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SCIENTIFIC AND CULTURAL ORGANIZATION

INTERNET IN EDUCATION

SUPPORT MATERIALS FOR EDUCATORS

UNESCO INSTITUTE
FOR INFORMATION TECHNOLOGIES IN EDUCATION



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PREFACE

Not long ago, some ten years or even less, we did not know much about the modern Internet; we could not imagine its facilities and our life with it. Now we have got a lot of different kinds of literature about Internet telecommunication technologies: manuals on the usage of these technologies for various purposes, instructions for teachers showing how to use it in the teaching and learning process, popular scientific literature, advertisements calling upon the users to locate their information in the net, etc. We offer you one more book on the Internet in education. Our purpose is to describe the place of the Internet in modern education, its role in enhancing the effectiveness of different forms of education, increasing the chances of those who would like to learn but can not attend schools, universities in his/her region, etc. This set of materials consists of three parts.

In Part I we analyze the situation with the Internet in education in different countries of the world to give you a chance to get acquainted with the positive aspects that the Internet provides for the sphere of education and the problems which arise. We consider it particularly important to have an objective look at Internet opportunities for education. That is why in the Introduction we draw your attention to the problems, which we consider especially significant for the education systems' decision-makers and for those who organize the teaching and learning process. The analytical materials of the first part cover the situation in the USA, European countries, some countries of Africa and Asia. It is a survey of almost 90 sources made by the authors from different countries.

Part II can be regarded as materials for discussion. We think it is very useful to be able to ponder on the problem, to argue about different views, to formulate one's position. This Part includes four Units, which reflect the philosophical and pedagogical views of their authors on the role of the Internet in education and are organized especially for discussion. A reader can pay special attention to those points and formulate his/her own view, which can either coincide with or differ from those of the authors. As well, each Unit is concluded with some topics for discussion. So you can share your opinion with your colleagues on the problems described in this or that Unit.

Part III is quite autonomous. It is a textbook for Internet users, which offers some materials on Internet technologies. It can be very helpful for those who have not yet mastered these technologies but are ready and eager to do so.

In the Appendix you will find the list of references to Internet resources in education.

Thus, the set of materials is addressed to the educators who should be aware of the situation with Internet usage in education; to the teachers and tutors who realize the teaching and learning process widely using the Internet resources and facilities either in traditional or distance forms. We do hope that this set of materials will not be looked through but will help you contemplate over the problems discussed here.

USE OF THE INTERNET IN EDUCATION: INTRODUCTION

“It’s not enough to know something;
it’s more important to know why and how”.
(C. Rodgers, G. Freiburg *Freedom Learn*)

The Internet swiftly entered the life of the humankind in the 20th century. It took us less than ten years to face the fact of its spreading all over the world, including the developing countries. It has become not only the hugest information resource in the world, but – what is even more important – the most rapid means of communication. People from different countries have got an opportunity to communicate with each other in quite a short time. In comparison with a snail-mail or even airmail, e-mail gets over distance and time, frontiers of the states with a lightning speed.

Thus, people get closer to each other. They have got a chance to know each other better, to become aware of what is common among nations and can unite them and what is different, what peculiarities of culture and religion should be taken into account to achieve mutual understanding. They gradually come to realize the fact that we all are inhabitants of one planet – the Earth – and have to live together depending on each other, helping each other. But, the Internet is only one of the means to understand this and does not guarantee the comprehension of the people only by the technological and information opportunities that it provides. Everything depends on the people themselves, their mentality, their will and intellect.

On the other hand, people in different countries, not only in the cultural and scientific centres, are able to get education in famous universities. Disabled children, invalids can learn at schools, colleges and universities by distance.

Those who study at schools, universities, colleges can enhance their knowledge using the educational literature, encyclopaedia, references, dictionaries, databases, which are freely accessed, participating in distance educational courses, in collaborative projects with students from other schools, universities, countries, discussing different problems with them.

So, the opportunities, which the Internet can offer in the sphere of education, are really unique. But we should keep in mind one simple idea that the Internet was invented especially for education. Very few technical aids were designed and produced particularly for the educational purposes. Educators have always had to investigate the didactic opportunities of this or that invention, to define how it can be successfully used in the sphere of education that is to define its didactic functions. It is very important neither to overestimate the role of the Internet in education nor to underestimate it, to define this role and place in the educational process.

For this purpose it is necessary to orientate oneself on the concept and the goals of education adopted in different education systems. Many of us live in the so-called information society where the information is of great value; some are only on the threshold of such society. Famous American economist Lester C. Turow in his book *The Future of Capitalism. How Today’s Economic Forces Shape Tomorrow’s World* (1997) underlines that the greatest value for many years ahead will be knowledge and qualification because knowledge can be manifested through qualification. The level of technologies in the developed countries is so high that it needs high-qualified specialists. If used efficiently the Internet can promote this process.

So, the contemporary concept of education, adequate to the values mentioned above and adopted in many countries as the priority, claims that the main goals of education nowadays should be intellectual and moral development of students, their critical and creative thinking, their ability to work with information. The educational theory of constructivism, psychological theories of critical thinking and activity are recognized by the progressive educators of the world to be meeting the demands of the time. Times have passed when the reproduction of acquired knowledge was the main goal of education. Now people face the life-long learning to be up-to-date in any professional sphere. Thus, the significance of the Internet in education is great, indeed. But the fact of Internet existence in the life of people, the opportunity to get an access to its resources does not guarantee its efficiency. Its efficiency in higher or secondary education depends on many factors. Some of them relate to Internet resources and fa-

cilities implemented in different forms of education, traditional education including; others deal with the distance form of education. So, what are these factors?

The factors which influence the effectiveness of Internet use in education

The most important among them is the ability of a user to work with information.

It is not that simple, because it demands on behalf of a student the ability to use different kinds of intellectual skills, which many of our students do not possess. It means that a student should be able to analyse the information he deals with, to select the facts, data adequate to the problem he investigates. He/she has to find arguments to prove his/her point of view. It is quite obvious that the information the student comes across in the Internet is not always helpful. More than that, it can be very aggressive; it can be not up to the scientific level, etc. The Internet is a very democratic environment where every user can locate his/her information. A lot of educational materials do not undergo any examination. This fact produces a lot of difficulties even for a teacher to select the material for educational purposes. To solve this problem one must be competent in his professional field. He/she should be able to analyse the material and recommend it to his/her students, and the students selecting the information should be also able to decide if this or that material is flawless to be used for the cognitive purposes.

Thus, for effective education a mere access to Internet information resources is not enough. It is necessary to prepare the students beforehand to work with information or to provide those who use the distance form of education with special tasks destined to develop intellectual skills of critical thinking, working with verbal texts, multimedia environment, to create all kinds of so-called secondary texts (abstracts, summaries, essays, etc.), to be able to work with information. It means in other words to develop their critical thinking. This must be the goal of every education system. So, this is the first factor, which influences the efficiency of the Internet in education. Besides, we should keep in mind that reading electronic texts in the net is not like reading printed texts. We have to look it through rather than read it thoroughly and make decision if it is worth downloading and more attentive reading later or not. So, students should be taught to look through the texts quickly, selecting the main ideas interesting for them from the point of view of their cognitive task. In this respect we can mention some recommendations given by Stephen Pickles from the Institute of Education, University of London. He advises the user to ask several key questions about every new Internet resource he finds: 1. Who? 2. When? 3. Where?

Let me quote his recommendations (<http://www.sosig.ac.uk/vts/education>), because I consider them very helpful.

“Who has Provided the Information?

Knowing who has provided the information you are looking at it is vital if you are going to evaluate fully what you are seeing – the Who question is key.

Who provided this information or opinion – a teacher, a researcher, a government department or agency, a commercial company, a pressure group, an individual or an organization?

Are details provided about the authors and the publishers? Are they qualified or reputable? Can you find information about the author on the web site? Or is it not clear at all who the author and publisher are? Are they one and the same?

Very closely related to Who? is Why? So ask yourself, why are they providing this information? Can you detect ‘spin’, bias or propaganda? Are they trying to sell a book or some other product? Are they promoting a particular point of view? Who are they funded or sponsored by? Are they reporting research or investigations of some sort, or merely asserting opinions? Is the information evidence based? Who is it aimed at?

When was the Information Provided?

When was the material first published on the Internet? Is there a publication date? Check the copyright notice, it might say there. If you are looking at statistical or other data, what time span is covered? How far back do they go? Are the latest figures included?

Which version of a document are you looking at? Is it a draft, or the interim or final report? For example, is it the most recent Ofsted report, or an older one? Is it a DfEE consultative paper, a *White Paper*, or the eventual legislation? Are

superseded documents archived for research purposes? Are they marked as such with links provided to the current version?"

Obviously, the usage of the information resources located in the Internet is not such a simple affair. It requires not only the ability to search for it in the huge ocean of the Internet, but to process it, to use it effectively for the cognitive goals.

The second factor is connected with the culture of communication in the net, intercultural communication in particular. It is a very important and complicated problem to solve. The fact is that many people do not possess the culture of communication in terms of using the adequate forms of greetings, of writing briefly and laconically, using the literary language, avoiding abbreviations, etc. As for the intercultural, transnational communication the problem is particularly acute. The lack of knowledge of a strange culture, national traditions, the peculiarities of different confessions, etc. promote misunderstanding between the partners and can be a cause of a conflict. New technologies are only means for communication among people of different nationalities. Their mutual understanding or misunderstanding, sympathies or antipathies depend not on the technologies but on the people's respect of the culture and traditions of each other, on their awareness of the peculiarities of these cultures. It is not a technological but a human factor. So, the problem can be solved only with the assistance of teachers, tutors, who are responsible for the process of education. It is not only the problem of acquiring the definite knowledge but also the problem of tolerance. They should be ready to supply the students with the necessary information, to explain them the peculiarities of a strange culture. Some preliminary preparation in this respect is necessary as well, if we want the Internet in education to be effective. The development of critical thinking requires possession of definite knowledge, experience, power of observation. The Internet creates opportunities for bringing people closer to each other, for mutual understanding but the realization of those opportunities depends on people themselves, their mental and spiritual abilities, their desire to understand and share the views of others.

The next factor which impacts the efficiency of Internet use in education is that teachers in most cases are unprepared for the practice of integrating the information resources of the Internet, its facilities in teaching and learning process, let alone distance education. In many and many countries the institutes of education do not train future teachers for the specific activity of handling Internet resources. The situation is changing in some countries due to the organization of special associations for in-service teacher training. But still many teachers and educators consider this a self-dependent activity in terms of using Internet technologies, finding some materials for the projects, reports, essays, using e-mail if necessary, etc. But in fact if we speak about education, we must keep in mind that this is a mutual, interactive activity, which should be controlled and directed. Even if the students are supposed to study some course or material located in the Internet all by themselves, they should be provided with the necessary instructions how to do it, what additional information is to be used in the Internet or other resources. So, this problem deals with the training of teachers either in the universities or at in-service training courses.

The analytical materials given below, touch upon some other problems, including navigation, which are also very important and mentioned by many specialists. So, we shall not repeat them here. The conclusion is that the Internet being a unique means for solving a lot of educational problems, enhancing the effectiveness of education in general, making the education democratic and available for millions and millions of people, nevertheless demands definite efforts to prepare students not only to use Internet technologies, but to work with information, which in its turn implies the development of critical thinking, using the ideas and principles of constructivism in their learning practice. It also assumes training of teachers to integrate Internet resources and facilities into the educational process. So, we cannot share the optimism of the specialists who only consider the positive aspects of the Internet ignoring the problems, which arise when the Internet a regular means integrated into the curricula or used autonomously.

Distance education

Distance education, as you will see from the analytical part, is very popular in the world. Nowadays it is more used in higher than in secondary education. But the pedagogical prognosis predicts integration of the traditional and distance education at any rate in high school and in higher education. The demand for distance education is strong in the society. There are social, economic and cultural reasons for that. Now the educators in different countries assume that distance education is a new form in the system of a life-long education. It is a teaching and learning process where the interaction between a teacher (or a tutor as they are more frequently called) and students or among students, is the core principle. Being as such it supposes the same goals, standards and content as the basic

education, if we do not mean the vocational training. The ideas of constructivism and critical thinking are recognized as the priority here, too.

The main pedagogic technologies used in the distance form of education are mostly the same as in the full-time tuition, but they are realized with the help of Internet technologies, which imparts them some special characteristics. The content of education is also structured under the influence of Internet technologies. Still the distance learning methods are quite recognizable: the basic lecture, cooperative or collaborative learning in small groups, project method, discussions, brainstorming, etc. Not long ago some pedagogues considered distance education either a modification of correspondent courses or self-education. There is a great number of such courses in the Internet. The practice of many countries shows that the majority of students of different ages prefer to learn with a teacher, a tutor or whatever you may call these specialists. Distance education, due to the opportunities Internet resources and facilities provide, gives a good credit to the students to consult with highly qualified specialists, who conduct a distance course, share their views with their course mates, get an access to libraries, museums, databases, which they certainly can not have in the traditional education. However, the effectiveness of distance education like full-time education or any other forms of education depends on definite factors. Many of them are described in the analytical survey in Part I, and we shall not review them. We shall try to mention only those which were not discussed there.

The first and the most important problem for many countries is the legality of distance education. Many educators have to admit that the employers are rather sceptical about the certificates of distance education. They evidently identify distance education with that of correspondent courses which are not highly estimated by the communities. In reality the effectiveness of distance education can be even higher than of full-time tuition. Again everything depends on many factors.

The professionalism of the staff and management is very important. The Internet can contribute to solve this problem via teleconferences in which tutors from different countries can share their experience at the web sites organized for this purpose, etc. The portals of virtual schools and universities can also be helpful because they may employ highly qualified specialists from scientific centres, schools and universities.

The authors of the analytical part point out the problem of cost. And right they are, at least for the countries where schools and universities do not have free access to the Internet, where the majority of students can not afford the access to the Internet from their home computers.

No less important is the problem of the quality of developing electronic textbooks, additional instructional materials. The significance of this problem is obvious for the Internet resources in general, as it has been mentioned above, but it increases immensely when it concerns the system of distance education. The development of electronic teaching and instructional materials requires, a team approach. It means that unlike printed aids, the electronic ones require different specialists for their development: experts in the subject, methodologists, programmers, designers. These educational products are always complex. One should bear in mind that the leading specialists in these teams are a subject expert and a methodologist, which means that the pedagogical ideas dominate.

There are two more problems in distance education: psychological interaction of the participants and the language barrier. In the analytical survey some authors consider the first problem to be supreme. In contrast to face-to-face communication, the distant communication has its psychological peculiarities. The participants do not see each other, if they do not use videoconferences. On the one hand, it stimulates the freedom of self-expression, but on the other, it sometimes leads to undesired utterances, behaviour which can inspire misunderstanding and even a conflict. It is more important when small groups of collaborators are formed. The problem expects the investigation and examination by specialists. As for the other one, which also makes distance learning unavailable for all those who want to get education not only in their own country, but also in some foreign institution, it needs time. The largest part of information in the Internet is in English. The English language becomes dominant in the Internet, however the information space of other countries is developing swiftly. So, learning not one but two and more foreign languages turns out to be a very urgent problem for the education systems of all countries. That was one of the reasons why UNESCO has called the coming century the century of polyglots.

We certainly could not mention all issues, which arise while using Internet resources in distance education. The experience of different countries in this sphere is insufficient, but we have had time to evaluate huge opportunities new

information technologies are providing. The question is how to use them effectively, keeping in mind not only their positive aspects but also the problems which arise in education while using these technologies, so as to be able to solve them and thus to enhance the effectiveness of the implementation of their positive aspects. We have only touched the pedagogic sphere, leaving aside the technological aspect. We did it on purpose to stress its significance and priority. New technological achievements have provided us with new opportunities to solve pedagogic problems, and we should not lose a chance to realise them most effectively.



PART I

EXPERIENCE OF INTERNET USAGE IN EDUCATION. ANALYTICAL SURVEY



Abstract

In 1999 the UNESCO Institute for Information Technologies in Education (IITE) initiated the project *The Internet in Education* to investigate main aspects of Internet usage in education and, consequently, to develop an information system, accumulating data in the domain. The project is accomplished as joint effort with CI (Communication and Information) UNESCO Sector (29/C5, 04045) and in cooperation with University Knowledge Networks Corporation (UNICOR, the Russian Federation).

The first stage implied the analytical survey *Experience of Internet Usage in Education*, which analyses about 90 works published recently by the leading researchers and teachers in different countries. The data was obtained from scientific papers, statistical surveys and reports of national as well as international organisations.

The information gathered characterises in detail Internet use in education. The survey presents:

- typologies of Internet applications in education;
- descriptions of Internet technologies used in education;
- statistical data of particular Internet applications distributed according to social and age groupings in different countries;
- achievements of Internet usage in education, systematized according to various types of educational activity. Simultaneously, the corresponding problems in teaching/learning were considered as well as those in organization and management of educational institutions and educational systems at different levels.

Analysis, Evaluations and Recommendations

Having systematized the initially scattered data, the experts prepared a preliminary *analysis of the situation in the educational Internet*. For example, it was found that usually only 2 or 3 of 20 currently known Internet applications are used in the majority of educational institutions, mostly, due to the lack of information rather than finance.

The analysis showed that the use of the Internet in organization and management of education increases economic efficiency of an educational institution as well as education accessibility on a global scale, despite a whole set of problems revealed in the survey.

The present study depicts the evident and less obvious *developments in the use of the Internet for education*, which serves an information base for policy- and decision-makers to predict situations and shape the policy of education computerisation. Particularly obvious is the transition from a technologically oriented Internet use in education to the educational tasks.

Special attention was devoted to the positive developments and tendencies that may become critical to *overcome* the accumulated *problems of Internet use in education*. For example, a very effective way to solve one of the most important problems – lack of qualified personnel for teaching on the Net – is to train specialists via “professional networking”. Undoubtedly, the Internet reflects differences in social and economic developments in the North and the South, the West and the East. At the same time, it provides technical, organizational and informational means to reduce this gap via information exchange in educational sphere, and these capabilities are far beyond any traditional technologies.

In the course of survey preparation a database of WWW resources on Internet usage in education was created. In appendix you can look through the catalogue to these materials. Rapid and regular changes in the subject of this research restrain the authors of any analytical survey in this field from making it comprehensive.

Objectives and methodology

Research objectives

In 1990s the development of the Internet has become a factor of global significance. The importance of Internet resources and technologies in education is indisputable today. All developed countries of the world have more or less extensive programmes promoting the Internet in the sphere of education. The overwhelming majority of the developing countries, despite the still existing difficulties, problems and fears, in with their capacities undertake certain steps to

contribute to the formation of the global educational community. In doing so, systematization and analysis of the experience of Internet usage in education becomes an urgent task for each country and the global community as a whole, regarding benefits as well as obstacles and undesirable consequences.

The analytical survey of Internet usage experience in education is aimed at the following objective: to systematise the information on the study of practical Internet usage in education during the last 3–5 years, and give brief description of main achievements, problems and tendencies.

Adopted terminology and abbreviations

For the purposes of this survey the following terminology and abbreviations shall be adopted:

“The Internet (Net)” – electronic communication environment built on the basis of the worldwide computer network.

“Internet technologies” – the complex of hardware and software means providing Internet operation.

“Education” – activities involving teaching, learning, management and administration.

“Application of the Internet in Education (AIE)” – the type of educational activities based on Internet technologies.

Data acquisition methods

The literature for the survey was mostly searched for on the Internet. As the result of searching, more than 80 works of different types were selected – statistical reports of governmental bodies and international organizations, reports of research institutions and monographs of individual scientists, conference proceedings. English and Russian language sources only were used in compliance with the contract.

More than 150 web sites on the topic were found and used as a source of data. All Internet hyperlinks (URLs) in the survey were revised on 23 March 1999.

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I.1. EXISTING TYPOLOGIES OF INTERNET APPLICATIONS IN EDUCATION

The application of the Internet in education is understood as the usage of Internet technologies to solve various educational tasks, namely, teaching, learning and management of the educational process. The systematic analysis of experiences in using the Internet in education implies that the types of such application provide an opportunity for comparisons and generalizations that can be preliminarily identified and defined. Depending on a chosen typology, the analysis will cover different aspects of the experience.

Various typologies of Application of the Internet in Education have been proposed the literature recently. At the same time, due to the accumulated experience in the use of the telecommunication technologies in education, one should note two main approaches in selection of the grounds for segmentation of this project-domain.

The technology-oriented approach is most widespread. For example, the statistical study on the use of the electronic communication in open learning and distance education, conducted by UNESCO in 1995 (Euler, Berg, 1998), has used the following matrix based on **the types of the applied telecommunication media** to collect information on interactive technologies in educational programmes:

- telephone,
- fax,
- audio-conference,
- video-conference,
- electronic mail,
- access to databases.

Under such approaches toward the study of AIE experience , the analysis of technical equipment and the readiness of the participants of the educational process to use respective technologies prevail. The approach may be modified. An example of modification can serve the typologies based on the **level of the equipment in educational institutions** or the **skills level** of teachers and learners in computer and telecommunication tools. For example, P. Groves with co-authors (Groves, Lee, Stephens, 1997) describes the following types of AIE:

Virtuality degree (skills level)	Internet tools
Low level	Usage of e-mail or discussion lists
Medium level	Discussion lists and online lecture notes delivered via the Web
High level	The above plus interactive web tutorials, designed specifically for the course and student interaction (e.g. production of their own web pages)
Expert level	The above plus virtual environments, giving the participants possibility of co-operative activity (like Multi User Dimension, MUD)

On the other hand, one can single out the group of typologies of Internet applications based on the principles, which do not tie the AIE down to some particular (but continuously developing) computer and telecommunication technologies. These typologies are oriented toward the analysis of the parameters characterising the solution of the educational problems proper.

So, J. Ellsworth (Ellsworth, 1994) proposes a classification of the Internet tools in accordance with **the types of interaction between the participants of the educational process** in the course of solution of different tasks/**Net tools with different combinations of students, teachers, and curriculum goals:**

- interaction between students and professors in educational process;
- interaction between students and professors during information searches on the Net;
- professional joint activities of professors and administration;
- students' joint research projects.

J. Harris (Harris, 1995) analysing the experience of successful design and implementation of online education courses and applications, introduces a notion of “activity structures” which means a model of activity of the participants of educational process in the Net. Divided, in accordance with **the types of interaction**, into three big parts, “activity structures”, by Harris, form the following typologies:

Kinds of interaction	Activity structures
Interpersonal interaction	key pals global classrooms electronic appearances electronic mentoring impersonations
Information collection	information exchanges database creation electronic publishing tele-fieldtrips pooled data analysis
Problem-solving projects	information searches parallel problem-solving electronic process writing serials creation simulation social action projects

One of the possible approaches was introduced by L. Harasim (Harasim, 1989), M. Rapaport (Rapaport, 1991) and developed by M. Paulsen (Paulsen, 1995, 1998) for the sphere of education. Paulsen proposes that the following four **types of communication paradigms** (communication methods) **and the kinds of “pedagogical techniques”** should be taken into consideration as a basis for singling out different Internet applications. He suggests that these “pedagogical techniques” should be interpreted as “the ways of accomplishing teaching objectives”. In a summarised form this typology is presented as follows:

Table 2. Methods, techniques and devices that could be applied in CMC-based teaching systems (Paulsen, 1995, 1998)

Ways of communication	Single	One-to-one	One-to-multitude	Multitude-to-multitude
Pedagogical techniques	Online databases Online magazines Online applications Program libraries Online hobby groups Interview	Educational contracts Preparation courses Internship Correspondence teaching	Lectures Symposiums Publications	Discussions Simulations or games Role-playing Case-studies Discussion groups Transcript-based assignments Brain-storming Delphi-technique Nominal groups techniques Forums Project groups
Types of CMC-devices	Facilities to work with online resources	E-mail	Listservers, BBS and WWW	Usenet, BBS and computer teleconferences

Based on the opportunities provided by the Internet for de-monopolization of information sources and estimation during the teaching process (no time restraints) of individual learning styles of each student, and proceeding from the thesis of M. Knowles (Knowles, 1991) about the necessity to apply more diverse **teaching methods** in this context, T. Pitt (Pitt, 1996, Pitt & CLark, 1999) gives the description of the nine “online teaching strategies”:

1. Educational contracts;
2. Lecture;
3. Discussion;
4. Self-teaching;
5. Tutorship;
6. Work in small groups;
7. Project method;
8. Case-study;
9. Forum.

In the end, J. Davies (Davies, 1997) builds her own typology of the usage of the Internet in education on the basis of the activity types in all aspects of the educational process:

Table 3. AIE typology according to J. Davies, 1997.

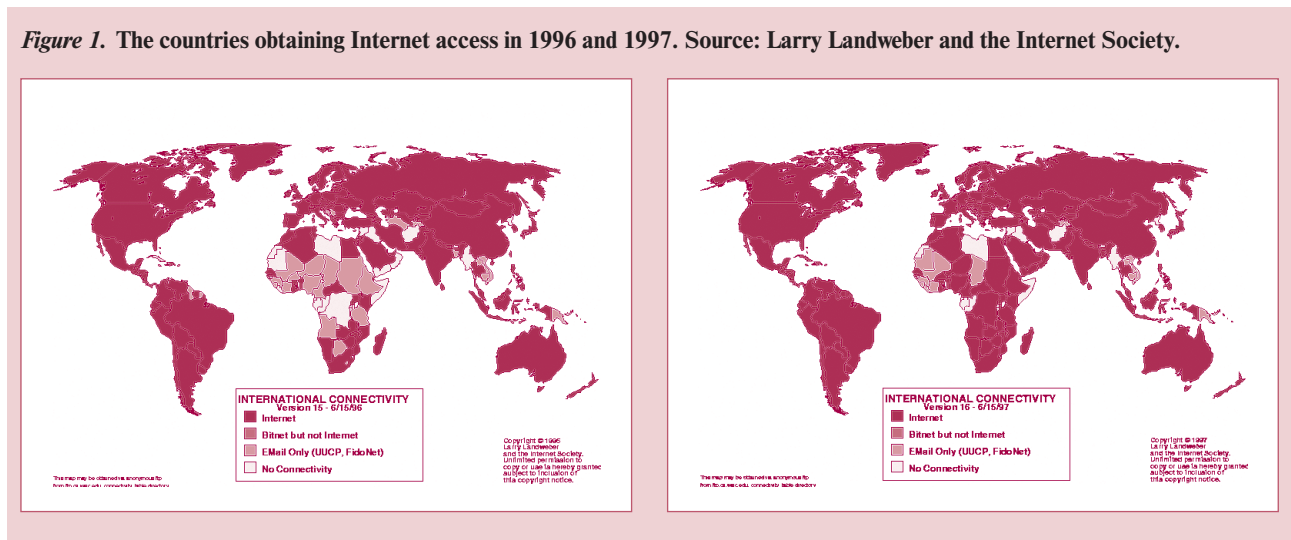
1. Web-based courses	Fully WWW-placed courses Major components of the course in WWW Support in WWW WWW contains only the information on the course
2. Educational administration	Online admission Courses registration Tuition payment Administrative tasks
3. Development of communication skills	Thematic student-to-student correspondence, including students from abroad
4. Electronic publishing	Creating of hypermedia web pages by students Issuing of online journals
5. Mining information	Databases browsing Electronic encyclopedias
6. Ask the experts	E-mailing questions to the most famous experts
7. Electronic appearances and virtual realizations	Virtual conferences or forums
8. Simulations	MUD, MOO
9. Involvement in research projects	Shared global search, collection and analysis of information
10. Professional networking	Exchange of experience and information via synchronous and asynchronous teleconferencing and discussion lists

It is easy to notice that the latter four of the above-considered classifications are compatible, since they are based on the supposition that educational tasks shall be primary in the usage of new information and telecommunication technologies. A similar approach has become predominant recently. According to A. Barron and G. Orwig (Barron & Orwig, 1997), “the objectives and tasks of teaching shall be the first to be determined, and only after that, particular technologies for their achievement should be selected”. The technological resources must comply with the curriculum, not vice versa. R. Pettersson (Pettersson, 1989) points out that the technology should serve the contents and methods of teaching. At the same time, the same technology can be used for different types of educational activity.

I.2. APPLIED TECHNOLOGIES

The level of Internet technology usage differs from one country to another. Still, the data from the research conducted by the Internet Society allows for the assumption that there is a technological ground for a drastic increase in the intensity of the international information exchange (maps presented below are based on the analysis of the dynamics of obtaining the Internet access of different types in 1996 and 1997).

Figure 1. The countries obtaining Internet access in 1996 and 1997. Source: Larry Landweber and the Internet Society.



The literature contains incomplete data on the application of Internet technologies in separate countries, at different educational levels and at specific educational institutions.

It should be noted that to achieve the objectives of the present survey, it is necessary to select the typological functions of the application of information and telecommunication tools in education. This can be adequately accomplished with the notion of Internet technologies alone. Therefore, particular software tools (the number of which compared to the one of the Internet technologies is large enough) applied in education, are not considered in the survey. Integrated Learning Packages (ILP) can be an example of such tools. They implement most of the existing Internet technologies (WWW, e-mail, push- and pull-technologies, etc.).

One may adopt **types of communication** classified in accordance with possible combinations of the participants in the communication process as a basis for sub-division of the Internet technologies used in education. This approach based on the above mentioned typology, was proposed by L. Harasim (Harasim, 1989), M. Rapaport (Rapaport, 1991) and M. Paulsen (Paulsen, 1995, 1998):

1. “Single” communication type – implies the absence of bi-directional communication (person-to-person relations) and is characteristic of a situation involving an information inquiry (e.g. online resources software: browsers, FTP-clients, search systems, Telnet-terminals).
2. “One-to-one” – assumes the presence of bilateral communication (e.g. electronic mail).
3. “One-to-multitude” – this type of communication is performed when information is distributed from one source to many recipients (e.g. listservers, BBS and WWW, including tools for hypermedia publication, streaming audio and video, pull- and push- technologies, authentication and encryption systems).
4. “Multitude-to-multitude” – accomplishes multilateral multi-directional communication, where all participants in communication have the same status (e.g. WWW, USENET, BBS, synchronous and asynchronous teleconferencing, and virtual reality systems with embedded programming language (Multiple User Domains – MUD, MUD Object Oriented – MOO)).

Since 1998, US university communities have united together with the government, industry partners and international participants to accelerate the next stage of Internet development in academia – Internet 2 (I2) (<http://www.ucaid.edu>). I2 is a collaborative effort to develop advanced Internet technology, vital to research and education missions of higher education. Internet 2 is to enable applications such as tele-medicine, digital libraries and virtual laboratories that are impossible with the technology underlying today's Internet. I2 helps develop and test new broadband technologies, such as IPv6, multicasting, and quality of service (QoS) that will enable a new generation of Internet applications in education.

I.3. USAGE OF INTERNET TECHNOLOGIES IN TEACHING AND LEARNING

Successful activities: achievements

I.3.1. Information retrieval

As P. Merrill with co-authors notes (Merrill et al, 1996), A. Barron and G. Orwig (Barron & Orwig, 1995) and others, the Internet is a large source of reference materials and data required for all types of educational activities – in studying/learning directly, in management of educational systems and in scientific and methodical work.

1. One of the most important advantages of the Internet in the area of information inquiry is **the increased accessibility** of reference materials and data for all categories of users. As R. Owston (Owston, 1997) writes, the Internet “is a truly open technology”, allowing users with any hardware and software to derive the necessary information from the network, independentl from the location of data and knowledge bases. Thus, within the framework of national educational systems, inequality in distribution of information bases concentrated in big centres usually, is overcome.

2. From the international point of view, there is **a possibility to decrease the gap in the quality and quantity of information provided for education between developed and developing countries**. G. Sadowsky thereby notes that "development experiences in one country can be useful in other countries; for recipient countries the trick is to discover similar projects and relevant information that could be useful to them". As an example, one can use the experience of MINISIS project (one of the versions of UNESCO ISIS system), where databases, which are critically important for development and education information accumulated in developed countries, were supplied to developing countries (in this case to the African region).

3. The third frequently mentioned advantage of the Internet in this sphere is the **quickness of information retrieval**, including online access mode. For example, S. Clemmit refers to the server “Real-time TAO Buoy Data Display” (<http://www.pmel.noaa.gov/toga-tao/realtime.html>)¹ as a valuable real time source of data for learning in the course of physical geography.

4. One more achievement of global network technologies in the considered field is the decrease in the **cost of information delivery** to users. Thus, most state-run schools (not only in developing countries) are limited in the possibility to acquire the necessary quantity of printed copies of the most authoritative reference and informative publications. In this case, even taking into account the expense of hardware, software and communication channels, it is efficient enough to use online publications, such as the encyclopaedia *Britannica Online* (<http://www.eb.com>), the dictionary *Merriam-Webster Online* (<http://www.m-w.com/netdict.htm>) and the atlas *Altapedia Online* (<http://www.eb.com>).

5. We must underline that the integration of information resources from different countries and regions leads not only to increased accessibility, but also to the **quantitative growth and qualitative diversity** of the remotely delivered information, with no need for each educational institution and single user to acquire and maintain expensive and complicated equipment required for emplacement of large quantities of information. G. Marchionini (Marchionini, 1988) notes that Internet systems allow the storage of volumes of information of various types. Most of researchers, thereby, agree that they are not scattered and subject-area-specific data and knowledge bases, but complex virtual libraries, which can potentially become the most valuable source of information on the Internet. Virtual libraries particularly, become the source of information, which is most often addressed by students. Thus, UCLA Graduate School of Education & Information Studies (<http://www.gseis.ucla.edu/intro2.html>) conducted research among 400,000 first-year students from more than 700 universities of USA, and found that 82.9% of them actively use Internet library resources.

Among the functioning projects on virtual libraries, one can distinguish *The Internet Public Library* (<http://ipl.sils.umich.edu>), containing, apart from catalogues and reference information, more than 7,700 texts accessible online.

The digital form of information on the Internet and continually growing efficiency of equipment made it possible to process and distribute via the network not only texts, but images, audio and video records. As it is mentioned in the

¹ All Internet hyperlinks (URLs) in the survey were revised on March 23, 1999.

