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BRIDGING THE INFORMATION AND DIGITAL DIVIDE AT HIGHER EDUCATIONAL INSTITUTIONS

Abstract. The article deals with the notion of information and digital divide on the grounds of the world processes of the information society establishment. This paper presents a research of the level of informatization of the main spheres of life activity of citizens of foreign countries, and the analysis of the experience of the leading countries in organization and implementation of a complex of measures, aimed at crossing the digital divide. Also, there have been outlined the peculiarities and problems of the development of higher education in Ukraine in the context of information and digital inequality. On the basis of the analysis of scientific literature and personal professional experience, the ways of the solution of the problem of teacher's selection of the adequate and the most effective pedagogical technologies, forms and methods of study in the process of overcoming the information and digital divide at higher educational institutions have been determined in this article.

Keywords: information and digital divide; information society; measures to cross information and digital divide.

1. INTRODUCTION

The problem setting. Information and communications technologies have recently become one of the most significant factors, promoting dynamic transformation of the modern society, and its transition from post-industrial society to the information one. The processes of implementation of information technologies into all spheres of life (informatization) have lead to considerable quality changes. Among the positive results of this, one may mention automation of numerous routine processes, including those in the spheres of science and education; access to significant amounts of information; practically immediate data transmission to any short- or long-distance destination; possibility for distance learning and many others.

At the same time, since the appearance and development of information society, certain problems have arisen, for instance, in the sphere of social relations. With a tremendous internal democratic potential at its disposal, allowing to make any state or private company open via publishing or arrangement of a wide access to various data, information society, as in the case with a traditional one, has turned out to be ambiguous, divided into the rich and the poor. Thus, there is a kind of border between those, who have technical supply and a required level of skills to use the Internet, and those, who do not have an access to the World Wide Web, due to the lack or absence of technical equipment and knowledge of information technologies.

The inequality between the rich and the poor in the sphere of information has recently been more and more caused by technological characteristics, when fast information spreading

comprises merely certain groups of users, while the others can only use equipment, which quickly becomes outdated. This kind of inequality has been called “the digital divide” or “the information divide”. There are the following definitions for these synonymic terms in the reference sources: 1) the difference between people, who use computers and mobile devices on a daily basis, and those who do not [10]; 2) a new kind of social differentiation, arising from various possibilities for IT usage, a term, typical of the supporters of the ideas, that link information structures, means and processes of their dissemination among citizens to the problem of civil rights and material welfare [4].

In the century, when information determines the development of production capacities, affects the economy and politics, digital divide involves new social problems for the countries, which have low economic and intellectual potential. According to the international research institutions, hardly more than 15 % of the information and communications technologies users in the world come from the developing countries [2].

With the development of information society there is growing a risk of social exclusion for many social groups. Foremost, those are poor citizens, who simply can not buy digital devices and work in computer networks. There is also a problem of reluctance or lack of knowledge to use information and communications technologies, requiring from a consumer certain specific qualities – high level of abstract thinking, fast reaction, and readiness for life-long learning. Thus, the appearance of new social, and particularly educational problems, connected with the information and digital divide predetermines the necessity of finding the how these issues should be resolved.

The **objective of this paper** is to outline the problems of the information and digital inequality at higher educational institutions of Ukraine on the grounds of the world processes of the information society establishment, and define ways of their solution.

The Analysis of Recent Studies and Publications. In periodicals and scientific publications certain aspects of the problem of digital divide have been researched since 1997, when a Development Program was approved by the UN. Since then, the governments’ and scientists’ attention has been focused on the fact, that digital divide is a consequence of other inequalities, deepening at the same time other disparities, chronologically preceding the mentioned one. For this reason, the countries, which do not stimulate an integration of information technologies into all spheres of society life, become uncompetitive in world economy. Such disappointing perspective awaits every person, who does not pay attention to the mentioned above innovations [1].

Problems of information society have become subjects of study for philosophers, political analysts, sociologists, specialists in the Humanities and technical sciences. The problem of crossing a digital divide is solved differently in different countries.

According to sociological research, the population of western countries has a good access to the Internet [2; 7]. The leading countries in the sphere of informatization are the USA, Denmark, Sweden, and Great Britain. At the same time, India and China are the first in rates of crossing the digital divide. [2].

The recent research by NGO Telecentre-Europe [7] has shown, that, speaking of the European Union, over 90 % of population of Denmark, Luxembourg, the Netherlands, Finland and Sweden have access to Internet and use it regularly. (See Table 1).

