AN ANALYSIS OF THE READINESS OF IT SPECIALTIES STUDENTS TO USE INFORMATION TECHNOLOGY IN THE EDUCATIONAL PROCESS

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Abstract. *The development of ICT and globalization of education create new educational competitive environment which feature is the information communication technology and student mobility. So today, it is important not only the technical support of the educational process, but also the level of students' readiness to use advanced information technology as one of the basic educational facility of information and communication teaching environment in higher educational establishments. In this regard, the main objectives of the paper are the analysis and display of the obtained results of research of IT specialties students' readiness of Ukrainian universities to use information technology in the educational process.*
Key words: *education and learning process, information and communication pedagogical environment, information technology.*

Introduction

The globalization of the world economy and business processes is also a push for the globalization of higher education. Among the universities throughout the world, there is currently a fight for influence in the education markets of their respective countries. The leaders in "global" education are the United States and the European Union. The globalization of education was made possible by the development of innovative educational technologies, and thus IT becomes a significant strategic resource for universities. A university that is able to create the best conditions and resources for IT integration into the studying process rises to the new level of a modern world university. Thus, the strategies for education in Ukraine need to focus on balance on the one hand - the possibility of universities having the appropriate strategic resources- and, on the other hand, the willingness of students to use them. The rapid development of the IT industry characterizes a system of university strategic resources interaction and the willingness of students to use these resources as a dynamic system. The development of ICT and the globalization of education create a new educational-competitive environment, whose focus is both information and communication technology and student mobility. To ensure the competitiveness of universities in the education market, universities should possess better innovative technology for education than their competitors.

One of the most important criterion for professional competitiveness in the job market today is the ability to learn, independently acquire knowledge, apply this knowledge to new environments and professional situations, think creatively and make non-conventional decisions. Accordingly, there is a need for the

introduction of a new paradigm of education. For robust and independent creative work in studying disciplines, the material basis of scientific and laboratory equipment, using modern information technology, is necessary. As noted by Hitendra Pillaya, Kym Irvinga and Megan Tonesa, a large number of universities are using online learning systems, but at the same time paying little attention to creating the conditions necessary for academic achievements within this educational environment (Social Media Michaelmas, 2012)

Joseph Lee, Ng Lai Hong and Ng Lai Ling (2001), in turn, noted that the success of any virtual environment for education depends on the skills of students and their attitudes toward the technology used.

David McCann, Jenny Christmass, Nicholson, Peter and Jeremy Stuparich (1998) note that ICT can be used to meet the changing needs within the educational sector: a more flexible learning environment, an extension of university services to national and international markets, and a stronger economic development effect on higher education in an extremely competitive environment.

Maryam Alavi, Youngjin Yoo and Douglas R. Vogel (1997) describe the students preparation at two universities through advanced information technology that were used for joint study and the teaching of transcontinental student teams and teachers and for the integration of external expert knowledge. The authors point out that this partnership has enriched students learning and accelerated their development.

Ukrainian scientists such as Oleksandr Spivakovskiy and Lubov Petukhova (2011) emphasize the need to establish the information and communication pedagogical environment, which , in their opinion, helps to teach and learn and makes education more accessible, especially for those who lack educational materials, for developing a learning culture, creating, sharing and cooperating in a rapidly changing knowledge-based society, thus forming a positive attitude to learning, willingness to learn, knowledge acquisition, and, as a result, provides the formation of a positive motivation for learning in a new information educational sector.

In the psychological and educational literature of the last decade dedicated to education informatization, there is the concept of the "information and educational environment", indicating a new entity of educational and informational environments integration.

Target of research: the use of information and communication technology in IT specialty students' preparation at universities.

Statement of purpose: IT specialty students' willingness to use information technology in the educational process.

Hypothesis of research: the timely and correct use of innovative educational tools in the learning process and the constant interaction of students and teachers in information and communication pedagogical environment will increase the

level of university students' training for studying and will improve the quality of educational services provided by the university.

Research methods

Conducting research on the subject requires the use of both theoretical and empirical research methods. Thus, research into students' readiness to use information technology in the educational process is impossible without an analysis, a comparison and synthesis, an abstract approach to the definition of the basic laws of information technology use, and a logical approach to the description of the possible implementations of innovative educational methods. The main means of achieving results is through surveying and analyzing the readiness of IT specialty students of Ukraine's higher educational establishments to use information technology in the educational process.

This study is a continuation of the research work carried out by Kherson State University in 2010-2012 under contract No. IT/583-2009, dated 10.23.2009, as part of a State information program of Ukraine, as well as our research conducted on the current condition of distance learning in Ukraine, the influence of the quality of electronic educational resources on the quality of educational services using distance learning technologies (Kravtsov H.M. et al., 2013), and universities' ICT infrastructure.