UNESCO International Report on Education for 1998, “regarding the hardware, large growth of possibilities of data processing has occurred in recent years... As a result of converting data into digital form ... the computer has the ability to work with multimedia (can supply user with text, image and sound)” (*The UNESCO International Report on Education for 1998*, Paris 1998). Thus, Internet virtual libraries gradually turn in to multimedia or digital libraries. One of the most illustrious examples of such database is the project *American Memory Home Page from the Library of Congress* (<http://lcweb2.loc.gov/ammem>), where more than 5,000,000 images, texts and video-records are offered. Widely used for educational purposes the specialised digital library of the Perseus project (<http://perseus.tufts.edu>) contains Ancient Greek texts – original and English translations, – maps, photographs, images of antiques and architectural plans.

A resource of no less importance for all participants in the educational process is software. For example, the division “Education” of the large software library “Download.com.” <http://www.download.com/pc/cdoor/0,323,0-10,00.html?st.dl.fd.cats.cat10>) contains several large subdivisions (Kids, Language, Literature, Mathematics, Miscellaneous, Science, and Teaching Tools) with thousands of software products and with the possible choice by such criteria as “only new” or “most popular”.

I.3.2. Individualized learning and teaching

With the network-oriented character of the Internet, giving some researchers the reason to consider it a mass-communication medium, we should not underestimate the prevalence and importance of the “person-to-person” type of communication on the Net. For a long time electronic mail has remained the only Internet application in education. The data submitted in the above-mentioned UNESCO survey, testify that electronic mail is still the most frequently used computer technology in open and distance education (see Table 4).

As many researches point out (for example, Davies, 1997), the advantage and disadvantage of e-mail in education become clear, when it is compared with two other communication media, which for quite a long time have been applied in distance education (to be more exact, in “studying by correspondence”) – snail-mail and telephone.

1. The advantage of e-mail over snail-mail is the **quickness of delivery** measured in a matter minutes. The quickness of interaction between participants in the educational process does not depend on the distance.
2. Telephony also provides instant connection, but it is limited by the requirement for synchronous communication. **Asynchrony** of e-mail makes it possible to receive and send messages at any convenient time, which is especially important in the situation when a correspondent and a respondent are located in different time zones. This characteristic of the communication of the “one-to-one” type, allows, according to G. Kearsley (Kearsley, 1997), an increase compared to synchronous communication, in the quality of interaction between learner and a teacher, owing to the time lag the learner has for messages processing. According to M. Paulsen (Paulsen, 1995), the asynchronous mode contributes to involvement in discussion of learners psychologically uninclined in the conditions of a real classroom.
3. Compared to telephone communication, the **e-mail communication** is characterized by low consumption of resources, including low costs of teaching, required equipment and data channel. Because of this, according to M. Van Gorp and P. Boysen, (Van Gorp & Boysen, 1997) and W. Johnson with co-authors (Johnson, Blake, Shaw 1996), e-mail is widely applied in the educational process (especially in case of the territorially distributed teaching staff).
4. Despite extensive development of new Internet technologies (WWW, streaming video and audio, push- and pull-technologies), many researchers point to the **didactic effectiveness** of teaching via e-mail. Although the teaching materials received by the learner, are very much similar to the traditional printed guidebooks, the simple and linear (unlike hypertext) structure course and control assignments is an advantage for many learners who cannot get their bearing in the over-structured teaching environment with an excessive number of informative links.
5. Many researchers stress that apart from the immediate teaching goals, the use of e-mail plays an important role as a medium which regenerates the epistolary culture, thus contributing to the **development of communication and writing skills** (Davies, 1997). J. Ellsworth (Ellsworth, 1994) thereby writes: “learners begin to work on their language and grammar, as never before. When children know they will receive a response from Stockholm, they begin to realize the difference between slang and literary language”. As P. Groves with co-authors writes (Groves, Lee, Stephens), “e-mail

makes it possible for students to stay in touch with their peers and with the teaching staff where a loaded schedule may make this otherwise difficult. The figure of the lonely scholar, who can become isolated through increasing specialization, or for more prosaic reasons of inadequate social or language skills, is one to whom e-mail presents some interesting possibilities”.

6. A relatively new phenomenon in the practice of educational communications is the currently established tradition of the **learners speaking directly to experts** in one or another field (which can already be considered the consequence of the increased level of communication skills among the learners actively using the Internet). On the net, there are a number of centers of the type of Yahoo! Yahoooligans! – School Bell: Homework Answers: Science: Ask a Scientist. Learners addressing these centres can receive, via e-mail, answers to their questions on a particular theme.

I.3.3. Group learning and teaching via the Internet

An online lecture or presentation of teaching material published on the Net fully or partially (as a summary), becomes accessible to many learners. At the first stage of the AIE implementation, the most common technology for this “communication paradigm” was the electronic bulletin board (BBS) and electronic mail discussion lists (listservs), where course notes were given with “read-only” access for students. After extensive implementation of originally interactive WWW technologies in the distribution of educational information began, various forms of courses on the WWW have become very common. Besides, the WWW technologies have allowed everyone to publish materials on the Net. In the last case, other learners can be the source (centre) of information for the learner.

Adopting the terminology proposed by B. Somekh and N. Davis (Somekh & Davis, 1997), one may say that the Internet facilitates the “maximization” of learning, i.e., on the one side to increase its “quantity” (as was shown by the example of increased accessibility of educational services), and on the other – to improve its quality (if used in compliance with the teaching goals and objectives).

1. From the didactic point of view, it is, first of all, the **positive influence** of the applied Internet-applications **on the learner achievement**. As it was mentioned in the *Report on the Effectiveness of Technology in Schools: 1995–96* published by IESD – an independent consulting firm in the field of educational technologies – “positive influence was found in all main spheres of education, from pre-school to high-school, as in the field of general education as well as professional education”. As a result of the meta-analysis conducted by C. Kulik and J. Kulik (Kulik & Kulik, 1991) prior to the researches in the field of effectiveness of educational technologies in 1991, it became clear that the use of computer technologies gives better results of the learning (interpreted as the fastness of learning and the level of achievement) by an average of 20%.

2. In many respects, the researchers relate such effect to the fact that the Internet makes the process of teaching **more oriented toward a trainee**. This tendency implies a greater consideration of individual features of each student who now has an opportunity (provided by the AIE) to express his/her ideas and ask questions in the course of a lecture, which is a difficult task in a real classroom situation (Owen & Liber, 1997). As it is emphasized by D. Fetterman (cited by Owston, 1997), in this case each idea may be preserved for further consideration, selection and profound development.

3. **The opportunity** of independent **choice of the speed of a teaching course** by a trainee is also important. Moreover, the student can spend for a certain level or stage of teaching as much time as it is necessary for him (Pitt and Clark, 1999).

4. Web applications enable teachers to conduct teaching in such a manner and with such technologies, which for the contemporary generation of students present **an integral part** of their **life style** (Owston, 1997). In this connection the definition of a computer as of “a children's machine” given by S. Papert in 1993 (Papert, 1993), is frequently mentioned: according to him, children treat a computer in an absolutely different way compared to today's adults – they play, have a good time, and learn with its help. Modern children learn more through visual images, than the older generation, as the modern world is richer in visual stimuli (to a considerable extent due to computers and telecommunications). Therefore, the method of using Internet-applications in education (including potential multimedia of WWW), and computer and telecommunication technologies in many respects depends upon the shift of the education process attention toward a student. A study on computer usage at schools in 20 countries conducted in 1989, revealed that in the majority of countries, the computers in the families of school students are available to the same extent as the books (Beaton et al., 1996). As it is pointed out in the *UNESCO World Report on Education*, “as a

result of all this, the school teacher who has taught more than ten years, and such teachers in the industrially developed countries present the majority, now deals with the type of a pupil which is different from what was known to him at the beginning of his teaching activities” (*UNESCO World Education Report, 1998*).

5. A direct consequence of this consists in **the changed role of a teacher**, which is not eliminated in highly automated Internet applications of the considered type, but passes from the unique source of information and pedagogical effects to the function of a guide in the sea of information given by the Network, and of a creator (designer) of situations oriented toward the educational process.

6. **The changed model of trainee** behaviour is also connected with the latter circumstance. Giving up the reproductive model and onsetting the creative pedagogy implies (in conditions of the above described changed teacher’s role) an emphasis on the development of independent student’s activity and his/her critical thinking and skills in solving real problems of science and business (Todd, 1996).

7. The development of such abilities and skills in the web environment gives the researchers a reason to consider **WWW** not just a delivery method for information materials and methodical support, but also **a cognitive tool** intensifying the abilities of the human mind. The special term for this aspect of AIE is “Mindtool”. The usage of the Web as a Mindtool involves the student in learning not *through* computer-mediate communications, but *with the help* of the latter, which implies an intellectual partnership between the person and the computer to get an access to information and its interpretation, as well as organization of the process of learning on one’s own (Jonassen, 1996). In this context M. Connel (Connel, 1997) says that in the process of teaching/learning, preference should be given not to AI (Artificial Intellect – “artificial intelligence”), the attempts of which introduction into the sphere of AIE have not given, in his opinion, any significant result owing to technologically-oriented paradigm of its development, but to the IA (Intelligence Amplification – “development, expansion of mind”) – just by virtue of the orientation of the technologies application toward the problems and objectives of teaching. Such approaches can be based on a specific feature of the WWW technology, namely hypertext (more precisely, its non-linear structure), which, according to G. Marchionini (Marchionini, 1988), presents basically homogeneous mechanisms of human associative memory.

8. The growing degree of learners’ intellectual autonomy entails an increase of learning motivation and self-reliance. As it is pointed out in the report *The Effectiveness of Use of New Technologies in Schools: 1995–96*, students effectively using AIE are more successful in learning which results in higher level of their self-appraisal and self-reliance. This tendency is particularly obvious in the situations where Internet application allows students to measure his/her own progress.

I.3.4. Collaborative activities

The advantages provided by the Internet in organization of cooperation are predestined by the very nature of the Network. As it is known, the World Wide Web (WWW) was formed as an environment specifically designed for collaborative work on the documents by collectives of researchers territorially remote from each other. The further development of Internet technologies has given an opportunity for joint use and editing of textual materials, schedules, audio and video-sequences.

1. According to P. Groves, with the co-authors (Groves et al.), the pedagogical significance of the given type of AIE consists in the fact that it allows the trainee not only to be involved in the single context of teaching, but also creates opportunities for interaction with others and with the teacher. In this respect it differs sharply from such types of educational activity as, for example, obtaining data from the web (web browsing).

T. Pitt and A. Clark (Pitt and Clark, 1999) single out some advantages of the group usage of the Internet by learners.

2. This type of AIE frees the learners from the necessity to conduct sessions of teaching simultaneously with the teaching centre, i.e., it provides flexibility in teaching for the students located in different time zones. The group of learners can interact irrespective of the educational establishment’s schedules. Thus, the restriction imposed by the synchronous types of AIE is removed.

3. The WWW does assure equal rights of the participants in a collective project regardless of their status, that, as many experts emphasise, results in a grown activity of the learners.

4. The WWW provides big opportunities for a rapid response of the teacher to the needs of learners (questions, consultations) during the teaching course without interfering with other participants in the project.
5. The group projects on teaching allow greater attention to individual features of the students and their special spheres of interests.
6. Providing access to resources in the mode of real time, the WWW contributes to the development of the collective work abilities (case studies, brainstorming, Delphi-groups and so on). E. Davies (Davies, 1996) especially emphasizes that mutual assistance and effective exchange of ideas helps members of a group better present the possible set of research alternatives and after the collective discussion to realise the best of them.
7. The possibility to ask questions and get answers on the WWW in the mode of real time, i.e., high degree of interactivity, makes forums on the Internet particularly effective.

One of the most vivid examples of organization of joint teaching is the project KIDLINK (<http://www.kidlink.org>), within the framework of which more than 50,000 school students from 77 countries in all continents participate in global projects and forums.

Main problems

Despite the existing achievements, evidence from the direct participants of the educational process, as well as researches shows that the process of information retrieval from the Internet is associated with a set of problems.

I.3.5. Information retrieval

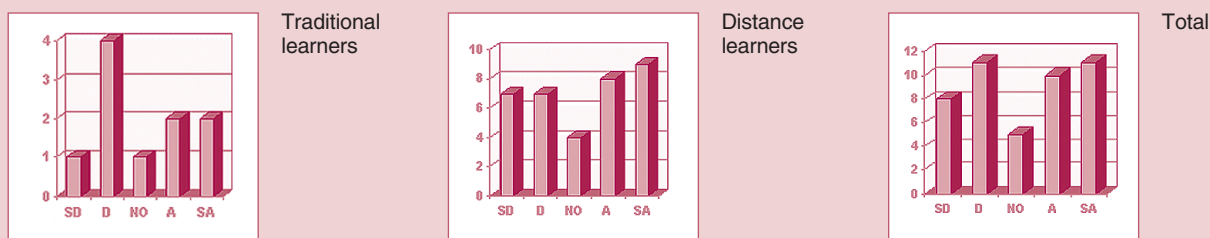
1. For teachers, administrators and, specifically, for learners the biggest barrier in obtaining data of any type is the navigation problem residing in the lack of functionality (and, in some cases, even in total absence) of tools and systems for systematic description and cataloguing (Yang & Moore, 1996; McKenzie, 1996). Thus, according to S. Clemmit (Clemmit, 1996), she had had to spend almost a year (!) before she managed to find the sites with information, which could be used in the teaching of physical geography.

Here is what M. Gorman, the head of the library of Fresno University of California, writes on this matter: “The net is like a huge vandalised library. Someone has destroyed the catalogue and removed the front matter, indexes, etc. from hundreds of thousands of books and torn and scattered what remains... The net is even worse than a vandalised library because thousands of additional unorganised fragments are added daily by the myriad of cranks, sages, and persons with time on their hands who launch their unfiltered messages into cyberspace.” (Library Journal, 15 September 1995).

2. Another problem, which can be observed as a derivative of the above mentioned, is the problem of “cognitive overload” – unreasonably large amounts of time required for learning of system control function and for making the decision about future routes of net surfing (Yang & Moore, 1996; McKenzie, 1996) – which can be considered a negative consequence of information redundancy of the Internet. A. King and A. Honeybone write: “By browsing through the multimedia, incidental learning is potentially greater than if the learner were just reading a text or listening to a tape. However, there is the danger that the very richness and variety of the choice may lead to cognitive overload” (King & Honeybone, *Needs Before Means: The Dialectics of Learning and Technology* 1996). “Cognitive overload” is also connected with the lack of necessary navigation skills of most users, whereas the interface of many data and knowledge bases does not promote the improvement of such skills, because it does not include a subsystem of self-teaching. Empirical research conducted by D. Jones (Jones, 1996) showed that the absence of navigation skills, while under cognitive overload conditions, is a primary, starting problem for most of the students. This problem, from the very beginning, cuts them off from further purposeful stages of the educational process on the Internet. Here is the estimation of the proposition “I need more help about the use of the Internet in the beginning of the learning course” by traditional learners, distance learners and total figure for all kinds of learning (indicators horizontally – SD – Strongly disagree, D – Disagree, NO – No opinion, A – Agree, SA – Strongly agree, indicators vertically – percentage of the total number of respondents):

3. Educational information of the Internet is characterised by the irregularity of distribution of represented information sources in accordance with their types. Thus, if the quantity of educational journals on the Net (pure electronic as well

Figure 2. The need for the teaching of methods of Internet usage. Results of learners' interviewing. Source: Jones, 1996.



as online versions of traditional publications) is considerable enough, the number of possible examples of fully functional encyclopaedias and dictionaries with free and unlimited access is not large. Valuable statistical data in the field of education, especially as to utilising new information technologies, is found on the Net much more rarely than, for example, legislative acts regulating the educational process. This irregularity reaches such a large scale, that, in some sense, one may speak only about potentially high accessibility of educational information on the Internet, despite numerous declarative statements of the opposite character. This conclusion is also confirmed by the data in the UNESCO analytical survey *The Usage of Electronic Media in Open Learning and Distance Education* (M.V. Euler, D. Berg, 1998). In accordance with this research, access to databases as a kind of educational activity on the Internet, is used only in 14% of distance education and open learning programmes.

Table 4. The kinds of communication media used in open learning and distance education. Source – UNESCO analytical survey *The Use of Electronic Media in Open Learning and Distance Education* (Euler, Berg, 1998).

Communication media	Usage in educational programmes (percentage)
Telephone	84
Fax	64
Electronic mail	54
Audio–conferences	32
Video–conferences	22
Computer–conferences	22
Database acces	14

4. The problems of legislative and public control over Internet contents are a part of the general problem which can be denoted the trans-cultural nature of the Net. It can become a **difficult trial of cultural identity** for the nations of the world. As it was mentioned at the Second UNESCO–ACEID (The Asia-Pacific Centre of Educational Innovation for Development) Conference organised by UNESCO–ACEID in cooperation with the Ministry of Education of Thailand in Bangkok, 1996, new technologies pose, in particular, the questions of their influence on the culture. In some countries, governments negatively consider accessing the Internet, since “it can break the culture” (*Re-engineering Education for Change: Educational Innovation for Development*, 1996).

5. As G. Sadowsky writes (Sadowsky, 1999), “the culture of the Internet reflects its roots in the North American research community. Important elements of that culture include broad freedom of expression and sharing of information. The element of freedom of expression has come in for criticism from a variety of sources as material-offensive to some – has been created and has become available on the Net”. The simplest and most obvious consequence of the described nature of the Net is the demand for a language-mediator. “Concerns have been raised in some non-Anglophone countries that the Internet is either implicitly or explicitly a tool to promote the linguistic dominance of English” (ibid). As a result, even the materials published on the Net by non-Anglophone authors are often presented in English. Of course, this fact also does not encourage the increase in accessibility of educational information on the Internet for non-Anglophone users.

6. As the Internet is filled with multimedia information, inquirers for information from data and knowledge bases encounter **technical restrictions** universal for the Net, in this case – the limited throughput of data delivery channels.

I.3.6. Individualized learning and teaching

Among the problems revealed by the experience of individual communications in teaching and learning via the Internet (basically using e-mail), one can distinguish the following:

1. First of all, there is the **problem of searching for a required address**. Although most existing e-mail software contains mechanisms for managing the lists of e-mail addresses, only several universal search engines can perform searches for required addresses by various criteria. While online address-bases for educational institutions yet present on the Net (although, in a limited quantity), the search for an e-mail address of a particular teacher or specialist can be unrewarding.

2. Apparently, the absence of such technology can be attributed to the **unsettled questions of information security**. The struggle against unwanted advertising mail (“spamming”), the efforts to provide confidentiality of messages by using various encryption systems, which is especially important in distant making contracts with a learner (“learning contracts”), together with the teaching staff, has not lead to a complete success.

3. The important problem, which directly influences the didactics of teaching on the Net, is the **low degree of interactivity**. This quality of electronic mail, as D. Jones (Jones, 1996) points out, makes it difficult to react timely to individual needs of learners, which finally leads to a feeling of isolation from teachers and other students. In the literature devoted to the problems of distance education, a special term is introduced – “distance of interaction”, which means the psychological space between a learner and a teacher, and is a function of the degree of “dialog” of their communication and timeliness of teacher's answers.

I.3.7. Group learning and teaching via the Internet

The majority of the problems noted by the experts who analysed the AIE utilization experience, are connected with the fact that **Internet technologies originally are not specifically oriented toward educative usages**. As it is stated in the UNESCO World Education Report, 1998, “the fact that large technological developments were motivated by the needs of education as such used to be a rare case. Most probably, on the contrary the education showed the tendency to the attempts of use for its own purposes of the technologies which were introduced in other fields”.

1. **The problem of pedagogical efficiency** in the use of new information technologies (including the Internet) in education is widely discussed in the research literature. Unlike the obvious and quantitatively valuable achievements in enhancing of the availability of education, the specific positive effect of the environment-intermediary on the quality of teaching is not so evident. Moreover, according to some researchers, for example R. Kozma (Kozma, 1994), the last 50 years of studies of unconventional media used in education (from radio and TV broadcasting to WWW) have not revealed, however, any considerable specific effect on the process of teaching for the given type of environment. This idea is shared by R. Clark (Clark, 1994) considering that the new methods of designing for teaching by means of new information technologies may stimulate improvement of the education quality, but not their use as the means of delivery for the teaching material.

Generalising this discussion, R. Owston (Owston, 1997) writes that the Internet, as any other environment-intermediary, cannot improve the quality of teaching. To strengthen this position, the researcher following G. Solomon with the co-authors (Solomon et al, 1991), considers that the use of the world telecommunication network as a means or tool of education does not contribute to shaping specific cognitive and other skills by learners who would communicate only with the given technology. The key moment in promotion of WWW technologies in education, in his opinion, is their effective utilization in certain situations of teaching/learning.

2. **Didactic difficulties** of hypermedia usage (i.e., a complex of multimedia and hypertext) are classified by C. Yang and D. Moore (Yang & Moore, 1996) and J. McKenzie (McKenzie, 1996) in the following way (some of the problems are common for the first and third of the selected AIE types):

- more control over the learners (compared to the traditional educational type) is required, since many students either do not possess the methods of independent study in the WWW environment, or are not disciplined enough;

- difficulties with hypermedia navigation constantly emerge;
- many learners on the Net suffer from cognitive overload;
- excess of information on the WWW induces a lack of self-confidence in the learners.

G. Marchionini (Marchionini, 1988) defines the following kinds of didactic problems:

- existing computer skills are not sufficient for teachers and learners to operate freely (read and write) the information in electronic format;
- learners are often disoriented in WWW space;
- attention of web learner is distracted by side flows of information;
- ergonomic problems created by AIE often do not allow learners to pay desired attention to the contents of the learning process;
- permanent and rapid changes on the Net cause a series of psychological and sociological problems for teachers as learners;
- specific problems for teachers emerge: the small experience of most teachers in hypermedia publishing and management of teaching process in the WWW environment does not allow them to concentrate on stating educational tasks of projective pedagogy. The lack of methodically elaborated ways of control and evaluation of the learning process on the WWW is also felt.

Some other approach is demonstrated by D. Benyon with the co-authors (Benyon et al., 1997). He considers that, in comparison with the traditional paper forms of the educational material presentation, the hypertext has some advantage as well as disadvantages: “the printed text is a very flexible means of teaching. The students can review the material wholly, and the authors almost always use the opportunity to inform them of the book’s structure through dividing it into chapters, lessons and so on”. The author calls the teachers not to transfer existing materials to hypertext, but to use potentials of its structuring and organization specially to satisfy the needs of learners.

3. Another difficulty important for learners and teachers, is the **extreme time commitment required for teaching/learning** on the Internet. So, T. Montgomery and D. Harapunuik (Montgomery and Harapunuik, 1997) stress that it is necessary for the managers to be ready to face the fact that the temporary loading of teachers and learners will be much higher in comparison with the similar course taught “face to face”. According to J. Davies (Davies, 1997), the delays caused by delayed answers to the questions of a student in distance teaching and due to the problems with the computer equipment, prolong the time spent by the student.

Much time is required to development and support web sites for educational purpose. A lot of experts point out that the extended of training of teachers to support a web site is a serious disadvantage of Internet courses.

4. Finally, one can distinguish a specific circle of problems connected with the changes of the teacher’s role mentioned above. Some authors tell about a potential **danger of dehumanisation of education**, elimination of “the linchpin of the process – a personal contact between the teacher and the learner in the classroom” (UNESCO World Education Report, 1998). A. Barron and G. Orwig (Barron and Orwig, 1997) call on the educational community to remember the balance between the high-tech (“high-tech”) education and the education “of a high level of contact” (“high-touch”): the “live” teachers are essentially required to provide “the factors of contact” in our high-tech society. The human sympathy and ability to analyse individual needs of the pupils remain in the field of activity of the teacher. J. Brunt (Brunt, 1996) asks – rhetorically “whether you can put a hand on the shoulder of the student in the Internet” – and defends the humanist approach to the usage of Internet technologies in education.

5. **Technological difficulties** of the development of the considered AIE type are most completely represented in the classification of C. Bouras with co-authors (Bouras, 1997):

- low throughput of the existing Internet channels;
- incompatibility of protocols and programming languages;
- poor support of audio- and video-flows in a real time mode;
- low interactivity level compared to teaching multimedia on CD-ROM;
- difficulties in conducting WWW session of “one-to-multitude” communicative type;
- poor control over information representation formats on client computers and insufficient ability to manage these processes in time.

According to D. Snyder (Snyder, 1997), the technological difficulties of web applications in the field of education frequently present an obstacle for teaching. So, in the sphere of distance education the students and teachers frequently face the problem of adjustment of specialised software for access to the Internet. The disadvantages of a network infrastructure of educational institutions strongly influence the learning efficiency. Mistakes in selecting of equipment and types of communications made by administration and technical experts result in the fact that the students experience difficulties in connecting with the server (Owston, 1997).

I.3.8. Collaborative activities

The basic difficulties in the AIE usage to organize collaborative activity in teaching/learning are:

administrative-economical problems – the obligation for educational institutions to allocate hardware and communication resources (sometimes fairly expensive, considering the requirements for the number of simultaneous users, etc.) originally designed for the group of organizations, administratively independent from each other;

personnel problems – the obligation for an educational institution to select out of the teaching staff a special group to support a network of collective projects;

methodical problems – most teachers currently do not have the skills required for managing collaborative educational projects on the Net;

technological problems – Internet technologies and particular software applications (e.g. teleconferencing systems) supporting this type, according to D. Jones' conclusions (Jones, 1996), are not of an affordable price for educational organizations, since these products were originally developed for business. They are also relatively complex for non-specialists and, finally, are platform-dependent (this limits the sphere of their application).

I.4. THE INTERNET AND ORGANIZATIONAL ASPECTS OF EDUCATION

Successful activities: advantages

I.4.1. Management of educational organizations using Internet technologies

1. In recent years Internet technologies have been widely applied in the management practice of educational institutions. The first step is usually the creation of a web page, later a WWW site performing representation, advertising-information functions – informing on the specialities taught, conditions of students' admission and residing, contacts, etc. Many researchers (DeLoughry, 1995A; DeLoughry, 1995B; Glazer, 1996) point out that web presentations today are the **most effective means of advertising-information support** of different schools' activities. The low cost of publication provides high efficiency of presentation of educational systems and courses, management of the distributed teaching staff and attraction of new entrants. So, in the Russian Federation about 300 higher schools have the sites.

2. With the development of the university WWW sites, their functions widen not only to directory service, **but also to organization of academic, scientific and administrative activity** of educational institutions.

For example, the WWW site of Moscow State University (MSU) (<http://www.msu.ru/russian/index.html>) has the following sections: general information (including the history of the University, its Charter, Academic Council, structure; associations; hostels; statistical data on the contingent and graduates; essential elements); information for entrants (including admittance rules, conditions of entry and teaching for foreign students; pre-university teaching; information on the latest entrance; addresses and telephones of entrance boards, etc.); research work; editions; student's life; employment offers; international ties.

Delaver State University WWW site (<http://www.mis.udel.edu/main/webinits>) has existed since August 1993 and responds to the needs of students, faculty and staff, visitors, and alumni, whose daily tasks could be made easier through new and creative usage of the power of the Internet. It helps the University community find information or get things done with more efficiency and less difficulty.

I.4.2. Intranets

Internet technologies have begun to be widely used in the management of education due to the reorganization of local computer networks with the use of the TCP/IP and WWW server protocols. Such networks have been named Intranet – a private computer network based on the communication standards of the Internet. Intranet is a smaller version of the Internet that only the members of an organization can see. Educational organizations can create within their walls a manageable, secure version of the World Wide Web. These internal webs are growing from an explosion in the use and understanding of Internet technology. Due to the total compatibility with any hardware-network, complete scalability, independence from physical realization of channels, orientation toward the “customer-server” architecture, economical use of the passband of network connections, integration of existing networks into a single system, economic efficiency and easy use, and, especially, high security (protection from Internet users by firewall), in the networks of Intranet, the realization of diversified administrative functions has become possible (Downing, Charles, Rath, 1997).

D. Murphy и D. Andrews (Murphy & Andrews 1996) remark that an intranet can facilitate the use of more complex data structures, protect data, allow tracking of information and forms, eliminate hard-copy manuals, maintain up-to-date schedules, reduce paper consumption and other costs.

D. Holland (Holland, ERIC_NO: ED425717), describing the development phases of Community College MI Mott Intranet, specifies the following: the first goal was communication, which included using the technology to allow people to communicate and make information available by e-mail, calendaring, Intranet/Internet, campus directory, open positions database, human resources information system, World Wide Web-based course schedule, online documentation of purchasing procedures, press release database and reports system. The second major task was to build systems of co-operation; the goal was to develop automation systems that would allow work to flow more efficiently among people. Included were the current events system, help desk service request database, facilities service request system, book request database, and room scheduling system. The third step was to build collaborative systems, which

would allow teams of people to work together to accomplish common goals. These systems contained online purchase requisition and approval, grievance tracking/solution system, and faculty information management system.

In Assumption University of Thailand (<http://www.intranet.au.edu>) the Intranet-centre unites around the main WWW-server, the document procession process of the departments of the staff management, finance administration, administrative managerial control, department of international relations, office of the head of studies, information and audio-visual centres and other sub-structures.

The Intranet of the University College London (UCL) (<http://www.intranet.ucl.ac.uk>) has been developed exclusively on the staff's administrative requirements and provides information specifically tailored to personal and working needs of the college staff while the UCL website is re-developed to focus more on its external audience.

The UCL Intranet provides access to the information, which may otherwise be difficult to locate. For example, the How to Guide aims to answer such questions as "How do I organise audio-visual equipment for a meeting?" This section is arranged under key words and sample question headings. The sample questions are not an exhaustive list of the areas covered. They are intended to help define and indicate the breadth of the subjects under each of the key words.

Key Documents links to internal College documents such as the Academic Manual, The Gold Book and other papers as they become available in web format.

Members of UCL can find the e-mail addresses of registered web coordinators for every department and division under Master Index, while the Mailing List is a role-based mailing list, from which you can generate address labels. Finally, quick links to administrative divisions and departments including contact lists, organizational charts, roles and responsibilities (where available in web format) are accessible, namely: teaching, research, finance and personnel pages for staff. Continued development will see other parts of the UCL community benefit from this internal communication resource. In time, students will have live access to their own records and exam results, Alumni will have the opportunity to network online and Departments will benefit from the secure environment an Intranet allows.

The UCL Intranet is available to the UCL staff who have valid Information Systems (IS) Accounts and are registered on the UCL Personnel Database.

I.4.3. Cost and effectiveness

According to P. Groves with the co-authors (Groves et al), first of all it is necessary to draw a distinction line between the external reasons (motivations) for which the AIE are introduced into the practice of educational institutions, and the immanent, resulting from the internal logic of educational system development. These authors give the following reasons of the 1st group:

- pressure of public opinion which frequently equates the concepts of "the latest methods of teaching" and "the most progressive methods of teaching";
- expectations of the entrants preferring to obtain only the "latest" chargeable educational services;
- requirements of higher administrative bodies pursuing the policy worked out in a certain political context, in the field of education.

1. The reasons of the second group (immanent) include **the increased availability of teaching**. According to R. Owston (Owston, 1997), despite disagreements in the definition of this criterion, the majority of researchers agree that the introduction of Internet technologies makes education more accessible for many people. Offering opportunities for training right at work, in remote areas and at home this type of AIE overcomes geographical and time barriers and plays more and more important role in distance education. Web-based teaching, according to J. Davies (Davies, 1997), can complement or replace traditional educational opportunities offered earlier by mail correspondence, distribution of printed educational materials, audio- and video-tapes, or through TV-broadcasting.

According to A. Bates (Bates, 1995), availability is the most important criterion for making decision on the suitability of a certain technology for open or distance education.

2. The second, most frequently noted advantage of AIE, mentioned in the literature, is **the increased economic efficiency of activity in educational institutions**. M. Moore and Kearsley (Moore and Kearsley, 1996) argument that, since DE is

a part of the system of education, the introduction of distance education renders a complex influence on the economy of education: if the programmes earlier offered to audiences, are transferred to DE, the need for premises, car parking space is reduced, the transport traffic becomes less intensive, costs of municipal services, security, land lease and so on are reduced.

A. Romiszovski (Romiszovski, 1993) emphasises that “while the cost of telecommunications regularly goes down, the cost of the real estate and land, the costs of labour and transport regularly grow”. H. Perraton (Perraton, 1994) conducted the research covering 16 educational institutions in various parts of the world and found out that the costs of one trainee under the distance education programme on the average are lower as compared to the similar programme of a traditional type.

According to H. Freeman and S. Ryan (Freeman and Ryan, 1997), the non-profit programme organised for a limited quantity of learners at the territory located next to the educational establishment, can with the minimum costs be offered to entrants world-wide. This opinion is shared by C. Faulhaber (Faulhaber, 1996) who considers that realization of specialised educational programmes on the Internet can be economically effective, as universities usually attract a very limited number of learners. According to G. Rumble (Rumble, 1992), “distance education allows for a limited quantity of teachers to train a very large number of students”. Thus, the ratio between the teaching staff and learners becomes smaller.

3. According to P. Groves (Groves, Lee, Stephens,), an economic feature of the WWW is **low cost** (and sometimes free forms of provision) of **necessary software** – web browsers and web servers. The same authors draw attention to the extremely low cost of distribution of publications of educational materials on the Network.

4. According to the report of J. Walsh and B. Reese (Walsh and Reese, 1995), the distance education allows educational institutes to develop new **markets of educational services** – such as corporate training, training of adults and professional instructing.

5. Finally, in the sphere of administrative activity **the exchange of educational resources between educational establishments** is important – from the joint development of most resource-intensive courses of distance education to the creation of distributed educational institutions. This kind of joint activity allows schools and universities to greatly reduce the cost of introduction of new information and telecommunication means into the teaching, as well as the costs of construction of the DE distributed systems.

