented, it can: promote cost-effective means for achieving acceptable levels of pollution; stimulate development of pollution control technology and expertise in the private sector; provide government with a source of revenue to support pollution control programs; provide flexibility in pollution control technologies; and eliminate a government's requirement for large amounts of detailed information needed to determine the feasible and appropriate level of control for each plant or product. Despite these strengths, economic instruments have certain disadvantages. One significant problem is that the effects of economic instruments on environmental quality are not as predictable as those under

the traditional regulatory approach, since polluters may choose their own solutions. Other problems are that some polluters may choose to pollute if the charge is not set at an appropriate level and that they require sophisticated institutions to implement and enforce them.

The command-and-control approach to pollution control and waste management relies primarily on regulatory instruments (for example, standards, permits, licenses, land use controls); the economic approach usually incorporates regulatory instruments as well as economic instruments such as charges, marketable permits, and subsidies.

In practice, economic instruments are rarely used alone to achieve environmental protection objectives. Generally, they supplement direct environmental regulations to raise revenues for financing pollution control activities or other environmental measures, provide incentives to better implement regulations, and stimulate technical innovation. The regulatory and economic instruments selected to achieve pollution control and waste management objectives will have broad implications for institutions at the national, state or provincial, and local levels of government, as well as for nongovernmental organizations. The choice of instruments will determine in large part the responsible level of government and the type of institution as well as the mechanisms for enforcement. In general, the activities requiring the greatest degree of political consensus and highest level of complexity (for example, setting standards) and risk are assigned to the national government level. The state and provincial levels tend to be responsible for policies that affect natural resources shared by several municipalities; local government generally is responsible for policy instruments associated with solid waste management, wastewater collection and disposal, air pollution from automobiles or local industries, and ground-water contamination. In some situations, pollution control responsibilities are assigned to watershed or air shed authorities. The institutions that would be responsible for pollution control and waste management include: national sector agencies; state and provincial agencies such as pollution control boards, watershed or air shed authorities, and county or municipal agencies. The courts and nongovernmental organizations also play roles in the development and enforcement of environmental regulations.

A.M. Dyadechko, *ELA*

THE COMPANIES' FOCUSES IN INNOVATIVE ACTIVITY

S.I. Kolosok, *postgraduate student*

Innovators implement new ideas that create value. Firms can innovate in many areas including new product and service development; new or better work processes like logistics and human resource management, marketing and customer management; and new tools and processes like production machinery and information systems, financing and capital management, and innovative business models. In short, companies can innovate in just about everything they do. Besides, innovation involves more than just ideation. It is an end-to-end process that stretches from discovery through commercialization. Continuous innovation is a competitive necessity in the industries we studied.

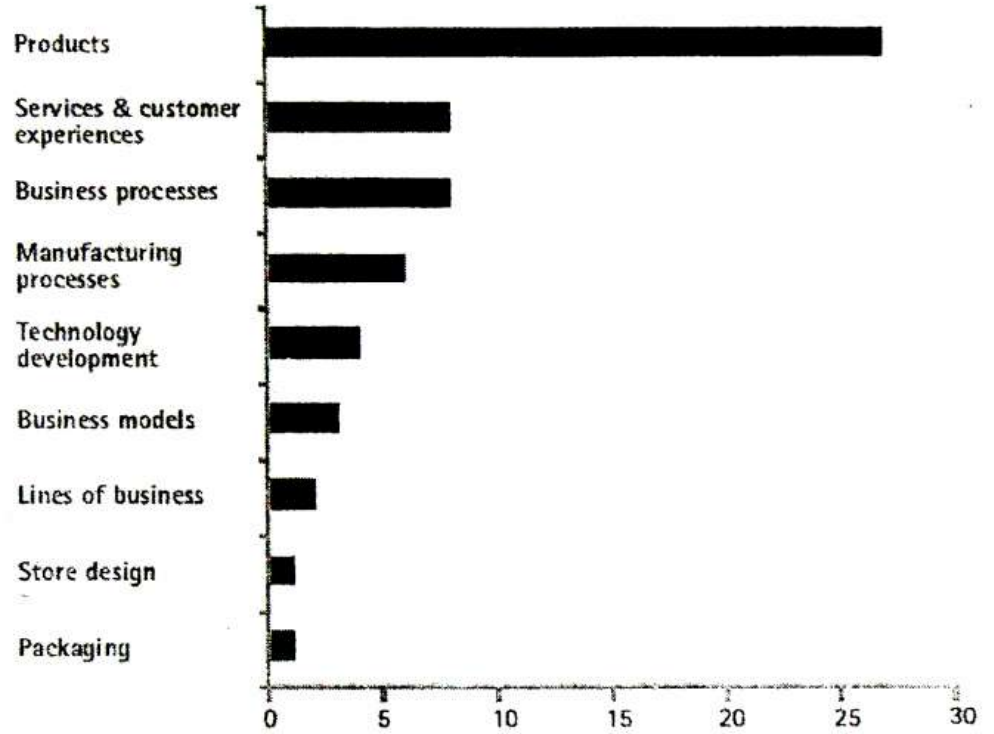
However, most firms tend to concentrate their innovative activities explicitly in a small number of areas. The most part common area was product innovation (Figure 1). Even executives who describe a broader innovation agenda for their firms frequently focus on product innovation when it comes to questions of sourcing.

The specific innovation focus might have more to do with the responsibility of the individuals we interviewed rather than any overarching corporate plan. At the very least, we can conclude that few companies had clearly stated a corporate focus for innovation. The firms rarely targeted business model innovation, and business process innovation tended to happen primarily during occasional "reengineering" initiatives.

One executive attributed his firm's innovation bias against these types of innovations to funding issues and incentives. Organizational ownership for these kinds of innovations is often unclear, and corporations provide little in the form of reward structures to motivate innovation in this area.

For most products, their approaches to sourcing range widely. On the average, the executives who could specify a percentage of external innovation estimate that their firms source 45 percent of their innovation from outside. This average hides a great deal of diversity. Some of the retail firms report that they get 90 percent of their innovation from outside sources—primarily in the form of the products they sell. In contrast, discovery intensive pharmaceutical and chemical organizations like Lilly and DuPont Crop Protection rely on internal sources for more than 70 percent of innovation.

Figure 1. The companies' focuses in innovative activity



With new types of innovation sources available, executives are expanding the purposes for which they consider external sources appropriate. In research-intensive companies, for example, the conventional wisdom holds that employees conduct research in the firm's core area of expertise, and outsiders provide less important support activities. Yet research powerhouses in the pharmaceutical industry are turning to small biotech firms for their next generation drug breakthroughs. Chemical companies with strong internal research traditions are lining up contract scientists in Russia and India to strengthen their staffs and stretch their R&D budgets. Firms that are edging into new product domains are looking to outside sources not for support capabilities, but for the critical skills these new arenas require.

A.M. Dyadechko, *ELA*

PROBLEMS OF FINANCIAL PROVISION FOR ENTERPRISE'S ECONOMIC GROWTH

N. Fedorenko, *postgraduate student*

Public discussion has for a long time centered on the decreasing investments and the difficult liquidity situation which most companies face. They have generally been seen to be the primary causes of lacking growth. The size of investments and economic growth are closely related over the medium to long term.

There is a problem of financial provision for enterprise's investment activity at the given stage.

In view of the poorly functioning banking system, the majority of enterprise financing has to be derived from internal sources. This also implies that tax policies should leave companies sufficient room for manoeuvre in the financing area. At the same time, attempts must be made to improve the credit conditions for companies, to maintain low real interest levels, and to improve the banking system's strength. Attracting foreign credits and investments could be another significant part of financing and investment in Ukraine.

However, it is not only the scarcity of supply, an insufficient demand for credit and investment too, leads to a decline in investment. To date not only foreign investment has been limited; many domestic enterprises prefer to invest their funds in foreign countries rather than investing it in the domestic economy (capital flight). The preconditions for increasing the readiness of domestic and foreign investors to invest in Ukraine are stable economic policies, absence of erratic fluctuations in the taxation approach, and the creation of a level competitive playing field.

In the short term it is very important for growth to what extent the lack of liquidity impedes companies from expanding their production. Deficient ongoing financing was again and again mentioned as the cause for production reductions. This argument was then used as justification for the continuance of state subsidies to companies. The reduction of state subsidies must therefore also be looked at from the point of view of financing. In spite of the partial withdrawal of the state from company financing, there are signs that the liquidity situation of companies has not deteriorated.

A.M. Dyadechko, *ELA*

ECOLOGICAL ASPECTS OF USE THE INFORMATION-COMMUNICATION TECHNOLOGIES (ICT)

V. Rudenko, *postgraduate student*

In conditions of an information society stresses of attention and the importance are displaced from traditional kinds of resources on information. Though information resources of a society exist basically so much, as long as a mankind, they were never considered as an economic category. Transition to market relations has caused occurrence of system of the markets within the limits of which the significant place should belong to the information market. Development of market relations during an epoch of prompt growth of information of economic relations allows to speak about occurrence of the new subject of the global market - the market of information services.

ICT industry seriously can impact the environment at different levels and in various dimensions. The ICT industry designs application programs which can ensure cleaner production patterns. Being an enabler of development, ICT can make a valuable contribution to sustainable environmental management; improve environmental monitoring and response systems; facilitate environmental activism; raise awareness and enable a more efficient use of resources. The industry uses material resources to manufacture products such as computers, hardware, and devices, but it also produces wastes. For example, mountains of waste from computers are piling up in European countries, Japan, China and Taiwan.

Applications of ICT for environmental protection are becoming common around the world. For example using ICT to collect, store, process and disseminate environmental database and information. This provides users with access to up-to-date information, thereby increasing and enhancing efficiency in environmental monitoring. It also facilitates the prevention and mitigation of environmental degradation. For instance, the websites of the Food and Agricultural Organisation (FAO), the United Nations Environmental Programme (UNEP), World Meteorological Organisation (WMO) and the World Resource Institute (WTI) are very good sources of data and information on the environment.

Table 1 below indicates the effects and opportunities created by ICT at three orders: physical existence of ICT (first order), on-going use and application of ICT (second order), and accumulative effects (third order).

Table 1: Environmental Effects and Opportunities Created by ICT (EITO, 2002)

First Order Effects	Second Order Effects	Third Order Effects
Design and Manufacture of ICT equipment - ICT production is relatively lightweight industry - Use of toxic components - New waves of technology are more energy-efficient	Increase and Decrease in use of Transport - E-commerce have significant environmental impacts from the increases in home deliveries - IT employees have less travels, then less pollution ICT managed control systems in business can reduce environment impacts Distribution and manipulation of environmental information such as ISO 14000 label/ certification	Decoupling economic growth and energy consumption and/or carbon emissions - Possibilities of reducing energy used and/or CO_2 per unit GDP
Operation of ICT equipment:Save energy use by stand-by mode		Changing settlement patterns - Conflicting pressures on local settlement
Disposal of ICT equipment - Increase in recycling and reusing		

Geographical Information Systems (GIS) and Global Positioning System (GPS) are typical ICT based tools for environmental purposes. A GIS is an automated system that enables the capture, storage, checking, integration, manipulation, analysis, display, and modelling of complex spatial data. It comprises hardware, software, and specified procedures for solving complex planning and management problems and formulating coherent management strategies. A GPS on the other hand, is a space-based radio positioning system that provides 24 hour three-dimensional position, velocity and time information to suitably equipped users anywhere on or near the surface of the planet.

A.M. Dyadechko, *ELA*

NEW METHODS OF CLESNING UP HEAVY METALS IN SOILS

A.I. Shapoval, *postgraduate student*

There are several options for treating or cleaning up soils contaminated with heavy metals. This paper discusses three of those methods.

At many sites around the world heavy metals have been mined, smelted, or used in other industrial processes. The waste has sometimes been left behind to pollute surface and ground water. The heavy metals most frequently encountered in this waste. They typically are spread out over former industrial sites and may cover huge territories.

Heavy metal contamination can be carried with soil particles swept away from the initial areas of pollution by wind and rain. Once these soil particles have settled, the heavy metals may spread into the surroundings, polluting new areas. Remediation technologies available for reducing the harmful effects at heavy metal-contaminated sites include: excavation (physical removal of the contaminated material), stabilization of the metals in the soil on site, and the use of growing plants to stop the spread of contamination or to extract the metals from the soil (phytoremediation).

Excavation and physical removal of the soil is perhaps the oldest remediation method for contaminated soil. Advantages of excavation include the complete removal of the contaminants and the relatively rapid cleanup of a contaminated site. Disadvantages include the fact that the contaminants are simply moved to a different place, where they must be monitored; the risk of spreading contaminated soil and dust particles during removal and transport of contaminated soil; and the relatively high cost. (see Table 1) Excavation can be the most expensive option when large amounts of soil must be removed.

Table1. Comparative costs for different types of heavy metal soil remediation.

Type of Remediation	Cost/cubic	Time
Excavation and removal	$100-$400	6-9 months
In situ fixation	$90-$200	6-9 months
Phytoextraction	$15-$40	18-60 months

Heavy metals can be left on site and treated in a way that reduces or eliminates their ability of adversely affect for human health and the environment. This process is sometimes called stabilization. Eliminating

the bioavailability of heavy metals on site has many advantages over excavation. One way of stabilizing heavy metals consists of adding chemicals to the soil that cause the formation of minerals that contain the heavy metals in a form that is not easily absorbed by plants, animals, or people. This method is called in situ (in place) fixation or stabilization. This process does not disrupt the environment or generate hazardous wastes. Instead, the heavy metal combines with the added chemical to create a less toxic compound. The heavy metal remains in the soil, but in a form that is much less harmful. Adding definite fertilizer to soil create insoluble minerals. This means the new minerals cannot dissolve easily in water. This has two beneficial effects. The minerals (and the heavy metals) cannot be easily spread by water to pollute streams, lakes, or other groundwater. Table 1 shows the cost of treating the soil by *in situ* fixation may be about half the cost of excavation and disposal of heavy metal contaminated soil. This method is relatively rapid and takes about the same amount of time as excavation.