However, the analysis of the research results from other countries of the EU (see Table 1) shows that most of the “outsiders” among the number of Internet users live in Bulgaria (54 %), Greece (55 %), Cyprus (59 %), Portugal (51 %) and Romania (44 %). As a result, 24 % out of 500 million people inhabiting the European Union, which makes it 120 million inhabitants, never

use the Internet. Thus, a digital divide is common for the developed European countries, and exists there between the social groups as well as between the states.

Table 1. The level of “digital inclusion” in the EU countries

#	Country	Number of citizens, who do not use the Internet (%)
1	Austria	18 %
2	Belgium	14 %
3	Bulgaria	46 %
4	Cyprus	41 %
5	Czech Republic	24 %
6	Denmark	7 %
7	Estonia	20 %
8	Finland	9 %
9	France	18 %
10	Germany	16 %
11	Great Britain	11 %
12	Greece	45 %
13	Hungary	28 %
14	Ireland	21 %
15	Italy	39 %
16	Latvia	27 %
17	Lithuania	33 %
18	Luxembourg	8 %
19	Malta	30 %
20	Poland	33 %
21	Portugal	41 %
22	Romania	54 %
23	Slovakia	20 %
24	Slovenia	29 %
25	Spain	29 %
26	Sweden	5 %
27	The Netherlands	7 %

Thus, according to these data, the problem of the information (digital) divide between countries, nations, generations, rural and urban population, professionals of different spheres remains to be one of the most significant.

A spread method of crossing a digital divide, as suggested by foreign scientists, is called “digital inclusion” – a kind of social inclusion in the 21st century, a complex of measures taken for organization of a wide access to information resources, use of computer technologies, teaching the population foundations of computer (digital) literacy etc [3; 15]. The analysis of

scientific literature shows, that the leading world countries have a considerable experience in the establishment of digital inclusion centers, organization of courses and other study programs in order to form the basis of citizens' information culture. These measures, in scientists' opinion, will help people to adjust to and successfully realize themselves in the information society [5; 9; 12]. It is worth mentioning, that numerous NGOs, community activists and educational institutions contribute to this campaign a lot.

According to a number of foreign scientists [9; 11; 16], in the context of crossing the digital divide it is important to consider the fact, that organization of an access to the Internet will not necessarily result in higher productivity as to its use, since the social groups, standing on the "opposite sides" of the digital divide, use the Web for different purposes: the richer — to become richer, and the poorer — mainly for entertainment and rest. Obviously, in such situation, the process of digital inclusion must start with a special training for the intending information and computer technologies users.

The leading role in crossing the digital divide, according to a number of scientists, must be performed by the governments of the countries [12; 14; 16]. It is them, that the overcome of political and economic obstacles on the way to the above mentioned goal depends on. By making it a global project and a national strategy for every country, in cooperation with big business-corporations they can and must help the population to get a wide access to the Internet and all the facilities, which information and computer technologies may offer. The scientists are unanimous in their opinion, that beside the described methods to solve the given problem, it is also necessary to run further research of the informatization of society, reasons and consequences of the information and digital divide, theoretical and practical aspects of individual's socialization nowadays.

In the context of the problem being discussed there another interesting fact is worth mentioning. According to the recent research [6; 8], information poverty and information overload have at least one negative feature in common — absence of information skills. In the first case it is a factor supporting no access to information and computer technologies, and in the second case — a reason of a widely spread information fatigue syndrome (or IFS), since when a person does not possess the required skills, the mentioned technologies are of no use. Other significant reasons of this syndrome, as defined in modern research [8; 13], are availability of Internet, especially via mobile access, social networks and the alike services, online and offline news, information and advertisement means. Obviously, the solution of this problem is to be found in the formation of the information and analytical skills through a corresponding training. It is training, that has to be prior to and then accompany the process of digital inclusion of an individual, since people without required knowledge simply will not know what they are supposed to do with digital technologies, including computer, Internet, cell phone etc. So, digital inclusion involves mastering computer literacy. As a result, a new social layer will be formed with its representatives known as Digerati, or digital literati — people, who are well educated in the sphere of computer and information systems, the elite of computer industry and online communities, which includes scientists in the sphere of information and computer technologies and famous bloggers.