A questionnaire for evaluating the indexes of the readiness of students to learn in information and communication pedagogical environment by students and faculty, including 3 evaluating points:

1. *Quantitative indexes of ICT use by students in the educational process, such as:*

- usage of Microsoft Office, including Microsoft Office Word, Excel, Outlook, PowerPoint, Access;
- Distance Learning Systems (DLS);
- Usage of Google, including Google Docs, Google Disk, etc.;
- Educational software (ES).
- Social networks (VK, Odnoklassniki, Facebook, and others);

2. *Qualitative indexes of a sufficient level of skills of 1st-year students on how to use ICT in the educational process*

Under "Sufficient level of skills to use ICT," we mean:

- the ability to use basic Microsoft Office tools (formatting of documents, including the creation of unique styles, the use of templates, merging of documents, data import and export, the usage of smart objects, and the usage of basic Excel functions, etc.);
- the ability to work with the systems of distance learning (viewing and storage of materials, execution of independent work online, becoming familiar with the test environment, etc.);

- the use of Google documents, creation of group access, downloading, storing and editing the necessary files on Google disk;
- Work experience with email;
- Availability of accounts in social network;
- Work experience with technical means of communication;
- Work experience with educational software.

3. *Semester from which the students begin the course "Information Technology" ("Introduction to Information Technology", "New Information Technology", "Office Computer Technology", etc.).*

Static analysis of the results

Within the research, we received 400 responses, 50% of whom were students of the 1st year at Kherson State University, in the specialty of "General Information", "Software Engineering", "Pre-school Education", "Physical Education", "Human Health" and "Chemistry," and the other 50% were students of Ukrainian pedagogical and classical universities. An analysis of the statistical data demonstrated that the results are within the range of acceptable error, showing the relevance of the research.

It should be noted that only work with Microsoft Office by students of each specialty begins with the first class, while the skill level of technology and training courses using ICT do not meet the necessary requirements. For example, only 60% of the students of the 1st course in "Human Health", "Physical Education", and "Chemistry" have a sufficient skill level in Microsoft Office, and teaching a course on using information technology starts by most of them in the 3rd to 6th semesters.

Table 1

Analysis of the responses to questionnaire No. 1

	Have ICT skills on a sufficient level (1st course)			
	Microsoft Office	System of Distance Learning	Google Docs	Other Programs for Educational Purposes
Software Engineering	60%	6%	2%	3%
Informatics	65%	8%	2%	2%
Physics	30%	5%	1%	1%
Mathematics	27%	4%	1%	5%
Elementary Education	16%	3%	0%	1%
Human Health	10%	4%	0%	0%
Physical Education	10%	1%	0%	0%
Chemistry	12%	3%	0%	0%

ICT has become an integral part of the social and personal life of people. The most important means of information exchange nowadays is the global Internet network, which is constantly being upgraded, expanding its space, offering many new services, facilities and methods for obtaining information. These methods consist of social networks and different computer communication facilities, which have a significant impact on the students' development.

Table 2

Analysis of the responses to questionnaire No. 2

	IT usage in the educational process				
	Microsoft Office	Social Networks	System of Distance Learning	Google Docs	Other Programs for Educational Purposes
Software Engineering	100%	60%	100%	60%	90%
Informatics	100%	60%	95%	60%	80%
Physics	100%	40%	85%	10%	45%
Mathematics	100%	40%	85%	10%	40%
Elementary Education	100%	10%	95%	5%	50%
Human Health	100%	5%	15%	0%	40%
Physical Education	100%	5%	15%	0%	35%
Chemistry	100%	5%	15%	0%	40%

Social networks include websites that allow you to find business contacts, friends and partners. There are also programs that provide text and voice information and support video calling through the Internet.

The dominant features of social networks are: connecting without spending money, a large number of users, a contingent of like-minded users (in terms of a group), and many ancillary services which help the user to get his diverse virtual space.

Thus, social network users build their own convenient virtual space where they spend a lot of their free time. For example, at the University of Oxford, ICT is a key part of the learning process. The major social networks used at the University of Oxford are Facebook, YouTube, Tumblr, Google+, LinkedIn, and Goodreads. Oxford University offers a number of training courses on the use of social networks and digital technology support. The goal of the university is to use social networks and turn them to an effective tool for the development of its graduates' information competence (Engage: Social Media Michaelmas, 2012). At Harvard University, social networks are a powerful tool which help the university disseminate necessary news. In addition, there are legal obligations at Harvard University regarding the use of social networks, and these principles have a stable policy (Guidelines for using social media, 2012).

An analysis of the use of social networks in the learning process makes it possible to conclude that social learning theory has acquired relevance abroad, which includes the assumption that students learn more effectively when interacting with other students within the appropriate theme or project. Students who visit a group once a week show better results in training than students who study outside the group (Використання соціальних мереж у навчальних цілях, 2013).

So the obtained results of research really show the increase of use indexes of social networks, emails and other communication facilities for educational purposes.

Using the appropriate means, both students and teachers are able to create informative and educational pages and groups, to provide appropriate shared resources and files for public use and more. The popularity of these networks leads to a higher percentage of students' attention to resources proposed by lecturers, the possibility of real-time communication, and the opportunity to create prototypes of account-oriented educational services.

