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About the problems of teaching information and communication technologies in the conditions of information society

Abstract. This article focuses on the education problems in Kazakhstan. The processes of informatization of society in the second half of the XX century and its continuation in the XXI century, transformation of information and knowledge have led to the emergence of the information society, characterized by a high level of information intensity in the everyday life of most citizens; by the use of technology for a wide range of personal, social, educational and business activities, by rapid transition and exchange of digital data between places irrespective of distance. The information age and the networked world are forcing educators to rethink the educational experience. Modern society requires new approaches to training specialists on a global level. Graduates of the university should not only have good knowledge of their field, have competencies that are formed by professional skills, but speak in three languages: Kazakh, Russian and English at the professional level. Kazakhstan education system must be able not only to give knowledge, but also, due to the huge flow of new information, be aimed at continuous self-education, self-mastery of the information. The authors point out the importance of the subject «Information and communication technologies» which must be taught in English since 2016 as a compulsory subject in the curriculum of higher education institutions. In this regard, there is a sharp demand for specialists in the field of Computer science. The authors consider that these specialists must be professionally trilingual.

Key words: education on the global level, information society, specialist in the field of information and communication technologies, trilingual education, trilingual specialist.

Introduction

The concept of information was first used by the founder of cybernetics Norbert Wiener in the 40s of XX century. Information is considered as knowledge and knowledge as power. The wise use of information gives advantage to those who have information. At the turn of XX and XXI centuries in connection with the increasing role of information and communication technologies(ICT), the information revolution has gained wide-scale nature. Information Revolution is actually a Knowledge Revolution. The global network for fast transmission of information in the digital form using a computer, satellite dishes and mobile phones is called Information Superhighway, a proposed high-speed communications system to enhance education in the 21st century. Its purpose was to help all citizens regardless of their income level to get education. The Internet was originally cited as a model for this superhighway; now the Internet has become the information superhighway which links everyone at home or office to everything else—huge collections of data, movies and television shows, shopping services, electronic mail and so on. Information revolution accelerated the formation of the knowledge society, and led to transformation of education and changes in all areas of life, including economy, culture and policy.

Under the influence of the spread of information and communication technologies(ICT) the speed and efficiency of information exchange have increased, which led not only to expansion of the boundaries of communication and cooperation in all spheres of human activity but to reassessment of values. The revolutionary impact of information and communications technologies as the most

important factors influencing on shaping the twenty-first century to a large extent determine not only economic, but also social processes. Progress in information technologies and communication changes the way we live: how we work and do business, how we educate our children, study and do research, train ourselves. The information society does not only affect the way people interact but it also requires the traditional organizational structures to be more flexible. ICTs have grown to the point of becoming necessary for societies and individuals to live and prosper. They provide new modes for creating and managing information, which lead to new means of interaction with other individuals; we can talk and see someone on the other side of the world; we can exchange documents in a matter of seconds, rather than in days or months as it used to be only a few decades ago. What has made it possible to routinize processes is not machinery. The key is not electronics; it is cognitive science. This means that the key to maintaining leadership in the economy and the technology is likely to be the position of knowledge professionals and social acceptance of their values.

Today we can say that most Asian states, Kazakhstan, in particular, being in the process of formation of an information society, have devoted huge effort and resources in order to improve their informational infrastructures and to educate experts in the relevant fields [1, p.118]. Kazakhstan has the programme of using e-learning packages in local languages in all subjects in all schools. In this regard, there is a sharp demand for specialists in the field of Computer science, in particular, «Information and communication technologies» as the science of information studies the representation, processing, and communication of information in natural and artificial systems. Since computers, individuals and organizations all process information, «Information and communication technologies» encompass computational, cognitive and social aspects. These changes will impact on the university level of education. Much work remains to be done in clarifying the curriculum if we are to build up a realistic picture of the current shape of Informatics.

Methods of research: general scientific methods such as analysis, synthesis, classification and generalization; comparative study of different systems of education.

The problems of teaching information and communication technologies

The global expansion of ICT in education has ushered in growing concern about its effect.

There is widespread belief that ICT empowers learning through a transformational effect leading to new student-centered educational paradigms that help foster intellectual creativity, problem-solving abilities, communication skills. Access to information and communication technology (ICT) in education can help individuals to compete in a global economy by creating a skilled work force and facilitating social mobility. ICT in education has a multiplier effect throughout the education system, by enhancing learning and providing students with new sets of skills; by facilitating and improving the training of teachers; and by minimizing costs associated with the delivery of traditional instruction.