In this context Russia demonstrates certain success in arranging an access to the Internet in all educational institutions, libraries and even hospitals, in order to make Internet more available for the representatives of all society groups. A number of enthusiasts make and run projects aimed at formation of computer literacy of the elderly people. In terms of one of such projects, a movement of the youngsters was developed to support socially unprotected groups (pensioners, the unemployed, especially those, who lost their jobs in the crisis period, people with physical

disabilities and women). A rise in social protection of the elderly people is considered to happen in the future due to the use of the potential of modern information and computer technologies and involvement of youth into volunteering in this regard. Inclusion of socially unprotected citizens into the information society will allow providing a stable social development with the use of the opportunities such kind of society offers.

2. THE RESULTS OF THE STUDY

Nowadays in Ukraine there are gradually provided systems of E-government, or, as they are also called, Internet government and Digital government, offering the organization of administrative and legal relations with the population in the following formats: government to citizens (G2C), government to business (G2B), government to government establishments (G2G) et al. with an aim to improve the level and time of service, avoid potential corruption etc. In many countries of Western Europe systems of E-government have proven their effectiveness. Ukraine is at the beginning of the way to reform civil service. But, even now it is quite difficult for the people of old age to use electronic state services, socially communicate, and thus adjust to the conditions of life in modern information society. Young people are at the same time very fast at mastering the computer world. They get most of the potential of the information technologies and use it for work, study, communication, state services, information search, shopping etc.

Rapid and active development of social networks shows, that many people (mostly pupils and students) are ready to share their knowledge and skills. Most of them are deeply confident in the fact, that it is very difficult to live in modern society without knowledge of information and computer technologies.

Sharing experience of the youngsters with the older generation, as it may be seen in one of many projects (www.timurinform.ru), will help to ruin the paradigm of interrelationships of the generations, establish a dialogue between parents and children, and thus reduce a generation gap. Training of pensioners arranged and run by the youth will allow to lengthen the duration of the working age, weaken social isolation which the older citizens might experience, and raise the quality of life.

The problem of information inequality, or the information divide is often treated as unequal access to mass media, whereas digital divide is connected with unequal access to the potential of modern information and communications technologies. In our opinion, both of these problems are inseparable constituents of a global issue of the dependence of an individual on his/her ability to use the information and communications technologies, as well as updated information, retrieved from mass media. Thus, we suggest this problem to be considered as the problem of the information and digital divide. In our opinion, this issue is a complex one and much more complicated, than it is treated in periodicals and even in some scientific research papers [1; 4; 9; 15]. Apart from less availability of mass media and computer technologies, the problem of the information and digital divide also involves a problem of person's unwillingness. Many people, especially those of middle age and older, still have not seen the advantages of the use of computer technologies, which in the end may lead to "social exclusion"- isolation from social life. Various attitudes and knowledge of the modern technologies can be seen among the students and teachers as well. It is of no doubt, that the problem of information and digital divide is closely connected with the problem of formation and development of the information culture of the population. Certain ways of the solution of this problem in the context of the professional activity of lawyers, economists, medical workers, border guards, and teachers are suggested in

scientific publications. Some steps are made to reach the goal, but at present the problem of information and digital divide in each of the mentioned spheres remains unsolved.

Fast informatization of education has caused the appearance of numerous questions and problems. During many centuries a human dealt with linear type of transmitting and perception of information. Any text message had the beginning and ending. In case with hypertexts, filled with a considerable number of links to other documents, an ability to cope with huge amounts of information, quickly single out what is important, synthesize and integrate interdisciplinary information is required from a human. This means, the pupils and student must be taught nonlinear, divergent thinking.

Another sharp problem at secondary schools and higher educational institutions is defining the contents of study material in the times when its amounts grow up and up constantly. One of the key questions, that should be kept in mind is “what knowledge is needed for an intending specialist, and is it possible to predict it for the spheres, that are rapidly changed?” Students stop attending classes, where they, in their opinion, do not receive professionally important information. Of course, they might not be able to evaluate the importance of this or that knowledge for the future profession. And there is another problem — motivation for study, which causes the problem of choice of the adequate and most effective educational technologies, forms and methods of study.

The analysis of the research in the sphere of professional education and our own experience allow us to suggest several effective ways to solve this problem:

- increase cognitive activeness of students, using interactive, project technologies along with the information and communications ones;
- include the latest achievements of the correspondent sphere of science in the study material;
- involve students in individual information search;
- organize quasi-professional activity of future professionals, using methods of situational study;
- widely implement the project method with the use of information and communications technologies;
- design traditional and multimedia textbooks, adapted to the students’ future professional activity;
- motivate students’ continual self-development and lifelong education.

In pedagogical literature, including dissertations, it has been proven more than once, that such approaches result in a considerable favorable effect concerning intending specialists’ training. It is up to the teachers of higher educational institutions to use the methodical recommendations.