I.4.4. Staffing

1. M. Van Gorp and P. Boysen, (Van Gorp & Boysen, 1997) and W. Johnson with co-authors (Johnson, Blake, Shaw 1996) note that electronic mail due to its low resource-intensiveness is widely applied in the **management of territorially distributed collectives of educational institutions**.

2. The most important advantage provided by AIE for teachers, methodologists and developers of courses is **the opportunity to exchange experience and continuous improvement of professional skills** through participation in various teleconferences. Mumford, 1995; Thomas et al., 1996 write that the teachers using constantly changing telecommunication means and computer equipment are critically in need of this type of AIE.

I.4.5. Distance education: institutional impact of Internet technologies

The development of distance forms of teaching is an important consequence of the Internet-technologies application for the progress of educational systems at different levels. Traditional methods of delivery of educational materials and organization of feedback with the learners – such as mail and telephone – are replaced by electronic mail and the WWW.

Different schools provide opportunities for learning through the WWW. An example of the Internet-technologies used in higher education shall be the specialised distance education institutions delivering a considerable part of educational materials through the WWW: British Open University (more than 120,000 students) <http://www.open.ac.uk>, the Open university of Hagen (Germany) (more than 50,000 students) <http://www.fernuni-hagen.de/>, INTEC college in Cape Town (RSA) <http://www.intec.edu.za/> (more than 68,000 learners), Modern humanitarian university in Moscow <http://www.muh.ru> (more than 60,000 students).

Many traditional higher education establishments introduce separate distance courses (for example, the course on fundamentals of protein structures in the Birkbeck College of the University of London <http://www.cryst.bbk.ac.uk/PPS>) or single out, within their structure, such separate divisions (UCLA Extension <http://www.unex.ucla.edu>).

It is important to note that the majority of educational institutions present a capacity to obtain a bachelor degree through the web, and some – a PhD. (School for Transformative Learning of the California Institute for Integral Studies <http://caso.com>).

How the distance education is developed in the higher school of advanced countries one may evaluate on the basis of the USA example, where in 1995 more than 58% high schools or distance courses were planning to introduce distance teaching during the next three years (see Table 5).

Table 5. Percentage of the USA higher education institutions currently offering DE courses, planning to offer DE courses in the next 3 years, not currently offering or planning to offer DL courses: 1995. Source – U.S. Department of Education, National Centre for Education Statistics. Statistical Analysis Report: Distance Education in Higher Education Institutions. October 1997 (NCES 98-062).

Institutional characteristics	Currently offering distance education courses	Planning to offer DE courses in the next 3 years	Not currently offering or planning to offer DL courses
All institutions	33	25	42
Institutional type			
Public 2-year	58	28	14
Private 2-year	2	14	84
Public 4-year	62	23	14
Private 4-year	12	27	61
Size of institution			
Less than 3,000	16	27	56
3,000 to 9,900	61	24	15
10,000 or more	76	14	10

Though the prevailing sphere of distance education is presented by higher and postgraduate teaching, DE progressively begins to be used in high schools as well. R. Owston (Owston, 1997) singles out three areas of secondary education, where the AIE are obtained. First, it includes home education: due to the web children suffer from the shortage of educational materials and the lack of dialogue with classmates to a smaller extent – two main disadvantages of home education. Secondly, this alternative education presuming free choice of a school is sometimes territorially remote from the place of residence of a pupil. Third, AIE of this type begins to be applied for extra courses to the pupils, in particular in preparation for entry to higher educational institutions.

On the whole, the analytical research by M. Brennan (Brennan, 1992) states that the distance education more obviously becomes real at all levels and in all sectors of education.

With the statistical data absent, a certain idea about the dynamics of the growth of distance education courses can be given by the quantity of courses registered on the server of Global Network Academy – a non-commercial consortium in the sphere of DE – if in 1998 15,000 courses were registered, in March, 1999 – more than 17,000.

Main problems

I.4.6. Management of educational organizations using Internet technologies

1. New technology, in the form of electronic connectivity, has opened up vast arenas of educational development. Many administrators however have not been prepared for the sudden change brought about by it. **The problem for educational**

administrators is how to run effectively without being overcome by the new information technologies. Some papers (e.g. Ross, 1996) provide guidelines for administrators and administrator educators in organising activities that will allow the effective integration of digital communication technology into school settings. Ross discusses five important programme elements of hardware, software, curriculum, staff development, and control over access.

2. The experts of the National Center for Higher Education Management Systems (NCHEMS) (<http://www.nchems.com/>) state that “in this time of rapid technological change, many **colleges and universities have not been able to keep pace with the growing information needs of the institution**. Computing hardware becomes obsolete before it is paid for, software barely meets the transaction processing needs of operational units, and management information needs are unrealised. Usually an overworked computing centre staff is under hard pressure to satisfy the day-to-day information processing needs while maintaining out-of-date systems, and the backlog of new requests grows exponentially. Some frustrated users design sub-optimal and uncoordinated microcomputer systems, while others simply limp along. Top administrators are reluctant to add resources without a clear plan, and the information technology staff is unable to articulate a plan without additional resources. Even in the institutions that are well served by information technology, top administrators may wish to have an external assessment of their technological environment. This is particularly true if any major changes in computing hardware or software are anticipated”.

3. Ernst et al. points out five key areas of change impacting higher education administration: funding sources, public expectations and state mandates, consumer expectations, evolving organization structures, and increasingly sophisticated workers. He describes **outdated organizational and technological strategies** for dealing with these trends and summarizes new ones (Ernst et al., 1994).

I.4.7. Cost and effectiveness

1. The most frequently mentioned problem of AIE usage is the **optimization of the cost of educational service provision** via the Internet. Thus, G. Rumble (Rumble, 1992) believes that until the problem of optimal balance of the initially required investments, the number of learners and the type of the used technological environment-media is not solved, one cannot hope for economical effectiveness of distance education courses.

R. Owston (Owston, 1997) considers three components of the cost of educational services via the Internet. First, it is software and hardware. As it was mentioned above, the basic types of software for the WWW in education – web browsers and servers – are supplied either free of charge or for minimal payment (Internet Explorer browser is distributed free of charge, Netscape Communicator is free for private use and academic institutions, the most prevalent web server Apache is also free). The main part of the expenses falls on hardware and data channel lease. So, if teaching is conducted for a small number of students, then payback period extends. In case of an increase in the number of learners, the demand for acquiring more powerful (and more expensive) equipment and broader data channel occurs.

The second component of the expenses for teaching via the Internet is the expenses for the courses specially designed for the Net, since plain delivery of the existing teaching materials for teaching in a classroom does not achieve the declared pedagogical objectives. R. Owston emphasises, that the expenses of DE courses must include not only payments for teachers and methodologists directly, but also for a brigade of technical specialists. The last aspect is not always taken into account when making the decision on whether to start teaching via the Net.

The third component is just the need to pay for the work of the collective of specialists conducting permanent (sometimes round-the-clock) technical and methodical support of the distance education software, including publishing new and removing obsolete materials, control over hyperlinks relevancy and improvement of design and implementation of new permanently emerging software technologies like Java-script (Mike, 1996).

2. An important global problem of AIE application is the **socio-economic inequity in possibilities of accessing the Internet** (Wampler, 1996). Apart from the necessity for each learner to have a personal computer, distance learning, unlike most educational institutions, forces students to use the services of local commercial Internet providers. Despite the fact, that, as shown before, the Internet on a global scale sharply activated lately, the degree of access to the Net among educational institutions (unlike business sphere), and especially among individuals varies considerably from country to country. While the percent of the USA public schools having internet access for the period from 1994 to 1998 had grown from 35% to 98% of the overall quantity (i.e. by 2,8 times), the Chad National Report for 45th International Conference on Education in Geneva in 1996 indicated that only nine obsolete personal computers with no Internet access were used in the Chad educational system.

Table 6. Percent of USA public schools with Internet access: by 1994, 1997 and 1998 data. Source – U.S. Department of Education, National Center for Education Statistics. Internet Access in Public Schools and Classrooms: 1994–98. February 1999 (NCES 99-017).

School characteristic	1994	1997	1998
All public schools	35	78	89
Instructional level			
Elementary	30	75	88
Secondary	49	89	94
Size of enrolment			
Less than 300	30	75	87
300 to 999	35	78	89
1 000 or more	58	89	95

As it was mentioned at the Second UNESCO–ACEID Conference organised by UNESCO–ACEID in cooperation with the Ministry of Education of Thailand in Bangkok, 9–12 December 1996, “the access to computer technologies for developing countries varies according to their wealth” (*Re-engineering Education for Change: Educational Innovation for Development*, Report at the Second UNESCO–International Conference).

I.4.8. Staffing

The research indicates that to accomplish the profound changes associated with the integration of technology in the overall learning environment, there is a real **need for teacher training and support** at all levels (e.g. Means, 1993, Aust and Padmanabhan, 1994, etc.). Mean’s (1995) observation reflects that “sites most successful in infusing technology throughout their entire programmes were schools and projects that also devoted a good deal of effort to creating a school-wide instructional vision – a consensus around instructional goals and a shared philosophy concerning the kinds of activities that would support those goals. What appears to be important is not the point at which technology becomes part of the vision but the coherence of the vision and the extent to which it is a unifying force among teachers”.

The evidence in the SPA report (*Report on the Effectiveness of Technology in Schools, 1995-96*) suggested that teachers who use technology in their classrooms are more effective if they have received training, if they have district-level support and if there is a network of other computer-using teachers to share experiences with.

It has “become clear over the past decade that simple motivational and short-workshop schemes are vastly insufficient to enable veteran (and even new, computer-generation) teachers to teach differently, and to teach well with technologies” (Hawkins and Honey, 1993).

I.4.9. Legal and ethical issues

One of the most painful problems in this sphere is the legal regulation and the whole set of juridical and ethical questions associated with that.

1. Credentialing and certification problem. Jones, D. (Jones, 1996) states, that “the ‘virtual university’ created by the technological delivery of instruction, while providing access, lacks formal recognition by employers and institutions of higher education provided by credentialing and certification systems. Certification and quality assurance should focus on the assessment of learning and learners, based on specific, standardised, and widely accepted competencies rather than on courses or other instruction units delivered by providers. Assessments must be acceptable to employers and other institutions and be conducted with integrity. Credentialing and certification may be implemented incrementally and regionally and through a variety of types of organizations”.

2. **Ergonomics standards** in some countries regulate only the professional-purpose usage of information technology tools. Thus, the learners are out of governmental control in these aspects.
3. As D. Loundy (Loundy, 1996) notes, **it is not always effective to protect copyright on materials represented in digital form**. V. Veselago writes: “unfortunately, most editorial departments avoid publishing full-text electronic versions of their journals, being afraid of decrease in the size of the paper version circulation” (Thesis to the conference *The Internet and the Modern Society*, 1998).
4. Researchers inform about the problems associated with **difficulty of functioning** on the Internet in the sphere of **traditional information circulation by social and legal institutions** as censorship (Young, 1997; *Censorship and the Internet in Schools: Problems and Solutions*, 1996) and prevention of minors accessing inappropriate information (Wagner & Wagner, 1997).
5. **Questions of providing security of information** on the Internet are broadly discussed in the literature. The most important problem is misinformation prevention against the potential entrants by educational institutions, as well as of the faculty and staff by unscrupulous students (Fitzgerald, 1997; Floridi, 1996; Safford, 1996). Further development of integral components of AIE of this type – systems for testing and control of knowledge – is in many ways dependent on the solution of this problem. As the researchers believe, free distribution of cryptographic tools of high reliability can partially solve the problem.

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PART II

SCOPE AND PROSPECTS OF INTERNET USE IN EDUCATION. MATERIALS FOR DISCUSSION



INTRODUCTORY REMARKS

This Part, as it was stated in the Introduction, contains the material, which reflects the position of our Spanish colleagues on the use of the Internet in education. It concerns different aspects of the problem – that of the change in the culture of different nations, inspired by the spread of computer technologies in different spheres of life; the authors' philosophical interpretation of those changes; the pedagogical and to some extent psychological basis of the problem and the effectiveness of the integration of Internet technologies in education, distance education including.

The materials of this Part (as stated by the authors) are addressed to:

- educators to show the possibilities of Internet utilization in different educational situations;
- teachers to offer an opportunity to favor their permanent training process and guid through the possibilities of the Internet in their educational task.

Both categories of users can turn to a special Unit to learn about some most popular and frequently used facilities of the Internet.

Each Unit and sub-units are preceded by a preamble where the main points of a sub-unit are formulated and sometimes some of them are debated. It helps the reader form his/her own position.

AIMS AND OUTCOMES

This Part aims at the following objectives:

1. To introduce the teachers to the use of the Internet in education, by helping them know its didactic possibilities in the educational context.
2. To help the educational personnel be located critically in the Internet looking for new solutions, discovering elements for their permanent training and using it to develop educational projects.
3. To demonstrate some facilities of Internet technologies which can be used in educational projects to facilitate the cognitive activity of the students.

Thus, this Part consists of four units that cover the mentioned above topics on the Internet. In the unit, addressed to the educators, global and theoretical aspects of the topic are approached; while the unit, addressed to the teachers, deals with the practical questions of Internet use in education. In this respect, regarding the main goals of education, the most important function of the Internet is considered to be the informative one. So, the key point here is to present the possibilities to obtain documents and didactic resources through texts and multimedia, articles, videotapes, services, people, companies, and institutions; to favor the didactic function of the Internet by showing its capability for realization of tutorships, the online access to didactic materials, visiting tele-libraries and entering virtual campus.

II.1. THE INTERNET: A CULTURAL CHANGE IN DIGITAL ERA

Objective

Apprehension of the meaning of the cultural change operated in the digital era.

II.1.1. Computer revolution and its consequences

The irruption of the so-called communication society is producing radical transformations in cultural conceptions, in education, in development, in life. It is a society in which the computer science, the information and the communication converge, and where the writing is supplanted by a new bunch of invisible and immaterial signs that leads us to the civilization of knowledge and information.

The new society of navigation through information and knowledge is soaked with culture, knowledge, multimedia and virtual things.

The cognitive revolution caused by the digitized telematics is already producing technical and social transformations, but it will not generate mutations so radical that they cannot be recognized and administered by the human being.

It is not wise to be alarmed or disturbed when facing the technological evolution that, as a matter of fact, has been constant all along the human history. The computer revolution is not a more important one than the writing, the steam engine, the telephone and the printing were at their time.

The new multimedia galaxy creates a field, in which knowledge and culture is so easy to achieve that it becomes more revolutionary due to the new questions that arise, rather than its advantages, for example, the question about the future of those who have no access to this electronic luxury. On the one hand, we face a real ocean of information and means of navigation, possibilities of communication and interactivity with the representatives of different cultures, but on the other, we should bear in mind the great responsibility of those who will be able to use them, their levels of independence. We should think of where the control of the access to the nets will be exercised and what measures can be arbitrated for a socially useful utilization of the media instruments.

These are only few questions that new technologies outline. They claim a new revolution for human intelligence to create, to imagine and to reinvent, a contribution to human development.

II.1.2 International technologies and culture

The habits and the beliefs are changing quickly, especially the relationship among people and the world of knowledge. The change is mainly significant in the fact of the information technology appearance in the social scenario, underlining the cognitive aspect and its possibilities as a communication way for people and as a personal way of self-expression.

The computers were introduced into the society suppressing, certainly, time and space, but also claiming human intervention and participation. In fact, this is quite a new value: these machines are humanizing instruments and they are better compared to previous media, as the television, for example, that propitiates a more passive relationship.

Much of the precedent passivity does not longer exist. The new technologies and, especially, the Internet, offer the possibility to select, to choose, to transport the information, to visit libraries and museums, to talk to other people – even to see them – in real time. It is possible because nowadays the computers are, mainly, communication instruments rather than calculating machines. They are instruments able to process a quantity of information, relating it, enlarging it and illustrating it with animated images and sound. They have opened a door to the hope for a peaceful encounter among nations.

To speak, to dialogue, to point and to criticize is something very simple thanks to new technologies and the Internet. For it is not necessarily superhuman efforts or unaffordable payments, as you might suppose having in mind that you can connect with the most distant parts of the planet.

Whereas the television shows the notion of a common space, the telematic nets suppress both space and time in one stroke, eliminating simultaneously the traditional references of the identity, individual as well as collective. The Internet facilitates varied associations that are based not on political likeness, but on psychological affinities. In a similar context the most diverse cultures don't find any difficulty to coexist.

To eliminate traditional references to the identity and culture does not mean (although there is the homogenization danger of the media instruments) a threat for the survival of different cultures. Quite on the contrary, new technologies are capable, by means of their appropriate use, to favor the relationship between different cultural visions. Their contribution has the capacity of making them reborn and be reinforced in their originality, since it enables channels for the transmission of their own messages, beliefs and visions on the world, originating multidirectional flows of information and knowledge that promote contrasts and reciprocal enrichment.

With this regard, to some extent the Internet stimulates the change of mentality, which is not neutral at this level that the cultures are accessible at home. Although it can precipitate the erosion of the singularities and knowledge, it also can approach the cultures to make them accessible, to transform them into masters of new alternatives for social improvement, to diversify the prevailing contents and to develop unpublished proposals. The new technologies with their possibilities to approach groups and people can impel new human creators to re-discover the treasures of new values, to plant new styles of living, to reorient the flow of events and to plan new purposes.

The change of mentality also appears when we consider the fact that the new information technologies actuate on the information; that means a change compared to the previous processes of technological advance where information was used to act on technology. Data and information have not only consequences and technical applications, but they are also applied to the same process of the knowledge generation.

So the new technologies have gone beyond their technical level to infiltrate in the knowledge where they apply new assignments and values. Then, the aspects of the mentality and contemporary culture regarding knowledge are implied. Knowledge has now more value because it can be used in a more effective and technically efficient way, rather than the knowledge itself.

For that reason, it is necessary to affirm that the ability to gather, systematize and use the information will be simultaneously both a source of power and a vehicle for social progress. It will be more and more certain that those who have access to better information will have comparatively more advantages, which will be difficult to overcome.

The objective of the work will no longer be the localization of the data, but its use. With the new technologies applied to knowledge, its discovering can no longer be the objective of an investigation, but its beginning.

In the new – digital – era to know means full time, non-stop keeping on knowing, if not, you will be out of the progress and stagnated in the development and growth process that advances inexorably.

It is, in fact, this sensible tendency that has accentuated the interest for teaching and learning. If we add that this knowledge is good to obtain new knowledge, we will approach what is called the globalization of knowledge, because it recognizes that now knowledge is less local and patrimonial and is endowed with the expansion through time and space.

So, the globalization concept is already inscribed in the facts: our societies are more and more connected with one another by communication and information nets whose logic consists of working in a universal way. But it is at the same time a notion that simplifies the ideological thing and hides the complexity of this new world order instead of revealing it.

II.1.3. The Internet and social problems

The phenomenon has social implications, since the communication and knowledge globalization process announces the end of the unique and panoramic world. The diversity is a sample of the plurality of the worlds.

These so-magnified methods have ended up impregnating the whole society. As a result it is necessary to keep a critical attitude to avoid a standard culture and guarantee that the particular groups can modify the messages sent

through the world nets of communication with the objective of secure enriching exchanges of mutual respect and the democracy.

Certainly, we need to use the new technologies to avoid exclusions and isolations but, mainly, to favor an equal intercultural exchange. Knowledge implies an active relationship between the person and the means used. We all can learn if we establish interaction. The Internet responds to the premises of the knowledge, and it facilitates authentic exchanges among users coming from different cultural contexts.

This shows the enormous relevance of the technology in the cultural processes and exchanges for the benefit of all. At the same time, it reveals the remarkable incidence in the current culture and in the society, as well as in the way the technology obtains the knowledge. This dependence has also affected the way of considering the interpersonal relationships even inside the local cultures.

The interpersonal relationships have been extremely impacted in a short period of time. The new technologies are more and more displacing the face-to-face relationships to such an extent that they seem to be unnecessary, something from the past.

The new technologies have altered the labor scenario to such an extent that the labor specialization depends on the rapid technological changes accelerated by the exponential growth of knowledge and information rather than long or short term planning. These displacements, evidently, have their effects on employment and culture of leisure. The precariousness of the employment destroys social balances and entails the change of the high-priority value of the work before the leisure, generates psychological disarrangement due to the lack of possibilities to make it operative.

In these circumstances, human beings face the problem of permanent adaptability and wonder their own identity. The last one is no longer the result of something reached in advance with a great effort but something more versatile where the results are not conjugated in accordance with the time and effort spent, but with changing and not necessarily coherent approaches.

Mainly, alterations have taken place in the form of capturing the reality. From the stage, where the reality was something subsistent in itself, we have come to another, in which the reality is virtual and dependent on some technological means that determine our idea of the reality. The technology separates us from a sound and visual direct perception of the reality, so it influences on our final image of the world.

This image of the world has its cultural correlatives. The traditional vision of the culture says that in the self-perception the thought plays the main function, in the sense that the ideas come before the facts, in a transcript of the complementation of the reality. In the new digital era this order is inverted so that the ideas come after the facts. The digital culture is the culture of the information or the facts, while the previous culture was the one of values, beliefs or ideas.

II.1.4. The Internet and peculiarities of virtual interaction

This situation has been reinforced by the interactivity concept that has acquired the emblem category in the digital era and that has ignored the conception of the face-to-face as a privileged modality of the human relationship and knowledge. Regardless its limitations, this emblematic notion of the interactivity has created a new mentality, which supposes that the behavior forms based on the direct physical meeting are surpassed because the new technologies allow to share the same space and time coordinates guaranteeing the excellence of the communication.

It is announced that we will not miss the direct interpersonal meeting supported by the technological advances that, in some cases, are able to capture the sight direction or the voice inflection and, in other cases, it is possible to live realities that multiply the capacity of the senses in the effects produced by the virtual helmets or the virtual gloves that open new worlds of sensations.

The virtual interactivity emerges as a phenomenon that attacks a certain common sense, but it has disturbing fringes for the private life, because besides the interactivity degree, it is necessary to gather several requirements to guarantee the democratic use of a communication system: immediate and complete reciprocity of the exchanges, plurality in the points of view, direct relationships among speakers that act indistinctly as originators and receivers, de-

centralization of the circuits of information and, the last but not the least, the respect for the freedom of speech and private life.

These simple democratic approaches of inexcusable application in the cognitive processes that the new technologies produce, only impact the culture without waking up the suspicion that they can be infringed, but simultaneously they wake up a certain existential insecurity that can end up affecting the concepts so basic as the understanding of the existence.

Since the new technologies, the Internet and the multimedia formats give such an enormous communication possibilities, interrelation, production and manipulation, they can change – in fact they are already changing – key aspects of the culture as the understanding of the being. That is to say, the tele-education, tele-information, other tele-somethings, especially, the tele-presence produce a change in the meaning of “where we are” and “how we are”, questioning the fact of being so virtual and dependent on the versatility of the media. The existence would not be related to the existential human being that we had understood as the being-in-the-world. When emptying the references of the world, the being and the action that unite the cybernauts – we lose every modality of the present thing that we have supposed for the existential understanding of the human beings. The virtual thing replaces as old-fashioned ideas the being-in-the-world and the action of in-the-world-of-the-life.

However, from another perspective, the new digital technologies promote another type of positioning, approaches and ways of understanding of the existence in the world. The telecommunication points to an open cultural order without hierarchies. When favouring the expansion of knowledge, it has intensified a beneficial cultural transmission for all, which is more important than the fact of absence of physical direct links.

In this situation, it is necessary to persuade people and groups to behave favouring the consolidation of the original cultural values rather than scare and protect oneself against some telemedia capable of sweeping with their powerful force the vestiges of cultural plurality by meeting the cultures in a boring, absurd, submissive and controlled uniformity.

Some words to conclude

Being in contact with the digital era we are aware of, at least, two things of great importance, if we want to build a democratic society today by carrying out a task that keeps in mind the enemies that threaten it and the friends that strengthen it. These are: a) the presumption that the new era requests adaptive persons for the new programmed order where the relationship prioritizes the exchange of data before the meeting among free, original and responsible human beings, and b) the possibilities of promoting a society open to the participation, the respect for others, the reciprocal cooperation and mutual understanding.

Activities

To analyse the reality

- Having read the discourse of the authors above, try to formulate your own opinion on the subject.
- Point out the most common conceptions that you know with regard to the cultural change in the digital era.
- Exchange information with your colleagues (you can do it via the Internet).
- Indicate the subsequent interest to the ideas that sustain the conceptions, which are observed around the cultural change in the digital era and share them with your colleagues.
- Pick up the motto about the cultural change in the digital era that is considered more significant to agree or disagree with the opinion of your colleagues or experts and give your arguments.
- Formulate your proposals to make the implementation of Internet resources maximum effective in education.

To formulate goals to reach

Keeping in mind that the purposes should respond to the:

- critical comprehension,
- creation of communication ways,

- voluntary action,
- values,
- human maturity,
- personal options,
- cultural creativity,
- ordination of the community,
- participation and adaptation to the social change.

Try to formulate the goals of the education.

II.2. THE INTERNET: AN EDUCATIONAL LEARNING TOOL

Objective

To discover the meaning of the L. Vigotskyan constructive learning in the Internet expressing the relationship and connections.

The educational applications of the Internet are supported by some learning theories. With the access to the Internet, it is immediately discovered that the whole hypertext material is a learning tool. In other words, those enormous groups of texts and multimedia contexts have not been created to be read lineally, but rather they use connections to make remissions, to put in contact different parts, or to be connected with other texts. That is to say, it is a tool; an instrument that, coded and registered, transmits information, and includes other processes accompanied or derived by the transmission, no matter this is the cause or the consequence.

But such an opportunity will be for a humanly valid learning if, previously, the characteristics of the tools and the principles of some learning theories have been assumed and articulated.

Although the Internet is particularly suitable with regard to the principles of some of those theories, it is necessary to say that in the group of the technological resources developed around the communication, none of them has been created for educational purposes. Almost all of them have been created in connection with the most general aspects of the social life, leisure, productive systems and economy.

In spite of it, the new technologies help the individuals live in a constructive, creative, self-regulated, active and interactive world, and they stimulate the self-learning.

II.2.1. Constructivism

The constructivism pattern in the design of learning ways and knowledge matches well with the Internet as a learning instrument. The constructivism pattern supposes that the elements that we get thanks to our senses and the mental itineraries, that we use to investigate those elements, are already within us. So we learn.

We learn, but not because we know something new or because we substitute an idea for another one, we learn because we transform our knowledge. It is a positive activity of the person, who learns by experiencing and solving problems actively and originally. The process differs from replacing, substituting and accumulating knowledge. Now the students try to build it using their previous experience. The instruction is centered in the students who are the center of the learning. All these tools are not to give knowledge fundamentally, but to help the student to build knowledge through the learning activities that favor personal autonomy and propitiate self-regulation or control of the learning.

In this sense, the mistakes are not irreparable failures. They are necessary components of the learning process. In this process the educator acts not as an instructor, but as a generator of the atmosphere, in which the students can build knowledge by means of an investigation work. This atmosphere will have a favourable effect in the motivation to do the task of deepening the interests, looking for better understanding and the follow-up of the learning.

If the student organizes or elaborates the information, the learning will be significant, and its quality will be in accordance with the quality that the organization or the creation has. The learning is a constructive process. This means that the basic activities of learning guide to the construction of the meanings for the students.

Now, we are installed in the most interesting fringe of the educational process: the construction of the autonomy by means of the exercise of a responsible freedom, in which respectful relationships are conjugated and the reciprocal interactions are able to integrate a person, other ones and the society in their project.

This is the common project of equality, justice, freedom and democracy where the learning develops by achieving present or future specific successes.

This corroborates the statement that the educational contents must always mind two big educational concerns: understanding and social insertion.

II.2.2. The Internet and constructive learning

The constructive learning area finds in the Internet an instrument that allows the experimental game of the “correct and mistake”, offering the possibility to build up original knowledge. Since it is an open system, where the interests are multiple and heterogeneous, its exploration can be multidirectional. The person can reflect impacts and gather data to transform into knowledge favouring the significant learning that takes place when the initial balance of the existent outlines and the new educational content is broken. The Internet navigation experience is a transcript of the mental itinerary of investigation or the cognitive outlines that we use to explore the data perceived by our senses. This walk on the Internet should be preceded – for it is beneficial in the educational area – by the ideological reservation of the theory of the constructivism learning, that states that the most important thing when learning is not what we will learn, but what we have already learnt, in the sense that what we will learn should be integrated in the previous cognitive net of the student.

Internet navigation must be based on the interest detected by the student. The interest causes intellectual curiosity that emerges into an atmosphere where the expectations of the students are satisfied by means of the Net, in which the interest detected by the student can expand, improving the learning project.

The Internet allows us to reach an essential objective in the learning process: the personalization of the teaching. It allows adapting it to the necessities of students, in accordance with their previous knowledge and interest. It allows each student to advance in his/her development in a personal and autonomous way according to his/her abilities.

If we underline more the interaction capacity of the Internet, we will stand out the quality of the Net that allows favouring a personal autonomy that spreads by means of reciprocal interactions. This interaction in the Internet will propitiate integrative attitudes, promote open and respectful mentalities and impel the interest for the learning acquisition of knowledge.

Multimedia instruments, that is to say, those that integrate in one format the combined information of audio, video, text and image, increase the possibilities of perception. The multimedia services contain elements of multiple information that can expand the representation of three-dimensional objects and allow interactions or bi-directional communications. They also can raise positive transformations and improve the teaching and learning processes at maximum.

This technology used as didactic resources is a vehicle of knowledge and a curricular culture adapted to the means where these processes are developed.

II.2.3. Learning as a social phenomenon

The consideration of the Internet as a suitable pedagogic instrument for learning is also supported by the principles that sustain the theory of L. Vigotsky: the learning is a social phenomenon. In L. Vigotsky’s opinion, the acquisition of new knowledge depends on the interactions of people in dialogue. To learn is, therefore, a dialectical process in which a person contrasts his/her points of view with others trying to get to an agreement, finally reaching an agreement.

L. Vigotsky linked cognitive contexts and developments because they were related to the socio-cultural transformations.

Internet and learning, according to L. Vigotsky

The Internet enlarges the possibilities to acquire new knowledge to unsuspected limits. The concentration in the Net of so many people, ideas and cultures adds to the conception of the learning by L. Vigotsky the multipolarity of levels of social experiences and culturally different people connected virtually.

Virtually. This word means that it is a place where series of things exist and circulate. It is considered virtual because it is located at the same distance from anyone.

The learning process depends on the dialogic device, cyberspace, hypertexts that the Internet owns. These are the most impressive agora for the establishment of dialogic relationships inclined to the acquisition of new knowledge by circulation through the universal net that multiplies relationships, impels the establishment of ideological contrasts, favourable dialectical processes and, even, real time debates.

The Internet strengthens the possibilities of this teaching and learning process, because one of the functions of the teaching is to qualify the students to understand the present culture. The new technology implies a new form of organizing and coding the reality subjecting it to an interaction with the students.

Some words to conclude

As a result of a social phenomenon, education and learning have in the Internet an unanswerable ally for the humanity's diversity that can be seen and can be located at hand in the Net. The encounters of people and cultures regardless the frontiers, ideological controls or unjust discriminations are a reality and a possibility to acquire new knowledge as a result of the people's interaction that participate in the dialogue in the corridor crowded with web pages, chat rooms destined for gathering by means of the computer keyboard, private or group epistolary exchanges through the electronic mail distribution lists, groups and discussion forums.

Activities

To analyse the reality

- You are an expert in education. You are certainly acquainted with the theory of constructivism and psychological views of L. Vigotsky. The students' activity in the Internet supposes their autonomy. Under what circumstances can their activity be successful?
- Contrast what you have learned with real situations of autonomy and interactivity in the Internet and your own experience.
- Exchange your opinions with your colleagues on the factors, which influence the efficiency of students' activities in the Internet, distance learning including.
- Mind that distance learning supposes interaction between students and the teacher and among the students.

To formulate goals to reach

1. To summarise what you have read and debated, try to formulate your concept of learning in the Internet, that is using the Internet information resources and some of its facilities in the learning process.
2. In what aspects does it coincide with the views expressed in the paper and in what aspects does it differ?

II.3. THE INTERNET: TO BE EDUCATED AND TO BE TRAINED

Objectives

- To understand the relationship between the Internet and education, and to analyse the causes and effects of this reality.
- To discover some of the possibilities and limitations of the Internet in the educational area.

II.3.1. How distance education is organized

Tutorial work

- In every educational process – and in the Internet, too – the student is the main actor of his/her own training.
- The students have tutors who advise, accompany and guide them in the study along with some consultants that guide them in the task of learning.
- In the training via the Internet, the students send their consultations, suggestions, questions and evaluations to the professor's tutorship office via electronic mail or forum.
- The professors carry out their direction and advice task by electronic mail.
- The tutorship office is open 24 hours a day. This is an advantage and a saving for everybody.

Tutorship and training via the Internet

- The tutorships have great importance in the educational processes. The contact tutor-student facilitates the follow-up of the marked line and the attainment of the established objectives.
- The Internet replaces the presence relationship using other services, like electronic mail.
- The service can eliminate the feeling of isolation that can happen in distance training by guaranteeing a quick and continuous communication with the tutor.
- For the tutor, the Internet offers a supplementary powerful instrument, because many questions that the student could outline have their answers inside the Internet. In these cases, the tutor must offer the convenient Internet address.
- The electronic mail, since it is a written communication way, favours a presentation of questions in a more objective, more reflexive and more thoughtful way.

It is very important for a student of distance form of education to be able to estimate his/her own work. This process can be facilitated if the student knows how to do it. So, the tutor should point out some most significant areas of the student's activity in the concrete materials. Here are, for example, some rules to facilitate a personal valuation of his/her activity for the materials presented above:

- Define the meaning of the cultural change in the digital era.
- Point out which values should preside in the new era.
- Define the benefits for the society, which in general could be if the values of the new era affect it globally.
- Indicate the number of successes and mistakes you have got in your work with the Internet and electronic mail.
- Point out the most exciting thing you have learned from the obtained documents and exchanges carried out in the Internet.