Growing plants can help contain or reduce heavy metal pollution. This is often called *phytoremediation.* It has the advantage of relatively low cost and wide public acceptance. It can be less than a quarter of the cost of excavation or *in situ* fixation. Phytoremediation has the disadvantage of taking longer to accomplish than other treatment. The plants are used to reduce wind and water erosion that spread materials containing heavy metals (phytostabilization). Another way plants can be used to clean up heavy-metal contaminated soil is called phytoextraction. The list of plants that may be used for phytoextraction include alfalfa cabbage, tall fescue, juniper, and poplar trees.

Another way plants are used to treat heavy metal contamination is called rhizofiltration. In this method heavy metals are removed directly from water by plant roots. For example, sunflowers were used to remove radioactive metals from sandy soil at Chernobyl.

The expensive process of excavating and disposing contaminated soil has been augmented with new methods that treat the soil in place. In situ fixation is less disruptive to people's lives and to the environment compared to excavating. Phytoremediation uses plants by several methods to contain or clean up heavy metals. Phytoremediation has great benefit of being relatively low-cost, natural solution to an environmental problem.

A.M. Dyadechko, *ELA*

REVERSE LOGISTICS AS AN INSTRUMENT OF GREENING LOGISTICS

I.I. Koblyanska, *post-graduate student.*

Nowadays reverse logistics (RL) is an important component of economy. Being widely presented in Ukraine as warranty services and legall requirement to return packaging to manufacturer it does not work.

Studies of reverse logistics were made by many foreign researchers, such as Carter and Ellram (the pioneers in developing the concept of RL), Hess and Meyhew, Lambert and Stock, Krikke etc.

It is necessary to point out, that the concept of reverse logistics has emerged as a way to decrease economical losses of no-sold or outdated products and negative impacts of forward logistics. These impacts represent wastes of packaging and utilized products, significant resource consumption (energy, labor, money) through the collecting and incineration process, land's using for garbage collecting.

These impacts are environmentally negative, disagree with sustainable development process and must be eliminated.

There is a number of ways toward greening logistics, such as decreasing the quantity of wastes or resource consumption, by redesigning packages, products, production process and returning the materials (products, packaging) to manufacturer.

Reverse logistics is the process of planning, implementing and controlling the efficient, cost-effective flow of raw materials, in-process inventory, finished goods and related information from the point of consumption to the point of origin for the purpose of recapturing value or proper disposal.

It is important, that reverse logistics activity includes only operations with materials or products, which can be sent 'backward'.

Typical reverse logistics activities would be the processes a company uses to collect used, damaged, unwanted (stock balancing returns) or outdated products, as well as packaging and shipping materials from the end-user or the reseller.

A number of reverse logistics activities are used for solving the environmental issues in logistics. They include using reusable totes, remanufacturing, designing a product to make use of reusable packaging. Furthermore, some legislation requirements, related to reverse logistics activities, are provided by necessity to decide environmental problems.

Among the wide range of reverse logistics environmental results it is necessary to highlight the following:

- decreasing of quantity of wastes, in particular, hazardous outputs of chemical, rubbish, pharmaceutical, building, steel and other industries, which can be reused;
- increasing of efficiency of resource consumption, particularly, fuel and energy, rare and valuable materials, due to recycling process;
- improving ecological and ergonomical characteristics of products and packaging materials, due to manufacturer's and seller's goals of reducing costs, related to reverse activities.

Despite a number of positive influences, there are still some problems of reverse logistics development.

First of all, reverse operations are very expensive for manufacturers and sellers. They include costs of reverse transportation, collecting, sorting and processing materials for reuse, inventory management, controlling, staff education and training, storage, adopting for future use, redesigning logistical system.

Secondly, the next important problem, particularly typical for Ukraine, is an absence of definite governmental regulation in this sphere. For example, there is no government control of returning packaging to manufacturers, despite the legislation, as a result, only few number of packages are returned and reused.

To solve these problems some approaches could be used:

- to combine delivery costs with reverse transportation costs, through the collecting and transportation materials for reuse in the 'back way';
- to create generally using storages and systems of collecting and sorting reusable materials (decreasing costs by coordinating interests and facilities of a range of manufacturers);
- to use economical instruments in governmental regulation. For example, using of privilege taxation, credit policy, penalties;
- introduction of hard governmental control regarding legislation performance and standardization.

In general, development of reverse logistics provides considerations for solving environmental issues and problems in logistics. But only coordinated actions of business, government and public community can solve these problems.

A.M. Dyadechko, *ELA*

INTENSIVE RECYCLING AND ECO-EFFICIENCY

A.O. Dmitrenko, *postgraduate student*

It's common knowledge, that environment now is an important part of our life. Initially it was particular industries that most felt the pressure of the environmental critique – agriculture, chemicals, energy, oil and mining – and the industries reacted with defensive hostility. But leading corporations have come to recognize that the environment is a more general issue, and that environmental policy propositions can no longer be resisted in particularistic ways.

Waste was one of the most tangible symptoms of the material excesses of mass production. Its volumes climbed with growth. The rising resistance to its disposal was one expression of the limit to the old industrial order and contributed to the elaboration of the alternative. Waste reduction is part of the new paradigm now being put into place.

Essence of the term 'Eco-Efficiency' is contained in seven simple guidelines:

- reduce the material intensity of goods and services;
- reduce the energy intensity of goods and services;
- reduce toxic dispersion enhance material recyclability;
- maximize sustainable use of renewable resources;
- extend product durability;
- increase the service intensity of products.

Following these guidelines can give companies a competitive head-start into the next century – but not if they are treated as an addition to business as usual. Eco-efficiency does require a profound change in their theory and practice of core business activities.

Major companies have begun to adopt zero targets. Bell Canada, Kimberley Clark, Du Pont, Honda, Toyota, Hewlett Packard, the Ricoh Group and Interface Carpets are all aiming for Zero Waste. The eco-efficiency literature is full of examples of firms cutting waste and toxic emissions by orders of magnitude.

In its early phases of application, eco-efficiency is applied to on-site processes and later to products.

Intensive recycling needs to give much priority to mapping its waste. In the case of waste, the primary mapping will have three main parts.

A.M. Dyadechko, *ELA*

ECOLOGICAL AND ECONOMICAL NECESSITY OF WASTES RECYCLING

T.V. Nestorenko, *postgraduate student,*

Waste policy has become one of the most keenly contested areas of environmental politics. The prime mover has been a new awareness of the pollution caused by the disposal of waste. This has been, and still is, the entry point for communities and governments becoming involved in what has hitherto been an untouchable issue. But there is now also a recognition of the significance of waste for two other major environmental issues – climate change and resource depletion. For policy makers the question of what to do about the targets reached at the Kyoto summit on climate change is also a question of what to do about waste.

Throughout the twentieth century, waste was the terminus of industrial production. Some of the debris had value and was recycled. Most was deposited in former mines, gravel pits and quarries or, via incinerators, was «landfilled in the air».

Landfills and incinerators have highlighted the problems of the toxicity of waste and how it has traditionally been managed. In landfills the decomposition of waste leads to emissions from many of the 100,000 chemicals now in use in modern production, while the acidifying process of biological degradation leaches out dangerous substances. With incineration, a core problem has been with those materials known to be particularly toxic when burnt (such as chlorine-based products, batteries and brominated flame-retardants). In each case the dangers associated with particular hazardous materials are compounded when their disposal is part of a general waste stream. As these effects have been recognised, the response has been increased regulations and improved technology. Modern landfills are required to be lined, and to treat the leachate and burn the gases emitted from the sites. Incinerators in Europe have had to be upgraded with new flue gas treatment technologies, which have cut toxic emissions to air. In this, the policies to control pollution from waste are part of the wider regulatory history of pollution abatement which characterised environmental policy in the last quarter of the twentieth century.

From the perspective of pollution, the problem is a question of what waste is. From the perspective of resource productivity, it is a question of what waste could become. As a pollutant, waste demands controls. As an embodiment of accumulated energy and materials it invites an alternative.

The one is a constraint to an old way of doing things. The other opens up a path to the new. Any discussion of waste policy, of local waste plans and of their economic consequences must start from these three issues: pollution, climate change and resource depletion.

Among the efforts to slow the potential for climate change there must be measures to reduce emissions of carbon dioxide from energy use, reduce methane emissions and change forestry practices.

The policy question is how to reduce the intensity of resource use faster than the countervailing pressure of the growth of demand. Part of the answer lies in the way primary production is carried out (through the reduction of artificial fertilisers and pesticides in agriculture, for example, or clear cut logging); part in the dematerialisation of production and in changes in consumption. But there is also the question of the reduction and reuse of waste. At any one time, waste accounts for the majority of material flows. Until recently it was treated as a leftover from useful production. But it is clear that any strategy to reduce resource pressures has to address the volume of waste and what is done with it.

It has to be either reduced or 'revalorised' through recycling. Waste – both in its process of generation and its treatment – thus takes a central place in strategies to reduce the material footprint of industrialised economies. Every aluminium can recycled not only means that the need for new aluminium is reduced, but that the waste (and energy) associated with bauxite mining, as well as alumina and aluminium production, is also avoided. These are referred to as the upstream benefits of recycling. They represent avoided materials production, avoided wastes and avoided energy.

Improving materials productivity through recycling conserves materials as well as the energy embodied in them. The Dutch Government forecasts that half of the energy efficiency gains it will make up to 2010 will be the result of improved materials productivity. The researchers estimate that materials reduction in Western Europe – following increases in penalties for carbon use – would contribute emission reductions of 800 million tonnes of CO2 equivalent (compared to the current European emission level of 5.1 billion tonnes).

A.M. Dyadechko, *ELA*

THE KEY PRINCIPLES OF EFFECTIVE QUESTIONNAIRE DESIGN

E.I. Nagornyy, *postgraduate student*

When most people think of market research methods, they inevitably think of questionnaires. Questionnaires are certainly an important means by which we capture responses from people and they can be administered face to face, over the telephone or they can be self-completion.

The primary purpose of a questionnaire is to help extract data from respondents. It serves as a standard guide for the interviewers who each need to ask the questions in exactly the same way. Without this standard, questions would be asked in a haphazard way at the discretion of the individual. Questionnaires are also an important part in the data collection methodology. They are the medium on to which responses are recorded to facilitate data analysis.

There are seven steps in the design of a questionnaire:

Step 1 – Decide what information is required

The starting point is for the researcher to refer to the proposal and brief and make a listing of all the objectives and what information is required in order that they are achieved.

Step 2 – Make a rough listing of the questions

A list is now made of all the questions that could go into the questionnaire. The aim at this stage is to be as comprehensive as possible in the listing and not to worry about the phrasing of the questions. That comes next.

Step 3 – Refine the question phrasing

The questions must now be developed close to the point where they make sense and will generate the right answers. Tips on how to write good questions are provided later in this chapter.

Step 4 – Develop the response format

Every question needs a response. This could be a pre-coded list of answers or it could be open ended to collect verbatim comments. Consideration of the responses is just as important as getting the questions right. In fact, considering the answers will help get the questions right.

Step 5 – Put the questions into an appropriate sequence

The ordering of the questions is important as it brings logic and flow to the interview. Normally the respondent is eased into the task with relatively straightforward questions while the more difficult or sensitive ones are left until they are warmed up. Questions on brand awareness are asked first unprompted and then they are prompted.

Step 6 – Finalise the layout of the questionnaire

The questionnaire now needs to be fully formatted with clear instructions to the interviewer, including a powerful introduction, routings and probes. There needs to be enough space to write in answers and the responses codes need to be well separated from each other so there is no danger of circling the wrong one.

Step 7 – Pretest and revise

The final step is to test the questionnaire. It usually isn't necessary to carry out more than 10 to 20 interviews in a pilot because the aim is to make sure that it works, and not to obtain pilot results. In theory the questionnaire should be piloted using the interviewing method that will be used in the field (over the phone if telephone interviews are to be used; self completed if it will be a self completion questionnaire). Time and money can preclude a proper pilot so at the very least it should be tested on one or two colleagues for sense, flow and clarity of instructions. The whole purpose of the test is to find out if changes are needed so that final revisions can be made. When carrying out the pilot it is best to run through the questionnaire with the guinea pig respondent and then go back over the questions and ask for each one, "what was going through your mind when you were asked this question?".

Questionnaire design is one of the hardest and yet one of the most important parts of the market research process. Given the same objectives, two researchers would probably never design the same questionnaire.

If questionnaires fail it is usually because they are dashed off with insufficient thought. Questions may be missed out; they could be badly constructed, too long, or too complicated and sometimes unintelligible. Good questionnaires are iterations which begin as a rough draft and, through constant refinement, are converted to precise and formatted documents.

A.M. Dyadechko, *ELA*

INNOVATION CAPITAL

O.O. Suyarova, *postgraduate student*

The dawn of the new millennium has been met with great enthusiasm and an equivalent commitment to change - or as we prefer to call it - innovation (the capacity to preserve the best of the old and realign the rest to take advantage of future opportunity).

Individuals and organizations from every function, sector and corner of the globe are envisioning a new economic world order - one based upon intellectual, not financial capital. Of course, knowledge has always been an essential element in the advancement of civilization, but today's emerging economy proposes that knowledge be managed explicitly.

The world is experiencing unprecedented change in applications of knowledge in every dimension of development, growth, revitalization and organization. The demands and opportunities of an interdependent global economy have implications for private and public decision making by enterprises and communities, whether local, national, regional or global.

Most nations have launched major initiatives to harness their inherent capability within a transnational context. All has been done in the name of international competitiveness. Economies have been transformed, communities revitalized, emerging territories supported and industrialized nations repositioned. We have much to learn from one another.

During the past several years, product development organizations have attempted to shift their strategic priorities from lowering product development costs and reducing cycle time (e.g. improving time-to-market), to finding ways to infuse greater innovation and differentiated features/capabilities into their products.