Table 3

Analysis of the responses to questionnaire No. 3

	Have own		
	E-mail	Portable computer (laptop, tablet PC, etc.)	Account in social network
Software Engineering	98%	84%	99,5%
Informatics	99%	76%	99,8%
Physics	80%	45%	89%
Mathematics	77%	54%	86%
Elementary Education	76%	15%	78,7%
Human Health	65%	9%	76,5%
Physical Education	66%	10%	89,5%
Chemistry	74%	10%	88,7%

As you can see, almost 100% of the students have their own accounts in social networks such as VK, Odnoklassniki, Facebook, and others (Table 3). The number of laptop computers used by the students of the 1st and 5th year of the specialty of "General Information" and "Software Engineering" has increased by 41%, and by 28% for students of other specialty (Fig. 1). Moreover, all respondents who have suitable technical equipment use laptops for learning. Thus, we can say that presence of laptops by students is affected by both professional orientation, as seen in the analysis of the responses of IT specialties students, and by rapid information and technological development in society, as indicated by the results of a survey of students of other specialties.
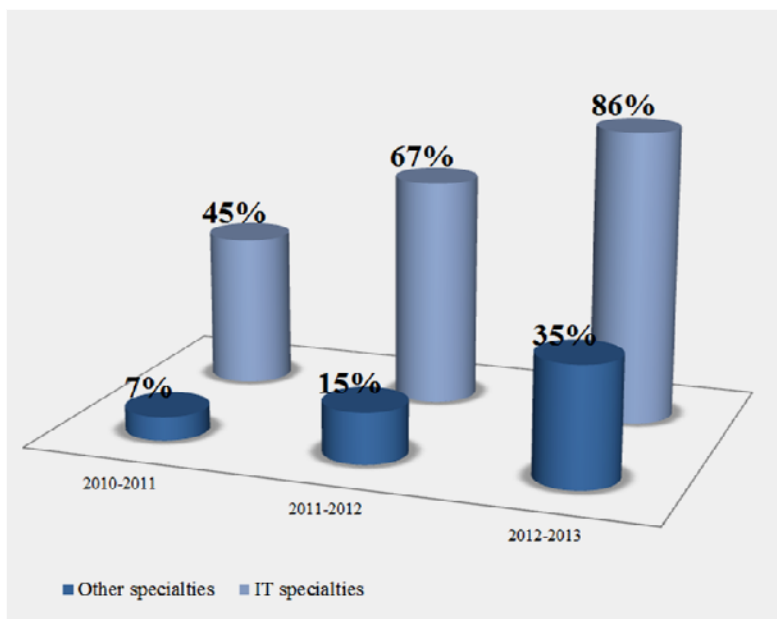
Figure 1 **Number of computer equipment for 2010-2013 academic years by the students of 1st and 5th courses**

As shown, the experience of development of higher educational establishment in the world, the effectiveness of professional training of future specialists belongs to a dialectical unity of learning and the educational process, ensuring a close relationship between professional training and practice. From this perspective, the special role plays the problem of theoretical justification and experimental testing of appropriate pedagogical technology for the organization of the educational process (Микитюк, 2004).

Accordingly, it is important to monitor the dynamics of the use of modern ICT and its impact on the quality of educational services, because, in this way, we are able to analyze the functioning condition of the educational system as a whole and to determine the prospects of its development, which are taken into account in the process of State policy forming in the field of education.

To determine the ICT usage dynamics by the participants of the educational process, let us divide them into 3 communicative groups: "Student-Student", "Teacher-Student", "Teacher-Teacher" (Table 4).

Table 4

The use of computer communications by various groups of users

"Student-Student"		*"Teacher-Student"*		*"Teacher-Teacher"*	
Skype	80%	E-mail	98%	Skype	68%
E-mail	48%	Skype	10%	E-mail	88%
Social Networks	85%	Social Networks	2%	Social Networks	4%

Table 4 shows that Skype is often used by such communicative groups as "Student-Student" and "Teacher-Teacher," but has a low level of use in the

communicative group "Teacher-Student". Thus, we can say that Skype is used by students in their communicative circles and will be a standard form of communication in their future professional activity that seeks to increase the usage level of computer communication tools (CCT) in the training of future specialists. The sustainable use of CCT will reduce the amount of time needed for training and improve the quality of the expected result in education.

However, the presence of individual workplaces, accounts in social networks, systems of distance learning at universities, E-mails, and Skype accounts will not give the expected results of their use if the students will have access to appropriate resources only in academic buildings and classrooms. Accordingly, it is also important to monitor and provide students with resources such as internet access and the local network of the university.

Conclusions

1. Indexes of basic ICT skill level of students of various specialties differ significantly. Currently, the most prepared students for ICT education use are the students of IT specialties.
2. The Analysis of IT use by the first year students of all considered specialties makes it possible to estimate it as a high one, indicating the need to increase the level of IT skills of pupils beginning in high school and the first semester at university.
3. The research revealed the presence of an imbalance between the possibilities of information and communication teaching environment at the university and students' readiness to use IT resources in the 1st semester of studying.
4. One of the vectors to improve students' readiness to use information technology in the educational process is learning to use computer communication tools, social networks, software such as Microsoft Office, Google Docs and others.
5. One of the main benefits of using ICT in the educational process is that it may provide access for pupils to the IT resources of universities.

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