II.3.2. The Internet as an instrument for the educational process

It is a fact that the Internet is an instrument for the educational processes of many people. The Internet has been credited for its capacity to inform and teach and for the fascination its technological architecture causes.

The Internet covers almost everything and magnetizes everything. At least it is not indifferent even to those who are overflowed by the new communication and information technology.

Together with this ocean of new data, there are also stores, libraries, museums exotic places, folklore, various suggestions and experiences at hand.

With the Internet we are facing the access to the biggest flows of knowledge in real time ever in history.

This outlines countless problems, among those, learning for a selective appropriation of resources, training for a productive assimilation and critical capacity for a socially useful validation of possible massive knowledge.

The Internet, on the other hand, opens stimulating opportunities. Among them:

- modulation of self-learning,
- appearance of suggesting spaces for the construction of a universalistic spirit,
- diverse proposals to produce plastic mentalization for an open, multi-focal and decolonized culture,
- stimulation of the freedom of expression, multidirectional interaction with a perspective to produce opinions connected by virtual meetings as numerous as wanted and affordable by the users.

Anyway, now one needs smaller financial means than those we needed to obtain similar results in the past. So, the resources of the Earth have been distributed democratically and with justice.

Everything in the Internet can be educational and used for personal growth as any other matter in this life. The difference with the Internet is that you can live there virtually.

For that reason, it is possible to impute the Internet to be the most immediate technological cause to break preconceived outlines. It is also the cause that produces more bewilderment and denounce the destruction of fixed certainties, the crumbling of self-complaisant statements and arrogant dogmatism because it also carries other visions different from the reasonable things, so it invites to request help to build ex--novo and destabilizes the flotation line of the paralyzed ideological positions or emotional displacements.

If one says that such effects are not characteristic of that simple binary combination, for which everything circulates in the Internet, we are forgetting the human component that finds its space in the Internet every time there is a bonus of ductility in the Net predisposing it to the human encounters and establishing a sort of synergy, that almost converts it in an alive organism that the computers reply.

Thus it is possible to consider the Internet as a chance for one to be educated and trained. Both concepts imply meetings. The Internet favours these meetings with its powerful capacity for the virtual presence of the most blinding illusions, the most disturbing concerns and unspeakable expectations in other means, for its alignment with the interests of the establishment, possibilities and limitations of the Internet.

It is not surprising that this has accelerated the decision to incorporate the Internet in the teaching. After all, the students attend school to carry out some learning propitiated by the professor who has some certain means for it. The Internet is one of these means.

Therefore, school is an institution with the maximum interest to implement the project of the use of the telematic as a didactic means. That is to say, the telematic is a science born thanks to the union of the telecommunication – that studies the form of establishing communications among distant points – and the computer science, being its objective: the communication of distant computers. This way the Internet, as the tool that directs this science, cannot be indifferent to such an institution as school, which function is to facilitate students in their involvement in the world.

In a pedagogic environment wider than school, the importance of the Internet should not be hidden, although it is necessary to consider its possibilities and limitations. In these environments, as well as school learning, when it is achieved, it produces a behaviour change: it is the result of the interaction of an individual with the environment. So, we could call it learning when the technological replica is articulated with the educational strategy. That is to say, the Internet will be viable for the learning as long as there is a balance among what is sought of new behaviours and the characteristics of the means.

In the Internet the message is the means, since it is the message that determines the means to be used, as well as where, how, when and for whom it is used. In other words, the educational objective must be adapted to the instrument, which will provide the type of learning depending on the didactic cognitive design that the electronic means has taken into account.

II.3.3. Possibilities and limitations

We can consider the possibilities of the Internet to establish relationships between distant people and limitations because the short distance itself can be a suspicious matter, in induction to be aware against that “terrible stranger who can copy us shamelessly”.

The possibilities can be regarded as advantages, because people feel free to say, contrast, discuss and contribute truthful information. The limitations can be regarded as disadvantages because the reticence to the transparent and authentic participation and truthfulness in the knowledge transmission affects the reliability of the exchanges.

Information is a fact or knowledge that we gather, use when we think, and express when we speak or act. We suspect that the information is never complete and loyal, so we come to a state where everything is affected by the doubt of the sincerity and, in consequence, the contents of information is devaluated.

The Internet is a container with enormous information at hand, available so quickly and cheap that we never had before. Data, documents, books, libraries and bigger encyclopedias are available at home after a successful search. However the Internet is in danger of becoming a labyrinth for the users that have to deal with different interfaces, with the communication systems of the programmes, which elements inform them on what is possible to do or what is happening, so they can end up being confused by the differences that the diverse programmes establish for one operation. Besides, there are effects that can produce such a heap of information, that would darken the necessary commitment with social and human values in the personal behavior or get away from genuine human purposes.

For that reason, the use of the Internet as an educational resource must be subjected to the functions, that are assigned to the new technologies and means when they confront the educational fact trying to extend the expertise of the students, making it a motivation agent for the students and promoting a vicar learning, since these means can present behavior models with attitudes, values and performances for the students to imitate in their daily development or in situations similar to those presented. It should also be the source of a creative and innovative learning helping the pupils master their knowledge of themselves and their environment, promote solidarity and facilitate the collaborative work in teams.

In this cast of possibilities and limitations of the Internet it is also necessary to point out the pros and cons of the service of information in the Internet that is conformed by hypertext pages (the so-called World Wide Web – WWW –). They are the result of adding of a third dimension in a plane text where certain words are underlined and when clicking on them you can get to another page, so it is possible to navigate through the text, in which there are also graphics, pictures and audible messages.

That astonishing number of electronic hypertext documents is growing vertiginously thanks to the cadence of the means that favours new hypertexts. However, some contributors see this ability as an induction to a widespread plagiarism due to the easiness that the computer technology offers to copy and to paste. Hence, some valuable contributions escape from the Net taking refuge in the traditional media and publications. Apart from this, there are the expected effects of the irresistible attraction of this means, that is so ductile to get what it seeks, that we face now a decline of the necessary critical attitude absorbed by the excitement of the magic of this tool.

There is an aspect, necessary to insist on unceasingly. This is the necessity of a critical control over computer tool, the awareness of the limits of the computer in the resolution of the problems.

It is not reasonable to attribute an exaggerated power to the Internet in the process of knowledge building. It is true that the Internet is a pot of knowledge and teachings, in which millions of computers linked with the common objective of communicating in a net where everything is adhered, where everything is at hand and where the most varied hypertexts can be thumbed through, worked, analysed and copied. These activities must be subjected to a considerable critics so that it allows us to select what is interesting. The lack of this critical attitude and aptitude could lead us to be diluted in the Net without any sense, to get lost in a magma of hypertexts and to make efficient work impossible.

It is suggested, therefore, to prepare the student to be an intelligent reader and sender of messages, using the available communication technologies.

Eventually, that means to get ready for freedom. The Internet can help us to achieve it by generating personal and social behaviors of free expression and the personal control over our own ideas facilitating their expansion.

Some words to conclude

These are the possibilities of the Internet, however, their limitations can be seen when we look at the current restricted use of the Net. The access to the Net is limited to a few people. These are not all who are entitled to. The revolutionary technology is able of changing the conditions of concurrence to the resources of the Earth, it is restrictedly distributed under control, and the training to use it is discriminatory distributed.

The unfortunate nations have no access to the Net. Their voice will or will not be heard depending mainly on their access to the Net.

Activities

To analyse the reality

- Elaborate a list of pros and cons concerning the role of the Internet in education. Under what conditions can this role be progressive?
- Formulate your idea on the role of a tutor in distance education.
- Try to formulate your opinion if the tutorship requires some specific professional preparation.

To formulate goals to reach

1. Summarizing everything you have read in this unit, try to formulate the goals of the contemporary training the students at the universities of education and in the in-service teachers training.
2. Can you make any proposals for stimulating teachers, university professors to use Internet resources in their work with students?

II.4. THE INTERNET: EXAMINING THE PEDAGOGIC EFFECTIVENESS

Objectives:

To examine the pedagogic effectiveness of the Internet.

II.4.1. An additional resource of information and a tool for the development of cognitive skills

The Internet is a space of free disposition, a place with no barriers. It is a place where class privileges and academic authority disappear, a threshold where all are equal and have the same possibilities to express their opinions. However its pedagogic effectiveness is questioned, at least according to what was understood up to now.

In addition to these characteristics of the Net, the possibility of immediate access to all subjects in search of information opens up an inter-subject approach, which does not exist in the traditional teaching. It is also destroying the image of the know-it-all professor – although he/she had a lack of information hidden behind the specialization disconnected from the knowledge of other subjects. It was not necessary to integrate other matters in one subject.

The new technologies have entered the educational field. Nowadays, with the aid of the computer, it is possible to solve complex problems, which is not quite an ordinary practice at school.

The teachings, the curricula, the information flows were specialized and fixed in time and space. That constituted the supporter of the social style. Now the situation has changed. The professors and even the textbooks are no longer the only sources of information. So, some educators think that it can cause devaluation of the professors and students, isolation, rejection and reciprocal mistrust.

On the other hand, the cease of the curricular controls and the consequences that would occur, could limit and restrict the accesses to the Net.

The new technology enters the educational scenario accompanied by the mistrust of many professors and educators, because it is armed with peculiar possibilities at the education as help for the student, and because its tutorship or its language is able to develop new forms of thinking.

However, the possibilities of the new technology imply a pedagogic offer of great interest. For example, the situation when we want to develop the investigation capacities or look for the collaboration with new groups. Also, when we connect nets and places of multiple information or look for the participation in projects of the civil society that demands collaboration and solidarity.

These aspects are in the core of the educational work and need a teacher able to innovate with a know-how in this field. The teacher would have the obligation of generating new possibilities in the teaching-learning process.

The Net, certainly, is an offer of personal responsibility and, consequently, a possibility for the user to outline his/her activity in the acquisition of knowledge as well as in their commitment for the social action. In other words, the Net, thanks to its interactive character, is an invitation to generate and receive knowledge.

These elements, that are normal in the investigation processes, are summed up in the Internet in a varied offer of available resources being the starting point of the basic information or advancing from multiple sort of information, as well as deepening into original works.

The cognitive tools in the Internet, however, need to be explored so that their use is effective in the design of the educational projects or of another type of intellectual activity. There is a causal relationship between the replica of the Internet that has their own characteristics in their educational designs, and what you can reach at the learning level. That is to say, the use of the Internet must presuppose, at least, some knowledge and a certain level of training to dominate the tool for the cognitive aims. You cannot forget that the endowed definitions impact the learning, the approaches to evaluate with and the perspectives where those definitions are incorporated. In the Internet this can be diluted in a more superficial structure due to the comfortable navigation, abundance of similar contents seemingly of the same value and varied purposes of the projects offered.

Therefore it is necessary to be predisposed to accept, on the one hand, that the presence of the media and the new technologies in the educational area must be used to achieve the educational goals with the means so that they would become an education tool. On the other, to achieve these goals one must possess some concrete knowledge of the new information technologies. Anyway, it is necessary to be critical and reflexive when facing the means and using them in a creative way.

II.4.2. Demand of alternative pedagogic paradigms

The pedagogic use of the Internet is demanding alternative pedagogic paradigms to the existent educational practices and traditional forms of learning. To try to use the Net as an imitative continuation of the existent educational technologies is to ignore the potentialities of this new technology.

The teaching centres that operate in the Internet are a sample of the change at the educational level. They are centres of virtual teaching that seek to correct the lacks of distant education. The tele-training corrects these lacks partly by means of the multimedia applications, although it is still necessary to stimulate the motivations of the users.

It will be possible to achieve a bigger interaction and create an atmosphere of an accented motivation only when we have materialized the task of appropriating the characteristics and the teaching strategies of the new technology, when we have prepared ourselves as for as it concerns the possibilities of Internet instruments to delight the users, because it satisfies the necessities validly, and also when we have experienced the influence it can exercise to create an atmosphere of collaboration and participation favouring capacities, attitudes and personal aptitudes.

With regard to the computer science the key is to learn how to learn and to learn how to undertake. In this task the information quantity is less important than its quality.

II.4.3. Training on the telematic

The use of the telematic services for training purposes is a phenomenon in its peak. Its presence is more and more accented thanks to the computer development. Also, the connections to the Internet have propitiated its expansion due to its possibilities to poke in other computers to obtain information.

The Internet is also contributing to the restructuring of the society when propitiating the change of many mental parameters. For example, it is converting all users into clients, trainers, pupils or students. We all have something to learn from the others. The Internet underlines this transformation of computers into clients and servers or professors and students.

There are nets that give a technical name to this phenomenon of interconnection almost at the planetary level, coming back to the domestic level, as if it was to put the effort to re-make schools as democratic public areas in practice of telematic support.

These are the so-called nets of local area where each computer has the same level and can have access to the files of the other ones, as well as to offer resources and information. These nets become a sort of democratic platform where the group work is possible. It is an invitation for the clarifying educational dialogue. It is a call for the contrasted investigation and a task in favour of strengthening democracy.

So, the computer science transforms into a didactic tool magnified by its articulation with the Internet that contributes to the constitution of a new pedagogic architecture when softening the channels for the communication and favouring the supports of information distribution.

When the local nets with access to the Internet become Intranet, that is to say, the computers within a corporation are connected to one computer connected to the Internet, this marks new learning possibilities as well as a democracy progress. The computers thus connected begin to communicate on the base of some protocols, programmes and services designed according to those who work in the Internet. This opens up a new and wide relationship field thanks to the possibility of interaction in groups with the massive offer in the Internet. In other words, the necessary critical attitude, the electronic means of collaboration and the unavoidable selection of excellent information become a shared huge effort in the human aspect.

The human effort is still relevant, if we can perceive an underlying reflection in the Internet, which is its characteristic of being able to connect us all in a unique language regardless trademarks, models, powers and operating systems. We are, therefore, in a space that, symbolically, would reply to the concept of “one humanity” composed of people capable of understanding each other and working jointly in spite of their differences. Here is the training strategy coming from the replica of the Internet characteristics.

In the Internet there is a procedure to designate different connected computers in the Net by a name, and a system of numeric addresses that allow unequivocal identification . So it is possible to send the requested information back and forth from different computers. We can notice that the human reality is not very different from it and it should be consolidated in the justice and cooperation by activating flows of service and generosity.

As it was mentioned, the Internet has defined some protocols of common communications that are understood by all connected devices. This is a reference in the education that symbolically draws the profiles of humanity, of a single humanity, of a single world.

If the Internet has developed easy-to-use computer applications to offer services, information, documents and communication in general, it is possible to derive, starting from these educational strategies to appreciation of a cooperation type and technological transfer that can be peaceful and assumed by different cultures.

In the Internet, the information circulates in hypertext formats. It is not difficult to administer this characteristic in education as an example of the necessity of working locally with universal spirit. It is a window opened to the world that favours multilateral exchanges and participation in cooperative projects.

If the transfer of files among computers is possible, and we do it with generosity, we will be promoting cooperation and help on reasonable expense bases, communications savings and speedy exchanges. Not less important is the possibility to distribute one message to hundreds of users simultaneously, participate in professional forums and search the information without excessive economic cost.

The new technology can be an effective tool to achieve a more harmonious and sustainable development as well as to eliminate the inequalities among nations. But this tool will be effective only if its use is based on solid ethical bases that must be present in the trade, environment, application of the scientific knowledge and shared use of knowledge in general.

Some words to conclude

The information society also needs some ethic rules mainly on principles that foment personal initiative, spontaneity, imagination, associative life, creation, transmission, absorption and application of knowledge. The society, which is moving, participating, free, autonomous, solid, understanding with the diversity and respect for everything and all, is the only one able to carry out true democracy.

That requires the adaptation of the educational systems to the objective or, better to say, to the purpose of favouring justice by avoiding the increasing differences.

Activities

To analyse the reality

- Do a brief report on the situation and propose the activities and services in the Internet to improve the situation.
- Locate in the Internet the actions currently carried out to improve the quality of life.

To formulate goals to reach

Keeping in mind what you have read in this and in previous Units and taking into consideration your own experience, try to give your arguments in support of your idea on pedagogic paradigm that might correspond to the new goals of education in the information society.

II.5. LEARNING: THE TREASURE WITHIN. REPORT TO UNESCO OF THE INTERNATIONAL COMMISSION ON EDUCATION FOR THE TWENTY-FIRST CENTURY

Objectives

- To know which approaches, guidelines and orientations on the new technologies are with regard to UNESCO.
- To be aware, at general level, of the educational questions that are affected by the new technologies and to express the responsibilities in their resolution, adaptation or improvement.
- To understand the relationship between the education and the new technologies and to analyse the causes and effects of this reality.

This Report is the result of a worldwide three-year process of consultation and analysis carried out by a distinguished panel of specialists under the chairmanship of Jacques Delors. It is a thought-provoking book, which proposes ideas that go far beyond educational reform. Building on the four pillars that constitute the foundations of education – *learning to be, learning to know, learning to do and learning to live together* – it provides a new outlook on how all societies should move towards a necessary Utopia, in which none of the talents hidden like buried treasure in every person are left untapped.

Through a fresh approach to the learning process, based on a more flexible education system where individuals' values are enhanced, the report examines basic education as an absolute priority, and underlines the pivotal role of secondary education in the learning process of young people and social development. Higher education institutions should become not only the centres of knowledge and places of professional training, but also the crossroads for learning throughout life and international cooperation. The central role of teachers and the need to improve their training, status and conditions of work is particularly stressed, as well as the use of technology in the service of education through adequate training for later use at work and in daily life.

Guidelines for educational renewal are proposed, based on strategies of education reforms taking into account broad-based concentration, increased responsibility and involvement for all partners at every level. The report closes with a strong plea for more resources to be devoted to education and for strengthening international cooperation to meet the challenges of a fast-changing world.

Pointers and recommendations:

- Choosing a type of education means choosing a type of society. In all countries, such choices call for extensive public debate based on an accurate evaluation of education systems. The Commission invites the political authorities to encourage such debate, in order to reach a democratic consensus, this being the best route to success for educational reform strategies.
- The Commission advocates the implementation of measures to involve different persons and institutions active in society in educational decision-making: administrative decentralization and the autonomy of educational establishments are conducive in most cases, it believes, for the development and generalization of innovation.
- In view of the foregoing, the Commission wishes to reaffirm the role of the political authority, which has the duty to define options clearly and ensure overall regulation, making the required adjustments: education is a community asset, which cannot be regulated by market forces alone.
- The Commission nonetheless does not underrate the force of financial constraints and advocates the bringing into operation of public/private partnerships. In developing countries, the public funding of basic education remains a priority, but the choices made must not imperil the coherence of the system as a whole, nor lead to other levels of education being sacrificed.
- It is essential that funding structures be reviewed in the light of the principle that learning should continue throughout individuals' lives. The Commission hence feels that the proposed study-time entitlement, as briefly outlined in the report, deserves to be discussed and explored.
- The progress of the new information and communication technologies should give rise to a general deliberation on access to knowledge in the world of tomorrow. The Commission recommends:


1. The diversification and improvement of distance education through the use of the new technologies.
2. Greater use of those technologies in adult education and especially in the in-service training of teachers.
3. The strengthening of developing countries' infrastructures and capabilities in this field and the dissemination of such technologies throughout society; these are in any case prerequisites to their use in formal education systems.
4. Launching of programmes for the dissemination of the new technologies under the auspices of UNESCO.





PART III
INTERNET FOR EDUCATORS. PRACTICAL COURSE




LEGEND FOR ASSIGNMENTS

 – assignment does not require computer

 – assignment requires computer

 – assignment requires additional information (see in attachments)

 – for comments

III.1. INTRODUCTION

III.1.1. What is telecommunication?

III.1.2. Modem

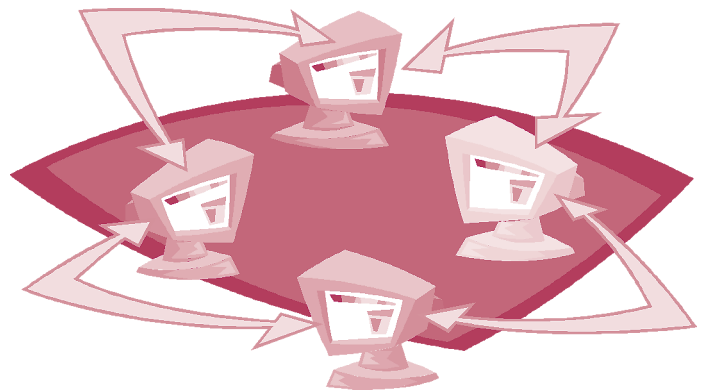
III.1.3. Communication lines

III.1.4. Getting access to the network

III.1.5. Dial-up and network connection

III.1.6. Software tools for networking

III.1.7. Internet in MS Office 2000



III.1.1. What is telecommunication?

Telecommunication is a general name for the group of tools that provides the transfer of information for long distances using all modern technologies and communication lines.

Computer telecommunication is a large group of telecommunication means where computers are used as transmitting and receiving devices. Computers in those systems, as a rule, do not exist separately, but are united into the networks.

The computer networks can be local (LAN – Local Area Network), or global (WAN – Wide Area Network). Global networks provide the data transfer on long distances from several miles (for instance, within one city) to several thousands miles (between cities, or countries located in different parts of the world). How is the data transfer realized? What unites computers into the telecommunication network?

In global networks computers are linked together with various communication lines – from special satellite channels and optic fiber lines to traditional phone lines. It is very useful to employ different communication lines, since at least one of them can be found everywhere. One can hardly find a place on the planet without a telephone line, or a satellite route above.

As a rule, large companies develop their own corporate computer networks switched to the global system of networks with high-speed digital connection lines. All the same the most users in the world work at their personal computers (PCs). Such computers are switched to the global networks through traditional analog phone lines.

To transform (to modulate) a digital signal transmitted by a computer into an analog signal (the series of the tone sounds) understandable for the phone lines, a special device was created that is called a **modem**. Modem is installed at both transmitting and receiving ends of the phone line, to which computers are plugged.

Hereby, the simplest telecommunication system that provides the user’s switching to the global computer network, as a rule, includes the following components:

- **Computer;**
- **Modem;**
- **Communication line.**



Remember all the words you know that begin with the prefix “tele-“.

Explain, what unites all these words? _____



Get acquainted with the today’s status of computer communications in the world:

1. Find articles from magazines and newspapers, in which there is some information about telecommunications.
2. What do you think it could be regarded the main premise for the rapid development of computer communications in any country of the world?
3. Give your prognosis for the development of telecommunications in the country you live in.



III.1.2. Modem

The word “modem” is the abbreviation of two words “**MO**dulation/**DE**Modulation”. Modem modulates the computer signal when the data is transmitted through the phone line and demodulates the analog signal that comes from the distant computer, converting the signal into the digital form. Modem is comparable with a professional interpreter, who does not only translate a certain set of words from one language to another, but in case of necessity, corrects the words and formulates the phrases in a brief and understandable way to help people communicate with each other in the most effective way.

Modems are produced in two forms:

Internal modems – separate electronic circuits that are placed in a special slot inside the computer’s body.

External modems – small external devices in a hard body that are plugged into the consequent (communication) port of PCs (COM-port 1 or COM-port 2) by RS-232 cable.

The main characteristic of the modem is the data transfer **speed rate**. It is measured in bits, if information is transferred through a modem in a time unit (a second). The higher transfer rate is, the more information is transferred and processed within a second.

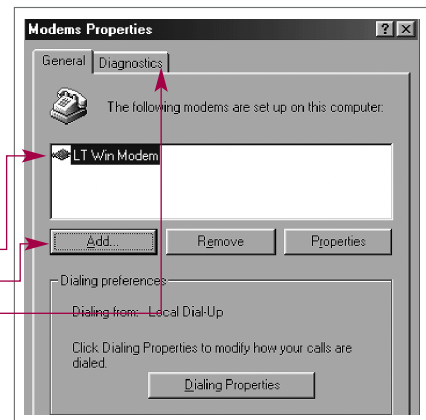
To plug the modem into the phone line and the PC the user should do the following:

1. Modem is plugged into PC COM-port by RS-232 cable.
2. Modem is plugged into the phone line by the standard phone cable.
3. Modem is switched to the power source.



To identify the type of a modem that is already installed on the PC, it is necessary to open the Windows Main Menu, then go to Settings and choose Modems from the Control Panel.

In the window Modems Properties you can see not only **the type of the modem** that is already installed on your computer, but you can **add a new modem** on the list, identify its properties, and **make the diagnostics** of the devices, switched to the communication ports of the PC.



Address the **Control Panel** and read the information shown in the window **Modems**. Answer the questions:

1. What type of the modem is installed on your computer? _____
2. What communication ports are on your computer? What external devices are plugged into them? _____

3. What speed rate does your modem support? _____



The external modem has special light indicators. What are they used for? What kind of information do they provide the user with in the data transfer process?



Calculate how much time does it take the modem to transfer five pages of the text (written in Word, or WordPad) if you know that the modem’s maximum speed rate is 33,600 bits per second.

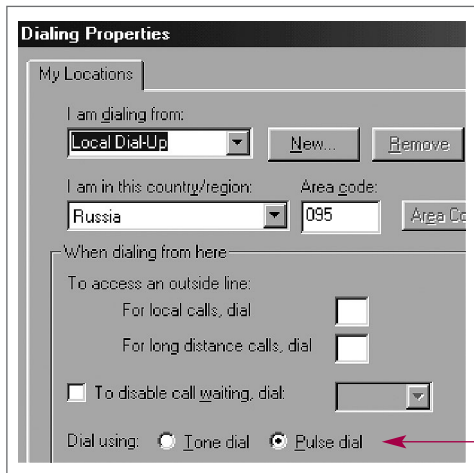
III.1.3. Communication lines

Different communication lines that unite computers all over the world build telecommunication networks. The user, who works with MS Office 2000, has the option to be switched into the world system of telecommunications by the most widely used and accessible communication lines – telephone channels.

Phone networks can be either in a form of traditional **switched** (junction-board) **public channels** (ordinary phone lines that link phone subscribers through the automatic phone stations) and **leased channels** (leased phone lines that provide direct conjunction of the users’ computers through the leased telephone cables).

Leased channels guarantee higher speed connectivity and reliability of the data transfer. The data transfer speed rate in the leased line can be higher than 45,000 Mb (megabyte) per second, when the real speed rate in public phone channels through the switched-board stations can be no more than 28.8 Kb (kilobyte) per second.

Telephone channels give a user an access to the system of global communications. The process of getting an access is realized with the help of the companies that are called “**providers**” (ISP – Internet Service Provider) – private, governmental, or non-governmental organizations that are in charge of the users’ access to the Internet.



The most used way to get an access to the global network is switching by a “dial-up” access through public phone lines. In fact, “switching” to the network means the automatic dial-up to the distant server (provider’s computer) and formal registration. As a rule, the provider suggests the user to use several entrance phone numbers (or “serial number”) that helps to avoid the situation when a phone line could be busy.

In the window **My Connection** opened from the folder **My Network Places** on the desktop the user can identify the existing parameters of the dial-up connection via the phone line. One of the most important parameters of the dial-up connection is the type of the dialing tone – tone, or pulse. The default option is **pulse dial**.



i Get to know some information about the telecommunication facilities of the company you work for (office, school, etc). Imagine that you participate in professional seminar where you are asked to fill out the questionnaire, and then send it by e-mail to the organizational committee. How can you answer these questions?

- What hardware facilities does your company have to work on the Internet?
- What is your Internet service provider?
- What communication channels do you use and why?
- What are the perspectives for telecommunications in your company?



III.1.4. Getting access to the network

There are several options of how a user can be switched to the provider's telecommunication network. They depend upon different factors and, first of all, on communication lines, computer's and modem's characteristics. The most widely used options of access to the network are:

1. Dial-up access via the switchboard phone lines

This variant lets a user get an access to the network on a traditional dial-up basis in the place and time convenient for the user. However the quality of connection and the speed rate are very poor. Dial-up access demands the modem installed.

2. Direct access via a leased line

This variant means the permanent IP access to the network by the leased communication line. This access is widely used to provide the collective access to the network when users work together in the company's corporate LAN network.

Getting access to the network (both individually and collective) the user (users) passes through the process of registration – getting the personal network name (login, nickname) and password.

Network name (login) – the conditional name of the user that is given to him to enter the network. The user chooses the login and password himself. For an individual user it can be a random combination of symbols, abbreviation from the first and the last name, initials, and etc. For collective users the login should be formal and include the name of the company. It is very useful to choose the login in a way that can be easily identified with its owner, for instance:

Sabine.Seufert – Sabine Seufert
steinbeck – Reinhold Steinbeck
mois – Marina Moiseyeva

Network password – a sequence of symbols (letters and/or numbers) that is used to identify the user and protect the network from unauthorized access. For example, the password should not exceed eight symbols. It can be like this: s0nka97, sch456, s7TN31, cat, mysong, and etc.

The identification information (login and password) helps the computer recognize the user and let him go inside the network resources.



Get to know the network login and password of your company (the friend you share computer with) uses to access the network. Do the following:

1. Click the shortcut **My Computer** on the Windows Desktop and open the folder **My Network Places**.
2. In the window opened click any icon with the **dial-up connection** to the network.
3. In the window appeared (**Connect To...**) find the following data:

- **User's login:**
- **Password:**
- **Phone number** of the dial-up access to the provider's distant computer:

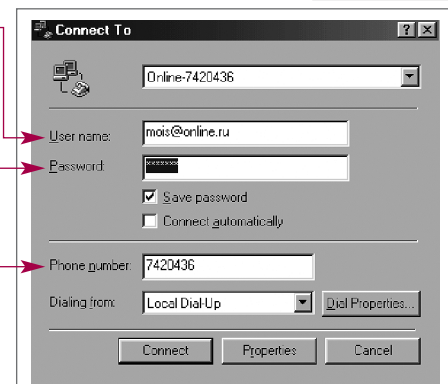


You are going to sign up to the network services personally. Choose for yourself:

- login _____
- password _____



The password is always closed by asterisks. Try to guess why?

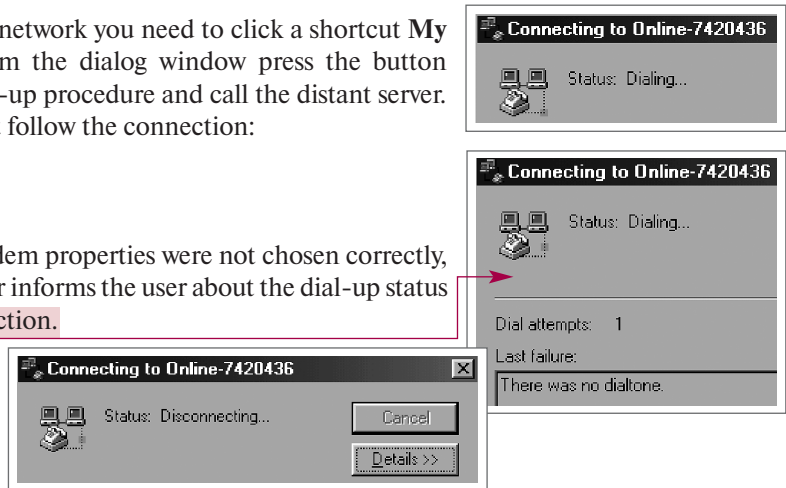


III.1.5. Dial-up and network connection

As you know already, to be connected to the network you need to click a shortcut **My connection** and then checking the data from the dialog window press the button **Connecting to...** Modem will execute the dial-up procedure and call the distant server. There could be several possible situations that follow the connection:

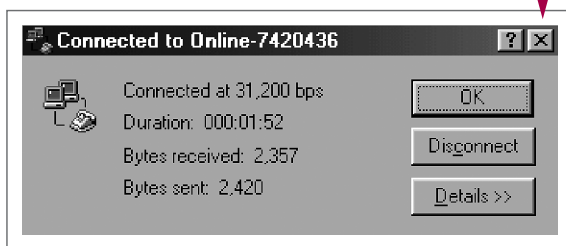
1. Computer does not "see" the modem

(Perhaps the modem is turned off, or the modem properties were not chosen correctly, for instance, communication port). Computer informs the user about the dial-up status and explains the possible reasons of disconnection.

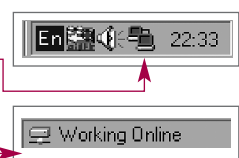


2. Connection is established properly

If the dial-up process was completed successfully the user could see the followed by window **Connected to...** that helps the user to see how much time he has spent in the network, how many bits of information he has transferred (received).



This window can be minimized and shown as a special button at the bottom of the Windows' screen. The other sign that proves that the user is still online, is the button **Working online**. If the connection is closed (interrupted), it will be written **Working offline**.



Follow the dial-up procedure. What would happen, if the connection terminates because of some hazards on the line? What message may you get from the modem, if another user who established the connection earlier uses the distant computer and phone line?

Create a **New Connection** in the folder **My Network Places** clicking the **button**

- Phone number of your computer service company.
- Your home phone number.

Dial-up each of these two numbers (check the sound of the modem turned on). What happened within the dialing process? Give your rationale.

Do you think the modem is always necessary to get an access to global communications? Ask the professionals.



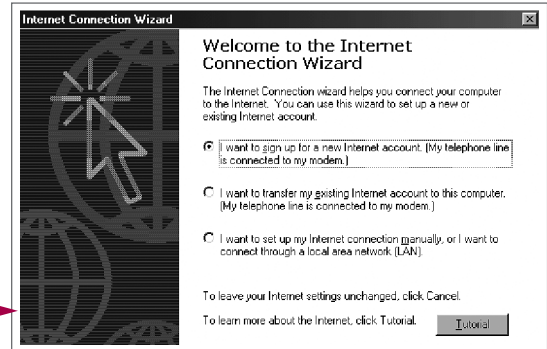
III.1.6. Software tools for networking

The user should have a certain set of program tools to do networking. The minimum set includes the following:

- **Programs that provide the network connection**

In Windows 98 and 2000 the user should not install any additional program to be connected to the network. Almost all the installations are done with the help of the “wizards”. This is one of the reasons why we are mentioning several programs – the process of connecting to the Internet has become accessible even for the beginners – “wizards” equip the most of modern software.