Three underlying themes are fundamental to the new infrastructure needed to create prosperity in this new economy:

- Knowledge is the new, expandable source of economic wealth. There is an emerging recognition that the inherent intellectual assets – effectively exploited through innovation -- are the most valuable resource of any country;
- Innovation that encompasses the full spectrum from creative idea generation through full commercialization. Successful innovation depends on converting knowledge flows into goods and services.

A.M. Dyadechko, *ELA*

PRICE BUILDING AT THE RESOURCHES MARKET

A.Lapenko, *postgraduate student*

Recent oil (and other commodity) price rises, and continued rapid industrialization in China and India, have raised concerns about longer term energy security. Almost all mainstream energy forecasters predict growing global demand growth, underpinned by developing country growth and continued, albeit much slower, growth in demand in the industrialized economies.

An important concern that global capacity to substantially increase oil production will be increasingly constrained by the size and distribution of the geological resource base. As a result of such succession of events, prices are likely to stay at high levels, and may even rise further if demand continues to grow.

Views about long term prices are vital inputs to many energy investment decisions that have long lead times and a capital stock that turns over only very slowly.

The optimal price oil is the long run marginal cost (LRMC), where the LRMC includes environmental costs in addition to the full cost of doing business. This is a well- established principle of efficient market pricing.

At the same time, there is mush room for uncertainty in the future dynamics of the world oil prices, concerned with a number of factors relating to both - demand (world economy growth rates), and supply - proposition (oil production).

As an analysis of the situation on the world oil market shows, a number of factors will contribute to maintaining of high level of world oil prices. According to expectations, the growth of world oil demand will be sustainable, despite high oil prices.

History shows that current high oil and other commodity prices should eventually come down as supply and demand respond to high prices. But there will be lags in these responses because of the long lead times usually required to make new energy investments, turn over the capital stock, and even to change users' expectations and behavior.

Numerous studies have provided estimates about the effect of oil price shocks on the global economy. Though consensus on the precise magnitude of the impact is lacking, most of them agree that oil shocks reduce the overall economic growth.

A.M. Dyadechko, *ELA*

FUNDAMENTAL BASES OF REENGINEERING

Gritsenko P. *post-graduate student*

The basic assumptions about how to manage enterprises or institutions have changed little in the last fifty years. During the past two decades something happened—first in mass-production manufacturing, then in service companies and non-profit entities. Customers or constituents experienced growing disaffection, employee turnover increased, sales flattened or fell, operating expenditures for non-profit institutions rose dramatically, and productivity had slower than expected growth. We have come to the point, then, where we must "reengineer" our basic business processes whether we are in a business, industry, government, or educational enterprise. Reengineering can be defined as using the power of modern information technology to radically redesign administrative business processes in order to achieve dramatic improvements in their performance.

Although the basic concepts of transformation or reengineering are straightforward and relatively simple, implementing them is a major undertaking by any existing organization. It will generally involve: overcoming organizational resistance, adopting a different style of leadership, introducing a new organizational culture, empowering individuals, developing flexible teams and self-oriented workgroups, significantly and continually raising standards, many times through endeavors such as total quality management programs, redefining the organizational structure, creating well designed internal and external networks that rely on social interaction and electronic communications, addressing a whole host of auxiliary issues such as new policy/procedure development, ongoing training and education, dealing with technophobia, good strategic planning and management.

Overcoming Organizational Resistance. If an organization is to be transformed it must engage in a prolonged change process. Change of major magnitud almost always is threatening.

Adopting a Different Style of Leadership. Leadership is perhaps the key issue in reengineering. According to Peter Senge, the traditional view of leaders is one of stereotyped heroes, special people who set the direction, make the key decisions, and energize the troops. They are great men and women who rise to the fore in times of crisis.Introducing a

New Organizational Culture. The transformation of an institution will probably begin with a redefinition of prevailing organizational culture.

Empowering Individuals. Autonomy, on the other hand, reduces our need to give attention and power (and, often, fear) to those above us, and demands that we take responsibility for our actions. It helps the organization to support courage and independence.

Developing Teams and Workgroups. Empowerment, then, occurs when power goes to employees who experience a sense of ownership and control over their work. In the flatter organizations of the information/service economy, one form of empowerment comes from the formation of self-directed teams or workgroups.

Setting New Standards for Quality. Common to all approaches is the idea of introducing new standards or measures that are much higher than prior expectations.

Redefining the Organizational Structure. Nolan contends that over the past fifteen years functional hierarchies have begun to dismantle themselves by eliminating layers of mid-managers and reducing the proportion of operational and clerical positions while the proportion of knowledge workers has increased significantly. These new network organizations will formalize structures during this decade.

Building Networks. Networks encompass alliances and joint ventures with other organizations, informal ties among internal teams that work across functions, and new ways of sharing information using telecommunication infrastructures, management information systems, and other such technologies.

Addressing Auxiliary Issues. As the process of transformation gets fully under way, many other issues that require attention may be recognized, such as policy/procedure development, ongoing education and training requirements, and technophobia.

Strategic Planning and Management. Strategic planning and management structure the framework which allows reengineering principles and related tenets to be interwoven, more fully developed, and implemented.

Dyadechko A.M, *ELA*

КАФЕДРА ФІЗИЧНОГО ВИХОВАННЯ
ОТНОШЕНИЕ СТУДЕНТОВ К ФИЗИЧЕСКОЙ КУЛЬТУРЕ И СПОРТУ

Берест Ю.К., доцент

Исследования и наблюдения в течении многих лет в Сумском государственном университете позволяют выяснить, что (исследования проводились в подготовительных отделениях и со студентами занимающимися спортивными играми) у 95,6 % студентов определенная степень выраженности интереса к физической культуре и спорту сложилась в довузовский период. Положительное отношение к физической культуре выразили 96 %. Считают, что физкультура необходима – 56, 2 %, полезна – 36, 3%, желательна – 7,5%.

Среди ценностей физической культуры для студентов на первом месте – здоровье; на втором – положительные эмоции, на третьем – условия сохранения высокого уровня работоспособности. Далее хорошее средство переключения, активного отдыха, забота о красоте своего физического сложения.

Примерно четвертая часть студентов отметила, что немаловажную роль в мотивации занятий играет необходимость получения зачета. Следует отметить, что 4,5 % студентов вполне удовлетворены занятиями по физвоспитанию, 30 % студентов недостаточно удовлетворены и 5,5 % совершенно не удовлетворены. Кроме двух разовых обязательных занятий в неделю 62, 9 % студентов используют самостоятельные формы занятий: 11,7 участвуют в спартакиаде факультетов, 4,4 % – в спартакиаде вуза, 3 % – в судействе соревнований. Относительно места и времени занятий мнение студентов существенно расходятся с имеющейся практикой. Так, из всех опрошенных, в закрытых помещениях занималось 56 %, а хотело бы заниматься только 43%. Чередование занятий в зале и на воздухе осуществлялось у 17 %.

Различными формами физических упражнений в дневное время занимается 95 % студентов, а хотят заниматься 63 %. В вечернее время занимается 4,1%.

Наиболее популярными видами спорта для студентов являются: спортивные игры – 40 %, плавание – 21 %, оздоровительный бег – 21 %, оздоровительная гимнастика и фитнес – 15 %, далее идут лыжи, туризм и др.

Субъективная оценка студентами своего здоровья показывает, что у 65 процентов из них физическое самочувствие отличное и хорошее, 20 %

чувствуют себя удовлетворительно. У 50 % самочувствие в связи с приходом в вуз не изменилось, у 18 % – стало хуже, у 14 % – стало лучше. Среди факультетов, затрудняющих в большей степени возможность регулярно заниматься физическими упражнениями подавляющее большинство студентов (70 %) отмечает загруженность учебными занятиями, (23 %) – занятость личными делами, (7 %) – занятость общественной работой.

Около 70 % студентов рассматривают занятия физическими упражнениями в режиме учебной деятельности и свободного времени как приятное, интересное и полезное времяпровождение. Здесь для них главное – отвлечение от учебы, снятие нервного напряжения, расслабление после напряженной умственной деятельности. Оптимальное решение этих задач они ищут в азарте спортивной игры, положительных эмоциях физической активности, спортивного соревнования. И все это на фоне умеренной физической нагрузки, не требующей чрезмерных усилий, большого напряжения. Многие студенты ориентированы на овладения новыми формами движений, но только теми из них, которые могут пригодиться в быту, будущей профессиональной деятельности или с игрой, которой собираются заниматься в течении всей жизни, например, бадминтоном, волейболом, футболом, баскетболом, футзалом, плаванием, туризмом и т.д. Исследования показывают, что 27,7 % студентов СумГУ не удовлетворены содержанием занятий, своей спортивной специализацией. Больше 50 % студентов считают занятия чрезмерно заорганизованными, в которых поточно-групповой метод работы преподавателя со студентами превращает последних тупых исполнителей команд.

Организация занятий по типу: «команда-исполнение» чаще всего вызывает негативную реакцию студентов. Путь к устранению отрицательных эмоций студентов только один – добиться осознанного; положительно – активного отношения к занятиям за счет умелой их мотивации. Прежде всего добиться этого возможно за счет распределения студентов в учебные группы с учетом их личных интересов.

Кроме этого есть группы так называемых престижных видов спорта, требующих специального дорогостоящего инвентаря. Очевидно, что включенность студентов в занятия такими видами спорта могла бы быть осуществлена за счет создания абонементных групп.

ПЕДАГОГІЧНА ТЕХНОЛОГІЯ В ОЗДОРОВЧИХ ВИДАХ ГІМНАСТИКИ

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При вивченні методики побудови занять пріоритетним є напрямок, що розкриває питання, які стосуються засобів, методів і організації оздоровчих занять для жінок з урахуванням професійної діяльності, віку, стану здоров'я тих, хто займається оздоровчими видами гімнастики .

В основу методики занять з жінками покладений принцип біологічної доцільності у підборі вправ і вихідних положень, обумовлених специфікою жіночого організму, а також облік вікових анатомо-фізіологічних особливостей тих, хто тренується при дозуванні навантаження. Залежно від спрямованості заняття можуть вирішуватися педагогічні, оздоровчі, естетичні, реабілітаційні, психорегулюючі та ін. завдання. Різнобічна спрямованість занять обумовлена численними мотивами і різноманітними інтересами жінок, що займаються гімнастикою .

Фізкультурно-оздоровчі заняття повинні мати спрямованість на зміцнення функцій серцево-судинної та дихальної систем при частоті занять 2-5 разів на тиждень тривалістю 15-60 хв. й інтенсивністю 50-85% від МПК.

Програма оздоровчого тренування, як правило, підрозділяється на 3 періоди: підготовчий, основний і підтримуючий. Завданнями підготовчого періоду є розвиток і удосконалення рухових навичок і умінь, підвищення координації в діяльності нервової, серцево-судинної й дихальної систем, зміцнення опорно-рухового апарата, що сприяє підготовці до виконання навантажень основного періоду. Всім тим, хто вперше починає тренуватися, а також тренується менше 4 тижнів, незалежно від рівня фізичного стану плануються навантаження підготовчого періоду. Його тривалість 4-6 тижнів. Після закінчення цього терміну можна переходити до навантажень основного періоду.

В основному періоді використання тренажерів та інших засобів для фізичних вправ передбачає підвищення фізичного стану до оптимального рівня. Тривалість періоду залежить від індивідуальних особливостей розвитку оздоровчого ефекту. Чим нижче вихідний рівень фізичного стану, тим більше часу потрібно для його підвищення. У середньому тривалість основного періоду для осіб з низьким рівнем фізичного стану складає 32-40 тижнів, із станом нижче середнього - 24-32 тижні, середнім - 16-24, вищим за середній - 8-16 тижнів занять. У залежності від

індивідуальних особливостей розвитку тренувального ефекту цей термін може бути чи коротшим, чи довшим .

Ефект оздоровчого тренування залежить від таких складових:

1. Частота занять (періодичність).
2. Тривалість (обсяг).
3. Спрямованість впливу.
4. Потужність навантаження.
5. Послідовність виконання вправ.

Частота занять. Рівень кардіореспіраторної підготовленості (КРП) підвищується зі збільшенням частоти занять, однак при чотириразових заняттях на тиждень він вирівнюється. Оптимальна частота занять, що забезпечує достатнє збільшення рівня КРП при мінімальному ризику травм, -3-4 рази на тиждень із середньою інтенсивністю. При проведенні менше трьох занять на тиждень можна також підвищити рівень КРП, однак доводиться виконувати навантаження з більш високою інтенсивністю, у цьому випадку значно важче домогтися зменшення маси тіла.

Тривалість. Оптимальна тривалість тренувального заняття залежить від інтенсивності. Найбільш важливою змінною, що визначає збільшення рівня КРП при досягненні мінімального порога інтенсивності, є загальний обсяг роботи, виконаної за тренувальне заняття. Одне тренувальне заняття повинне забезпечити витрати енергії, що дорівнює 200-300 ккал .

Інтенсивність. Збільшення рівня КРП відбувається при інтенсивності фізичного навантаження 50-85% МПК. Разом з тим загальноприйнято, що поріг інтенсивності, що забезпечує тренувальний ефект, повинен бути на нижньому кінці розкиду для малорухомих людей, і на верхньому - для фізично підготовлених. Верхня границя інтенсивності аеробного навантаження для фізично здорових людей, які не займаються спортом, складає: 70% МПК, 70% резерву ЧСС, 80% ЧССмакс. Рухова активність з такою інтенсивністю робить адекватне навантаження на кардіореспіраторну систему, що згодом приводить до її адаптації.

Оптимальною з нашого досвіду є технологія, яка включає: частоту занять не менше 3-4- рази на тиждень; інтенсивність занять , яка передбачає витрати енергії 200-300 ккал. за одне заняття; інтенсивність фізичного навантаження 50-85 % МПК. Дві останні складові ефекту оздоровчого тренування залежать від мети заняття.

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ПРОБЛЕМА ПРОФЕСІЙНОЇ ПІДГОТОВКИ ФАХІВЦІВ З ФУТЗАЛУ

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Актуальність. Необхідність фізичного виховання в закладах освіти, підвищення його соціального статусу, розширення кола завдань, які вирішуються, потребує постійного вдосконалення професійної підготовки в системі фізкультурно-педагогічної освіти.