Unfortunately, far from all educators are ready to change the old forms and methods of teaching. One of the main reasons of this is the information and digital divide between the generations of students and teachers, between the teachers within one university, college, one department, or between the students of the same course. At the same time, the people, who know how to work with a PC, understand its potential, and use it for study or professional activity, reach success much faster in comparison to those who do not.

As a rule, students understand it earlier, than teachers, and that is why they try to master information and communication technologies, are eager to visit corresponding classes, and even take elective courses. It is more difficult to motivate teachers for such kind of self-development. Some of them try to learn the foundations of work with a PC on their own. The results of our research, conducted among the students majoring in the Humanities and their teachers show, that

since 2003 until 2013 the number of computer literate freshmen had increased from 58 % up to 98 %. In case of the teachers, the dynamics is even more intensive: 84 % in 2013 comparing to only 14 % in 2003. Obviously, the digital divide between students and teachers is gradually crossed, but this process is time consuming, whereas the potential of information and computer technologies grows bigger and bigger every day.

The problem needs to be solved in a more effective and drastic way considering the fact that higher educational institutions teachers, as one of the most intellectual layers of the society, have to become a force aimed at bridging the information and digital divide not only in education, but also in the whole society. Despite the complexity of the problem, teachers still are at the highest level in the system of education, in particular in the sphere of use of information and computer technologies.

It is clear, that it will be difficult to reach it, at least because of certain passivism of higher educational institutions, and that is despite constant calls for innovations. Obviously, in every college, institute and university there is a need to organize something like postgraduate professional courses. Study process at such courses, in our opinion, are to be run using innovative educational technologies (interactive, research, project etc.), making it as well a methodical training for a teacher of a higher educational institution. In this case, the information and digital divide between teachers, teachers and students may be crossed.

3. THE CONCLUSIONS AND PERSPECTIVES OF FURTHER RESEARCH

The information and digital divide is a global social problem, which is reflected in the system of education. Unless this issue is solved, it will turn into “information and digital abyss” both on a state and international levels. If we do not take urgent measures, this “abyss” will be impossible to cross. It is the solution of this problem, which the efforts of all educational institutions must be spent on. Among the perspectives of further research we suggest search of ways of improvement of students’ and teachers’ information culture to be considered.

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ПРОБЛЕМА ІНФОРМАЦІЙНО-ЦИФРОВОЇ НЕРІВНОСТІ ТА МОЖЛИВІ ШЛЯХИ ЇЇ РОЗВ'ЯЗАННЯ У ВИЩІЙ ШКОЛІ

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Анотація. У статті розглядається поняття інформаційно-цифрової нерівності на тлі світових процесів становлення цифрового суспільства, досліджено стан інформатизації основних сфер життєдіяльності громадян західних держав. Проаналізовано зарубіжний досвід з організації й реалізації комплексу заходів, спрямованих на ліквідацію цифрового розриву. Виділено особливості і проблеми розвитку вищої освіти України у контексті інформаційно-цифрової нерівності. На основі аналізу наукової літератури і власного педагогічного досвіду визначено шляхи розв'язання проблеми вибору викладачем адекватних і найбільш ефективних педагогічних технологій, форм і методів навчання в процесі подолання інформаційно-цифрової нерівності у ВНЗ.

Ключові слова: інформаційно-цифрова нерівність; інформаційне суспільство; заходи з подолання інформаційно-цифрової нерівності.

ПРОБЛЕМА ИНФОРМАЦИОННО-ЦИФРОВОГО НЕРАВЕНСТВА И ВОЗМОЖНЫЕ ПУТИ ЕЕ РЕШЕНИЯ В ВЫСШЕЙ ШКОЛЕ

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Аннотация. В статье рассматривается понятие информационно-цифрового неравенства на фоне мировых процессов становления цифрового общества, исследовано состояние информатизации основных сфер жизнедеятельности граждан западных государств. Проанализирован зарубежный опыт по организации и реализации комплекса мероприятий, направленных на ликвидацию цифрового разрыва. Выделены особенности и проблемы развития высшего образования Украины в контексте информационно-цифрового неравенства. На основе анализа научной литературы и собственного педагогического опыта определены пути решения проблемы выбора преподавателем адекватных и наиболее эффективных педагогических технологий, форм и методов обучения в процессе преодоления информационно-цифрового неравенства в вузе.

Ключевые слова: информационно-цифровое неравенство; информационное общество; меры по преодолению информационно-цифрового неравенства.

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