Thus, clicking the icon **Internet Connection** from the Windows desktop you can activate the **Internet Connection Wizard**.



- **Browsers**

These programs support the access and navigation in the World Wide Web. Windows 98 and 2000 include **MS Internet Explorer** browser on default.



- **Teleconferences**

Among programs that provide participation in various online forums there is a program called **MS NetMeeting**.



- **Electronic Mail**



Mailing programs provide electronic mail exchange. This is an alternative (and more professional) option in comparison to mail units included into all browsers. Mailing programs like Outlook Express are more useful to work with big flows of daily correspondence.



- **HTML editors**

The user creates and publishes on the web his personal or corporate web pages. They can be developed using the modern text editors (like MS Word 2000) that can save text documents in HTML format. Professional HTML editors are much more convenient and useful. One of such editors is included into MS Office Professional kit. It is called **FrontPage**.



It is known that Office 2000 in comparison to previous MS Office packages is more focused on the Internet. Give your arguments on this thesis using the characteristics of the following instruments of the Word:



Find these instruments in the Word main menu and try to explain their functions.



Ask your colleagues what other programs besides MS Office 2000 they use as:

Browsers – _____

Mailing programs – _____

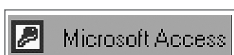
HTML editors – _____

III.1.7. Internet in MS Office 2000

All the programs from the Office 2000 set ensure the work of the user in the Internet. As a rule, among the commands of the main menu of each office program one can see a lot of links to Internet resources, or commands related to the Internet services, e-mail, network forums (conferences), etc. All documents created in the Office 2000 can be saved in **HTML** (Hyper Text Markup Language) format – the main format of the Internet documents and published on the Internet web sites directly from the moment the user creates them on his computer. Here are some examples.

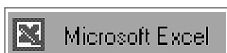


Publisher is the desktop publishing system in which the Internet finds its significant place because the program includes special wizards to create web sites with professional design and formatting. Publisher contains rich collection of images, frames, backgrounds and fonts.



Access is the program that creates and manages databases. Operating the program the user can do the following:

- Send the data as attachments to e-mails;
- Import any data directly from the Internet;
- Exchange data within chat sessions with other users (NetMeeting);
- Get the online information support from the Microsoft web site.



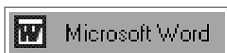
Excel creates various electronic spreadsheets. The programs integrate with the Internet in the following:

- Imports the data used in the spreadsheet directly from the Internet web pages;
- Creates documents in the HTML format to publish them on the Net directly;
- Supports the real-time teleconferencing;
- Supports mailing lists through e-mail;
- Includes hyperlinks to other documents and web sites on the Internet.



PowerPoint is used to create electronic presentations and graphic demonstrations. In the program one can do the following:

- Create separate web pages or web-presentations;
- Send documents created in the program by e-mail, or as attachments to e-mail messages;
- Send documents to other users by mailing lists;
- Participate in real time teleconferences.

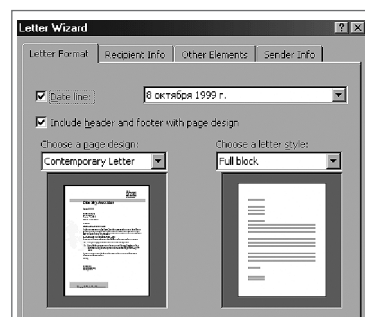


Word text editor helps create and edit web pages, participate in teleconferences and support mailing lists, send messages by e-mail, etc.



Use MS Word text editor to develop the standard electronic message. To apply **Modern office design** (formatting) use one of the built-in wizards. Do the following:

- Open the Word.
- In **Tools** menu choose **Letter Wizard**.
- In the dialog window appeared, choose the design of the letter as **Modern**, fill out the fields with additional information about the recipient and push button **OK**.
- Write the formal letter to any of your friends or partners. Sign the letter by your real name.
- Choose command **Send/Receive** from the **File** menu to send the message.



III.2. ELECTRONIC MAIL

III.2.1. What is the Internet?

III.2.2. Electronic mail

III.2.3. Structure of a message

III.2.4. MS Outlook Express

III.2.5. Shared accounts

III.2.6. Rules of the netiquette for e-mail

III.2.7. E-mail languages and coding



III.2.1. What is the Internet?

Today the global system of telecommunications unites thousands of various computer networks. The variety of these networks is explained by the variety of their organizational structure, communication lines they use, and protocols, or rules and standards that describe the procedure of data exchange between any two computers within the network. Taking this into account we may divide the computer networks into two main groups:

1. **Networks that unite small (home) personal computers** directly via switched telephone lines and provide the file exchange between them (for example, FidoNet or some commercial networks).
2. **Networks that belong to Internet Society** and which give the users the shared access to distant information resources (file archives, software applications, data processing centers, etc.) in real time mode (for example, NORDUnet, FREEnet, America Online, CompuServe, etc.).

In order to transfer the information between two or more incompatible networks (having different protocols) special devices like **gateways** are used. They transform the format of the data in the appropriate form.

The Internet is the most dynamic and largest world system of global communications. It does not have any specific organizational structure, and in fact is a conglomerate of independent computer networks. They are united by standard protocols of information exchange like **TCP/IP (Transmission Control Protocol/Internet Protocol)** that they use as the basis protocols. Thus, the words “switching to the network”, or “IP-connectivity” mean, in fact, switching to one of the telecommunication networks that supports the TCP/IP protocols and belongs to the Internet Society.

- i** Call the company who is your Internet provider (or any ISP company from your city) and ask the manager about the main services they can suggest you to sign up to.
- i** Give your examples of the telecommunication networks that belong to the Internet Society:
 Educational – _____
 Banking – _____
 Corporate (belonging to companies) – _____
- i** Find additional information about the TCP/IP protocol. Get to know why this protocol was chosen as the main protocol of the Internet? (⇒ See *List of recommended publications*. Attachment 1.)

III.2.2. Electronic mail

Electronic mail (E-mail) is the main network service. As you know already, at the registration in the provider's office the user gets his own network name – login that is followed by the opening (leasing) of the personal “mailbox”. **Mailbox** here is the folder opened on the provider's computer that is used to keep the archives with information and for other purposes. The mailbox is protected from unauthorized access by the password that is known by the user only. ISP gives the user the address of the mailbox to be used for e-mail exchange with other users of the Internet.

In the Internet the network addresses are written with the Latin alphabet's letters, numbers, or symbols (like “!”, or “%”). The format of the address is always the same:

`<username>@<computer_name>`

So the login (nickname), under which the user is registered in the network, is written to the left from the symbol @ (that is used as a divider of the name and address itself) and the name of the network server (computer) where the user's mailbox is located – to the right, for instance:

`nccom@pest.msk.su`
`mois@glasnet.ru`
`victor@urc.ac.ru`

The name of the computer consists of several words or abbreviations divided by the periods (dots). To read the e-mail address properly one should read it from the left to the right, like the traditional post address.

With the help of the electronic mail you can do the following:

- hold on private e-mail exchange (one to one);
- send the copies of your message to other users of the network (one to many);
- hold discussions, network forums in online (real time) and off-line (postponed) modes;
- distribute news within the groups of special interests;
- operate distant information servers asking them for the information you need;
- send faxes, etc.

Electronic message (letter) is not only a text. It can be graphics, sound, animation – any file you want to send.



1. Try to identify which of the enlisted addresses are the addresses of:

- Private companies or organizations _____
- Educational institutions _____
- Internet service providers _____

2. Identify the geographical belonging of the following addresses (from the list below).

3. Read the abbreviations from e-mail addresses shown below and explain their origin (their meaning).

The List of E-mail Addresses:

kazunkov@mei.msk.su

proyd@derby.ac.ru

tmvm@rricnit.ryazan.su

1070.1256@CompuServe.com

mihael@uka.online.edu

gjcase@admin.gmcc.ab.ca

victor@free.net

peka@cs.utu.fi

Karlheinz_derr@diff.uni-tuebingen.de

boscaw@servidor.unam.mx

semenov@k808.mainet.msk.su

humber@bolero.uni.rain.ni



Put together the list of e-mail addresses you think you would use most often in your daily activities, including, for instance:

- Your ISP client support services – _____
- Alternative address you can use in emergency when your address is blocked _____
- Your company's address – _____
- Your friends' addresses – _____

III.2.3. Structure of a message

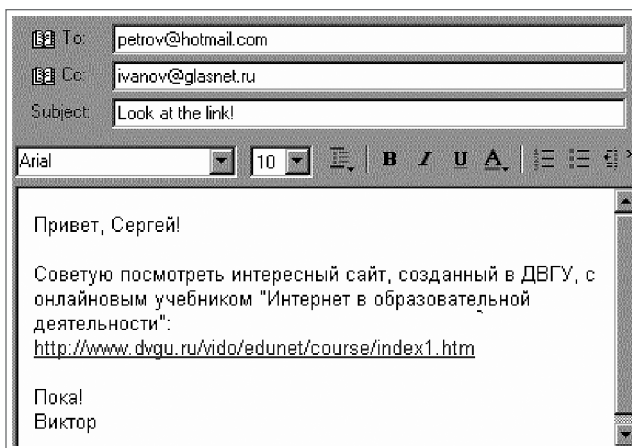
Electronic message is developed in accordance with the same rules as a traditional letter. One can find the following parts in its structure:

- **Message Header** (includes the e-mail address of the sender, e-mail address of the recipient, address of the user you want to send the copy of the letter to (Cc:), and the brief subject of the message).
- **Message Body** (the text of the message with addressing cliches and the signature).

One of the most popular mailing programs used in Office 2000 (which also can be used both for e-mail and teleconferences) is **Microsoft Outlook Express**.



To open the program Outlook Express it is necessary to click the **shortcut** on the Windows desktop.



To create electronic messages in Outlook Express a special set of commands and instruments is used. It helps to format and edit messages on a professional basis. For example, the panel **Tools** includes buttons Spelling, buttons Send and Attach.



Do the following to create and send a message:

1. Click the button **New Mail** from the **Tools** panel.
2. Fill out the header and compose the text of the message.
3. Attach the file (if you want to do it).
4. Click the button **Send** on the **Tools** panel.



The text of the message can be typed directly in the body of the message, or inserted from the text editor (ready text) with the help of the commands from the main menu of the Outlook Express – **Insert/Text from File...** (at this moment the text cursor should be inside the body of the message).



If the letter is very important and urgent a special label of the priority can mark it by the command **Message/Set Priority**. On default the priority is set as **Normal**.



Test the work with e-mail in the Outlook Express:

1. Being in off-line mode (not connected to the network) create a new message.
2. Fill out your own e-mail address in the field **"To:"**.
3. Write one word **"test"** in the body of the message and in the subject field.
4. Connect to the network and send the message.
5. In a couple of minutes check the mailing box (press the button **Send/Receive** on the **Tools** panel of the Outlook Express). Open the message you received.

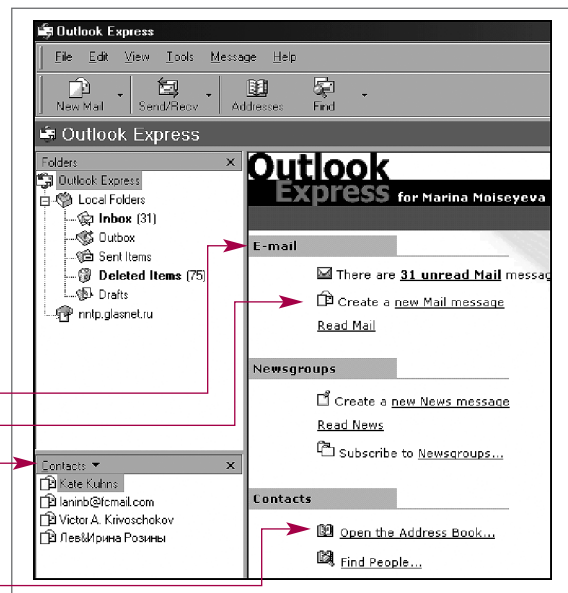
III.2.4. MS Outlook Express

There is special software to work with e-mail and teleconferences. The MS Office 2000 includes one of the most popular mail programs as **Outlook Express**.



To open the programs click the shortcut on the Windows desktop.

With the help of Outlook Express the user, who is signed up to one of the Internet providers' networks, in one or several networks simultaneously can operate the e-mail, get the news by mailing lists participating in the network discussions. This program is connected directly to the folders of the MS "electronic secretary" – the office program that is called **Outlook**. For example, in the Outlook Express window the user can open the List of Contacts (that is formed automatically from the headers of the incoming messages), or the Address Book.



In the list of messages each message is marked by the special labels, which help the user orient in their content and the following procedures:



The message contains the file attachment



The message is marked by the label of priority (important, or not)



The message has been already read



The message has not been read (these messages are written in bold in the list)



The user answered the message



The message was forwarded to another user



The message is saved in the folder **Draft**



Learn how to attach the file to the message. Do the following:

Create one more text message; in the body and in the subject write "test2", and in the field "To" write down your own address.



Press the button **Attach** from the upper menu (instruments panel) and choose any graphic file you want from the list of the files (for instance, from the subdirectory My Pictures of the folder My documents).



After the file appears in the field Attachment of the header click the button **Send/Receive**.

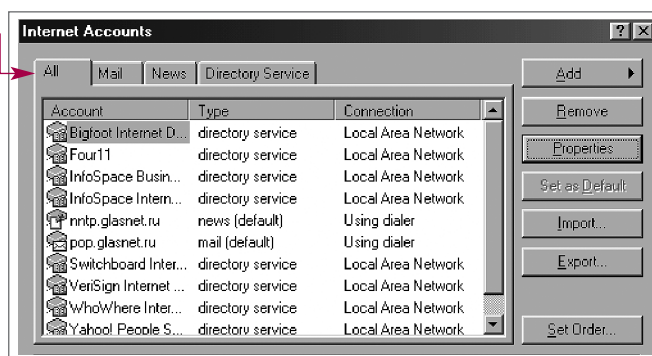
Check the incoming messages and, if you see the message test2, choose it from the list and make the double click on the name of the attached file in the header of the message. In this situation the graphic file (a picture) will be opened in a separate window by the graphic editor that is used on your PC on default (for example, MS Photo Editor).

III.2.5. Shared accounts

If the user works with several telecommunication networks he can open several separate accounts on the computer, each of them to receive the incoming messages from the distant server. To open the new account on the PC for getting e-mail and messages from the mailing lists the user is supposed to do the following:

1. Choose the command **Accounts** from the **Tools** menu.

2. On the inset **All** one can see all names of the mail and news servers that are used by the user of this PC switched to the network (both local and global).



3. Go to the inset **Mail** and give the command **Add** that will open the **Internet Connection Wizard**.

If a computer is shared by several users simultaneously, it is important to divide their incoming and outgoing messages to prevent unauthorized access to the personal information. In this case, it is possible to open the separate mailing boxes for each user. Do the following:

1. In the **File** menu choose **Identities**, and then – **Add New Identity**.

2. Put the name of the new user in the dialog window.

3. If necessary, enter the password to protect the mailbox from any unauthorized access.

If you need to delete the mailbox, choose the command **Manage Identities** from the menu **File/Identities** and press the button **Delete**.

When one of the users works with e-mail for a while, and then the other is coming, it is not necessary to reset the computer. To switch one account for another one it is necessary to choose the command **Switch Identity** from the menu **File** and change the user's account.

The user can protect his mailbox by the password, set the size of the font for the messages, the size and the color scheme of the window to identify the procedure of the linking of this program and the **Notes** and **Chronological Scale** of the Outlook. To do it the user should change the settings on default in the **Properties** window from the menu **File/Manage Identities**.



Imagine that you share the computer with your colleagues – Helen and John. Organize the incoming mail in such a way that it would be convenient for everyone without exception. Do the following:

1. Open the personal mailboxes for your colleagues.
2. Helen has just come up to you and told you that she needed to check the incoming messages, and it was very urgent. Switch from one account to another without resetting the computer.
3. John has got a new computer. Delete his account from the old one you shared with him.
4. Arrange your own mailbox. Identify the settings on default, and lock up the mailbox with the password.



Define the algorithm of the e-mail sending for the user, who shares the computer with two more employees of your company.

III.2.6. Rules of the netiquette for e-mail

In the Internet there exists an informal code of behavior that regulates the communication of the users with each other and that is called the network etiquette, or netiquette. Participating in e-mail exchange the user should remember the following:

1. Answering a message, you should include the citations of the most important sentences of the message.
2. It is very useful if the message is signed with the brief signature that is added automatically to each message send by the user (but the signature must be limited by four lines).
3. The informal style can be used only in personal communication.
4. It is top prohibited to forward somebody's letter to other people, or publish it in the conference without its author permission.
5. If you are too busy to answer the incoming message immediately, send at least a couple of words to confirm reception, and the promise to give a detailed answer in the near future.
6. If you send an archived file, ask the recipient before whether he has all the archivators to unpack the file.
7. The text of the e-mail message should be structured, the paragraphs separated from one another by a blank line.
8. The text line should be limited to 60-70 symbols; and the alignment on the right is not recommended.
9. Try not to send letters of more than 50 kilobits in size.
10. To make e-mail messages more emotional you can use special symbols:

- Adding "smiles" –
;-) \$-[>:-(
- Emphasizing the words with the logic accent by **CAPITAL** letters, or putting these *****words***** into special symbol brackets.

Outlook Express allows the user to manage the flow of the incoming messages. With the help of the menu **Tools/New Mail Rules** the user can develop a set of the rules (algorithms) describing the processing of this or that message received by e-mail, from mailing lists, or newsgroups:

- to move them to the folder of destination,
- to copy into the other folder,
- to delete, or forward to another e-mail address.

Using these rules, the user can also get rid of the **spam** (unnecessary) messages that are of no interest for him. To do so, he/she should create a new rule:

1. To choose the key-word from the header of the message, or the network name of the sender.
2. Define what to do with this message.
3. Give the name to this new rule.



Use the Outlook Express commands from **Tools/New Mail Rules** to prohibit the mailbox from the famous network spammer with the nickname `vasia@piter.ru`, who send you messages with the suggestion to join the start-up company doing illegal business on the Net.



Create your own e-mail signature to use in all your outgoing mail (for example see the signature to the right):

```
*****
Dr. Osama Ata
Broadband Wireless Group
Optical and Broadband Wireless Division
Sprint Advanced Technology Labs
30 Adrian Court
Burlingame, CA 94010
(650) 375-4314 Phone
(650) 375-4330 Fax
oata@sprintlabs.com
```

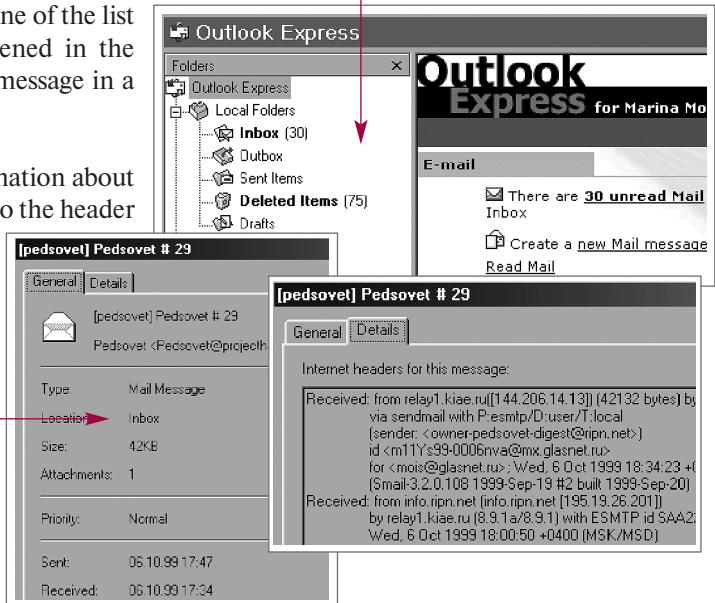
III.2.7. E-mail languages and coding



To read the messages downloaded from the Internet the user must click the button **Send/Receive** and then, after the process of the downloading is completed, to click the button **Incoming** in the Outlook Express window, or in the appropriate **Outlook folder**.

If the user makes a click when the cursor is on any line of the list of the messages, the marked message will be opened in the bottom (viewer) window. Two clicks will open the message in a separate window.

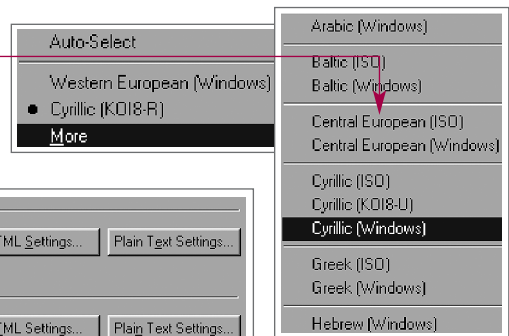
Sometimes it is very useful to get the detailed information about the message, which is added by the e-mail program to the header of the message (when the message was sent, the size of the message, what Internet servers it came through, etc.). In order to get this information the user must choose the command **Parameters** from the **File** menu that is followed by the opening of the additional dialog window with the **Details about the message**.



Sometimes, opening the message the user cannot read the text, because it is shown as unreadable. It can be explained in most cases by the lack of appropriate language on the user's computer, or different coding system that was applied to the message while saving it and sending through the Internet. It is possible to solve some of these problems with the help of the Outlook commands:

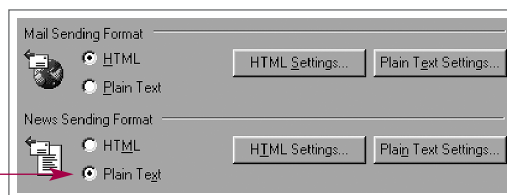
1. Format/Coding

The **coding** to read messages can be changed. For example, for the Russian language the user can choose one of the following coding systems – **ISO, Windows, or KOI8-U**.



2. Tools/Parameters

The user defines the characteristics (language, coding, format) for reading and sending the e-mail messages. The most useful format is the **Plain Text** format that is understandable for majority of the Internet mailing systems.



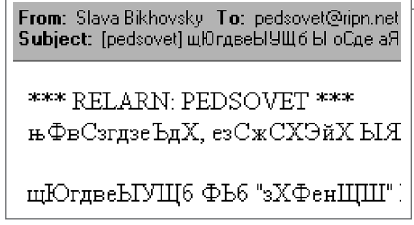
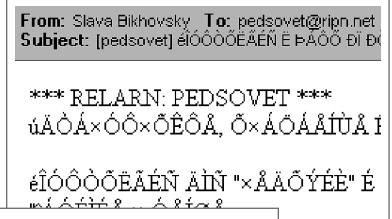
You've got the message from Yaroslav Bikhovsky from Russia, but you can't read the body of the message.

What coding system did the author apply in the first and second variants of the message?

What coding do you need to apply to read the message in a proper way?



Create one more test message and call it test3. Before writing the message change the format from Plain Text to HTML (by commands **Tools/Options/Send**). Insert a picture in the message by commands **Insert/Picture**. Compare the messages test2 and test3. What is the main difference between them?



III.3. TELECONFERENCES

III.3.1. Teleconferences

III.3.2. Mailing lists

III.3.3. Usenet newsgroups

III.3.4. Reading the conferences

III.3.5. Rules of the netiquette for conferences

III.3.6. Real time conferences

III.3.7. NetMeeting

III.3.8. Collaborative creation and discussion of the documents



III.3.1. Teleconferences

Electronic mail provides sending the message to one addressee and many addressees as well by copying the first message automatically to all e-mail destinations appointed by the user. Mass e-mail exchange that is purposed for “one-to-many” information flows is more effective, if it is organized in a form of teleconferences. Teleconferences are created for those users, who would like to discuss some topic together. They are organized in each telecommunication network, and at the same time they are accessible for the users from other networks as they exchange e-mails through the gateways. Hereby **teleconferences** are the organized exchange of information between the network users.

Internet teleconferences differ from each other by:

1. **the accessibility** – teleconferences can be *opened* (opened to all subscribers – users of the network) and *closed* (opened to a limited number of subscribers),
2. **the management** – *moderated* (managed, administrated by the leader, administrator, moderator, who is responsible for everything that is going on in the conference) and *not moderated* (without a moderator, non-regulated discussions),
3. **the way the information exchange is organized** – *delayed* (off-line) conferences (discussion groups, mailing lists, etc.) and *real time* (online) conferences (for example, *IRC – Internet Relay Chat*).

The most widely used and popular teleconferences are delayed conferences, so-called mailing conferences. In the Internet they are grouped into two categories on the basis of the technology used to distribute the news: **mailing lists (lists)** and **newsgroups (USENET groups)**. The conferences are organized in a very democratic way. As a rule, the opening of the conferences is initiated by some network users who want to create the network community of users interested in the same problem, topic, idea, trend, etc.

The names of the news groups are easily related to the corresponding topic discussed inside, but the names of the mailing lists demand special explanations. (⇒ See *Examples of the names of the conferences*. Attachment 2.)

- You decided to ask the IT engineer in your office what conferences you should see for the beginning. He printed out a list of the conferences he is subscribed to, but there are no annotations to any of the conference you see. (⇒ See *Examples of the names of the conferences*. Attachment 2.) Choose in this list:

Names of the conferences with the following topics to be discussed:

- networking for novices, _____
- books, _____
- computer technologies, _____
- pedagogy, _____
- network news. _____

Names of the conferences you need to address if you want to:

- find a new job, _____
- study something, _____
- find books on intranet, technologies, _____
- chat with somebody. _____

- Which groups of the conferences would you search for the information about distance learning, science and culture in? (⇒ See *Examples of the hierarchies of the USENET newsgroups*. Attachment 3)

III.3.2. Mailing lists

Mailing list is a special e-mail address that is organized in such a way that all messages sent to this address will be forwarded simultaneously to all subscribers of this mailing list. Being subscribed to the group discussion, each user receives the messages and participates in discussion sharing his opinion on the topic with other subscribers.

There are several types of the mailing lists:

1. Simple lists

The lists are formed by a simple list of e-mail addresses which is created in the message header in the fields “**To:**” or “**Cc:**”. The commas should divide all addresses from each other. Each subscriber, who receives such message, should send his answer using the command **Reply All**.

2. Compound lists

The lists are represented by the real e-mail address that is connected to the whole list of addresses of the subscribers. When the mailing server receives the message to this main address, it distributes automatically among other addresses appointed in the list. Such list can be moderated by real people (*list administrator*), or mail robot (*listserv, majordomo, listproc*), which recognizes commands written in the body of the message (for instance, such important commands like *help, subscribe* (to be added to the list of subscribers), or *unsubscribe* (to be deleted from the list)).

3. Digests

Some mailing lists suggest to subscribe to the digests, or information press-releases that include several messages accumulated within a certain period of time.

To get subscribed to the mailing list, one should:

1. find address of the mailing list you are interested in;
2. send the e-mail message with commands for subscription;
3. get the confirmation on the subscription from the mail robot or server administrator.

Then, if the necessity to get the information through the mailing list is over, the user may unsubscribe from it by sending the message with corresponding command (request).



Make a simple mailing list in your mail program (Outlook Express). Include all e-mail addresses of your friends, and colleagues whom you want to exchange e-mail with.



Subscribe to the “Thought for the Day” distribution list, which gives wonderful thoughts for the day from a variety of sources. Create a new message and put the address `listserv@listserv.tamu.edu` into the “**To:**” field with one command inside the body of the message

SUBSCRIBE TFTD-L yourfirstname yourlastname

When you get the answer and read the information from the first issue, you may unsubscribe from the list sending the same message, but with the command in the body changed to

SUBSCRIBE TFTD-L yourfirstname yourlastname



Study by your own, or ask somebody else, who works in the Internet, to help you study the web site www.newsville.com/news/groups, where one can find rich collection of various newsgroups (Usenet Newsgroup Hierarchies). Choose any of the lists with the most interesting topics and try to subscribe to them.

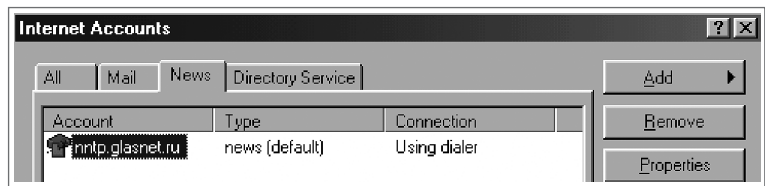
III.3.3. Usenet newsgroups

Usenet (abbreviation from User's Network) – is an international network of teleconferences, which borders stretch far beyond the Internet network. Discussion groups in Usenet are called newsgroups. The newsgroups consist of the articles and responses for the previous publications that users send to the conference. The conferences are grouped in accordance with the strict hierarchy (⇒ see *Examples of the names of the conferences*. Attachment 2).

The messages of the newsgroups are saved not in the mailbox, but in the special news server. The user must sign up to the chosen newsgroups. In fact, it means that the user defines the list of addresses (names) of the newsgroups that would be downloaded to his computer each time the user is logged into the network (downloading and uploading the e-mail).

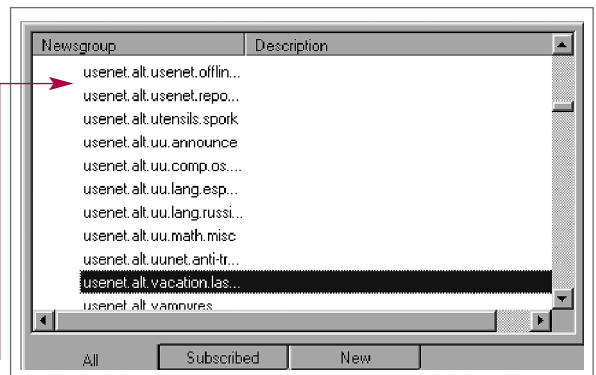
To read the newsgroups the user must add special settings in the mail program he has (Outlook Express):

1. In the **Tools** menu it is necessary to choose **Internet Accounts**. Then open the inset **News** where all the newsgroups the user has an access to are enlisted.
2. To add the new addresses the user should press the button **Add**.
3. With the help of the **Internet Connection Wizard** the user fills out the information about the server of the assigned newsgroup and the subscriber (the user himself) – for example, the nickname the user would use to identify himself within the conference.

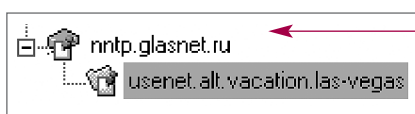


This procedure must be repeated to register each new conference in the list.

The user's computer must be switched to the network within the process of making all settings for the newsgroups. At the moment of logging into the provider's computer (in the pictures the Glasnet server is shown) the Outlook window will be filled with the information about the downloading of the newsgroups' list that the user can have an access to.



If the user chooses any of the **newsgroups** from the list (by clicking the mouse button), he would see its name in the



window of the accessible **Outlook folders** and can read all downloaded messages sent to this conference within a certain period of time. Then, to save the time spent in the network (that is very important at dial-up access) the user can read all messages in off-line mode.



Subscribe to any two of the newsgroups from the Usenet conferences you can have an access to through your provider's newsgroup server (⇒ see *Examples of the names of the conferences*. Attachment 2):

- Conference related to the education and schools _____
- Conference related to travelling _____



Explain what is the difference and similarity of the mailboxes opened on any Internet server for the individual user and for the newsgroups.

III.3.4. Reading the conferences

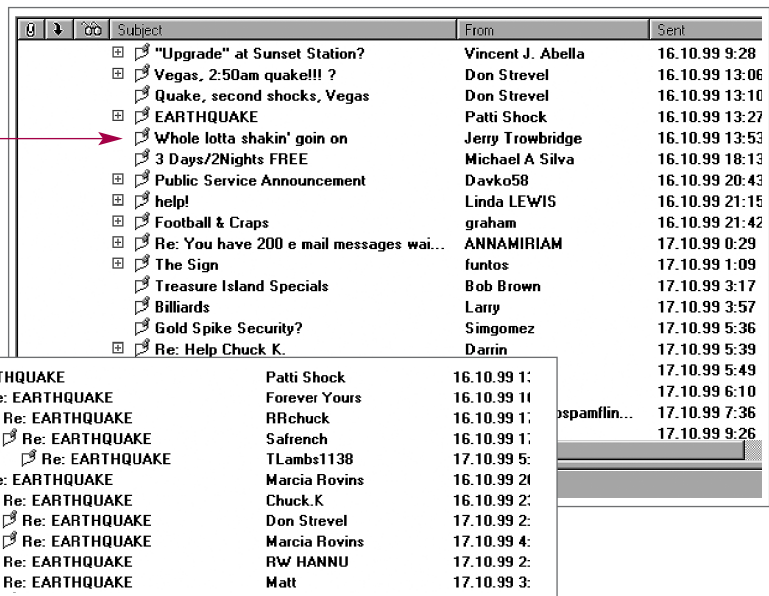
The user applies the same set of commands to read the messages of the off-line conferences as he uses while working with e-mail.

To read the messages from the list in the additional Outlook window one should make a single click of the mouse button. Double clicking on the line with the name of the message will open it to a new window.

It is not easy to read all messages downloaded from the network and get to know how many of them were already read by the user. To help the user the Outlook shows the additional Information message, which appears in the bottom line of the Outlook Express window.

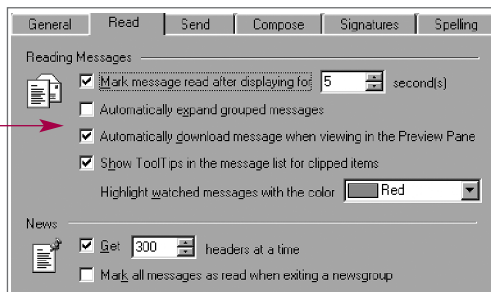
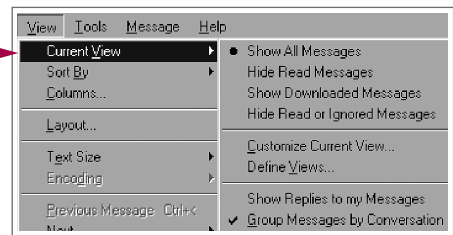
Sometimes it is very difficult to identify the main message that started the discussion from the replies that were added to this message by other users later, because many people discuss many topics within a conference simultaneously. The replies are marked by the abbreviation **Re:** (from referring). In the Outlook message list the user can read only main messages or only one message and all replies to it.