В Україні приступили до реалізації "Комплексної цільової програми розвитку футболу в Україні на 2003-2008 роки". Одною з вагомих проблем даної програми є необхідність структуризації системи підготовки кваліфікованих спеціалістів в області футболу. Проблема розвитку футзалу у відповідності до даної концепції є однією з пріоритетних напрямків розвитку футболу. Потреба розвитку футзалу пов'язана з ростом популярності цього відносно нового виду спорту у всьому світі. Одна з причин, яка зумовлює необхідність розвитку футзалу, є значні досягнення українських клубних і національних команд на міжнародних змаганнях різного рівня та перспектива включення цього виду спорту в програму Олімпійських Ігор.

Одним із ключових завдань розвитку футзалу в Україні є його включення до навчальних програм загальноосвітніх шкіл і вищих навчальних закладів. Абсолютно очевидно, що вирішення даного завдання неможливе без наявності кваліфікованих спеціалістів.

Метою даного дослідження є вивчення перспектив і проблем, які перешкоджають розвитку футзалу в системі фізкультурної освіти України.

Виходячи з мети дослідження нами були сформульовані наступні завдання:

1. Встановити, в якій мірі футзал користується популярністю в учнівському та студентському середовищу, а також причини цієї популярності.
2. Встановити, в якій мірі державна установа зацікавлена в розвитку футзалу.
3. Встановити причини, які перешкоджають розвитку футзалу в Україні на сьогоднішньому етапі.

Однією із важливих переваг футзалу є те, що в нього можна грати цілий рік – як в закритих приміщеннях, так і на свіжому повітрі.

Футзал дає можливість позитивно впливати на розвиток організму спортсмена, їх фізичну підготовленість, розумову і фізичну працездатність, забезпечує необхідну підготовку гравців, розвиває у них специфічну техніку і тактику гри.

Футзалу характерні безперервна рухова активність гравців на майданчику, підвищення швидкості виконання технічних прийомів (зупинок, ведення, обведення, тощо). Переміщення по майданчику на великій швидкості поєднуються з прийомами м'яча, виконанням дриблінгу, передач, обманних рухів, відбору м'яча (адекватно до правил гри – заборонені поштовхи, атака ззаду, підкати) і ударами по воротах.

Можна вважати, що у процесі підготовки майбутній тренер-викладач повинен озброїтися широким колом інформації про зміст системи фізичної підготовки, арсеналом сучасних педагогічних технологій з широким використанням наукових розробок, методиками психологічного вивчення індивідуальних особливостей спортсменів, про використання активних форм, методів і засобів підготовки, які забезпечують раціональну діяльність в умовах постійних змін ситуації під час вирішення завдань підготовки, розвивати і вдосконалювати знання, вміння і навики, які вирішують професійну діяльність з більшою ефективністю.

Тренер-викладач повинен вміти застосовувати наявні знання, керуючись положеннями дидактики, вміти реалізовувати поставлені завдання в навчально-виховному процесі, творчо підходити до забезпечення підготовки і володіти адекватною виконавчою дисциплінованістю.

Проведене нами дослідження дозволяє зробити наступні висновки:

1. Розвиток футзалу в Україні користується вагомою підтримкою із сторони державних структур, про що свідчить зміст "Комплексної програми розвитку футболу в Україні на 2003-2008 роки".
2. Футзал в Україні – один із найбільш популярних видів спорту у представників учнівської і студентської молоді (чоловічої статі).
3. Основними причинами, які перешкоджають розвитку футзалу в Україні (на даному етапі) є:

- Відсутність футзалу в навчальних програмах загальноосвітніх шкіл і вищих навчальних закладах;

- Відсутність спеціалізації з футзалу у вищих навчальних фізкультурних закладах, що не дозволяє забезпечити цей вид спорту висококваліфікованими спеціалістами;
- Відсутність достатньої кількості наукових досліджень і методичних публікацій, які торкаються проблем футзалу;
- Відсутність конкретних кваліфікованих характеристик для тренера-викладача з футзалу.

Таким чином, проблема розробки кваліфікаційних характеристик і програм навчального курсу "Теорії і методики футзалу" в рамках навчальних програм інститутів фізичного виховання вищих навчальних закладів України на даному етапі є досить актуальною.

ВПЛИВ ЗАНЯТЬ РІЗНИМИ ВИДАМИ СПОРТУ НА РОЗВИТОК ФІЗИЧНИХ ЯКОСТЕЙ СТУДЕНТОК

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В теорії і практиці фізичної культури дуже актуальними є проблеми виховання фізичних якостей і їх вплив на спортивну діяльність, оскільки дослідження і розвиток рухових якостей є основою загальнофізичної підготовки та фундаментом для росту спортивної майстерності. Різноманітні рухові дії формуються протягом життя людини під впливом багатьох чинників, а процес їх формування може набувати різного характеру. Оптимізація цього процесу досягається в умовах раціональної та цілеспрямованої фізичної підготовки.

Виховання фізичних якостей та навчання вправ, тобто загальна і спеціальна фізична підготовка — дві тісно взаємопов'язані складові фізичного виховання. Неможливо навчитись, не повторюючи вправ, а повторне виконання неодмінно впливає на розвиток певних фізичних якостей. Між фізичними якостями існує тісний взаємозв'язок. Розвиток однієї якості позитивно впливає на прояв іншої, або, навпаки, відбувається негативний вплив. Так, на початкових етапах тренування зростання максимальної сили позитивно позначається на прояві швидкості в циклічних рухах; при розвитку гнучкості збільшується не тільки амплітуда рухів, але і сила м'язів, які піддаються розтягуванню. Розвиток загальної витривалості (в певних межах) веде до підвищення спеціальної витривалості, що, в свою чергу, сприяє зростанню сили м'язів. Водночас у висококваліфікованих спринтерів може спостерігатись навіть зворотний зв'язок, тобто зростання сили (внаслідок тренування з обтяженнями) може негативно вплинути на швидкість бігу. Ще яскравіше

зворотній зв'язок проявляється між максимальною силою і загальною витривалістю.

Вивчення літературних джерел дозволяє констатувати, що комплексна оцінка рухових якостей визначає рівень фізичної підготовленості студентської молоді. Таким чином, фізичні якості – це розвинуті в процесі виховання і цілеспрямованої підготовки рухові задатки людини, які визначають її можливості успішно виконувати певну рухову діяльність. Між фізичними якостями існує тісний взаємозв'язок, який може бути як позитивним, так і негативним; чим нижчий рівень розвитку фізичних якостей, тим тісніший позитивний взаємозв'язок між ними, і навпаки. Вдосконалення фізичних якостей означає раціональне застосування відповідних фізичних вправ і адекватних методів їх виконання в обраному виді спорту.

Значною мірою малодослідженими залишаються питання впливу занять різними видами спорту на рівень розвитку фізичних якостей студентів, що ускладнює вибір методики оздоровчого тренування студентів. Рівень розвитку фізичної підготовленості студентів залежить від вибраної методики підготовки та засобів її реалізації.

Динаміка росту результатів студенток, що займаються фізичним вихованням, не завжди спостерігається позитивною, на що є свої об'єктивні причини. По-перше, низький рівень фізичної підготовленості студенток I курсу; по-друге, недостатня зацікавленість студентів в підвищенні свого функціонального рівня; по-третє, недостатня інформативність Державних тестів. Так, результати стандартизованих тестів і нормативів порівнюються з показаним результатом, що викликає у більшості студентів негативне ставлення до тестування. Тестування ж має сприяти мотивації студентів до регулярних занять фізичною культурою та спортом, покращення своїх результатів. У якості модифікації тестів можна запропонувати методику складання тестів, в яких результати не порівнюються з нормативами, а оцінка їх виконання базується на змінах, які відбулися за окремий період часу.

У процесі фізичного виховання для підвищення ефективності навчального процесу і розвитку рухових якостей необхідно враховувати індивідуальні якості та здатності студенток, рівень їх методичної підготовленості, тому що без цього немає гарантії успішного використання педагогічних впливів.

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ОСОБЛИВОСТІ ВПРОВАДЖЕННЯ КРЕДИТНО-МОДУЛЬНОЇ СИСТЕМИ ОРГАНІЗАЦІЇ НАВЧАЛЬНОГО ПРОЦЕСУ З ФІЗИЧНОГО ВИХОВАННЯ: ПРОБЛЕМНІ ПИТАННЯ ПРАКТИКИ ЗАСТОСУВАННЯ

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Соціально-економічні зміни, які відбуваються в Україні, чітко визначили орієнтир розвитку вищої освіти, спрямований на євроінтеграцію, модернізацію навчально-виховного процесу та впровадження інноваційних технологій навчання. Виходячи з цього, в останні роки виникли передумови подальшого вдосконалення фізичного виховання та впровадження нових технологій у навчальний процес. Базовим орієнтиром є спрямованість на модернізацію навчального процесу у напрямку гуманізації в контексті європейських освітніх вимог.

Для реалізації цього завдання необхідне послідовне впровадження принципово нових технологій до змісту і структурування освітніх знань. Тобто реформування навчального процесу з фізичного виховання необхідно здійснювати як в структурному, так і в змістовному відношенні.

З цією метою у вищих навчальних закладах активно запроваджується кредитно-модульна система організації навчального процесу та модульно-рейтингова система контролю фізичного стану та фізичної підготовленості студентів.

Впровадження модульно-рейтингової системи оцінювання передбачає досягнення кожним студентом встановлених ECTS норм, тобто оволодіння студентом змістовними модулями через специфічну для модульного навчання організацію методів і прийомів навчальних заходів. Основним змістом фізичного виховання є активна діяльність студента, направлена на мотиваційно-ціннісне ставлення до фізичної культури, установлення на здоровий спосіб життя, фізичне вдосконалення і самовиховання.

Можна визначити ряд проблем переходу на кредитно-модульну систему навчального процесу з фізичного виховання: недостатнє методичне обґрунтування деяких нормативних положень кредитно-модульної системи організації фізичного виховання студентів вищих навчальних закладів; недостатнє науково-методичне обґрунтування та індивідуальне трактування викладачами принципів

оцінювання навчальних досягнень студентів з фізичного виховання; недостатнє організаційно-методичне забезпечення самостійної та індивідуальної роботи з фізичного виховання студентів; низький рівень мотивації студентів до активних занять фізичним вихованням та інше.

Однією з центральних проблем фізичного виховання і потужних резервів підвищення його ефективності є проблема індивідуалізації, яка обумовлена об'єктивним протиріччям між колективною формою навчання, різним рівнем фізичної підготовленості студентів та особистісним засвоєнням навчального матеріалу. Одним з принципів модульного навчання є принцип гнучкості, тобто побудови навчального процесу з урахуванням індивідуальних потреб і можливостей студентів.

Так, у впровадженому кафедрою фізичного виховання СумДУ регламенті модульно-рейтингової системи атестація студентів проводиться з метою стимулювання їх активних та систематичних аудиторних і самостійних занять з фізичного виховання. 50 % рейтингових балів студент може отримати за систематичне відвідування навчальних занять, 25 % модульного рейтингу визначається теоретично-методичною підготовленістю студента і, відповідно, лише 25 % залежить від його фізичного та функціонального стану. Заохочувальні рейтингові бали надаються за участь у спортивно-масових заходах, змаганнях та науково-дослідницькій роботі з актуальних питань фізичного виховання.

Ще одна особливість модульної технології навчання полягає в тому, що робиться акцент на самостійну роботу студента, яка потребує відповідного методичного забезпечення. При розробці методичних матеріалів слід враховувати, що на самостійну роботу студента відводиться значна частка навчального часу, тому методичні рекомендації з усіх видів навчальної програми з фізичного виховання мають містити відомості про методи самостійного виконання вправ з різних видів спорту, їх форму і зміст.

Зважуючи на те, що студенти звільнені від практичних занять з фізичного виховання за станом здоров'я, мають бути оцінені з теоретично-методичної підготовленості, метою самостійної роботи визначається поглиблення теоретичної й методичної підготовки студентів, а також формування професійних і спеціальних умінь застосування фізичних вправ. Відповідно до мети визначається

коло завдань: оволодіння теоретичним і методичним програмним матеріалом; розвиток умінь його оптимального вибору для організації та проведення різних форм занять з фізичного виховання; реалізація творчих можливостей студентів у моделюванні майбутньої професійної діяльності.

Серед проблем, які постають перед кафедрами фізичного виховання окремо стоїть питання про якість оцінки фізичної підготовленості студентів, її обґрунтування та об'єктивність її отримання. За умови кредитно-модульного контролю всі тести і нормативи здаються відповідно до змістовних модулів, викладених у регламенті впровадження модульно-рейтингової системи. Це дозволяє студентам адаптуватися до виконання контрольних вправ, вдосконалювати методику їх виконання, досягати максимально високого індивідуального результату.

Узагальнюючи наведені вище підходи до організації навчальної діяльності на основі кредитно-модульної системи, можна відзначити, що поступово складаються уявлення про можливість конструктивного використання й подальшого розвитку ідей модульного навчання в процесі фізичного виховання студентів.

ПРОФИЛАКТИКА И ЛЕЧЕНИЕ ЗАБОЛЕВАНИЙ ОПОРНО-ДВИГАТЕЛЬНОГО АППАРАТА С ПОМОЩЬЮ ЗАНЯТИЙ В ВОДЕ

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Начальные степени сколиоза клинически сходны с патологической осанкой. Поэтому общими профилактическими мерами для этих групп больных является правильное физическое воспитание детей.

Лечение детей с нарушением осанки должно быть комплексным: лечебная гимнастика, полноценное питание, массаж (ручной, подводный, общий), физиотерапевтические процедуры, лечебное плавание, тренировочно-оздоровительные мероприятия.