To see the main message and all replies received on it the user must click the button “+” to the left of the message subject. To close the list of replies one must click the button “-”.



To regulate the flow of the downloaded messages from the newsgroup it is possible to do the following:

- To make the message sorting by subject, sender, and the time it was sent.
- To group the messages by the topic of the discussion in the menu **View/Current View**.
- To define the parameters of the messages downloading to the user's computer (the size of the downloaded messages, the time of downloading, etc.) in the menu **Tools/Parameters/Read**.



Download the Usenet newsgroups list on your computer and try to find the newsgroup *israel.internet*. Read some of the messages from this conference. What is it devoted to? Is it popular among the Internet users? Why?

III.3.5. Rules of the netiquette for conferences


The subscribers of the Internet conferences are recommended to study the so-called **FAQ lists (the lists of the Frequently Asked Questions)** that are usually formed by joint efforts of the participants of some network discussion group (newsgroup, or the mailing list) and supported by volunteers. This will let to understand better the rules of the conference and regulations/limitations for the users. Sometimes these lists contain the advices on the technical issues related to the general questions on how to send the messages, formatting and coding of the e-mails, etc.

The user should find and read the very first message that was sent to the conference as the opening message of the new topic (theme) of the discussion. This first message gives the most important information about the objectives of the conference, subscribers' audience and rules for e-mail exchange.

Users should keep to the rules of the netiquette that are very similar to those used within e-mail exchange:

1. To send the replies and main messages keeping close to the main topic of the discussion.
2. Do not discuss the conference itself, the content of the messages published, or the conference moderators.
3. Do not write anything to the conference that you would never write on the open postcard sent by traditional postal service.
4. Do not send the messages with the questions related to the conference procedures and management to the entire conference.
5. Before you write the message to the conference reflex on its content whether it could be interesting to the audience.
6. It is necessary to remember that the messages published in the conference are considered official publications that are regulated by the copyright law.
7. It is prohibited to use the direct advertising within the public conferences.
8. Be very polite with the others.
9. Do not use the conference to exchange e-mails with one partner.
10. Before sending your first message to the conference read attentively the messages that were published in it before.
11. Do not participate in discussion until you clearly understand the main topic of it.
12. Do not interrupt your partners. Let them have their own point of view and let them speak it out.
13. Do not ask private questions (about the gender, religion, job, etc.).
14. If you do not want to use your real name, use the nickname.
15. At the end of the discussion say good-bye to your partner.

Think what could influence the popularity of a conference?

 Analyse the conference Israel.Internet from the point of view of the netiquette. Read the first two messages and lists of the frequently asked questions. Find out, if someone moderates this conference, or not? Is this conference used for direct advertising, business purposes? Does its content correspond to the aims and objectives declared in the main (initial) message?



III.3.6. Real time conferences

Mailing lists, discussion groups or newsgroups – are off-line conferences where the communication between the users is organized by e-mail. There is another type of the Internet conferences that is very popular in today's Internet – online conferences, in which the users can communicate in real time mode either in a form of a *dialog* (with two participants), or a *polilog* (with many participants involved). In real time mode the users may do the following:

- exchange the text messages that are typed directly from the computer keyboard,
- to see and to hear each other, that is supported by the multimedia tools.

There are numerous servers in the Internet that support the real time teleconferences. For example, one of the most distributed systems of real time conferences is called **IRC (Internet Relay Chat)**. Each moment 24 hours per day thousands of the IRC conferences (channels) are active and accessible for users. Every user can open his/her own conference (channel) and invite others to join the discussion.



To join the IRC channels it is necessary to use special software. The users of MS Office 2000 have an option to use the **NetMeeting** program that is included into the Internet Explorer browser on default. The NetMeeting provides the text messages exchange, collaboration in creating graphic objects – simplest outlines, pictures, etc. (there is simple graphic editor like Paint included into the NetMeeting), to exchange files, have audio or videoconferences.

Since the communication between users on the IRC channels is organized in the real time mode, the users must make the preliminary agreements (before the IRC session) on the exact time of the online meeting and choose the channel they want to use.

A typical real time teleconference session includes the following stages:

1. To open the program (NetMeeting).
2. To log into the network server.
3. To look through the channels' lists.
4. To join the selected channel.
5. To communicate.
6. To end the session and log out.

The real time teleconferences depend upon the type and the quality of the Internet connectivity and communication channels. Sometimes it is useful to ask the provider how to skip the big streams in the network to prevent the interruption of the network connections and long-waiting.



Use NetMeeting to have discussion with your partners from the distant office:

1. Open NetMeeting choosing the command **Internet Call** from the menu **Link** and then choosing the button **Internet Call**. (Do not forget to connect to the Internet before doing it).
2. In the **Tools** menu choose the command **Parameters** and then the inset **Call**. Choose what name of the server is shown in the **Server** field (for example, ils.microsoft.com). Choose the server you want to go to, and then press **OK**.
3. After downloading the list of the users, look it through and define how many users chat with each other simultaneously on the channel, where they come from, and if they can use the video and voice options.
4. Find your partners in the list and call them to chat with you.



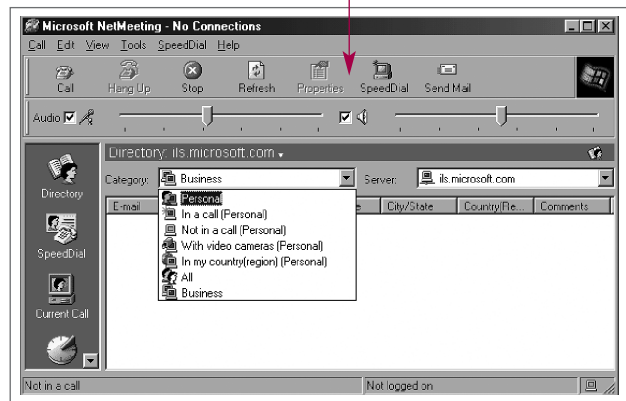
Find the information about the Internet telephones. What is the nearest future of linking the Internet, television and mobile phones together?

III.3.7. NetMeeting

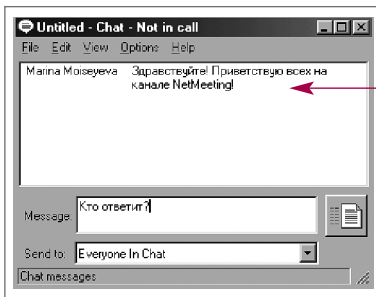
The NetMeeting's main window looks like the Outlook window.

To the left of the NetMeeting window there is a **panel** that is very similar to the Outlook panel. The user operates this panel when it is necessary to change the view of the working screen:

- to look through the content of the server's catalogues and choose the appointed channel;
- to see the list of the contacts that would help join the online NetMeeting discussion;
- to look through the list of people whom you can get in chat with on the same channel;
- to check whom you spoke already to in the process of the discussion, what questions were discussed, etc.

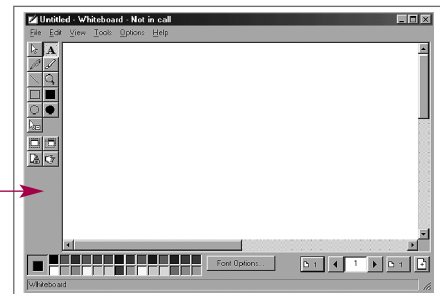


With the active inset **Directory** the user can choose the discussion group he would join from the **Category** field, and the name of the server he would like to be switched to in the **Server** field.



To join the ongoing online discussion it is necessary to give the command **Tools/Chat**. In the window appeared – **Chat** from the **Message** field the user can type messages to send. After that it is necessary to choose the name of the addressee (addressees) in the field **Send To**.

The main window of the NetMeeting shows the messages of all participants of the discussion.



The command **Tools/Board** can open the **graphic editor** accessible for all participants of the discussion.



Experiment with NetMeeting to send the file to your colleagues from the partner's company. To do it:

1. Open the NetMeeting.
2. Choose the user you want to send the file to clicking his name from the list of the inset **Current Call** with the right button of the mouse.
3. Choose the command **Send...** from the context menu.
4. In the window appeared choose the file with the picture you used in previous exercises, and double click the file's name.
5. The status line will help you to follow the procedure of the file transmitting. When the message about the successful transmission appears click the **OK** button.



How do you understand the meaning of the following widely used Internet terms: *software*, *hardware*, *freeware*, *shareware*, and *public domain*.

III.3.8. Collaborative creation and discussion of the documents

One of the most interesting options of the NetMeeting program is collaborative communication in the jointly used application (Word text editor, Excel spreadsheets, etc) that is opened on any participants' computer (for example, the meeting moderator's). In this case the participants of the discussion have an access to the chosen application, in which they can collaborate on creation and discussion of various documents.

To open the text editor choose the command **Tools/Sharing/Text Editor**.

There are two types of sharing the joint software within online collaboration in NetMeeting:

1. *The application is opened on the moderator's computer. Other participants of the discussion can see the document, but can not edit it, or save it on their computer. To edit, and to save is the responsibility of the moderator.*

To do it:

- After the NetMeeting is opened and the channels chosen, the WORD text editor must be opened as well.
 - Press the button **Joint Applications** from the panel of the instruments of NetMeeting. Then choose the names of the users you allow to work with the application (others would see the application, but would fail to work with it).
2. *The application is opened on the moderator's computer. Other participants of the discussion can edit the document, but only the moderator can save it to his computer.*

To do it:

- Open NetMeeting and then – the text editor (Word).
- Press the button **Collaborate** on the panel of the instruments of NetMeeting.
- The participants of the discussion who would like to participate in the collaborative creation of the document can use the application in turn and contribute to it.
- To interrupt the work of any user the moderator should press the button **ESC**.

The finished document is distributed (sent by e-mail) as a file among the participants of the discussion.



How can the real time communication through the Internet be organized? What kind of facilities should the user plug into his computer to participate in the voice (audio) conferences? Videoconferences? (⇒ See *List of recommended publications*. Attachment 1.)





III.4. INTERNET INFORMATION RESOURCES

III.4.1. Types of Internet information resources

III.4.2. MS Internet Explorer

III.4.3. An access to Internet resources

III.4.4. Search engines and catalogues

III.4.5. Web browsing

III.4.6. WWW Favorites

III.4.7. Reading the web pages



III.4.1. Types of Internet information resources

The Internet is not only the e-mail or newsgroups exchange between the users subscribed to. With the help of the Internet the user can get an access to various types of the information stored on numerous network servers:

- data bases (factographic, bibliographic, etc.);
- electronic libraries;
- electronic vocabularies;
- electronic online editions (newspapers, magazines);
- file archives;
- various web pages, etc.

The access to these information resources is provided by special network protocols and client-server software.

The most famous Internet applications used to provide the access to the distributed network information resources are **Telnet**, **FTP (File Transfer Protocol)**, **Gopher** and **WWW (World Wide Web)**.

Telnet – the program that lets the user log into the distant computer networks and operate them. Within the telnet session the user’s computer becomes the terminal of the distant computer and the symbols typed by the user from the keyboard are transmitted to the distant computer.

FTP – the protocol of the files transfer that regulates the rules of the files transfer within the network. The icons of the folders correspond to the catalogues (folders) on the distant computer, and icons of the documents – to the files. To open the required catalogue it is necessary to click its name. Text files (and files of the recognizable types that can be identified by your computer) will be shown by the browser on the screen, while packed and executive files will be downloaded to the user’s computer.

To skip the necessity to remember the numerous commands typed from the user’s keyboard and to automate the search of the information on the Internet sites the integrated system (that absorbed the previous protocols developed) called **Gopher** was developed. Gophers organize the information shown on the browser’s screen in a form of the system of catalogues and menus. Listing the Gopher’s menus the user would see the documents, folders, links to other Internet resources, search engines, etc. Text documents can be read in the Gopher’s window, and others – downloaded to the user’s computer. When the World Wide Web appeared, the Gopher lost its importance and was absorbed by the WWW.

WWW – distributed network system that combines hypertext and hypermedia with graphics, sound, video and distributed applications.



What Internet system would you use:

- To download the file from the distant Internet server to your computer _____
- To search for the assigned information on the Internet _____
- To play chess on a distant computer _____



Visit the Microsoft ftp-server (or ask somebody to show it to you) where you can get various free software programs. Do the following:

1. Open the browser (MS Explorer).
2. In the Address line type ftp://ftp.microsoft.com
3. Browsing the hierarchic file system find the folders (files) related to:

Windows _____

MS Office 2000 _____

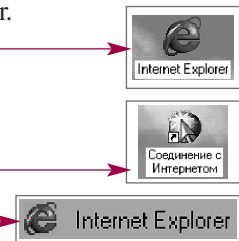
Internet _____

III.4.2. MS Internet Explorer

The set of the programs from the Office 2000 kit includes the popular browser Internet Explorer.

There are several ways to open the browser:

- To make the double click on the **Internet Explorer shortcut** from the Windows' desktop.
- or **Internet Connection shortcut**,
- To open the program by commands of the menus **Start/Programs/Internet Explorer**



MS Internet Explorer browser is developed to navigate the distributed distant resources of the Internet and to work with numerous documents off-line, if these documents can be read in HTML format.

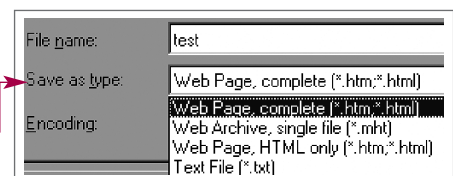
The document published on the Internet (that means the same as “was saved” on one of the Internet site), is called the web page. Each **web page** includes the hypertext links of two types:

- **linear** (to other sections, or paragraphs of the same page under the condition that it is big enough in size);
- **non-linear** (to other documents of the Internet web sites).

With the help of MS Internet Explorer the user can have a lot of options:

- To copy the information from the web page to another document (by command **File/Copy**).
- To print out the information from the web page (by command **File/Print** with all the necessary settings of the printing and the traditional preview option like in other office programs).
- To send the web page to other users of the network (either the whole page, or just the link to it) by commands **File/Send** with the adding **Page by mail**, or **Link by mail**.
- To save the web page on the computer by the command **File/Save**.

The procedure of the web page saving has its own special features depending on what the user really wants to save: text only, or text with the graphics and multimedia components or something else. There are several options to save web page as a defined format choosing this format from the field **Save as type**:



- **Web Page, complete** (saves the entire page with the graphics and styles);
- **Web Page, HTML only** (saves the page without styles and hyperlinks);
- **Text File** (saves the text only), etc.



1. Log into the network and open the browser MS Internet Explorer.

2. After you see the default web page on the screen (as a rule this is the “home page” of the Microsoft corp., or your official provider), save this page on your computer in format Web Page, Cjplete, and then – Text File.

3. Change the mode of the logging to Offline. Open both files by commands File/Open and compare them.



Create the shortcut on the Windows desktop for the quick access to the file saved in web Page Complete format. To do so, open the file in the browser and click the right button of the mouse (the mouse cursor should be placed in the browser's window).

III.4.3. Access to Internet resources

The easiest way to get an access to Internet resources in Office 2000 is to use the browser Explorer.



To get an access to the distant servers the user must type the network address of the assigned server in the Address field of the browser. The network address here is called the URL (Universal Resource Locator).

URL-address contains the information about the exact location of the resource and the way to get it (by WWW, ftp-protocol, Telnet, etc). URL-address consists of two parts divided by a colon:

Name of the protocol://name_of_the_server/way_to_the_file/name_of_the_file

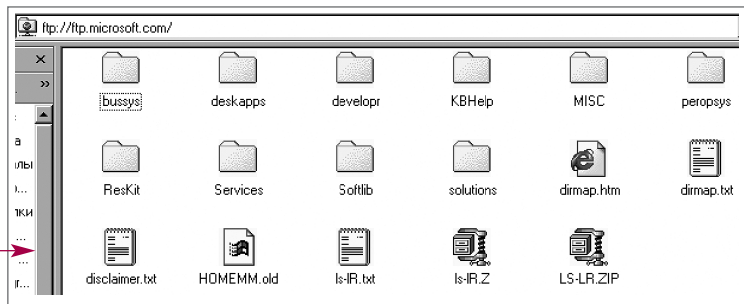
ftp:// – uses the ftp protocol

telnet:// – logging into the distant computer by the telnet protocol

gopher:// – logging into the Gopher servers

WWW:// – logging into the WWW servers

The information on the ftp-servers that have file archives and the information the user get access to with the help of the hierarchic menus of the Gopher system is shown in a form of the computer files of different structure, for example:



- programs (files with extensions EXE, COM);
- documents (files with extensions TXT, DOC, XLS, MDB, PPT);
- pictures (files with extensions PCX, PIC, GIF, JPG, PSD, PDD, BMP, EPS, TIF, CDR);
- audio (files with extensions WAV, SND, MP3, MUS);
- video (files with extensions VDO, MOV, AVI);
- web pages (files with HTM, or HTML extensions).



Explore the FTP servers by sending e-mail to ftpmail@academ.com (United States), or ftpmail@cnd.caravan.ru ftpmail servers. Open the program Outlook Express, compose a new e-mail putting into the address field the address of the e-mail robot. In the body of the message put the following list of commands:

open ftp.simtel.net

cd pub/simtelnet/msdos/disasm/

binary

get bubble.zip

quit

Send the message, and in 5 or 10 minutes check the e-mail. Receive the answer from the robot and read it.

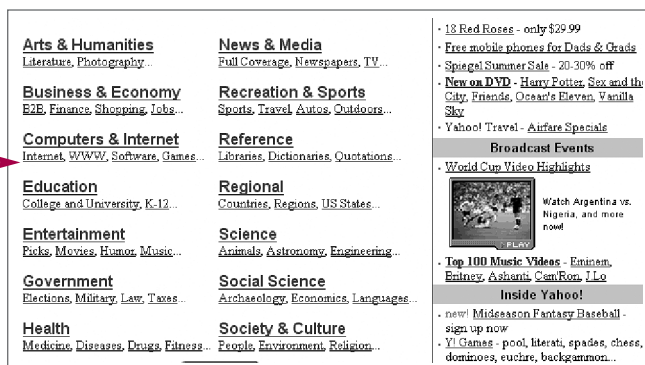


Explain the meaning of the commands executed by the robot on your request: OPEN, CD, GET и QUIT. Where have you already seen these commands?

III.4.4. Search engines and catalogues

To get an access to the Internet information resources the user must know the network address of these resources. Since the Internet is in the process of permanent reconstruction, there is no unified catalog, table of contents, or directory of the resources. During last five years special information search systems were developed that help the users find all they want from the Internet. The examples of these systems are **thematical catalogues and index systems**.

Thematical (subject) catalogues are the information and inquire systems that are developed by “hand processing” of the information collected on different Internet servers and represented in a form of certain hierarchies by **topics**. The upper level of the general topics (categories) includes such topics as “Internet”, “Education”, “Business”, “Arts”, etc., and the lowest level indicates the links to certain web pages and information resources.



To have a quick access to a certain section of the thematic catalog the user can address the in-built system of automatic search by **keywords**. It is necessary to type the keyword, or series of the keywords, or word combinations and then press the button **Search**. The system will answer whether there are any resources on this topic, and if there are some the user can follow the link to go there directly skipping the intermediate sections.

There are few thematic catalogues on the Internet, but they are very popular, for example *Yahoo*, *Galaxy*, or the most famous in Russia – *Rambler*.

Index systems – information and inquire systems that generate automatically the data selected by the special network “intellectual” software – robots in the Internet – that gives **at the user’s request the links** to various Internet documents in return to the key words input. There are much more systems like thematic catalogues. For example, *Google*, *Lycos*, *AltaVista*, and etc.



There are several information and inquire systems in the Russian Internet sector as well. Most of them are integrated combining the functions of thematic catalogues and index systems. These systems, as a rule, are bilingual (support two languages – Russian and English – at the same time). In some cases, they are equipped with a system of Internet documents translation from one language into another.

- Write down no less than ten keywords that you can use to find the information about the Moscow State University.
- Use the Google (www.google.com) to find the links to the sites of the Library of the US Congress, Gutenberg Project Library, Maxim Moshkov Library.
- _____
- _____
- _____
- _____
- _____

III.4.5. Web browsing

On default the Internet Explorer opens with the automatic downloading of the Microsoft web site (www.microsoft.com). The user may change the default settings of the initial page to any other, for example, the provider's home page, one of the user's favorite page, etc. To do this it is necessary to open the Explorer and then the menu **Tools/Internet Options**. On the first of the insets – **General** – in the **Address** field it is possible to input the new **network address** of the home page. This inset can help the user to change the home page settings in the process of networking. After the homepage is downloaded the user must press the button **Use Current**.



To go back to the defined homepage the button **Use Default** is used.

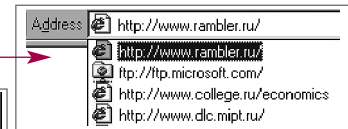


Then to navigate in the World Wide Web the user follows the links. He can move forward, or backward. The easiest way to track the steps made by the user before and then to come back is to use the buttons from the instruments panel **Back and Forward**. To navigate on the pages in any moment of the browsing the user may use the same commands but taken from the context menu – **Back and Forward**.



There are several options to input the address of the resource into the **Address** field of the Explorer:

1. By typing directly in the address field.
2. By copying the address from any other document (for example, from the electronic message, or WORD document) into the address field.
3. By choosing the address from the **list of addresses** that was automatically formed by the program from the names of the web sites the user saw within a certain period of time. The list is opened by **button**



After the address is typed it is necessary to press ENTER button, or click the **Go** button from the instruments panel.



Change the setting of the homepage address of the browser to a new one – <http://www.yahoo.com> – the address of the search engine *Yahoo*. (The students of the distance courses are recommended to input the address of the homepage of the distance course, for example, <http://www.courses.com>).



Open the list of addresses in the address field of the browser and see what web pages you visited frequently during the last several days.

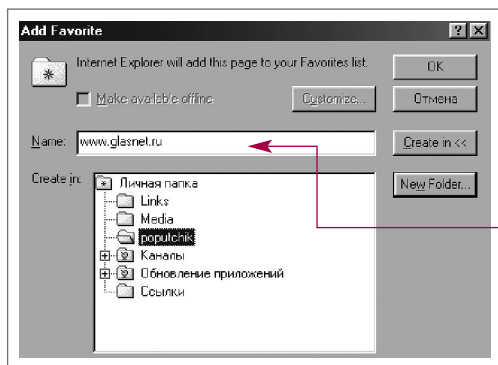


Find the information about the other browser very popular among Internet users – Netscape Navigator. Get to know what is the difference between Netscape Navigator or Netscape Communicator and Netscape Composer? (→ See *List of recommended publications*. Attachment 1.)

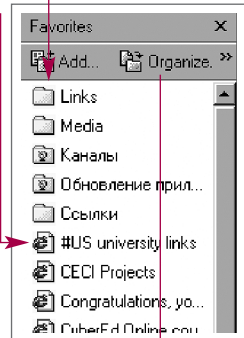
III.4.6. WWW Favorites

Internet Explorer is used as the default browser for MS Office 2000 applications. From each application the user can access the special folder called **Favorites** that is formed automatically within the user's Internet browsing. This folder contains the links to the interesting (favorite) sites the user visited.

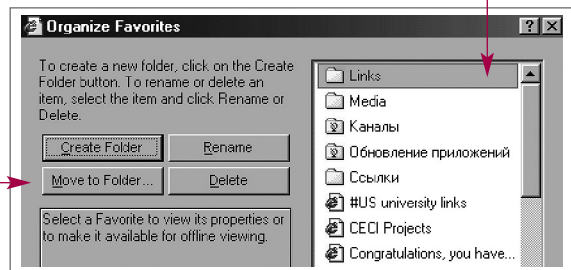
Clicking the button **Favorites** from the instruments panel the user can open the list of the **folders** and **selected links** for the favorite WWW pages directly from the Explorer main window.



To add the web page to the folder **Favorites** in the main menu of the Explorer it is necessary to give the command **Favorites/Add...** In case the user is already online and the defined page is downloaded, the link to this page is written automatically to the folder **Favorites**. Working off-line the user should input the **page address** himself.



To organize the web pages enlisted in **Favorites** the user can create the folders, name and rename them, copy, or delete. These options are accessible from the window **Organize...**

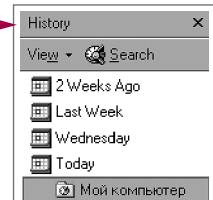


Operating the Explorer the user can find quickly the links to the web pages of the Internet and web documents that are stored on

the user's computer by clicking the button **History** from the instruments panel. In Explorer window other **History window** can be opened as well that would show the user all links for a certain, selected by the user, period of time:



- last two weeks;
- last week;
- last day when the user worked online;
- today.



Open the folder Favorites in the browser and find out what links it contains?

Try to find out as well where on your computer you can see the same folder Favorites (in the main Windows menu, in MS Office)?



Add the address of the educational web site <http://www.education-world.com> to the Favorites folder.



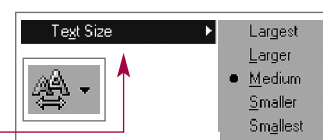
Get to know some Internet sites that could be interesting to those who would like to study on the Net. (⇒ See *List of popular educational sites*. Attachment 4.)

III.4.7. Reading the web pages

Browsing the web pages the user can choose the setting for the screen defining:

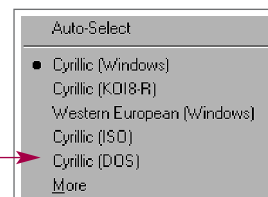
1. The size of the text

One can choose any of five sizes of the text – from the smallest to the largest. It can be done by the commands of the main menu **View/Text Size**, and directly from the panel of the instruments by the button **Text Size**.



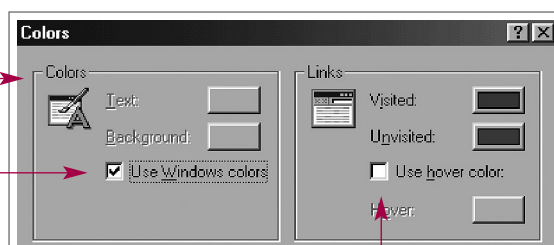
2. Coding

As in the e-mail while web browsing sometimes the text of the screen can be un-readable because of the text coding. The user can change the coding type choosing the right option by command **View/Coding**.



3. Colors of the text, background, and links

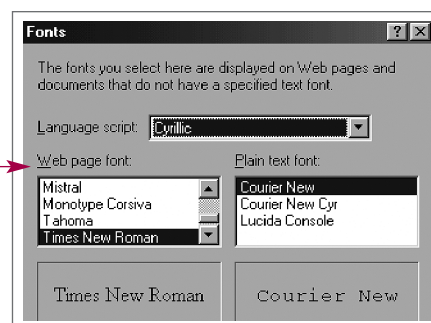
In the menu **Tools/Internet Options** it is possible to press the button **Colors**. In the windows opened the user can define the settings for the **color of the text and background** that would be used at downloading of the web pages from the Internet. To define the color scheme and design in details one can use the flag **Use Windows colors**.



In the same window the user may choose the colors for the hyperlinks – visited, or unvisited by the user. To refuse the underlining of the links (that is unnecessary because the links are already marked by the colors) it is recommended to turn off the flag **Use hover color**.

4. Fonts

Web pages can be created with the set of the fonts on default that the user does not have on his computer. That is why it is recommended to identify what fonts are to be used to **read such pages, or to print, or to save the web page**. This can be done from the window **Fonts** that is called by the button **Fonts** in the menu **Tools/Internet Options**.



In the menu **Tools/Internet Options** the following parameters are set:

- Colors of the links: *yellow* – for visited links, *green* – for unvisited.
- Color of the text – *dark blue*, color of the background – *light gray*.
- Font on default for reading web pages – *Arial*, for saving and printing out – *Courier New*.

With the help of the button **Size** define the size of the font as Large. Log into the network and download the well-known home page of the Yahoo. Observe how the view of the page has changed since the last change of the settings.



Save the home page of the Yahoo (www.yahoo.com) from the main menu of the Explorer (**File/Save as...**). Then open the folder **My Documents**, enter the name of the file – *yahoo*, and choose the type of the file as the *Web Page*, complete and coding as *Western European (Windows)*. Press **OK**. Turn the mode of the work to off-line and open the newly saved file by command **File/Open/Find...**

III.5. TOOLS FOR DEVELOPING WEB SITE IN MS OFFICE 2000

III.5.1. Web site tools

III.5.2. HTML language

III.5.3. HTML formatting

III.5.4. Linking HTML documents with other files

III.5.5. Web page background color

III.5.6. Interactive forms



III.5.1. Web site tools

MS Office 2000 has a wide variety of options to work with documents, that are prepared for publishing on the Internet, that includes:

1. Tools to create documents in hypertext format (HTML).
2. Tools to edit html documents.
3. Tools to publish html documents on the Web.

Working with the documents in MS Office it is possible to save the document in html format (the saved document will have the extension *.htm). It is also always possible to preview the document before it is downloaded to the web site in the mode of the preliminary Preview (for example, like the web-mode in MS Word, or MS PowerPoint). Some of the office programs (first of all, those who are used to create the text documents) like MS Word have

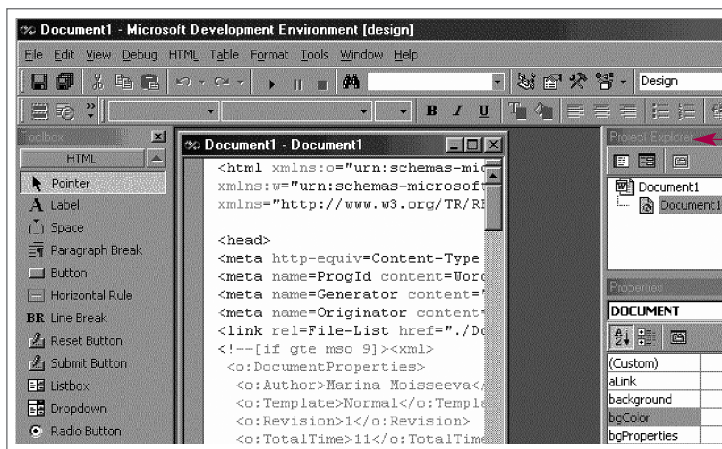


the additional panels of instruments: **Web** and **Web Tools** that can be placed in the window



with the help of the menu View. Web components here are various additional file inserted into the document:

1. Interactive components (buttons, lists, text fields, etc.).
2. Multimedia components (animations, audio files, video files, etc.).



With the help of the **Web components** panel it is possible to open the in-built editor of the scenarios – **MS Development Environment**, that suggests the user to edit the html script of the document, check the hyperlinks of the document with other documents and to change some settings (like the color of the background, the borders and indents, etc.).

To edit the html document, or create it from the very beginning the user can apply the program **FrontPage Express**, which is the simplest html editor.

To publish the ready hypertext documents on a certain Internet site (the user can appoint the site himself) there is a special Wizard of the web editions called **Web Publishing Wizard**.



Open the Web Publishing Wizard by choosing **Start** button from the Windows main menu, then **Programs/Accessories/Internet Tools**. Do the following:

1. Study the procedure of the publication of the documents on the Internet.
2. Use the Help system of the Wizard to understand how the user must organize the documents on the local computer (in the local folder) to prepare them for uploading to the web site.



Which protocol (protocols) or programs of the Internet data transfer were used as the basis of the file exchange procedure between the local computer and the Internet server?

III.5.2. HTML language

HTML (Hyper Text Markup Language) forms the basis of web documents. Looking at the documents more attentively one can see the ordinary text files that include, beside the text, the formatting and content symbols – tags. Tags define (describe) the design of the document (fonts, headers, paragraph indents, background colors, etc.). They help include various illustrations (pictures, animations, graphic objects, interactive components, etc.) into the document, and create hyperlinks between this document and other resources that exist in the Internet already.

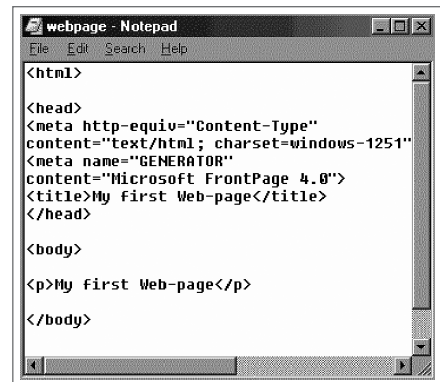
The tags are written with the angular brackets to divide them from the main text, for example, `<title>`.

Tags can be *double* (when they are written for a certain fragment of the formatted text, or the document), for example, `<head>` and `</head>`, or *single*, when they should be applied to a certain place in the text, or to the appointed object, for example `<hr>`, `
`. In the case with double tags the symbol of slash (/) indicates the end of the action for this tag.

Reading the tags each browser opens the document saved in html format on the screen, including the pictures, forming hyperlinks with other documents, or Internet resources. Since each browser executes the formatting of the html-documents in its own way (for example, MS Internet Explorer and Netscape Navigator), the general view of the final hypertext form can vary from the initial variant developed by the user. For example, the interactive web-components that are seen and that are active in the Explorer can be lost in the Netscape, and vice versa. That is why each document that is to be published in the Internet must be tested in different browsers.

The following main double tags mark the structure of the HTML-document:

- `<html>` and `</html>` — define the format of the document (html) and mark the borders of the text document;
- `<head>` and `</head>` — include the description of the document, the key-words for the searching systems, the name of the document, the coding, and other general issues that are applied to the document;
- `<title>` and `</title>` — the name of the web document;
- `<body>` and `</body>` — the “body” of the document (the same as the “body” of the e-mail message) that contains the document itself.



Open the WordPad text editor and then open any of the text documents with *.htm extension available from the **My Documents** folder. Do the following:

1. Study the structure of the document.
2. Find double tags that define the structure.
3. What other tags do you see in this document?
4. Try to “read” them and understand their functions.