Задачами лечения являются всестороннее физическое развитие с целью создания общефизиологических условий, способствующих правильному держанию тела, освоению двигательных навыков, развитию силы, работоспособности мышц, координации движений;

воспитание нормальной осанки; обучение правильным навыкам стояния, ходьбы, сидения, правильному дыханию.

Физические упражнения подбирают по анатомо-физиологическому действию. При нарушениях осанки применяют общеукрепляющие, дыхательные, специальные упражнения.

В комплексе лечебных мероприятий важное место занимает плавание, одна из форм лечебной физкультуры.

Плавание происходит в необычных для человека условиях — водной среде. В плавании действие физиологических факторов (активных движений) сочетается со взаимодействием человека с водной средой.

Лучшим способом плавания с целью коррекции искривлений позвоночника является брасс на груди, при котором конечности производят симметричные движения, способствующие выравниванию асимметрии позвоночного столба и конечностей. Движения рук и ног строго координируются с движением грудной клетки, сокращением диафрагмы и мышц брюшного пресса, дыхание непроизвольное.

Известно, что при нарушениях осанки и сколиозе довольно часто встречается плоскостопие, как проявление нервно-мышечной и соединительнотканной недостаточности при данной патологии.

Плавание с лечебными целями рекомендуется детям с нарушениями осанки в сагиттальной и фронтальной плоскостях, сколиозом I—III степени. В отдельных случаях можно разрешать плавание при сколиозе IV степени.

Противопоказано плавание при прогрессирующих формах сколиоза, индексе стабильности позвоночника (по Казьмину) < 0,5. Очень осторожно следует назначать плавание больным диспластическим сколиозом. К числу общих противопоказаний следует отнести острые и хронические заболевания кожи (грибковые, инфекционные кожные заболевании); заболевания ЛОРорганов (отит, гайморит, декомпенсированный тонзиллит); заболевания глаз (конъюнктивит, блефарит) и другие.

Основными задачами лечебного плавания при сколиозах являются:

воспитание нормальной осанки;

возможная коррекция имеющегося искривления позвоночника и грудной клетки;

развитие правильного дыхания;

увеличение силы, тонуса мышц, особенно разгибателей позвоночника, брюшного пресса, грудных, мышц нижних конечностей;

улучшение функции сердечно-сосудистой системы;

воспитание чувства равновесия;

коррекция плоскостопия;

закаливание организма;

приобретение навыков плавания.

На основании клинического и функционального обследования детей с нарушениями осанки и сколиозом мы применяли специальные комплексы плавательных и физических упражнений в зале и в воде в течение курса лечения. Длительность курса лечения — 10 мес. При необходимости курс лечения повторяется. Построение курса лечебного плавания основывается на дидактических и организационно-методических принципах, принятых в лечебной физкультуре. Курс лечения делится на 3 периода: подготовительный (сентябрь, октябрь), основной (ноябрь, декабрь, январь, февраль, март, апрель), заключительный (май, июнь).

При сколиозе противопоказано плавание кролем на груди в координации. Вращательные движения в грудном и поясничном отделах позвоночника, возникающие при работе рук и ног, могут привести к увеличению мобилизации позвоночника и прогрессированию искривления. По этим же причинам мы не рекомендуем плавание дельфином, где сгибательные и разгибательные движения последовательно возникают во всех отделах позвоночника при каждом цикле работы рук и ног. Отдельные элементы этих способов плавания не противопоказаны (например, плавание кролем при помощи ног, плавание дельфином при помощи рук). При нефиксированных сколиозах можно рекомендовать (при строжайшем определении показаний) плавание на боку, баттерфляем.

Обучение начинают с элементов плавания независимо от подготовки. Сохранение позы коррекции позвоночника при выполнении всех упражнений считаем обязательным и необходимым моментом методики. В лечебном плавании рекомендуем также широко использовать поддерживающие средства, так как одной из важнейших задач является разгрузка позвоночника.

К поддерживающим средствам относятся: плавательные доски из пенопласта разных размеров, резиновые надувные круги, мячи;

надувные, пластмассовые игрушки; обручи из пластика или алюминия; плавательные шесты (трубки из алюминия, бамбука 3—4 см в диаметре); плавательные перекладины (снаряд из пенопластовых пластин и пластиковых трубок). В качестве дополнительных поддерживающих средств можно использовать стенку бассейна, ступени для спуска в воду, подвесные лесенки.

Неумеющие держаться на воде выполняют упражнения для освоения с водной средой. Мы согласны с мнением В. С. Васильева, Б. Н. Никитского (1973), которые подготовительные упражнения для освоения с водой разделяют на следующие группы:

элементарные движения рук и ног; передвижения по дну; погружение; упражнения для дыхания; всплывание; лежание; скольжение.

Существует множество комплексов упражнений для лечения заболеваний опорно-двигательного аппарата на суше и в водной среде.

Наук. кер – ст. викл. Долгова Н.О.

ОСНОВА МЕТОДИКИ ФІЗИЧНОГО ВИХОВАННЯ, ЯК ФАКТОР ВПЛИВУ НА ЯКІСТЬ НАВЧАННЯ І ВИХОВАННЯ СТУДЕНТІВ

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Фізична культура є частиною передової культури, набутком всього народу. Це потужний засіб не тільки фізичного вдосконалення та оздоровлення, але також і виховання соціальної, трудової, творчої активності громадян. Фізична культура не вичерпується вправами, спортом, гімнастикою, іграми та туризмом: вона включає громадську та особисту гігієну праці, побуту, використання природних сил для загартування, правильний режим праці, відпочинку та харчування. Систематично вживані фізкультура та спорт – це молодість, що не залежить від паспортного віку, це старість без хвороб, оживлена оптимізмом, довголіття, і нарешті – здоров'я.

Практика фізичного виховання молоді

Складовою частиною методики навчання фізичній культурі є система знань по проведенню занять фізичними вправами. Без знання методики занять фізкультурними вправами неможливо чітко і

правильно виконувати їх, а отже ефект від виконання цих вправ зменшитися, якщо не зовсім пропаде. Невірне виконання фізкультурних вправ приводить лише до втрати зайвої енергії, а отже і життєвої активності, що могло б бути спрямоване на більш корисні заняття навіть тими ж фізичними вправами, але в правильному виконанні, чи іншими корисними справами.

Розробка методики занять фізичними вправами повинна вироблятися високопрофесійними фахівцями в області фізичної культури, тому що неправильна методика виконання може привести і до більш серйозних наслідків, навіть до травм. Тим більше у вищих навчальних закладах, де навантаження повинне бути більш ускладнене ніж у середніх, методика занять фізкультурними вправами повинна бути чітко розроблена і деталізована.

Крім розробки самої методики занять фізкультурними вправами важливою частиною методики фізичного виховання і навчання студентів є засвоєння студентами знань, навичок, умінь з метою розвитку й удосконалювання фізичних здібностей.

Розділи занять

Фізичне виховання і навчання студентів складається з теоретичних, практичних і контрольних занять, що визначаються методикою і концепцією викладання, прийнятої в даному вищому навчальному закладі.

Кожний розділ має свою особливість, виконує визначені цілі і спрямований на конкретний результат. І звичайно ж має свою особливу методику.

Теоретичний розділ.

Будь-яка навчальна програма по фізичній культурі припускає наявність обов'язкового теоретичного розділу. Ця частина фізичного виховання і навчання викладається студентам у формі лекцій у логічній послідовності. Тим самим формується теоретичний шар знань у студентів по фізичній культурі. Це буде основою для формування умінь у студентів виконувати фізичні вправи і прокладе шлях для наступного розділу.

Практичний розділ складається з двох підрозділів: методико-практичного і учбово-тренувального.

У кожнім семестрі система практичний занять, що має методичну й учбово-тренувальну спрямованість, будується як закінчений модуль, відповідний проходженню різних розділів програми.

Контрольні заняття.

Модулі завершуються виконанням студентами на заняттях відповідних контрольних завдань і тестів, що характеризують ступінь засвоєння навчального матеріалу. Контрольні заняття забезпечують оперативну, поточну і підсумкову інформацію про ступінь засвоєння навчального матеріалу

Отже розкривши всі розділи фізичного виховання і навчання студентів можна помітити, що без чітко сформованої й відпрацьованої системи викладання і навчання важко буде дотриматись методики занять фізичними вправами. Іншими словами правильне, чітке виконання послідовності проходження всіх трьох розділів обумовлює якість виховання і навчання і є основою для застосування методики занять фізкультурними вправами.

Складаючи основу методики фізичного навчання і виховання всі перераховані вище розділи тим самим виконують функцію факторів, що впливають на якість навчання і виховання студентів, тому що тільки послідовне проходження всіх етапів фізичного навчання може гарантувати правильність засвоєння і контроль за засвоєнням матеріалу по фізичній культурі.

Словесні способи навчання засновані на використанні слова як засобу впливу на тих що займаються і включає пояснення, розповідь, бесіду, подачу команд, указівок, зауваження. Це може здійснюватися шляхом попереднього усного пояснення викладачем фізкультурної вправи, правильності його виконання, його значення для зміцнення і розвитку фізичного стану організму. Наочні способи навчання - це показ, демонстрація відеофільмів, кінограм, фотографій, плакатів, схем, що створюють у студентів образні представлення про досліджувані вправи. Їхній показ повинний бути чітким, зразковим, інакше він негативно впливає на психіку того, кого навчають, веде до неправильного виконання прийомів і дій. Він важливий на первісному етапі навчання, коли пояснення не дає повного представлення про вправу. Потім викладач може продемонструвати виконання цієї фізкультурної вправи. Наступним етапом буде виконання цієї вправи студентами і контроль викладачем правильності, точності і чисельності виконання фізкультурної вправи. У разі потреби застосовується "дзеркальний" спосіб показу. Одна з форм використання цього способу навчання - показні заняття.

Практичні способи відіграють вирішальну роль у формуванні рухових навичок, розвитку й удосконалювання фізичних якостей у студентів. Це, як правило, повторення вправ цілеспрямовано і багатократно з поступовим ускладненням умов і підвищенням навантаження.

Важливим у навчанні і такі методичні прийоми, як випробування, виконання вправ по командах викладача, самостійне виконання вправ, оцінка і заохочення, надання допомоги і страховка, ігри, естафети, змагання, підготовчі вправи. Усе це застосовують у тісному взаємозв'язку щоб домогтися високої ефективності від кожного навчального заняття.

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ВІДНОВЛЕННЯ ЮНИХ ЛИЖНИКІВ У ПІДГОТОВЧОМУ ПЕРІОДІ

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Стрімкий прогрес спортивної майстерності змушує детальніше вивчати процес підготовки спортсменів і шукати можливості для його подальшого вдосконалення. До найбільш перспективних відносяться ті, які відштовхуються від розв'язання проблеми ефективності застосування відновлювальних заходів.

Сучасні методи підготовки спортсменів засновані на використанні великих за обсягом інтенсивності тренувальних навантажень, що нерідко призводить до перенавантаження і навіть до травм і захворювань опорно-рухового апарату. Повторні мікротравми спричиняють розвиток дегенеративного процесу в колагенових волокнах сухожилок з наступними явищами невеликого реактивного запалення в добре зрошуваних елементах: сухожилкових піхвах, серозних сумках, окісті, м'язах.

Як відомо, унаслідок втоми в організмі спортсменів у вигляді закономірної біологічної реакції виникають процеси відновлення, які забезпечують повернення до початкового рівня функціонального стану організму. Розгортання і перебіг процесів відновлення залежить від напряму та величини навантаження, характеру тренувальних занять та багатьох інших факторів зовнішнього і внутрішнього середовища.

Виконуючи свою роботу, м'язи одночасно вдосконалюють функції практично всіх систем організму, у першу чергу серцево-судинної і дихальної.

М'язове волокно характеризується такими основними фізіологічними властивостями: збудливістю, скороченням й послабленням. Ці властивості, по-різному поєднуючись, забезпечують роботу нервової і м'язової систем організму і сприяють підвищенню фізичних якостей людини, що у повсякденному житті й спорті називають силою, швидкістю, витривалістю та ін. Вони відмінно розвиваються під впливом фізичних вправ.

Установлено взаємозв'язок усіх внутрішніх органів, що дістав назву моторно-вісцеральних рефлексів. Працюючи, м'язи передають по нервових волокнах інформацію про власні потреби, стан і діяльність внутрішніх органів й у такий спосіб впливають на їхню роботу, регулюючи й активуючи її.

Різноманітні біохімічні процеси, що відбуваються в м'язах, у результаті впливають на функції всіх органів і систем. Так, у м'язах відбувається активне нагромадження аденозинтрифосфорної кислоти (АТФ), що є акумулятором енергії в організмі. Процес її нагромадження залежить від роботи м'язів.

М'язи відіграють роль допоміжного фактора кровообігу. Відомо, що для стимуляції венозного кровообігу корисна дозована ходьба. Вона сприяє зменшенню набряків, оскільки м'язи ніг, що скорочуються, немовби підганяють, видавлюють і підкачують венозну кров до серця. Без м'язів був би неможливий процес пізнання, бо відповідно до досліджень І.М. Сеченова всі органи чуттів так чи інакше пов'язані з роботою різних м'язів.

Кожне м'язове волокно постійно вібрує навіть у стані видимого спокою. Ця вібрація не відчувається, не припиняється ні на хвилину і сприяє кращому кровообігу. Таким чином, кожен зі скелетних м'язів, а їх в організмі близько 600, є немовби своєрідним мікронасосом. Звичайно, додаткова участь такої кількості периферичних «сердець» значно стимулює кровообіг.

При цьому ефект полягає в тому, що ця система додаткового кровообігу добре піддається тренуванню за допомогою фізичних вправ і, будучи залученою до роботи, багаторазово посилює фізичну й спортивну працездатність. Не виключено, що м'язові мікронасоси поряд з іншими факторами впливають на реабілітаційний ефект, що дають фізичні вправи при деяких формах серцевої недостатності.

Заняття фізичними вправами сприяють кращому кровозабезпеченню м'язів. Відомо, що під час фізичного навантаження не тільки розширюється просвіт численних дрібних судин (капілярів), що

пронизують м'язи, але й збільшується їх кількість. Так, у м'язах людей, які займаються фізичною культурою й спортом, кількість капілярів значно більша, ніж у нетренованих, а отже, у них кровообіг у тканинах і головному мозку кращий.

Необхідно враховувати, що відновлювальні процеси розвиваються нерівномірно: спочатку після навантаження цей процес іде швидко, а потім повільніше. Установлено вікові особливості відновлювальних процесів, які різні за швидкістю в людей різних вікових груп. Так, у підлітків (12–16 років) після індивідуальних навантажень швидкість відновлення відбувається швидше, ніж у дорослих спортсменів. Під час виконання великих навантажень відновлення у дітей іде повільніше, ніж у дорослих.

Одна з важливих особливостей відновлювальних процесів – неодночасне (гетерохронне) повернення до початкового рівня різних показників психофізичних функцій. Так, наприклад, відновлення потреб кисню, вентиляції легень, пульсу, артеріального тиску і температури шкіри у м'язах, що працюють, відбувається в різні строки. Гетерохронне відновлення психофізіологічних функцій передбачає різний ступінь підготовки до різних вправ. Так, наприклад, після виконання вправ субмаксимальної потужності спочатку відновлюється здатність спортсмена здійснювати короткі швидкісні вправи, а тільки потім – вправи субмаксимальної інтенсивності.

Відновлення основних показників серцево-судинної системи відбувається раніше, ніж повертаються до початкового рівня енергетичні ресурси організму. Так, наприклад, після виконання вправ у режимі 90% інтенсивності, що триває 30 с, відновлення працездатності відбувається за 90–120 с.

Висновки:

1. Стійкість до навантажень залежить від процесів відновлення. При їх швидкому протіканні можна збільшити як навантаження, так і частоту тренувальних занять. Якщо відновлення неповне, то в час повторного навантаження відбувається перевтома і порушуються процеси адаптації.

2. Одним із найважливіших завдань сучасного спорту є своєчасне визначення функціонального стану і змін опорно-рухового апарату спортсмена, внесення корекцій у тренувальний процес і проведення відновлювальних заходів. Багаторічні спостереження засвідчують, що ефективність відновлювальних заходів залежить від їхньої комплексності, часу застосування, виду спорту, віку, статі та ін.

ОСОБЛИВОСТІ ТРЕНУВАННЯ ЮНИХ БІАТЛОНІСТІВ НА ЕТАПІ ПОГЛИБЛЕНОЇ СПОРТИВНОЇ ПІДГОТОВКИ

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Під управлінням у найбільш загальному вигляді розуміють переведення об'єкта з одного стану в інший, що заздалегідь заданий. Це визначення значною мірою відповідає меті тренування, яка полягає в тому, щоб перевести спортсмена з одного стану (рівня підготовленості) в інший (більш високий рівень підготовленості). Технологія управління складається з ряду стадій: ухвалення рішення, організація виконання, збору й обробки інформації, підбиття підсумків.

Етап поглибленого спортивного тренування посідає одне з провідних місць у системі підготовки юних спортсменів. У цей період достатньо чітко проявляється психофізична індивідуальність юних спортсменів, виявляються індивідуально-типологічні особливості адаптації до фізичних навантажень, визначається індивідуальний стиль змагальної діяльності.

Найважливішими завданнями етапу поглибленого тренування юних біатлоністів є досягнення високого рівня загальної і спеціальної фізичної підготовленості і підвищення функціональних можливостей організму. У біатлоні домінуюче місце займають тривалі, безперервно виконувані вправи, що найбільшою мірою сприяють розвитку спеціальної витривалості у тих, хто займається.

Здійснений теоретичний аналіз матеріалів зі спеціальної науково-методичної літератури дав змогу подати таке визначення терміна. Під динамічною індивідуальною нормою розвитку будь-якої рухової якості розуміється прогноз результатів у тесті, що визначає цю якість на деякий заданий часовий інтервал (цикл, етап, період) на основі аналізу раніше зареєстрованої динаміки результатів.

Для розробки математичної моделі прогнозування індивідуальної норми розвитку швидкісних і швидкісно-силових якостей у підготовчому періоді річного циклу був організований піврічний педагогічний експеримент, за результатами якого складені рівняння множинної регресії, що дозволяють прогнозувати динаміку результатів у тестах на весняно-літній та осінньо-зимовий етапи підготовчого періоду. Учасники експерименту (юні біатлоністи 15–16 років) мали кваліфікацію не нижче, ніж I спортивний розряд.

Емпіричні дані, на основі яких будувались регресивні моделі, реєструвались у травні і вересні. У ці місяці спортсмени, які брали участь в

експерименті, тричі тестувались з інтервалом в один тиждень. Далі згідно з результатами тестування були побудовані рівняння множинної регресії, які дозволяють зробити прогноз результату на три місяці, тобто на період закінчення весняно-літнього, а потім осінньо-зимового етапів підготовки юних лижників, відповідно до періодизації, прийнятої у програмі з лижних гонок для ДЮСШ.

Рівняння регресії мали такий вигляд:

$y_i=a_ix_1+b_ix_2+c_ix_3+d_i, i=1,4,$

де x_1 – результат у тесті (1-е тестування); x_2 – результат у тесті (2-ге тестування); x_3 – результат у тесті (3-тє тестування); a, b, c – коефіцієнти управління регресії; d – вільний член.

Рівняння розраховувались для таких тестів: біг 100 м (у розрахунках використовувався показник V бігу, м/с) (y_1) та стрибок у довжину з місця (см) (y_2). Тести було обрано з урахуванням рекомендацій Програми для ДЮСШ з лижних гонок й біатлону, а також можливості їх виконання у манежі за стандартних умов.

У таблиці 1 подано параметри рівнянь регресії для перерахованих тестів.

Таблиця 1

Коефіцієнти рівнянь регресії для визначення індивідуальної норми швидкісних і швидкісно-силових здібностей юних біатлоністів 15–16 років у підготовчому періоді річного циклу тренування

Коефіцієнти рівняння регресії	Тести			
	Біг 100 м		Стрибок з місця	
	початок весняно-літнього етапу	початок осінньо-зимового етапу	початок весняно-літнього етапу	початок осінньо-зимового етапу
a	0,41095	1,3625	-1,9324	-0,86793
b	0,44138	-1,6032	1,70156	1,11188
c	-0,16919	0,975091	0,59064	1,18588
d	2,49115	2,04888	140,06	-92,052
R^2	0,989	0,979	0,840	0,90

Виконані дослідження засвідчили, що для визначення індивідуальних норм розвитку рухових якостей доцільно здійснювати багатовимірний статистичний аналіз результатів тестування, на основі якого формуються рівняння множинної регресії для прогнозування можливої динаміки індивідуальної норми рухових якостей, що вивчаються.

РОЗВИТОК ГНУЧКОСТІ У СТУДЕНТІВ НА ЗАНЯТТЯХ З ФІЗИЧНОЇ КУЛЬТУРИ

Лисенко О.В.,Бурла О.М., *викладачі*

Гнучкість — здатність спортсмена виконувати рухи з великою амплітудою.

Термін «гнучкість» більш прийнятний, якщо мають на увазі сумарну рухливість в суглобах всього тіла. А стосовно окремих суглобів більш правильно говорити «рухливість», а не «гнучкість», наприклад «рухливість в плечових, тазостегнових або гомілковостопних суглобах». Хороша гнучкість забезпечує свободу, швидкість і економічність рухів, збільшує шлях ефективного додатку зусиль при виконанні фізичних вправ. Недостатньо розвинена гнучкість утрудняє координацію рухів людини, оскільки обмежує переміщення окремих ланок тіла.

За формою прояву розрізняють гнучкість активну і пасивну.

При активній гнучкості рух з великою амплітудою виконують за рахунок власної активності відповідних м'язів. Під пасивною гнучкістю розуміють здатність виконувати ті ж рухи під впливом зовнішніх розтягуючих сил: зусиль партнера, зовнішнього обтяження, спеціальних пристосувань і т.п.

За способом прояву гнучкість підрозділяють на динамічну і статичну. Динамічна гнучкість виявляється в рухах, а статична — в позах.

Загальнопідготовчі вправи, вживані при розвитку гнучкості у студентів, є рухами, заснованими на згинанні, розгинанні, нахилах, поворотах. Ці вправи спрямовані на підвищення рухливості у всіх суглобах і здійснюються без урахування специфіки виду спорту.

Засоби, вживані при розвитку гнучкості, розділяються на вправи, що розвивають пасивну або активну гнучкість. Розвитку пасивної гнучкості сприяють різні пасивні рухи, виконувані за допомогою партнера і різних обтяжень (гантелі, амортизатори, еспандери і т. п.), з використанням власної сили (наприклад, притягання тулуба до ніг, ніг до грудей, згинання грона однієї руки іншою і т. п.) або власної маси тіла; статичні вправи — утримання кінцівки в положенні, що вимагає граничного прояву гнучкості.

Розвитку активної гнучкості сприяють вправи, виконувані як без обтяжень, так і з обтяженнями. Це різного роду махові і пружинисті рухи, ривки і нахили. Вживання обтяжень (гантелі, набивні м'ячі, гриф штанги, амортизатори, різні силові тренажери і т. п.) підвищує ефективність вправ унаслідок збільшення амплітуди рухів за рахунок використовування інерції.

Вправи, направлені на розвиток гнучкості, можуть складати програми окремих учбових занять. Проте, частіше їх планують в комплексних заняттях, в яких разом з розвитком гнучкості проводиться силова підготовка студентів. Вправи на гнучкість широко включають в розминку, вони також складають значну частину ранкової зарядки. При плануванні роботи над розвитком гнучкості необхідно пам'ятати, що активна гнучкість розвивається в 1,5— 2 рази повільніше пасивною. Різний час потрібен і на розвиток рухливості в різних суглобах.

На етапі збільшення рухливості в суглобах робота над розвитком гнучкості повинна проводитися щодня самостійно. На етапі підтримки рухливості в суглобах на досягнутому рівні заняття можуть проводитися рідше — 3—4 рази на тиждень, може бути дещо скорочений і об'єм роботи. Проте повністю виключати роботу над розвитком або підтримкою гнучкості не можна ні на одному з етапів тренувального року. При припиненні тренування гнучкість досить швидко повертається до початкового або близького до нього рівня. Не забезпечують збереження гнучкості одно-дворазові щотижневі тренувальні заняття.

Проте принципово важливо те, що тільки закінчивши виконання вправ, направлених на розвиток рухливості в одному суглобі, слід переходити до вправ для наступного суглоба.

При розвитку гнучкості слід враховувати великий вплив зовнішніх умов і стану організму студентів на прояв цієї якості. Підвищенню рухливості в

суглобах, разом з вказаними чинниками, сприяє попередній масаж відповідних м'язових груп.

Не дивлячись на те, що найвищі показники гнучкості виявляються в межах 10—18 год, а в ранкові і вечірні часи рухливість в суглобах знижена, це не може служити підставою для того, щоб в цей час не проводити вправ, направлених на розвиток гнучкості. При

відповідній розминці робота над гнучкістю може плануватися у будь-який час дня.

Однією з серйозних проблем методики фізичної підготовки кваліфікованих спортсменів є поєднання роботи над розвитком гнучкості і силових якостей. В літературі неодноразово указувалося, що важливо не тільки добитися високого рівня розвитку гнучкості і сили, але і забезпечити відповідність розвитку цих якостей між собою.

Тому методика розвитку гнучкості повинна припускати не тільки відповідність цієї якості з силовими здібностями студентів, але і забезпечувати в процесі спортивних занять умови для суміщеного розвитку вказаних якостей. На практичних заняттях це повинно зводитися до підбору таких допоміжних і спеціально-підготовчих вправ силової спрямованості, які разом з дотриманням основних методичних положень, що лежать в основі розвитку силових якостей, забезпечували б умови для розвитку або підтримки досягнутого рівня гнучкості.

РОЗВИТОК ШВИДКІСНИХ ЗДІБНОСТЕЙ У БОКСЕРІВ

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Актуальність дослідження визначається специфікою змагань, де для досягнення перемоги у жорсткому двобою треба застосувати весь арсенал швидкісних та швидкісно-силових здібностей, які використовуються протягом тривалого часу.

Багаторічне тренування – це вкрай складний процес, що включає діяльність організму і його систем. Уся рухова діяльність людини виконується м'язовою масою, регульованою центральними і периферійними механізмами нервової системи, функціонально й енергетично забезпечується фізіологічними системами. Організм людини має унікальні властивості – функціональну універсальність і пристосувальну активність. Завдяки цьому, у результаті цілеспрямованого і регулярного фізичного тренування організм вибірково підвищує свої робочі можливості і кількісно розвиває ту форму специфічної пристосовності, що обумовлена конкретною руховою діяльністю і здебільшого визначає її успіх. Такий вибірковий характер функціональної спеціалізації обумовлюється головним чином режимом виконуваної роботи,

що характеризується двома факторами: обсягом та інтенсивністю тренувальних впливів.

Під швидкісними здібностями розуміють комплекс функціональних властивостей, що забезпечують виконання руху за мінімальний час. Розрізняють елементарні і комплексні форми прояву швидкісних здібностей. Елементарні форми виявляються в латентному часі простих і складних рухових реакцій, швидкості виконання окремого руху, коли є невеликий зовнішній опір і частота рухів. До комплексних проявів відносяться здібності до досягнення високого рівня дистанційної швидкості, уміння набирати швидкість зі старту, виконувати з високою швидкістю рухи до кінця змагання.

Варто враховувати, що елементарні і комплексні форми швидкісних здібностей є винятково специфічними і, як правило, не залежать одна від одної. В умовах боксерського двобою спостерігаються комплексні прояви швидкісних здібностей (такі, як швидкість поодиноких і серійних ударів, пересувань, швидкість прийняття захисту). Між зазначеними формами швидкісних здібностей не існує кореляційного взаємозв'язку.