Not closing the WordPad open the Explorer in the other window and open the same document in it. Then, in the WordPad editor change the text of the header to any other one (between the tags `<title>` and `</title>`). Save the new document. Go to the browser and click the button **Refresh** from the panel of the instruments. Check whether the design of the header was changed, or not.

III.5.3. HTML formatting

To get a better design of the HTML documents some special tags are used to format the font and paragraphs like in traditional text editors:

- format of the text – `...`,
- format of the paragraph – `<P>...</P>`,
- format of the lists.

Formatting the text the user can define:

1. The relative text size

HTML tags describe the headers by the six different levels – from one to six. The header marked by the first level is the biggest while the header of the sixth level is the smallest.

`<H1>...</H1>`, ... `<H6>...</H6>`

2. The absolute text size

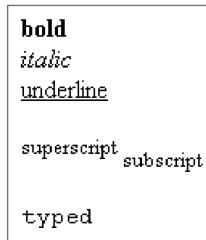
The absolute text size varies from one to seven, and is used mainly to define the main text (body text).

`...`, ... `...`

3. The text effects

The tracing of the text that is described by the following tags:

- `...` Bold text
- `<I>...</I>` Italic
- `<U>...</U>` Underline
- `_{...}` Superscript
- `^{...}` Subscript
- `<TT>...</TT>` The text placed between these tags would be written by the text similar to the typed text.



Formatting the paragraphs the user can define:

1. Text alignment:

For the header – `<H1 ALIGN=LEFT/CENTER/RIGHT>...</H1>`

For the paragraph – `<P ALIGN=LEFT/CENTER/RIGHT>...</P>`

2. New line:

Single tag `
`

3. Horizontal line (divider):

Single tag `<HR>`

Formatting the lists the user can define:

1. Bulleted (unnumbered) list: `...`

Each element of the list will start from the single tag ``.

2. Numbered list: `...`

Each element of the list will also start from the single tag ``.

3. Definitions list: `<DL>...</DL>`

In these lists single tags `<DT>` – for the defined term and `<DD>` – for the definition are given instead of the tag ``.

4. Compact list: `<UL COMPACT>...`



Continue to work with the document in the WordPad. Change the following elements of the text:

1. Relative size of the header for the largest (`<H1>`), and then – the smallest (`<H6>`).
2. Make the header italic.
3. Make the header typed.



What other tags of the text formatting did you find in the document? What do they define?

III.5.4. Linking HTML documents with other files

Being different from an ordinary text, a hypertext provides the immediate transfer from one text fragment to another to include different multimedia components (audio files, animations, etc.) and graphic illustrations into the text. What tags are used for it?

The transfer from one text fragment (document) to another is provided by the tag that has the following form:

<anchors of the initial text>

Here the address of the link is the file that is placed on the local user's computer, or on any other distant computer switched to the network. Anchors of the initial text, i.e., those fragments of the document that would be highlighted with the color to show the place of the hyperlink transfer. Clicking the anchors the user can follow the link going to the document of destination. Anchors can be in a form of the:

- word (words),
- sentences, or headers,
- graphic objects — buttons, pictures, photos, etc.

If the address of the link does not include the name of the catalog, the transfer will be made within the current catalog. If the address does not include the name of the server, the transfer will be made within the current server. The conclusion is that while building the Internet site the user should develop the documents first, and then put them into the corresponding catalogs on the local computer. After testing the site in the browser it would be possible to publish the site on the Internet.

Besides defining the hyperlinks to the text documents published on the Internet the tags can be used to organize the links to other resources of the Internet — ftp-archives, e-mail, etc. For example:

<Download the file>
<Send an e-mail message>

To include the pictures (from the graphic files that were saved in the same catalog as the initial text) the following single tag is used:

This tag can include an alternative text as well. This one is shown in the additional window after the mouse cursor is moved over the picture. It is very useful, if the process of the picture downloading is too slow (the user can understand what kind of picture is coming):

As a rule, the web pages include only compressed graphic files of the GIF and JPG formats.

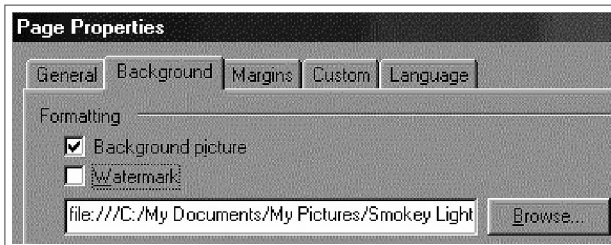


Open the program FrontPage Express. Create a simple web page for your department (your school) using the tags described on the previous pages of this book. Do the following:

1. Type the text in the FrontPage Express window.
2. Insert the picture from the Clipart gallery.
3. Clicking the special button from the panel of the instruments (with the picture of the globe and the binocular) define the conditional hypertext link like <http://www.distkurs.ru>.
4. Create the simplest bulleted list by the standard commands Format/List including the names of your colleagues in it.
5. Save the document by name info.htm.

III.5.5. Web page background color

When the web page is under construction the designer should choose the color of the page's background (**background color**), or the "wallpaper". It can be the basic color from the list of the available colors taken at the inset **Page Properties/Background Color** of the FrontPage Express editor, or any image downloaded from the outer resource of the Internet. This inset can be opened from the context menu.



Putting the flag **Background picture** by the button **Browse...** the user chooses the graphic file that can be duplicated and used as the colored background.

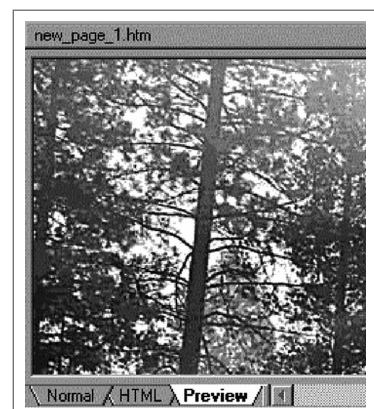
The background color of the page can be set, or changed either for each paragraph separately, or with the help of the double html tag **<body>** that can contain one of possible attributes (descriptions of the characteristics) that define the entire web page (web document):

background="filename.gif"

bgcolor="#FFFFFF"

In order to look through the document in html format in the FrontPage Express editor the user should choose the command **HTML** from the menu **View**.

- ✓ Remember how the browser MS Explorer can change the existing settings of the screen: the color of the font, hyperlinks, and background color.
- 📁 Being in the FrontPage Express editor define the possibilities of the HTML language to describe the special text styles. Do the following:
 1. In the opened document *info.htm* (you've done last time) highlight the name *Information about the school*, or any other.
 2. Open the context menu, then click the name of the inset **Font**.
 3. Change the tracing of the chosen fragment for **citation, sample, blinking**. What would you choose?
 4. Change the background color of the document for the *light gray*. Save the document, then open it in the browser.



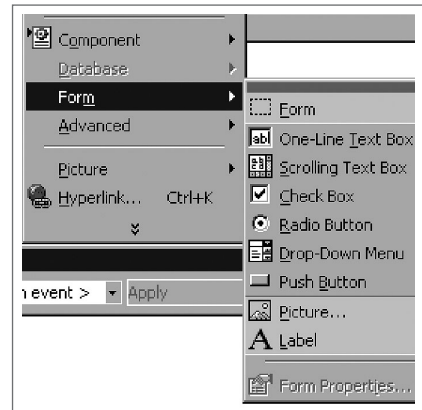
III.5.6. Interactive forms

Even if the user does not know the Java programming language that is used to create complex features of the web pages, he can insert and edit several standard forms (ready forms) from the collection of the FrontPage editor, like:

- simple and scrolling text boxes;
- flags and check boxes;
- drop-down menus;
- buttons.

By these forms the user can interact with the visitors of the web page, to create so-called *feedback* that is organized in a form of:

- the various inquires and questionnaires;
- e-shop ordering forms;
- search fields;
- the visitor's books with open fields for requests and suggestions, etc.



From the menu View the user could open that instruments panel that gives the active buttons of the web forms to be inserted into the document. The other option to get web forms is to do it with the commands of the menu **Insert/Form**.

After the form is placed on the screen (the active field will be marked by the blinking leaders line), the user should do the following:

1. Highlight the form by the click of the mouse.
2. Open the context menu and choose the command **Form Properties...**
3. Fill the data into the dialog window.
4. Check the work of the form in the MS Explorer browser.

There are several wizards in the FrontPage Express editor that can be opened by the command **File/New**: simple page wizard, home page wizard, wizards of forms, orders, and confirmations, etc. Calling the wizard the user should enter his own information instead of the ready conditional text placed in the fields before (the unnecessary text is deleted).



Create the feedback form for the visitors of your web site (your company's web site) in FrontPage Express. Do the following:

1. Use the commands **File/New/General** to call the wizard of the Feedback Form.
2. Following the wizard's hints replace the text information where it is possible with your own one and develop a brief feedback form, that would help you to learn the interests and preferences of your clients.
3. Save the form as the file with the name `opros.htm`.



Go back to the file `info.htm`. Place the marquee with the words like "Welcome to our site!" after the main header in the middle of the page. Do the following:

1. Call the dialog window by commands **Insert/Component/Marquee**.
2. Enter the text into the window and set the parameters of the scrolling.
3. Check the work of marquee in the browser.
4. Save the file.



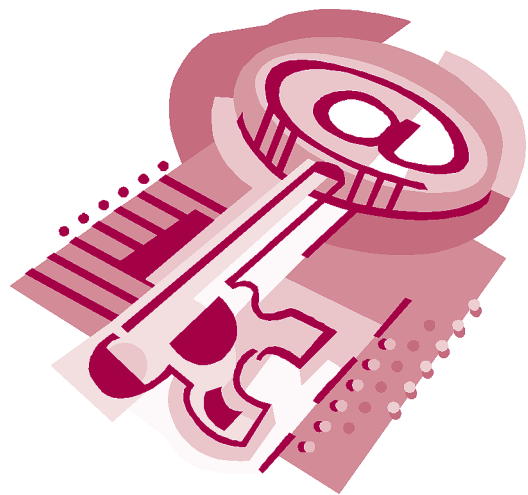
ATTACHMENTS

Attachment 1. List of recommended publications

**Attachment 2. Examples of the names
of the conferences**

**Attachment 3. Examples of the hierarchies
of the USENET newsgroups**

Attachment 4. List of popular educational sites



Attachment 1.

List of recommended publications *

<i>A Brief History of the Internet: The Bright Side, The Dark Side</i> , by Michael S. Hart	http://uiarchive.cso.uiuc.edu/pub/etext/gutenberg/etext95/bhoti01.txt
<i>Atlas for the Information Superhighway</i> Adopted from Crispen's On-line Internet Roadmap Workshop 1996, by Patrick Douglas Crispen and Mark D. Ciampa	http://netsquirrel.com/roadmap.html
<i>Big Dummy's Guide To The Internet</i> , ascii v. 3.21, © 1993, 1999 by the Electronic Frontier Foundation (EFF) – Updated and re-edited as EFF's [Extended] Guide to the Internet	http://www.eff.org/pub/Net_info/EFF_Net_Guide/netguide.eff
<i>Cataloging Internet Resources</i> , A Manual and Practical Guide, by Nancy B. Olson (Editor)	http://www.oclc.org/oclc/man/9256cat/toc.htm
<i>File Formats on the Internet: A Guide for PC Users</i> , by Allison Zhang	http://www.lib.rochester.edu/multimed/contents.htm
<i>Get going with the Internet</i> , by Torben Junker Kjær	http://www.knowwareglobal.com/eng/internet_get_going.htm
<i>Internet Text: Philosophy and Psychology of the Internet</i> , by Alan Sondheim	http://lists.village.virginia.edu/~spoons/internet_txt.html
<i>Internetworking Multimedia</i> , by Jon Crowcroft, Mark Handley, Ian Wakeman	http://www.cs.ucl.ac.uk/staff/jon/mmbok/book/book.html
<i>Make the most out of the Internet</i> , by Torben Junker Kjær	http://www.knowwareglobal.com/eng/most_internet.htm
<i>Netizens: On the History and Impact of Usenet and the Internet</i> , by Michael Hauben, Ronda Hauben	http://www.columbia.edu/~hauben/netbook/
<i>NetWorld!: What People Are Really Doing on the Internet, and What It Means to You</i> , by David H. Rothman [First chapter and links]	http://www.clark.net/pub/rothman/networld.html
<i>Networking Health: Prescriptions for the Internet</i> Copyright 2000 by National Academy Press	http://www.nap.edu/books/0309068436/html/
<i>Online!: A Reference Guide to Using Internet Sources</i> , by Andrew Harnack, Eugene Kleppinger	http://english.ttu.edu/kairos/1.2/inbox/mia_archive.html
<i>PC Webopaedia</i>	http://webopedia.internet.com
<i>Realizing the Information Future: The Internet and Beyond</i> , Copyright 1994 by the National Academy Press	http://www.nap.edu/books/0309050448/html/index.html
<i>Surfing the Internet</i> , by Jean Armour Polly	http://uiaechive.cso.uiuc.edu/pub/etext/gutenberg/etext93/surf10.txt
<i>The Art of Electronic Publishing: The Internet and Beyond</i> , by Sandy Ressler	http://www.prenhall.com/electronic_publishing/html/toc.html
<i>The Hitchhikers Guide to the Internet</i> , by Ed Krol	ftp://ftp.prairient.org/pub/providers/gutenberg/etext92/hhgi10.zip

* You can get the detailed information about the books from this list. Follow the links and enter the name of the book, or the name of the author in the search form:

Online bookstores: <http://www.amazon.com>
<http://www.bn.com>
<http://bamm.com>
<http://booksamillion.com>
<http://www.powels.com>
<http://www.lbookstreet.com>
<http://www.bookssoup.com>

LIST OF RECOMMENDED PUBLICATIONS

<i>The Internet Companion: A Beginner's Guide to Global Networking [2nd edition]</i> , by Tracy LaQuey	http://archives.obs-us.com/obs/english/books/editinc
<i>The Internet Publishing Handbook: For World-Wide Web, Gopher, and WAIS</i> , by Mike Franks	http://www.sscnet.ucla.edu/ssc/franks/book
<i>The Internet's Coming of Age: Technical and Policy Changes</i> , Copyright 2000 by the National Academy Press	http://www.nap.edu/books/0309069920/html/
<i>The User Friendly Guide to Internet & Computer Terms</i> , by Charles Steed	http://www.userfriendlybooks.com
<i>Your Internet Consultant – The FAQs of Life Online</i> , Kevin Savetz	http://www.savetz.com/yic/

**Attachment 2.
Examples of the names of the conferences**

Newsgroups		Mailing lists
news.announce.newuser	tesl-l	(tesl-l@cunym.cuny.edu)
news.announce.newsgroups	e-dairy	(e-dairy@majordomo.net)
relcom.bbs.list	eslcc	(eslcc@hcc.hawaii.edu)
relcom.comp.lang.pascal.misc	ecology-l	(ecology-l@umdd.und.edu)
fido7.coffe-club	english-l	(english-l@coe.missouru.edu)
fido7.books	pit-d	(pit-d@maelstorm.stjohns.edu)
fido7.other.news.answers	gna-vc	(gna-vc@maelstorm.stjohns.edu)
alt.alien.visitors	pedsovet	(pedsovet@ripn.net)
misk.books.technical	dist-edu	(dist-edu@urc.ac.ru)
rec.folk-dancing	library	(library@urc.ac.ru)
sci.antropology	green-travel	(green-travel@peach.ease.lsoft.com)
sci.classics	recalumn	(recalumn@lists.asu.edu)
sci.volcano.jp	bbu-l	(bbu-l@vm.sas.com)
biz.comp.hardware	newbooks	(newbooks@vm.its.rpi.edu)
biz.pagest	jobops	(jobops@listserv.arizona.edu)
misc.jobs.contract	aecm	(aecm@listserv.loyola.edu)
misc.forsale.computers.mac	cyberia-l	(cyberia-l@listserv.aol.com)
relcom.education		
relcom.humor		

Attachment 3.**Examples of the hierarchies of the USENET newsgroups**

comp	Computer hardware and software
humanities	Humanities and arts
rec	Hobby, leisure, and traveling
sci	Science
soc	Social topics
talk	Discussions and forums
misc	Other miscellaneous topics
alt	Alternative
info	Information
biz	Business information about goods and services
k12	School projects
schl	Information for school children and students
relcom	Russian newsgroups

**Attachment 4.
List of popular educational sites**

ProEd World Wide Clearinghouse for Seminars, Conferences, and Executive Programs	http://www.proed.com
The Learning Path	http://www.biddeford.com/learningpath
Lifelong Learning	http://homepages.together.net/~lifelong/
Global Network Academy	http://uu-gna.mit.edu:8001/uu-gna/index.html
Distance Education Clearinghouse	http://www.uwex.edu/disted/home.html
Distance Learning: Welcome to CyberEd	http://www.umassd.edu/cybered/distlearninghome.html
Assiniboine Community College: DENIM Centre	http://www.assiniboinec.mb.ca/denim/
Open University of Great Britain	http://www.open.ac.ru
Open University of Israel	http://www.open.ac.il
Open University of Hong Kong	http://www.ouhk.edu.hk
Open Learning Agency in Canada	http://www.ola.bc.ca/stuserv/dso.html
The University of Southern Queensland, Australia	http://www.usq.edu.au
Pennsylvania State University	http://www.worldcampus.psu.edu
School of Education at Indiana University Bloomington	http://education.Indiana.edu/~disted/index.html
Silicon Valley's Masters Institute	http://www.masterinstitute.edu/
Global English	http://www.globalenglish.com
Distance Education Clearinghouse	http://www.uwex.edu/disted/lobcall.htm
Active Learning	http://www.cti.ac.uk/publ/actlea/
Continuing Professional Development	http://www.openhouse.org.uk/virtual-university-press/cpd/welcome.htm
European Journal of Open and Distance Learning	http://www.nks.no/eurodl
International Journal of Continuing Engineering Education and Life-Long Learning (IJCEELL)	http://www.mscp.edte.utwente.nl/ptk/
The Internet and Higher Education	http://www.sbe.nova.edu/ihe
The Get Educated.com	http://www.geteducated.com
WebNet Journal	http://www.webnetjrl.com



APPENDIX

LIST OF WWW RESOURCES ON THE USE OF THE INTERNET IN EDUCATION



Nº	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
1.	A Basic Guide to the Internet http://library.albany.edu/internet/internet.html	English	USA	A basic guide to the Internet. Each chapter is linked with other useful materials on the Internet and multimedia usage.	3-6	Teachers, students
2.	actDEN (Digital Education Network) http://www.actden.com/	English	USA	ACT360° Media Ltd. provides quality content and new methods of interaction through actDEN (Digital Education Network). With actDEN, teachers and parents can access timely content for classroom or home use, and introduce students directly to the Internet education experience. ActDEN currently offers seven software tutorials, produced in conjunction with Microsoft K-12 Education, and seven exciting DEN courses. Each tutorial and online course offers up-to-date information and interactive features that encourage students to learn, think, and participate in the online community.	0-6	Teachers, parents
3.	Active Learning on the Web http://edweb.sdsu.edu/people/bdodge/Active/ActiveLearning.html	English	USA	The author has been experimenting with different ways of teaching through the web and offers some simple to implement and highly effective techniques of engaging students in active learning.	5,6	Teachers
4.	African Internet Connectivity http://www3.wn.apc.org/africa/projects.htm	English	South Africa	Summary of International ICT Development Projects in Africa. This document lists the activities of agencies with programmes and projects relating to support for ICTs in Africa. The listings are being regularly updated with support from a number of development agencies which have requested research studies in this area, in particular IDRC of Canada.	5,6	Administrators
5.	Algunos modelos de enseñanza para los nuevos canales http://www.uil.es/departamentos/didinv/tecnologiaeducativa/doc--bartolome2.htm	Spanish	Spain	Satellite television, videoconferences and e-mail are new communication channels, which appear in our houses and schools. We must make use of them to foster the education process. The author tries to systematize the above-mentioned technologies and their usage according to some models.	2,3,5	Teachers

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N ^o	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
6.	Alliance for Global Learning http://www.global-learning.org/en/index.php3	English	USA	The Alliance for Global Learning is a strategic partnership among three founding organizations: Schools Online, World Links for Development (WorldL), and the International Education and Resource Network (*EARN). This partnership was created to address the inequities in access to technology and the Internet and to provide educational opportunities for more students worldwide. The Alliance is establishing computer centers and Internet connectivity in schools in Africa, Latin America, and the Middle East.	1–5	Administrators
7.	Applying Big6 Skills http://www.surflife.ne.jp/janetm/big6info.htm	English	Japan	Mike Eisenberg's and Bob Berkowitz' Big6 Skills™ and the national Information Literacy Standards developed by the American Association of School Librarians (AASL) and Association for Educational and Communications Technology (AECT) to organize an introduction to research on the Internet.	0–6	Teachers
8.	Aprender sin distancias http://uoc.terra.es/articulos/josep_maria_duart.html	Spanish	Spain	The Internet has become a communication and information environment changing the modern educational process. Younger people take it for granted as a part of basic education, while adult people often have difficulties adapting themselves to the changes.	2–6	Administrators
9.	AskERIC http://www.askeric.org/	English	USA	AskERIC is a personalized Internet-based service providing education information to anyone interested in education throughout the world. It is now, with the ERIC Clearinghouse, a component of the Information Institute of Syracuse at Syracuse University. AskERIC includes: Question & Answer Service, Resource Collection, Question Archive, Lesson Plans, ERIC Database, Mailing Lists.	1–6	Teachers, administrators
10.	Asynchronous Learning Networks (ALN) http://www.aln.org/	English	USA	Asynchronous Learning Networks (ALN) combines self-study with substantial, rapid, asynchronous interactivity with others. In ALN learners use computer and communication technologies to work with remote learning resources, including coaches and other learners, but without the requirement to be online at the same time. The most common ALN communication tool is the World Wide Web.	4–6	Students, teachers, administrators

№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
11.	BECTa www.becta.org.uk	English	United Kingdom	The Government – led agency on the use of ICTs in education BECTA (British Educational Communications and Technology agency) seeks to evaluate information and communications technologies (ICTs) practice; supports existing applications of ICTs; investigates emerging technologies and associated pedagogy.	2–6	Teachers, administrators
12.	Benchmarking of Virtual Campuses http://www.benvic.odl.org/index.html	English	Spain	Benchmarking of Virtual Campuses projects is coordinated by the Open University in Catalunya. Benvic is aimed at offering to decision-makers systems to evaluate virtual learning platforms. The BENVIC project is developing an evaluation system that can be used as a reference by many other institutions wishing to apply a virtual training system and to have a quality environment.	5,6	Administrators
13.	Berkeley Digital Library SunSITE http://sunsite.berkeley.edu/Teaching/	English	USA	A collection of links to the Internet resources on teaching and training (materials, images, curricular resources).	2–4	Teachers, students
14.	Bilingual Education Resources on the Internet www.edb.utexas.edu/coe/depts/ci/bilingue/resources.html	English	USA	A collection of links to US bilingual education resources on the Internet (English/Spanish): government servers; journals, digests and research resources; Math and Science resources; schools and projects online. The site of the University of Texas.	1–6	Administrators, teachers, students
15.	Blue Web'n Learning Sites Library http://www.kn.pacbell.com/wired/bluwebn/	English	USA	An online library of over 1200 Internet sites categorized by subject, grade level, and format (lessons, activities, projects, resources, references, & tools). Blue Web'n is attempted to catalogue the most useful sites – especially online activities targeted at learners.	1–6	Teachers, students
16.	Building a School Web Site http://www.wigglebits.com/	English	USA	A guide for building a school web site designed for beginners. It covers: the Big Picture – the power of publishing, basic HTML, using a web editor, search engine placement, standards, bandwidth, animation, and more; the Details – simple, step-by-step directions to follow.	2–6	Teachers, students
17.	Busy Educator's Guide to the World Wide Web http://www.glavac.com/	English	USA	The Busy Educator's Guide To The World Wide Web gets educators using the Internet without reading about its history, how fast it's growing or trends for the future. The book emphasizes what a busy educator can use in the class now.	0–6	Teachers

LIST OF WWW RESOURCES ON THE USE OF THE INTERNET IN EDUCATION

Nº	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
18.	Campus virtual e internacionalización de la formación http://cvc.cervantes.es/obref/formacion_virtual/campus_virtual/hidalgo.htm	Spanish	Spain	Teleeducation: the need of the new society. Forms of teleeducation. Teleeducation as a strategic element of CEPADE (Center of Postgraduate Studies for Business Administration). Introduction of teleeducation in CEPADE. Practice example of Brazil.	5,6	Teachers, administrators
19.	Centro de Estudios de Información e Investigación Educativa http://www.fhumyar.unr.edu.ar/ceide/articulos.htm	Spanish	Argentina	The digital journal of the Centre of Studies on Educational Research and Documentation. Virtual pedagogical scenarios, research papers, teacher's services and activities.	0-6	Teachers
20.	CHEST http://www.chest.ac.uk/	English	United Kingdom	CHEST, the Combined Higher Education Software Team, acts as a focal point for the supply of software, data, information, training materials and other IT related products to the Higher and Further Education sectors. At the basic level it agrees on educational discount prices for more than a thousand products, and publishes these in the form of the CHEST Directory. The CHEST Directory is held online, updated daily, and available for free access to the community.	4-6	Administrators
21.	CiberEduca http://www.cibereduca.com/	Spanish	Spain	The educational portal for teachers, psychologists, experts in didactics and parents. Sections available: My Psychologist, My Teacher, Online Courses, Events, Resources, School for Parents.	0-4	Teachers

№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
22.	Ciencia, Cultura y Educación sobre Internet 2 http://encuentro-internet2.reuna.cl/	Spanish	Chili	After the positive experience of the 1st International Meeting "Science, Culture and Education over Internet2", held in April 2001 in Valparaíso (Chile, Fifth Region), the 2nd Meeting is considered highly valuable for Chile and Latin America. From 10 to 12 of April 2001, the national university and scientific communities got familiarized with the stage of development of the new technologies and discovered some of the applications of the Internet2 network.	5,6	Administrators, teachers
23.	CollegeNET http://www.collegenet.com/	English	USA	A search engine helping quickly find the ideal college narrowed down by region, college sports, major, tuition, and several other criteria, over 1,500 customized Internet admission applications built for college and university programmes.	3,4	Students, teachers, administrators
24.	CollegeView www.collegeview.com	English	USA	The site is intended for undergraduates and graduates, who are choosing a career or searching for employment, provides the whole range of information on the topic including financial aid and scholarship.	3-6	Students, administrators
25.	Common Ground: A Cross-cultural Self-directed Learner's Internet Guide http://lone-eagles.com/guide.htm	English	USA	This guide is specifically intended to be used as a customizable resource for citizens. It presents four levels of self-empowerment: Becoming a Self-Directed Learner; Self-Publishing Globally; Building Learning Communities; Global Citizenship and Enlightened Expectations.	3-6	Students, teachers
26.	Community Learning Network http://www.cln.org/	English	Canada	CLN is designed to help K-12 teachers integrate technology into their classrooms. CLN has over 265 menu pages with more than 5,800 annotated links to free resources on educational WWW sites -- all organized within an intuitive structure. Since September 1996 visitors from 165 different countries have made over 16 million hits on the CLN web site.	0-3	Teachers

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№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
27.	Computer Integration for Elementary Grades http://www.edu.pe.ca/publications/journey.pdf	English	Canada	This paper brings specific information and ideas relevant to P.E.I. elementary teachers working toward the IT integration. The document begins with broad understandings and planning tools in Part I, and moves to specific, detailed lesson plans in Part II.	1	Teachers
28.	Conducting Research on the Internet http://library.albany.edu/internet/research.html	English	USA	The Internet provides access to a wealth of information on countless topics contributed by people throughout the world. On the Internet, a user has access to a wide variety of services: electronic mail, file transfer, vast information resources, interest group membership, interactive collaboration, multimedia displays, and more. The Internet consists primarily of a variety of access protocols. These include e-mail, FTP, HTTP, Telnet, and Usenet news. Many of these protocols feature programs that allow users to search for and retrieve material made available by the protocol.	3–6	Teachers, students
29.	Creating Virtual Learning Communities in Africa: Challenges and Prospects http://www.firstmonday.dk/issues/issue5_5/darkwa/	English	USA	This paper discusses the growing application of information and communication technologies in Africa and other parts of the world. It examines the global information technology revolution gaining momentum and the way in which it is transforming educational institutions. It then discusses the current state of distance education in Africa, identifying the institutions offering distance education and the nature of the delivery platform used. The prospects and challenges in introducing distance education to Africa tertiary institutions are discussed. Finally, it offers suggestions to overcome the challenges confronting technology-based education in Africa.	0–6	Teachers, administrators
30.	Critical Evaluation of Resources on the Internet http://www.library.ualberta.ca/guides/criticalevaluation/index.cfm	English	Canada	The article is intended to provide assistance in evaluating resources on the Internet. Unlike most books and journal articles, which undergo a peer review process prior to publication, anyone can publish anything on the Internet. For that reason, it is imperative to critically evaluate all information taken from resources on the Internet.	5,6	Teachers, students
31.	Diffusion and Uses of Internet in Catalonia and Spain http://www.uoc.es/m3/wp/picwp1201/	English	Spain	This working paper summarizes and analyses the statistics provided by available studies on the spread and uses of Internet in Catalonia, in Spain, and in selected Spanish regions circa 2001. A database was established by collecting and evaluating studies and surveys from various sources.	1–6	Administrators

Nº	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
32.	Digital Librarian http://www.digital-librarian.com/	English	USA	Selected links for easier navigation on the Internet categorized by topic.	0-6	Students, teachers
33.	Distance Education in Developing Countries http://members.tripod.com/stewart_marshall/	English	South Africa	The site is intended for anyone who is involved or interested in distance education and who would like to contribute to a knowledge database about its use in developing countries. The sections of the site currently include: Distance Education in Developing Countries; Institute of Distance Education; Borderless Education; a discussion list.	2-6	Teachers, administrators
34.	Distance Learning in Higher Education http://www.chea.org/Research/distance-learning-3.cfm	English	USA	The materials concerning DL in Higher Education: national surveys, policy issues, and virtual universities.	5,6	Administrators, teachers
35.	EDmin.com http://www.edmin.com	English	USA	Edmin.com is the solution for assessment, technology use planning, and implementation for schools, districts, and related agencies.	-	Administrators
36.	EdSurf http://www.edsurf.net/	English	USA	The Online Distance Education Learning Resource for Adult Students. DE catalogs, guides, free online courses software, resources.	4,5,6	Students, teachers
37.	Educación a distancia utilizando Internet: experiencia en cursos de postgrado de la Universidad Nacional de La Plata http://cvc.cervantes.es/obref/formacion_virtual/campus_virtual/osorio.htm	Spanish	Argentina	The paper demonstrates how a set of economic tools used properly can help in organizing a postgraduate distance learning course expanding the horizons of students.	6	Teachers
38.	EducaRed http://www.educared.net/asp/global/portada.asp	Spanish	Spain	The project EducaRed promotes the integration and educational usage of the Internet in schools and the impact of pedagogical innovation through the EducaRed network.	0-6	Teachers

LIST OF WWW RESOURCES ON THE USE OF THE INTERNET IN EDUCATION

No	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
39.	Education and Internet http://m.iwa.hokkyodai.ac.jp/education/internet/	English, Japanese	Japan	Japanese site on education via the Internet. The site sets examples of Internet projects, TV conferences, the use of satellite communication.	2-6	Teachers, IT Specialists
40.	Education Home Page www.columbia.edu/~sss31/Education/	English	USA	Links to educational resources. A personal homepage kept under continuous review and revision.	2-6	Administrators, teachers
41.	Education Index www.educationindex.com	English	USA	An annotated guide to the best education-related sites on the Web sorted by subject and life stage. More than 3,000 sites in 66 categories.	1-6	Teachers, students, administrators
42.	Education Internet Guide: Sources for Theory, Practice, Teaching and Research http://www.library.usyd.edu.au/Guides/Education/index.html#xref01	English	Australia	Education Internet Guide: Sources for Theory, Practice, Teaching and Research includes primary and secondary sources on the structure, administration and content of education, and its related systems and institutions.	0-6	Teachers
43.	Education Network of Ontario http://www.enoreo.on.ca/index.htm.en	English	Canada	The Education Network of Ontario/ Réseau Educatif de l'Ontario (ENO/REO) provides a wide range of telecommunication services for the JK-12/OAC education community in Ontario, including Internet access, member email accounts, student and teacher education projects and a large number of online education conferences/news groups. The network can also provide LAN and WAN connectivity solutions for Ontario boards of education and other public service agencies.	0-4	Teachers, students
44.	Education Network Planning Guide http://www.adc.com/Library/EducationGuide.html	English	USA	Within this guide, you will find "typical" multicampus university network drawings from the wide area network down to the desktop highlighting ADC's product solutions. Further product description follows to help you choose the best product to fit your network.	4-6	Teachers, administrators
45.	Education Planet http://www.educationplanet.com/	English	USA	Education Planet delivers high quality educational resources, tools and services that empower K-12 teachers, students, parents and administrators to effectively and creatively utilize the web for education. Currently, Education Planet hosts over 100,000 quality educational resources, including over 16,000 lesson plans.	0-4	Teachers, students, administrators