Прості необтяжені рухи, що вимагають максимального прояву швидкості, можуть бути розглянуті на прикладі поодинокого удару. Такий рух виконується за активної участі м'язових груп ніг і тулуба, координація роботи яких відносно проста й істотно не впливає на швидкість основного руху. У більш складних рухових актах, пов'язаних зі зміною положення тіла у просторі напрямку чи його переміщення, а також переведенням з однієї дії на іншу, відповідно ускладнюється і координаційна структура м'язової активності. У цьому випадку наочним прикладом можуть бути дії боксерів, для яких характерні зміни напрямку руху, раптові бічні переміщення, різноспрямовані рухи тулубом (ухили, нирки), переведення від захисту до атаки. Зменшення часу реалізації складних рухових дій пов'язано з поліпшенням рухливості нервових процесів (що виражається в удосконаленні протікання процесів збудження і гальмування в різних відділах нервової системи), з виробленням і зміцненням раціональної міжм'язової координації рухової навички.

На ступінь розвитку швидкісних здібностей впливають такі особливості м'язової тканини, як співвідношення різних м'язових волокон, їхня еластичність, розтяжність, рівень внутрішньом'язової і міжм'язової координації. Прояв швидкісних здібностей спортсменів також тісно пов'язаний з рівнем розвитку сили й удосконаленням спортивної техніки, можливостями біохімічних механізмів до найшвидшої мобілізації і ресинтезу анаеробних постачальників енергії, рівнем розвитку вольових якостей.

Часто у спортивній практиці постає необхідність прояву швидкісних здібностей у рухах з подоланням значних опорів. Удосконалення таких рухів, які виконуються з м'язовим зусиллям більш ніж 15% від максимально можливого (збільшення їхньої швидкості), пов'язано зі спеціалізованою силовою підготовкою.

Відомо, що між силою і швидкістю рухів з різним зовнішнім опором є визначена залежність. Максимальна потужність (іноді називають "вибуховою") є результатом оптимального поєднання сили і швидкості. Потужність виявляється в багатьох спортивних вправах, у початкових і кінцевих фазах удару, у "вибуху" багатоударних серій, у різких (несподіваних) переміщеннях тощо. Чим вищу потужність розвиває спортсмен, тим більшу швидкість він може дати снаряду чи власному тілу, тому що фінальна швидкість снаряда (тіла) визначається силою і швидкістю прикладеного впливу. Потужність може бути підвищена за рахунок збільшення сили чи швидкості скорочення м'язів або за рахунок обох компонентів. Звичайно, найбільший приріст потужності досягається шляхом збільшення м'язової сили.

Слід зазначити, що зміни в організмі, викликані силовими і швидкісними навантаженнями, дуже близькі і різниця між ними в основному кількісна. За певної роботи вміст міоглобіну у м'язах значно зростає, що свідчить про пристосування м'язів до кисневого дефіциту.

Важливою умовою ефективності й економності високошвидкісних рухів є використання еластичних властивостей м'язів. Еластичні властивості м'язів виявляються у здатності накопичувати пружну енергію в підготовчих фазах і реалізовувати її для підвищення результативності рухового зусилля в робочих фазах. Як приклад можна навести використання відходу назад стрибкуватим пересуванням і наступне повернення в дистанцію бою з ударом, що більш ефективно, ніж виконання тієї самої технічної дії з відхилом назад. З підвищенням швидкості рухів (переміщень) спортсмена внесок неметаболічної енергії в загальний енергетичний механізм збільшується. Поряд зі зростанням потужності робочих зусиль, що само по собі важливо, це підвищує економність витрат метаболічної енергії.

Висновки. Таким чином, швидкісна робота викликає глобальні морфофункціональні перебудови всього організму на центрально-нервовому і функціонально-фізіологічному рівнях. Для високої швидкості надзвичайно складних рухів істотне значення має навичка розслаблення м'язів. Це особливо важливо для швидкісних рухів у зв'язку з необхідністю ресинтезу АТФ у проміжках між м'язовими навантаженнями (повторні атаки в боксі).

ФІЗИЧНА ПІДГОТОВКА ФУТБОЛІСТІВ

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Постановка проблеми. Проблема полягає в тому, що формування рухових якостей в онтогенезі відбувається нерівномірно і гетерохронно та залежить від рівня розвитку систем організму. Кожному віку властивий визначений рівень розвитку рухових якостей. Найвищі рухи в силі, швидкості і витривалості досягаються в різні періоди. Тому тренеру-викладачу під час організації тренувальних занять важко правильно розподіляти засоби для розвитку фізичних якостей для кожного з тих, хто займається.

Роль рухів у розвитку організму величезна. Вони сприяють формуванню багатьох функцій людини.

Формування рухових якостей відбувається нерівномірно. Наприклад, удосконалення витривалості визначається значною мірою складною діяльністю кровоносної, дихальної і серцево-судинної систем, а розвиток сили м'язів тісно пов'язаний з ростом кісткової і м'язової тканин.

Систематичне тренування прискорює розвиток рухових якостей, але їх приріст у різні вікові періоди неоднаковий.

Фізична підготовка вирішує два головних завдання: усебічно розвивати рухову систему гравця і відповідно до вимог, що пропонуються футболом, удосконалювати специфічні рухові здібності.

В основі якісної характеристики навантаження лежить інтенсивність, що залежить від нерівномірності сили на різних етапах гри і характеризується максимальною, середньою чи мінімальною ігровою активністю. Якісний показник навантаження – внутрішня структура, що разом з обсягом та інтенсивністю характеризує навантаження в цілому. Говорячи про структуру навантаження, потрібно звернути увагу на певні вимоги до координуючої функції ЦНС. Вони випливають із самих дій гравця, який повинен постійно стежити за обстановкою на полі, ухвалювати рішення в ситуаціях різної складності.

Послідовний зв'язок окремих дій дозволяє гравцю вирішувати конкретні завдання. Уміння правильно знайти цей зв'язок є вищою формою реалізації майстерності. З віком відбувається нерівномірний розвиток сили окремих м'язів. Наприклад, у 12–16 років приріст

максимальної сили м'язів (МСМ) у м'язів-розгиначів стегна більше, ніж у м'язів-розгиначів гомілки і стопи.

У кожному віковому періоді змінюється співвідношення (топографія) МСМ різних м'язів, формується своєрідний м'язовий профіль. Найбільш інтенсивний приріст МСМ установлений у період від 13–14 до 16–17 років. В наступні роки (до 18–20 років) темпи її зростання сповільнюються.

Говорячи про фізичну підготовку юного футболіста, виділяють три основні категорії сили:

– статична сила – здатність розвивати максимальне зусилля в статичному режимі діяльності;

– динамічна сила – здатність розвивати зусилля кілька разів підряд за визначений час в умовах швидкого руху і динамічного режиму діяльності;

– вибухова сила – здатність розвивати максимальне зусилля за дуже короткий відрізок часу (у момент удару, кидка, відображення м'яча).

Швидкістю називається здатність виконувати у визначених умовах
які-небудь дії за можливо короткий час.

У футболі, де постійно змінюється інтенсивність і динаміка рухів, вимоги до швидкості особливо високі. Насамперед це стосується вміння швидко мислити і реагувати на полі.

Швидкість реакції визначається часом від одержання імпульсу до відповіді на нього. Вона залежить від швидкості протікання нервових процесів, а також від чутливості рецепторів. Розрізняють просту реакцію – відповідь на один імпульс (старт) і складну – вибіркову реакцію на різні імпульси, отримані в конкретній ігровій ситуації. Для спортивної гри характерна складна ситуація.

Швидкість виконання простих ігрових дій. У простих діях, які виконуються з високою швидкістю, розрізняють дві фази: фазу зростаючої швидкості (стартова швидкість) і фазу стабільної швидкості (спринтерська швидкість). Максимальна швидкість залежить не тільки від рівня швидкісних даних гравця, але й від рівня розвитку динамічної сили, від ступеня оволодіння технікою рухів тощо.

Швидкість виконання складних ігрових дій залежить від загального вміння рухатися. Саме освоєння техніки ігрових дій допомагає футболісту показувати ритмічну і швидкісну гру.

Для розвитку швидкості найбільш сприятливий вік від 9 до 12 років. У цьому віці особливо значна перевага дітей, які тренуються, перед тими, які не тренуються. Якщо в цей час не розвивати швидкість, то в наступні роки виникне відставання, яке важко ліквідувати.

Ступінь витривалості визначають кілька факторів: функціональний розвиток окремих частин організму, координаційні здібності м'язів, психічний стан гравця, оптимальність залучення всіх органів.

Витривалість у різні вікові періоди підвищується нерівномірно. Так, установлено, що у вправах аеробної потужності найбільший приріст витривалості спостерігається в юнаків від 15–16 до 17–18 років. У вправах аеробної потужності значне збільшення тривалості роботи відзначається від 10–12 до 13–14 років.

У футболістів розрізняють загальну і спеціальну витривалість.

Загальна витривалість визначається здатністю гравця тривалий період виконувати рухи середньої інтенсивності, використовуючи функціональні можливості організму.

Спеціальна витривалість визначається здатністю футболіста виконувати (відповідно до вимог гри) складну рухову діяльність тривалий час і з високою інтенсивністю.

Така здатність залежить від можливостей організму зберігати працездатність при роботі з максимальною інтенсивністю. Її характеризують швидкість і стабільність нервових процесів. До спеціальної витривалості відноситься і здатність витримувати високий рівень фізичних процесів навіть в аеробних умовах.

Спритність – це здатність швидко і точно координувати рухи під час вирішення найбільш несподіваних завдань у процесі гри. Вона пов'язана з комплексом фізіологічних і психічних здібностей гравця, з його руховим потенціалом. Ступінь спритності визначає вміння гравця координувати свої рухи.

Найбільший ріст здатності до координації рухів – від 7 до 10 років. У 10–12 років вона стабілізується, у 14–15 – трохи погіршується, а в 16–17 років показники рухової координації найвищі.

Спритність буває загальна і спеціальна.

Основне завдання загальної спритності – розширити об'єм рухових навичок. Загальна спритність – основа спеціальної спритності, що постійно вдосконалюється гравцями у процесі систематичної підготовки з використанням різних форм фізичного виховання. Спеціальна спритність – уміння гнучко, пластично "пристосовувати" свої рухи до мінливої ігрової ситуації, зберігаючи цілеспрямованість і високий рівень рухової діяльності.

Спеціальна спритність – основа техніки ігрової діяльності. Вона завжди виявляється через техніку в можливо більшій кількості варіантів. Розмаїтість варіантів дозволяє гравцю справитися з незначними змінами зовнішньої обстановки і зі змінами обстановки на полі.

ЯК ПЕРЕБОРОТИ СТРАХ ПЕРЕД ВОДОЮ, ПРИ НАВЧАННІ ПЛАВАННЯ

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Ми часто чуємо фрази: остовпів від страху, онімів від жаху, до смерті налякався. Чи багато істини у цих, на перший погляд перебільшених виразах?

Ще в стародавні часи видатні люди цікавилися впливом психіки на стан організму. І сьогодні нагромадилося багато фактів, що підтверджують таку залежність навіть у тварин. Приклади цього можна знайти і в наукових працях, і в популярних виданнях.

Тварини, як і люди, часто зазнають глибоких психічних потрясінь. От що відбулося один раз у Лондонському зоопарку з молодим кенгуру, привезеним з Австралії. Якось кілька звірят, його сусідів, затіяли між собою бійку. Забіяки обійшлися легкими пораненнями. А кенгуру був мертвий, хоча ніякої участі в бійці не брав. Він сидів, забившись в кут. Його вбив... страх. Частіше за інших тварин жертвами подібної вразливості стають зайці. Вітчизняні і закордонні етнографи, наприклад, що вивчають побут і культуру племен, що знаходяться й у наш час на низькому рівні розвитку, наводять факти раптової смерті людей, що ненавмисно переступила різні морально-етичні заборони: один – після того, як доторкнувся до людини, на яку поширювалося табу недоторканності; інший – від свідомості, що порушив релігійні табу, що є за своєю суттю всього лише забобонами. Натураліст Альберт Швейцер наприклад, описує випадок смерті

молодого африканця після того, як, сідаючи в пірогу, той випадково роздавив павука, що вважався, за уявленням племені, його священним родичем. Схоже, що приказки про страх цілком відповідають істині: дійсно, страх здатний викликати в організмі фізіологічні зміни, що призводять і людину, і тварин до загибелі.

Як показує статистика, тонуть люди при звичайному літньому купанні, нерідко навіть ті, що вміють плавати – їх серед тих, що потонули, 50 – 70%. Що ж трапляється з ними у воді і чому вони гинуть, часом частіше, ніж ті, хто плаває погано або не плаває зовсім?

Звичайно причини нещасть на воді пояснюють судорогами ніг, переохолодженням, втомою, вирами. Але, міркуючи над подібними поясненнями, є підстава засумніватися в їх точності. Справді, чи не так небезпечні судороги, чи можна в розпал літа переохолодитися до такого ступеня, щоб це спричинило трагічні наслідки? Чому треба боятися втоми, якщо на будь-якій ділянці пропливу можна «лягти в дрейф» і відпочити прямо на воді, не виходячи на берег? Французький лікар і дослідник А. Бомбар, вивчаючи матеріали про долі потерпілих в аваріях кораблів , встановив, що люди, виявившись один на один з океаном, вмирають «задовго до того, як фізичні або фізіологічні умови, у яких вони опиняються, стають смертельними». А. Бомбар дійшов висновку, що якщо люди втрачають розум або помирають через кілька годин або днів після катастрофи на воді в теплий час року, уже опинившись на рятувальних судах, отже, їх убиває не море, не голод, не спрага, їх убиває страх.