No	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
46.	Education Sites on the Web http://www.atlantic.net/~bdar/educate.html	English	USA	The site contains the following sections: libraries and books on the Web, Museums on the Web, Student College Info; Helpful Teachers Links; Employment Links; Scholarship Loan Info; Educational Search Engines.	0-6	Teachers, students
47.	Education Supersite http://www.petersons.com	English	USA	The site is intended to organise information on educational technologies at all educational levels (Colleges and Universities, Graduate Programs, Study Abroad Programs, Summer Camps, Jobs, Private Schools, Executive Education Programs).	1-6	Teachers, administrators
48.	Education World http://www.education-world.com/	English	USA	A specialized system on the world educational resources, including a database with over 100,000 references to various information resources on education. The database is well structured and has quite powerful search system.	1-6	Teachers, students, administrators
49.	Educational Internet Resources/ Home Page by Guy Williams www.the-spa.com/guy.williams/main1.htm	English	USA	Web page by Guy Williams, the consultant for the US Department of Education. The page contains references to educational resources, online libraries, educational organizations and programs, exhibitions and museums, school and community networking resources.	1-6	Teachers, administrators
50.	EDUCAUSE (Transforming Education Through Information Technologies) http://www.educause.edu/	English	USA	EDUCAUSE is a non-profit association, which mission is to advance higher education by promoting the intelligent use of information technology. The site contains events, news, information resources, discussion lists, membership information.	5,6	Administrators
51.	EDUTECH/TECFA at the University of Geneva, Switzerland Faculty of Psychology and Educational Sciences (FPSE) http://agora.unige.ch/tecfa/edutech/	English	Switzerland	An online resource for education and technologies offering a variety of options, including sites of the month, an alphabetical search for themes, a query search, and an opportunity to submit a theme to Edutech's database.	5,6	Teachers
52.	EduWeb http://www.eduweb.co.uk	English	United Kingdom	Huge library of articles, pictures and multimedia clips from top UK education and media sources; e-mail systems designed for schools; lesson ideas and resources for Windows computers; whole-class teaching service with online bank of ready-made Maths activities; comprehensive, interactive Maths teaching and assessment resource; thousands of selected educational web links.	1-3	Teachers

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Nº	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
53.	Efectos de un programa de educación virtual sobre los conocimientos de los docentes acerca del uso de las nuevas tecnologías de la información y comunicación con fines educativos http://www.cibereduca.com/temames/ponencias/sept/p69/p69.htm	Spanish	Spain	The paper contains the following chapters: Justification, Theory, The Use of ICTs in Education, Heuristic and Algorithmic Approaches, Pedagogical Basis for the Use of ICTs in Education, Pedagogical Use of the Internet, Advantages and Challenges of the ICTs Use in Education, etc.	6	Teachers
54.	ERIC/ Educational Resources Information Center http://ericae.net/	English	USA	The ERIC Clearinghouse on Assessment and Evaluation provides information concerning educational assessment, evaluation and research methodology.	1–6	Administrators, teachers
55.	Evaluating Web Sites for Educational Uses: Bibliography and Checklist http://www.unc.edu/cit/guides/irg-49.html	English	USA	Librarians and other information specialists share their expertise in evaluating web information resources in the articles listed in this document. Included in this resource guide is a checklist of questions to ask when evaluating a Web site as a potential educational resource. More checklists are available in the articles cited.	5,6	Teachers, librarians
56.	Federal Resources For Educational Excellence http://www.ed.gov/free/	English	USA	On 18 April 1997 the U.S. President asked Federal agencies to determine what "resources they can make available that would enrich the Internet as a tool for teaching and learning." In response, more than 30 Federal agencies formed a working group to make hundreds of federally supported education resources available at this web site.	0–6	Teachers, administrators
57.	Formación universitaria por medio de la web: un modelo integrador para el aprendizaje superior http://uoc.terra.es/articulos/duart/duart_pdf_esp.html	Spanish	Spain	The article is an extract from the book "Virtual Learning", (Aprender en la virtualidad). The book is targeted at teachers and educational specialists in the field of graphic and educational software design and contains texts helping them organize their work in the virtual environment.	5,6	Teachers

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58.	Free-ed.net (Free Education on the Internet) http://free-ed.net	English	USA	Free online courses, tutorials, and study guides. The classification by knowledge fields is provided.	4,5	Students
59.	FunBrain.com http://www.funbrain.com/	English	USA	FunBrain.com was founded by associates of a Chicago based software company that specializes in developing risk management and training systems for banks and options traders. Applying the same technology to kids learning games quickly produced the number one education site for K-8 kids and teachers.	0-2	Students, teachers
60.	Getsmarter.org http://www.getsmarter.org/index.cfm	English	USA	The assessments on Getsmarter.org allow anyone to compare performance of his math and science skills on a uniform basis, universally. In addition to self-assessment, Getsmarter.org provides tools for learning and self-improvement. For high school students, MSTV (Math & Science Television) excites visitors about math and science by giving interactive, real-world examples of why the subjects are so important in their daily lives.	1-3	Students
61.	Global Campus http://www.csulb.edu/~gcampus/	English	USA	Global Campus is a collaborative multimedia database containing educational materials (images, sounds, text, and video). The goal of the project is to share resources through technology by providing a central "campus" where institutions may make their resources available on the WWW.	4-6	Students, teachers
62.	Global Information Networks in Education/GINIE http://www.ginie.org/	English	USA	The objective of Global Information Networks in Education (GINIE) is to improve the quality of education in the countries currently facing the crisis or passing the transitive period. The site contains online searchable database, online conference, mailing list.	1-6	Administrators
63.	Global SchoolHouse http://www.gsn.org	English	USA	The system contains an alphabetic catalogue of references to teaching and information resources used in the secondary and pre-school education.	1-3	Teachers

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64.	GlobeWide Network Academy http://www.gnacademy.org/	English	USA	<p>The Site contains a large catalogue on DE and reference information on books devoted to the DE questions. Includes information on the forum on systems of virtual reality with the built-in MOO programming language.</p> <p>The DE catalogue has quite powerful search system and is also well structured (inquiry may be performed on a header, authors of the course (project), languages, educational level (pre-school, secondary, etc.), in accordance with the form of presented information (online courses, programs, educational, scientific and research and methodical materials), that simplifies the user's task on finding required information.</p>	4-6	Students, teachers
65.	GoCollege http://www.gocollege.com/	English	USA	Paid information retrieval system providing the following services: search for a college; search for required educational programmes (includes the list of programmes in the database); online test of your knowledge; references to various educational resources; search for higher education institutions; chat.	4,5	Students
66.	Herramientas de búsqueda para la WWW http://www.cibereduca.com/temames/ponencias/sept/p127/p127.htm	Spanish	Spain	The paper describes documentation facilities of the WWW and studies various types of tools for information search and retrieval.	4-6	Teachers, students
67.	HighWired http://www.highwired.com/	English	USA	HighWired delivers solutions for schools to integrate technology into the classroom in ways that engage and improve performance of the entire school community – teachers, administrators, students, parents, and alumni.	0-4	Teachers, administrators, students

№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
68.	ICTs and Distance Education: Groundbreakers in Industrialization? http://www.acef.ca/revue/XXVII-2/articles/Provost.html	French	Canada	This article takes as its starting point studies on the role played by ICTs in the industrialization of education. Its objective is to determine to what extent the issues raised by this research are present in distance education. It deals notably with the productivity increases ICTs have been expected to bring about, as well as the confrontation caused by new learning environments between the market (and public) mentality and teaching. The article also describes other parameters necessary for the success of ICTs.	0–6	Teachers
69.	ID21 Education: Communicating. Development. Research http://www.id21.org/education/index.html	English	United Kingdom	ID21 is a fast-track research reporting service funded by the UK Department for International Development (DFID). It aims to bring UK-based developments to policymakers and development practitioners worldwide. ID21 aims to be part of the process of putting policy into practice. Online, in print and through the southern media, ID21 showcases recent research findings and policy lessons on major development issues.	0–6	Administrators
70.	IEARN (International Education and Resource Network) www.igc.apc.org/learn	English	USA	International Education and Resource Network with the participants from 48 countries. Information on meetings and conferences, discussion groups, joint projects, database on projects, information on educational resources (article, student's publications, books, video, etc.), database on schools project-members.	1–3	Teachers
71.	iGuide – Israeli Internet Guide: Education http://www.iguide.co.il/english/19.html	English	Israel	Israeli Internet guide to education. Universities, K12, other educational institutions, religious education, educational organizations.	0–6	Teachers, administrators
72.	Informika / State Institute of Information Technologies and Telecommunications http://www.informika.ru/text/index.html	Russian, English	Russian Federation	The server of the State Institute of Information Technologies and Telecommunications. The information system for education in the Russian Federation.	1–6	Administrators, teachers

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№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
73.	Interactive Teaching Network http://www.gactr.uga.edu/conferences/calendars/itn/index.html	English	USA	The Interactive Teaching Network (ITN) is a self-supporting outreach service provider located in the Department of Special Education at the University of Georgia. Providing in-service and pre-service training, ITN has produced over 47 interactive satellite-based programs with sites in 48 states and Canada and with over 60,000 participants.	1–4	Teachers
74.	Internet for Schools http://www.internetforschools.co.uk	English	United Kingdom	Internet for Schools is a free service provided by Electronic Telegraph, to help teachers and students get more out of the Internet. Education news, unofficial guides to UK universities, useful links.	1–6	Teachers, students
75.	Internet Gateway Education Suite http://www.vicomsoft.com/vig/edu/edu.info.html	English	USA	Internet Gateway Education is designed for Schools, Colleges and University networks connecting to the Internet. The Education version contains the full Internet Gateway feature set (Content filtering, a robust Firewall and support for VPN, DHCP Server, Access rights and CyberNOT, Remote Control and comprehensive Logging information) and includes a one year subscription to the CyberNOT content filtering list.	1–6	Teachers, students, administrators
76.	Internet in the Classroom http://courseweb.tac.unl.edu/rhondac/classrm.html	English	USA	A list of links enabling K–12 educators to find useful Internet resources. The following sections are included: Curriculum Sites (K–12); Especially for Kids!; Online Classrooms; Teacher Resource Sites; Policy/Safety/Ethics Issues; Internet Tutorials/Guides; Internet Staff Development.	0–4	Teachers
77.	Internet Issues in Africa http://www.middlemarch.co.nz/anne/africa/intro.html	English	Australia	This essay discusses the Internet-access issue ranked as the most pressing in the literature, considers the benefits to the African people, examines three selected issues: education, literacy and censorship, briefly discusses the relationship between culture and development, concludes with a personal perspective on any perceived benefits.	1–6	Teachers, administrators
78.	Internet resources for Elementary Mathematics Educators http://www.math.ttu.edu/~dmettler/title.html	English	USA	This is a set of resources, which would be useful to the elementary math teacher, student teacher, or per service math teacher, as well as sites that are suitable for use in the math classroom by students or by parents of the elementary math student.	0–3	Teachers

№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
79.	Internet Special Education Resources http://www.iser.com/	English	USA	A nationwide directory of professionals who serve the learning disabilities and special education communities. The system is designed for simplification of search for experts in the field of education to help with learning disabilities and attention deficit disorder assessment, therapy, advocacy, and other special needs.	0–4	Teachers, parents
80.	Internet Teacher Tools http://www.kn.pacbell.com/wired/fil/pages/listteacher12.html	English	USA	Free Teacher Tools on the Internet. The links for Student Communication sites, Free Teacher Web Sites, Templates for Web Based Activities (housed on their server), Worksheet Generators, and Online Practice/Test Generators.	1–4	Teachers
81.	Internet Use by Teachers http://www.crito.uci.edu/TLC/findings/Internet-Use/startpage.htm	English	USA	TLC survey to Internet use by teachers and their students. An earlier analysis of the same data was presented at Tel-Ed 1998, San Antonio, TX, October 30th, 1998. This paper provides a revised and more extended analysis, and includes information about Internet use by teachers.	1–4	Teachers
82.	Internet: herramienta y desafío para docentes http://www.cibereduca.com/temames/ponencias/sept/p92/p92.htm	Spanish	Spain	There is a wide range of issues related to learning and teaching. The aim of the following article is to inform us about the role of the modern teacher faced with the boost of ICTs in education.	3–6	Teachers
83.	InterNIC Academic Guide to the Internet http://www.aldea.com/atf/atfright12.html	English	USA	The InterNIC Academic Guide to the Internet is the guide created especially for the Higher Education community. Its mission is to develop the primary Internet resource of and for the research and academic community.	5–6	Teachers, students, researchers
84.	K–12 from Japan http://okumedia.cc.osaka-kyoiku.ac.jp/educ/index-e.html	English, Japanese	Japan	Links to the K–12 and related educational information (Schools, Resources and Projects) in Japan.	0–3	Teachers, administrators

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№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
85.	Kaplan Educational Center http://www.kaptest.com/	English	USA	A guide for undergraduates searching for college. Test preparation, admissions and tutoring.	3,4	Students, teachers, parents
86.	Kid's Web http://www.npac.syr.edu/textbook/kidsweb/indexold.html	English	USA	Kid's Web goal is to present students with a subset of the Web that is very simple to navigate, and contains information targeted at the K-12 level. Each subject section, contains a list of links to information that is understandable and interesting to school kids. There are also links to external lists of material on each subject, which more advanced students can browse for further information.	0-2	Students
87.	Knowledge Integration Environment http://www.kie.berkeley.edu	English	USA	KIE is a learning environment that uses the Internet to help middle and high school students develop an integrated understanding of science and a critical eye toward the complex resources found on the Web. KIE project explores innovative uses of the Internet and World Wide Web for K-12 science instruction.	3	Teachers, students
88.	La Aldea Digital en Soria http://adigital.pntic.mec.es/upe.de.soria/index.htm	Spanish	Spain	The virtual campus for rural education. The organization is aimed at creating environments facilitating and speeding up the educational process.	1-3	Teachers, administrators
89.	La calidad en las experiencias virtuales de educación superior http://uoc.terra.es/art/uoc/0106024/sangra.html	Spanish	Spain	The article analyses the current debate on the quality of virtual higher education offered to the public and sets a reference point for the most appropriate parameters for evaluation of such institutions.	5,6	Administrators
90.	La formación en web: del mito al análisis http://cvc.cervantes.es/obref/formacion_virtual/campus_virtual/sangra2.htm	Spanish	Spain	The description of the postgraduate course for specialists in instructional multimedia design at the Open University of Catalonia.	6	Teachers, students

№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
91.	La tecnología de Internet en la docencia: Herramientas para la formación del profesorado http://cvc.cervantes.es/obref/formacion_virtual/campus_virtual/taverner.htm	Spanish	Spain	Model of instructional design; detailed description of stages of instructional design; tools and resources for each stage.	6	Teachers
92.	Learn the Net http://www.learnthenet.com/english/index.html	English	USA	Learn the Net focuses on delivering high quality electronic educational products and services to the desktop via the Internet and intranets. A Web-based tutorial for Internet novices and a source of educational and technical assistance for all users.	2-5	Teachers, students, administrators
93.	Learners Online http://www.learnersonline.com/	English	USA	Learners Online is a monthly e-journal that brings you the newest and best educational resources on the Net. Millions of tremendous educational sites are on the Web, but few people have the time or the expertise to find even a fraction of them. For a monthly payment, Learners Online compiles hours of Internet research and lesson planning.	0-6	Students, teachers
94.	Learning on and over the Internet: Dynamics and Limitations: Project Report http://users.otenet.gr/~kar1125/education.htm	English	Greece	This paper reports on the findings of an online investigation intended to explore the educational function of the Internet by analyzing the ways the learning opportunities are presented and utilized on and over it, in an attempt to understand the trends of changes in learning technology and how these changes affect adult learners.	4-6	Teachers
95.	Learning Together with the Internet: Teacher and Student Resources http://educ.queensu.ca	English	Canada	Queens University Faculty of Education resource center.	5,6	Teachers, students
96.	Lightspan Inc. http://www.lightspan.com	English	USA	Lightspan Inc., a provider of curriculum-based educational software and Internet products and services, is guided by a simple principle: there is no limit to what students can achieve when provided with tools that motivate them to learn.	1-4	Teachers

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97.	Mass Networks Education Partnership (MNEP) http://www.massnetworks.org/	English	USA	The mission of MNEP is to impact education policy and support the infusion of technology in the education system to improve staff development, teaching, and learning. MNEP provides strategic input to technology-facilitated efforts aimed at creating the conditions that lead to improved student's learning outcomes. Links to MNEP main initiatives.	0-4	Administrators
98.	NACADA's Technology in Advising Commission http://www.psu.edu/dus/ncta/	English	USA	NACADA's Technology in Advising Commission is called upon to help academic advisors in understanding the impact on academic advising of technologies such as the World Wide Web, e-mail, degree audits, telephone and online registration, and student information systems.	4-6	Administrators
99.	National Education Association http://www.nea.org/	English	USA	The web site of the National Educational Organization, committed to advancing the cause of public education at all levels across the USA. A huge information resources collection.	0-5	Teachers, students, administrators
100.	NetDay http://www.netday.org/	English	USA	NetDay's mission is to help educators "think beyond" the technical connections of computers and the Internet to educational results, and to connect people by creating environments where the magic of learning for all participants – students, teachers, administrators, parents, and community members – is enhanced through the use of appropriate technology resources.	1-4	Teachers
101.	Office of Learning Technologies http://olt-bta.hrdc-drfhc.gc.ca	English	Canada	The Office of Learning Technologies (OLT) was established in 1996 within Human Resources Development Canada (HRDC), as a partner in building a culture of lifelong learning. The OLT works to raise awareness of the opportunities, challenges and benefits of technology-based learning and to act as a catalyst for innovation in the area of technology-enabled learning and skills development.	1-4	Administrators
102.	Online Class www.onlinedclass.com	English	USA	K-12 educational resource combining interactive learning (work in collaboration with other schools) and lesson plans based on the Internet resources for individual use.	1-3	Teachers
103.	Online Internet Institute http://oii.org/	English	USA	The online Internet institute originally designed to simplify the teachers process of improvement of educational courses on the basis of advanced technologies in education. The system currently operates as versatile, based on the educational standards, assisting the teachers and learners in organization of educational process.	2-6	Teachers

N ^o	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
104.	<p>Overview: Research on IT in Education http://www.iste.org/research/reports/tt/cu/overview.html</p>	English	USA	<p>This paper is designed as background reading for PreK–12 educators taking IT short courses and workshops. It presents an overview of the current research on information technology (IT) and some of its roles in improving education.</p>	0–3	Teachers
105.	<p>Pedagogical Internet in Russia http://www.emissia.spb.su/offline/a610.htm</p>	Russian	Russian Federation	<p>A collection of links to pedagogical Internet resources of Russia: DE institutions, information servers for education, pedagogical universities, centers for educational informatization.</p>	1–6	Administrators, teachers
106.	<p>Posibilidades educativas de las herramientas de comunicación informáticas aplicadas en la enseñanza presencial http://www.cibereduca.com/cursos/cursos-hc.htm</p>	Spanish	Spain	<p>Description of the online course provided by CiberEduca: Objectives, Programme, Methodology, Materials, Certificate–Diploma, Price, and Application Form.</p>	5,6	Students, teachers
107.	<p>Proyecto BENVIC, una metodología y criterios de calidad para evaluar entornos y plataformas virtuales de aprendizaje http://cvc.cervantes.es/obref/formacion_virtual/campus_virtual/sangra.htm</p>	Spanish	Spain	<p>The main objective of the project is to create the methodology and criteria for evaluation of virtual education environments for distance learning. The project is run by three European universities and three research institutions. The leader of the research is the Open University of Catalonia.</p>	6	Teachers, researchers
108.	<p>Quality On the Line: Benchmarks for Success in Internet–Based Distance Education http://www.ihep.com/Pubs/PDF/Quality.pdf</p>	English	USA	<p>This report examines case studies of six colleges and universities that provide Internet–based degree programs. The final outcome is a list of 24 benchmarks that are essential to ensure quality in Internet–based distance education.</p>	5,6	Administrators

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109.	Red Universitaria Nacional http://www.reuna.cl	Spanish	Chili	The REUNA Consortium is a strategic component of the university system in the field of information technology. Its mission is to support the implementation of IT in all areas throughout the university system.	5,6	Administrators, teachers
110.	Scholars' Guide to WWW http://tiger.uic.edu/~rjensen/index.html	English	USA	A comprehensive guide to WWW for educators structured as a search machine.	4-6	Teachers
111.	SchoolWorld Internet Education http://www.schoolworld.asn.au/	English	Australia	Global Internet Classroom designed for the teachers of secondary schools and students. The system contains a set of projects; programs and resources concerning the problems of education in the secondary education institutions.	1-3	Teachers, students
112.	Schoolzone http://www.schoolzone.co.uk/	English	United Kingdom	Schoolzone was set up by a group of enthusiastic teachers and parents in Oxford. They are providing safe, differentiated Internet material, which teachers, students and parents can access easily.	0-4	Teachers, students
113.	Searching the Internet: Recommended Sites and Search Techniques http://library.albany.edu/internet/search.html	English	USA	This tutorial covers three basic types of tools: subject directories; search engines, primarily first generation services that have been around for quite a while; The so-called "deep" or "invisible" Web, information that is stored in databases as well as multimedia and other files. In addition, there are collections devoted to listing database sites.	4-6	Teachers, students
114.	Study Abroad http://www.studyabroad.com/	English	USA	An online study abroad information resource. Here you will find listing for thousands of study abroad programmes in more than 100 countries through the world.	4-6	Students
115.	StudyWeb. Links for Learning http://info.studyweb.com/	English	USA	An online environment for teachers and students. Search for resources, instruction, evaluation, professional development. Now is available only by school subscription.	1-3	Teachers, students

№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
116.	Syllabus Web http://www.syllabus.com/	English	USA	The electronic version of the SyllabusWeb journal containing the information on technologies applied in higher education. Contains articles and publications on technologies of education. As well, the journal provides help information on forthcoming conferences. Includes an opportunity for registration of materials on use of technologies in education for participation in the above listed conferences.	5,6	Teachers, researchers, IT specialists
117.	TagTeacherNet http://www.tagteacher.net/index.shtml	English	USA	TagTeacherNet is the online arena for the teaching community. Resources, Lessons Planning, Job Opportunities, Forums.	0–4	Teachers
118.	Teacher.training@Microsoft http://www.microsoft.com/education/?ID=TeacherTraining	English	USA	A free, in–depth programme for: Colleges of Education, State Departments of Education, State–authorized Regional Service Centers such as Educational Service Districts, Intermediate Units, and Board of Cooperative Educational Services, Institutions in the United States and Canada (excluding U.S. territories and possessions). Individual schools and school districts do not qualify. Microsoft provides a two–year software and resource grant to State Department of Education and College of Education training labs that provide hands–on training to pre– and in–service K–12 teachers. Programme members participate in an online community to help you enhance your professional development programme.	5,6	Administrators, teachers
119.	Teachers' Internet Use Guide http://www.rmcdenvr.com/useguide/	English	USA	This guide provides with the assistance of designing Internet–based lessons aligned with the Texas Essential Knowledge and Skills (TEKS).	4–6	Teachers
120.	Teaching & Learning on the WWW http://www.mcli.dist.maricopa.edu/tl/	English	USA	This searchable collection includes sites that range from courses delivered entirely via the web to courses that offer specific activities related to a class assignment or perhaps courses that offer class support materials via the web. This site does not include resource collections, lists of links, commercial products, or online schools.... just examples that are connected to specific courses or learning activities.	2–6	Teachers
121.	Teaching with Electronic Technology http://www.wam.umd.edu/~mihall/teaching.html	English	USA	The site provides information about conferences, publications, and general discussions of teaching with electronic technology.	4–6	Teachers, students

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122.	Teaching with Technology at Penn http://ccat.sas.upenn.edu/	English	USA	The system supporting development of online courses, discussion groups and electronic class discussions tools.	5,6	Teachers
123.	Technology Roadmap http://www.microsoft.com/education/?ID=Roadmap	English	USA	Technology Roadmap is a map that shows you how to get to your destination: a connected learning environment in which teachers, students, and staff have access to productivity tools and advanced network Technology that support: Improved learning and teaching; Efficient administration; Unlimited information access between schools, homes, and the global community.	1–3	Teachers, students, administrators
124.	Technology Studies in Education http://irs.ed.uiuc.edu/	English	USA	The system containing references to the projects in the field of education, supported by teachers and students. It is focused on organization of the process of self-education.	5,6	Teachers, students
125.	Tenet Web http://www.tenet.edu/	English	USA	The Texas Education Network's purpose is to advance and promote education in Texas by providing a communications infrastructure, which can be used to foster innovation and educational excellence in Texas.	1–6	Administrators, teachers, parents, students
126.	The Art of Japan http://library.thinkquest.org/27458/index.html	English	USA	The site is the gold winner of the ThinkQuest Internet Challenge 1999. The essence of this ancient and sophisticated culture is revealed through traditional Japanese arts (sculpture, paintings, practical arts, gardens, architecture and origami). They are viewed through reports, flash animations and picture galleries. Historical information guides users through the origins of Japanese art and its forms. Multimedia enhances the user's experience; quizzes and polls allow visitors a chance to interact with the web site.	2–6	Students, teachers
127.	The Educator's Guide to the Web http://www.rice.edu/~skumari/EG/	English	USA	The Educator's Guide to the Web provides a comprehensive framework for teachers to understand the Web and integrate it into their classrooms. This book offers expert guidance on finding and using age-appropriate resources for children. The Educator's Guide to the Web offers experienced, professional advice about curriculum integration, evaluating and monitoring web sites, legitimate educational resources, and connectivity options available for any school.	1–4	Teachers

№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
128.	The Internet Advocate http://www.monroe.lib.in.us/~lchampel/netadv.html	English	USA	Resource Guide providing introduction to the multitude of the ways educators and librarians can use the Internet, positive examples of youth Internet use, information on software to block Internet sites unsuitable for minors, issues concerning electronic freedom of information and additional Internet resources for librarians.	1–3	Teachers
129.	The Internet and Education http://www.internetpolicy.org/briefing/previous.html	English	USA	As the Internet completes the universalizing of educational opportunity, serious issues of public policy arise – issues of resources, of incentives and empowerment, of control and regulation, of assessment and accountability. The following sections survey some of these issues.	2–6	Administrators
130.	The Lesson Plans Page: Computers & Internet http://www.lessonplanspage.com	English	USA	The Lesson Plans Page is a collection of over 1,000 lesson plans, primarily at the elementary level, that were developed by Kyle Yamnitz, students, and faculty at The University of Missouri. More recent lesson plans were submitted by the users of this website. Launched in October of 1996, The Lesson Plans Page was developed to assist educators of all types. Elementary school teachers get lesson plans that are ready to use in their classrooms.	0–4	Teachers
131.	The MarcoPolo program http://marcopolo.worldcom.com/	English	USA	The MarcoPolo program provides no-cost, standards-based Internet content for the K–12 teacher and classroom, developed by the nation's content experts. Online resources include panel-reviewed links to top sites in many disciplines, professionally developed lesson plans, classroom activities, materials to help with daily classroom planning, and powerful search engines.	1–3	Teachers
132.	The Need For A National Learning Infrastructure http://www.educause.edu/nlii/keydocs/monograph.html	English	USA	The report discusses changes occurring in the way we define learning; describes the need to create new ways of delivering higher education that overcome the shortcomings of our current one-size-fits-all approach to teaching—what Educom is calling a national learning infrastructure (NL); offers strategies for creating a new learning infrastructure.	0–6	Teachers
133.	The NODE Learning Technologies Network http://node.on.ca	English	Canada	Non-profit information network facilitating cooperation and research in the field of technologies for post-secondary education and teaching.	4,5	Teachers, researchers

LIST OF WWW RESOURCES ON THE USE OF THE INTERNET IN EDUCATION

№	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
134.	The Open University http://www.open.ac.uk/text-only/	English	United Kingdom	The textual version of the Open University web site with full description of all the options and resources.	4–6	Students, teachers
135.	The Power of the Internet for Learning: Final Report of Web-Based Education Commission http://www.ed.gov/offices/AC/WBEC/FinalReport/	English	USA	The final report of the Web-Based Education Commission (WBEC) was published on 19 December 2000. Senator Bob Kerrey (D. Neb.), Chairman, and Representative Johnny Isakson (R. Ga.), Vice-Chairman of the Web-Based Education Commission urge the new Administration and 107th Congress to make E-learning a centerpiece of the nation's education policy.	2–5	Administrators
136.	The Public Policy Implications of a Global Learning Infrastructure http://www.educause.edu/nlii/keydocs/policy.html	English	USA	A Report from a Joint NLIJ-SHEEO Symposium Denver, Colorado. The report consists of two parts: "A Vision of a Global Learning Infrastructure" and "An Information Technology Agenda for State Policymakers". Two papers contained in this report are designed to contribute to the ongoing and fertile debate about how states and their systems of higher education should manage the transition to new learning environment.	5–6	Administrators
137.	The School Web Clubs http://supportnet.merit.edu/webclubs/index.html	English	USA	The School Web Clubs site is a resource for students, teachers, parents, technology coordinators and webmasters in schools, who would like to help students create or work on their school's web site by creating a club or special technology projects group.	1–4	Teachers, students, parents
138.	The Teacher's Guide to International Collaboration http://ed.gov/Technology/guide/international/	English	USA	The Teacher's Guide to International Collaboration was developed to help teachers use the Internet to "reach out" globally. These materials were prepared as part of the Department of Education's International Education Initiative. This guide is designed for online access. On every page, teachers will find many projects and suggestions to begin or expand classroom projects that reach across the globe. In every section of this online guide, we have provided links to elementary, middle and high school projects and organizations that are involved in international education via the Internet.	1–6	Teachers

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139.	The Virtual University http://www.educause.edu/nlii/VU.html	English	USA	Educom's National Learning Infrastructure Initiative (NLI) and IBM held a roundtable of 45 knowledgeable higher education leaders to discuss the virtual university. The intention was to begin with a vision of what higher education might be like in the future – especially as influenced by the virtual university. The round table helped test an initial statement of the issues and contributed its own sense of what was possible and not possible. This paper reflects the results of those deliberations.	5,6	Administrators
140.	Thinking Critically about World Wide Web Resources http://www.library.ucla.edu/libraries/college/help/critical/index.htm	English	USA	The World Wide Web has a lot to offer, but not all sources are equally valuable or reliable. Here are some points to consider.	5,6	Teachers
141.	UNESCO Education Sector http://www.unesco.org/education/index.shtml	English	international	UNESCO web site section concerning educational issues.	–	Administrators, teachers, researchers, IT specialists
142.	UniGuide: Academic Guide to the Internet http://www.aldea.com/guides/ag/attframes2.html	English	USA	The UniGuide Academic Guide is created especially for the higher education community. Its goal is to develop the primary Internet resource of and for the research and academic community.	2–5	Teachers, researchers, students
143.	University Links http://www.ulinks.com/	English	USA	A catalogue of various university references, opportunity for search for educational institutions, help of an expert, references to university forums. The site contains help page assisting to use system most effectively.	5–6	Students, teachers
144.	UOC – Universidad Virtual http://uoc.terra.es/	Spanish	Spain	Open University of Catalonia is a virtual institution, a new concept of outdoors university education based on transmission of knowledge via the Internet. An innovative educational model using the advantages of ICTs to meet the needs of learners.	1–6	Students, teachers

LIST OF WWW RESOURCES ON THE USE OF THE INTERNET IN EDUCATION

N ^o	Title and URL	Language	Country	Short description (in original language and English)	Levels of education (following UNESCO classification)	Target groups of users
145.	Using Technology in Education http://www.algonquin.on.ca/edtech/index.html	English	Canada	The site contains articles on technologies in education, references to systems using new technologies (online courses, journal articles, etc.), references to search systems (both universal, and specialised).	5-6	Teachers
146.	Using the Internet for Education http://www.cadvision.com/blanchas/education/eb-hp.htm	English	Australia	This web page is dedicated to showing how the Internet can be used for educational purposes. When using the Internet for educational purposes, there is no difference between local and distance education. The classroom becomes a virtual classroom and the location becomes transparent.	0-6	Teachers
147.	Using the World Wide Web to Enhance Classroom Instruction http://www.firstmonday.dk/issues/issue5_3/mathew/index.html	English	USA	This paper presents one method of enhancing the instructional process through the use of Web-based Instruction.	5,6	Teachers
148.	Usos Educativos de Internet http://www.uil.es/departamentos/didinv/tecnologiaeducativa/doc-marques.htm	Spanish	Spain	The analysis of three basic functions of the Internet, through which it affects the educational process: information, communication & didactics support. Some examples of Internet application in education and its advantages & disadvantages. The research paper contains a lot of links and a large bibliography and can serve as a good guide for Internet users.	3-5	Teachers
149.	Virtual Education http://ved.edmin.com/	English	USA	EDmin.com is committed to developing innovative products, such as the Virtual Education System (V-ED), a suite of Internet-based applications that empower educators to make critical curricular decisions with confidence. This web site features a variety of resources for educators, who are interested in assessment and accountability.	1-5	Teachers

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150.	Virtual Teacher Center http://vtc.ngfl.gov.uk/	English	United Kingdom	The VTC is a service for school professionals providing news, support for professional development and the facility to search quality-badged resources across the NGFL (National Grid for Learning).	0–6	Teachers
151.	Web for Teachers http://www.4teachers.org/	English	USA	Web for Teachers is a carefully indexed collection of online resources made by teachers for teachers. The online space for teachers integrating technology into the curriculum.	0–4	Teachers
152.	WebCT http://www.webct.com/	English	Canada	WebCT is the world's leading provider of integrated e-learning systems. Over 148,000 faculty members at 1,578 colleges and universities are using WebCT's products and services to transform the educational experience for more than 5.8 million students. The company's mission is to be the preferred partner of institutions that are creating total e-learning solutions, from getting started to scaling campus-wide. WebCT is available in 10 major world languages and a quarter of the company's installed base is located in more than 60 countries outside North America.	3–6	Teachers
153.	Working the Web for education http://www.ozline.com/learning/theory.html	English	USA	A research on theory and practice of integrating the Web for learning.	3–5	Teachers
154.	World Lecture Hall http://www.utexas.edu/world/lecture/index.html	English	USA	A database of university-level course materials freely available over the Internet. The references are integrated into an alphabetic catalogue and structured in accordance with the fields of knowledge (over 100 titles).	5,6	Teachers
155.	World Links for Development (WorldL) http://www.worldbank.org/worldlinks/	English	USA	The World Links for Development (WorldL) program provides the Internet connectivity and training for teachers, teacher trainers and students in developing countries in the use of technology in education. WorldL links students and teachers in secondary schools in developing countries with schools in industrialized countries for collaborative learning via the Internet.	1–6	Teachers, students