Щоб довести, що в океані можна існувати багато днів, Бомбар самотужки робить тривалу подорож на маленькому гумовому човні. Харчуючись тільки сирою рибою і планктоном, збираючи дощову воду і вичавлюючи сік з риб'ячого м'яса, що майже не містить солі, він за 65 днів перетнув Атлантичний океан, затвердивши, таким чином, ідею, що є багато шансів на порятунок, якщо не падати духом і боротися за своє життя. Науковий подвиг Бомбара ще раз продемонстрував усьому світові, що в будь-якій критичній ситуації психічний настрій відіграє головну роль і в найскрутнішому стані людина, мобілізувавши свою волю, залишається переможцем, вселяння – це той духовний вплив, що люди роблять один на одного.

Слово є пускачем. Наше мислення також має ефект навіювання або, правильніше буде сказати, ефектом самонавіювання. Виявилося, що якщо, сконцентрувавши увагу, наділити звертання до самого себе

в короткі словесні формули і думкою повторювати їх у визначеній послідовності, чітко уявляючи ті відчуття або ситуації, про які згадується у формулах, то після деякого тренування вдається досягти бажаного результату.

На жаль, негативні емоції, що супроводжуються неусвідомленим самонавіюванням, виявляються звичайно більш руйнівними, ніж ті самі неусвідомлювані позитивні. Щоб позитивні емоції досягли максимального ефекту, потрібно навмисне впровадження їх у свідомість, потрібна методика, мобілізуюча резерви організму. Негативні ж емоції спрацьовують у демобілізуючому плані значно дійсніше, тому вони і мають потребу в постійному контролі і управлінні з боку людини.

Отже, бойовий настрій, мобілізуючий резерви організму, дозволяє часом здолати більш сильного супротивника. І навпаки, недооцінювання можливостей суперника, що підсвідомо знижує активність навіть при великому бажанні виграти, не підкріпленому граничною внутрішньою мобілізацією, призводять до поразки. У цьому всі ми переконувалися незліченну кількість разів. Невипадково тепер перед відповідальним змаганням поруч із тренером все частіше можна бачити психолога.

Є чимало рецептів і прийомів, за допомогою яких вдається викликати необхідний психологічний настрій. Одні люди у хвилини, коли хочуть підняти свій тонус, починають наспівувати бравурну мелодію, підбадьорюючи себе. Інші беруться за яку-небудь роботу, поринають у неї з головою та у процесі її виконання перенастроюються. Третім, особливо жінкам, буває досить надягти улюблену сукню, як у них з'являється урочисто-святковий настрій.

Важливо мати на увазі, що, поставивши собі задачу – змінити настрій, людина здатна це зробити. Вона дійсно вільна над своїми емоціями, настроєм і треба лише, щоб вона знала про це, знала, що сильніше сама за себе, знала, як керувати своїми почуттями.

Буває, що надзвичайні обставини вимотують людину фізично і морально, здавалося б, до краю. Далі боротися вже неможливо – все, це межа. Ні. Людина говорить собі, обставинам, смерті: «Брешеш, не піддамся!» або «Я все рівно вистою». Вона внутрішньо не ламається, не здасться. Найчудовіше те, що при цьому дійсно вступають у дію, активізуються біологічні резерви, дотепер не використані організмом, з'являються нові труднощі. Потім і сама вона, і інші будуть

дивуватися: «Як це можна за таких умов вистояти або вижити? Адже це вище людських можливостей!".

Ось чому страх при запливі у всіх наведених прикладах стає таким всесильним, що людина внутрішньо не готова до цього психологічного іспиту. І якщо при виникненні думки : „А може я втону " перебороти себе і прогнати цю думку, тоді в умовах запливу виникнення цієї думки буде супроводжуватися не панікою і стресовою реакцією, а торжествуючою радістю: „Ось він, нещасливий сумнів у своїх силах! А мені не страшно!".

І в реально важких умовах плавання: вітер, що підсилився, безладна хвиля, темнота... Важливо, щоб і тут людина не піддалася негативному самонавіюванню і думці, що лякає, не реагувала на неї, щоб вона не «запала» у свідомість. Найменший сумнів у своїх силах плавець повинен придушувати негайно, щоб не доводити себе до психічного і фізичного виснаження. Тому з дитинства саморегуляція повинна починатися раніше, ніж станеться стрес, а ще правильніше – до запливу або на початку його.

Необхідно у кожного підлітка, юнака виробляти здатність свідомо, шляхом використання відповідних прийомів змінювати в потрібному напрямку стан нервово-психічної системи. Кожна людина бути всемогутньою, коли потрібна мобілізація сил, спокійною – коли потрібна холоднокровність, зібраною – коли необхідна зосередженість, відчути приплив енергії, коли потрібно скинути із себе втому; нарешті, уміти довільно регулювати функції своїх внутрішніх органів, коли виникає потреба в цьому.

Особливо важливе місце в механізмі настроювання займає монолог, тобто звертання спортсмена самого до себе. Монолог вимовляється (або продумується), як правило, під час розминки, а найчастіше – перед самим виходом на ринг, поміст або перед запливом. Він завжди інтимний, і довідатися про його зміст у цей момент дуже складно.

МАСАЖ - ЕФЕКТИВНИЙ ЗАСІБ ВІДНОВЛЕННЯ ЛИЖНИКІВ - ГОНЩИКІВ І БІАТЛОНІСТІВ

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У зв'язку з подальшим зростанням інтенсивності тренувального і змагального процесів у лижному спорті актуальною стає правильна побудова відновлювального періоду з використанням науково обґрунтованих засобів відновлення. Метою нашого дослідження було вивчення відновного ефекту масажу у кваліфікованих лижників - гонщиків і біатлоністів.

Лижні гонки належить до ациклічних видів спорту. Енергетичні затрати в час тренувальної та змагальної діяльності є значними, а сам енергообмін відбувається, переважно, анаеробним шляхом за рахунок розчеплення вуглеводів. Швидкість кровообігу у спортсменів цього виду спорту дуже висока, як і в інших циклічних видів спорту. Виведення продуктів розпаду з організму спортсменів може бути сповільнене, а тому це може впливати на спеціальну працездатність висококваліфікованих лижників і біатлоністів.

Вітчизняними і зарубіжними спеціалістами протягом багатьох років приділяється велика увага створенню ефективної системи засобів відновлення спортсменів високого класу. Значення даної проблеми у спортивній практиці особливо зросло у зв'язку з тенденцією до подальшого збільшення інтенсивності тренувально-змагальних навантажень. Одним із засобів комплексної системи відновлення є відновний масаж. Роботи А.Бірюкова, В. Пашкова (1984) про відновний масаж недостатньо задовольняють практиків сьогодення.

В доступній нам літературі ми не зустрічали робіт, пов'язаних із впливом масажу на обмінні процеси в організмі лижників - гонщиків. А тому метою нашої роботи було дослідження впливу відновного масажу на виведення одного з проміжних продуктів вуглеводневого обміну - піровиноградної кислоти, у лижників і біатлоністів в умовах інтенсивного тренування.

ОРГАНІЗАЦІЯ І МЕТОДИ ДОСЛІДЖЕННЯ

Об'єктом дослідження були кваліфіковані спортсмени з лижного спорту, студенти СДПУ віком 19-21 року. Дослідження проводили впродовж річного тренувального циклу.

Біологічним матеріалом наших досліджень була сеча, яку збирали до тренування, після ночі і через 1-2 год після тренування, масажу та пасивного відпочинку. Піровиноградну кислоту визначали колориметричним методом (модифікований метод Умбрайта).

РЕЗУЛЬТАТИ ДОСЛІДЖЕННЯ

Базуючись на проведеній нами роботі, можна сказати, що показники виділення піровиноградної кислоти внаслідок активної м'язової діяльності, змінюються. Відновний масаж, на відміну від пасивного відпочинку, прискорює і збільшує виведення продуктів вуглеводневого обміну - піровиноградної кислоти у лижників і біатлоністів.

Результати, подані на рис. 1, відображають динаміку виділення з організму продуктів енергетичного обміну. Вміст піровиноградної кислоти в сечі є на 21% більшим після відновного масажу, ніж при пасивному відпочинку. Виходячи з цього, можна припустити, що відновний масаж спричинює позитивний ефект, оскільки супроводжується виведенням з м'язів продуктів розпаду глюкози.

Рис. 1.

Динаміка вмісту піровиноградної кислоти в сечі лижників - гонщиків і біатлоністів

ВИСНОВКИ.

Отже, відновний масаж, порівняно з пасивним відпочинком, у між тренувальному і періоді спричинює позитивний ефект на організм спортсменів, що є необхідним для досягнення високих спортивних результатів.

СИНЕРГЕТИКА И ОБРАЗОВАНИЕ

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В современном мире образование - одна из доминант в жизни человека и общества. Изменение, которые происходят в информационной, технологической, экономической, социальной и комунникативной сферах, а также связанные с ними - динамизм и разнообразие знания - поднимают значение образования на более высокую ступень. Вместе с тем обострение кризисных явлений в мире обозначило проблему поиска новых путей дальнейшего его развития. Движение в направлении новой системы образования, адекватной требованиям постиндустриальной цивилизации, связано с изменением роли человека, с развитием его творческого мышления, с интеграцией научного познания и самопознания.

Мы страдаем от неспособности охватить комплексность проблем, понять связи и взаимодействия между вещами, находящимися в разных областях действительности. Это подтверждается действиями многих научных организаций и властных структур, напоминающих «слепой полет». Об этом свидетельствуют такие тенденции: происходит дальнейшее увеличение числа неграмотных в мире (около 1 млрд. человек); появление и развитие функциональной неграмотности населения; повсеместное снижение качества образования; нарастание разрыва между образованием и культурой, образованием и наукой; отчуждения обучающегося от процесса образования.

Такое положение показывает, что сегодня судьбы цивилизаций не могут определяться ни мудрейшими правительствами, ни международными организациями, ни учеными до тех пор, пока их действия не будут осознанно поддержаны широкими слоями населения или, говоря языком постнеклассической науки, пока не будет создана новая самоорганизующая среда. И сегодня новое видение мира, понимание личной ответственности за его судьбу постепенно становятся непременным условием выживания человечества и каждого индивидуума.

Данная ситуация в мире на современном этапе делает актуальной проблему поиска новой парадигмы образования, поскольку возможность устойчивого развития общества, успешного преодоления глобальных проблем, региональных конфликтов, характерных для развития цивилизации, тесно связано с достигнутым уровнем образования всех членов общества. Но система образования всегда основывается на

определенном научном понимании мира и человека, которое определяет цели и задачи образования, его содержание, принципы и методы.

Поэтому реформа образования должна опираться на идеи целостности и фундаментальности образования, но не в духе традиционного дисциплинарного понимания фундаментальных наук, заложившего образовательную парадигму со времен первой фазы научной революции, а с учетом парадигмальных изменений науки рубежа XXI века, перехода ее в междисциплинарную стадию постнекласической науки.

Таким образом, мы приходим к необходимости формирования, с учетом знания современной науки, целостного видения мира, свойственного нашим предкам. Синтез мудрости древних цивилизаций, гуманитарных и естественных наук - это путь к новому пониманию природы, человека и общества. В последние десятилетие такой синтез начался спонтанно, в силу логики развития самой науки, интеграции ее дисциплин, рассмотрение все более сложных систем физики, химии, биологии, приближающихся по сложности поведения к живым организмам или их сообществам, моделирующим, как оказалось, также социальные психологические феномены. Новым направлением науки о сложном является синергетика, которая опирается на современные математические методы и является исследованием линейного развития окружающего нас мира: природы, общества и мышления людей. От Бытия к Становлению -вот следуя Илье Пригожину, ориентация новой научной парадигмы, в контексте которой акцент переносится с изучения инвариантов системы, положения равновесия, на изучение состояния неустойчивости, механизмов возникновения нового, рождения и перестройки структур самоорганизации.

Процессы самоорганизации в неравновесных условиях соответствуют диалектическому взаимодействию между случайностью и необходимостью, флуктуациями и детерминистическими законами. Вблизи бифуркаций основную роль играет хаос, случайность, тогда как в интервалах между бифрукациями доминируют дитерминистические связи.

Пути развития самоорганизующихся систем не предопределены. Вероятность выступает ни как порождение нашего незнания, а как неизбежное выражение хаоса в точках бифрукации. Это означает конец классического идеала всевидения и порождает необходимость пересмотра принципа механического рационализма как господствующего научного объяснения действительности. Традиционная

система образования, опирающаяся на принципы классической науки не может эффективно выполнять роль средства освоения человеком мира. Отсюда возникает необходимость разработки новой парадигмы образования - синергетической. В чем ее суть, каково содержание?

Синергетическая модель образования в свое содержание включает следующие важнейшие элементы.

- Во-первых, открытость образования и творческий характер обучения.
- Во-вторых, развитие интеграции различных способов освоения человеком мира: искусства, философии, мифологии, науки и др.
- В-третьих, развитие и включение в процесс образования синергетических представлений об открытости мира, целостности и взаимосвязанности человека, природы и общества; когерентности и нелинейности развития; хаоса и случайности как конструктивных начал.
- В-четвертых, свободное пользование различными информационными системами, которые сегодня играют не меньшую роль в образовании, чем непосредственное общение с преподавателем.
- В-пятых, личностную направленность процесса обучения, то есть за исходное начало берется не социум, как целостная система, а человек с его неповторимостью как постоянный источник стихийности, неупорядоченности и в то же время - источник развития.
- В-шестых, сенергетическая модель образования предполагает изменения роли преподавателя: переход к совместным действиям в новых ситуациях в открытом, изменяющемся, необратимом мире.

Синергетика способна изменить не только содержание, но и методы обучения. Обучение, основанное на принципе синергетики, можно рассматривать как стимулирующее, или пробуждающее, как открытие для себя нового или сотрудничество с самим собой и другими людьми.

Таким образом, синергетическая модель образования включает открытость образования, интеграцию всех способов освоения человеком мира, включение синергетических представлений в процесс образования, пользование различными информационными системами, личностную направленность процесса обучения, изменение роли преподавателя в новых ситуациях в открытом, изменяющимся и необратимом мире.

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Наукове видання

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СПІВРОБІТНИКІВ ТА СТУДЕНТІВ
ГУМАНІТАРНОГО ФАКУЛЬТЕТУ
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