The qualifying characteristics of the specialist as the trilingual professional are the following: it is an expert who has received special education in the field of his specialty in three languages and is engaged in the creation, implementation, analysis and support of professionally-oriented information systems in the fields of economics, law, social sciences and etc.; can solve functional problems, and can manage the information in the subject area with the help of these information systems. Thus, computer analyst in his future professional activity will analyze, forecast, model and create information processes and technology within professionally-oriented information systems. All this determines the need for a balanced inclusion of disciplines of computer science in the standard of education.

All these criteria fully apply to the preparation of IT analysts for the sphere of education. Analysis of existing standards of training of the specialist shows that the requirement of qualifying characteristics means that the future specialist should have knowledge of advanced information technologies of designing, creating, analyzing and maintaining professionally-oriented (in this case – teaching) information systems. This demand cannot be achieved in full volume without improving the content of the standard of education.

Despite the fact that the issues of quality training for positions such as "Methodist-organizer of informatization of education", «Director of studies of informatization of education», «Training course development", "Specialist in distance education" and so forth have been discussed several times in mass media, the significant changes have not been made in the standard yet.

In our opinion, the main drawbacks of the current standard are firstly, irrational use of time during the development of disciplines because of the duplication of a range of issues in a variety

of disciplines. Secondly, the requirements of the standard do not fully take into account the prospects of development of information technologies themselves, the processes associated with the development of the information society. Thirdly, the standard is not focused on the most significant dynamic changes in the subject area (education) – the processes of modernization [2, p.58].

Here there are just a few examples relating to the duplication of the content in various subjects. Thus, quality assurance programs are discussed with absolutely identical positions in several courses. According to the standard, the content of the course "Informatics and programming" includes the theme "The main stages of computer problem solving; modular programs; object – oriented programming; quality criteria for the program; interactive program". In the course "Development and standardization of software and information technology," the student acquires the theme "Evaluation of qualitative and quantitative characteristics of software" and "Evaluation of the effectiveness of the software." The student learns the similar content once again in the framework of the course "Information Management".

A similar approach to the substantive content of the standard can be found in topics related to software development at all stages, and information systems, in particular. Thus, during the study of the course "Development and standardization of software and information technologies" students get acquainted with the subject "Organization of design software; stages of the design process." Similar topics are studied by them in the course of acquisition of the discipline "Design of Information Systems", in the course "Information Management" as "The organization of the control for various phases of the organization of IT and IP: design, implementation and operation, composition and content of work"[3, p 56].

And these are just some examples, the list of which can be extended.

Particular attention should be paid to the need to improve the educational standard of training informatics analyst for education in connection with the development of the information society.

It is known that different people have different psychological resistance to the process of informatization. Today, a wide range of topical issues can be attributed to the social consequences of informatization. Among them, the issue of a precise definition of maximum permissible loads on the psyche in different social groups in terms of increasing of the flow of information, the problem of computer phobias; computer manias and many others. The study of these issues is carried out in the framework of a new scientific field – Information Psychology [4, p.84].

It is extremely important to include a separate discipline, Computer Psychology, in the preparation of the standard of informatics analyst. The content of this discipline must be significant and it should be studied, in our view, in 5 – 6 semesters [5, p. 192-193]. It is necessary to have a special theme "Information security of a person in the information society" while studying this discipline.

We should note that the content included in the standard of the course "Information Security" is largely technocratic. It considers the legal aspects of information security only partly, and does not touch at all the moral and psychological problems arising in the information society and ways to overcome them. Meanwhile, the scientists found that the addicts of the virtual world, are easily hypnotized to a much greater extent than to the ordinary world,. There is a real threat for them to become "zombie", in particular through the game program or using elements of neuro-linguistic programming through software viruses. Special attention must be drawn to the fact that abroad the observance of citizens 'rights in this respect has long been monitoring by the commissioners for the protection of citizens' rights in the information systems [6, pp. 72-73].

The course "Computer psychology" is appropriate to provide the formation of the skills of research and the organization of several research practices.

As to the third drawback selected by us of the current standard that the standard is not focused on the most substantial changes in the dynamic domain – processes of modernization. The problem is much deeper. It appears that the standard is unbalanced in this part. Disciplines focused on the study of the education system in general, a common methodology, in particular, are very limited [7, p. 231].

There is another important aspect of IT problems in training analysts for education which should be mentioned. Today, Kazakhstan is in an intensive process of transition to a multi-level education, which is caused, first of all, by Kazakhstan's integration process into the European education system, initiated by the signing of the Bologna Declaration. The authors of several publications consider to be advisable to train a specified qualification in the framework of the Master's program "Informatics in Education". It seems that the transition to such a system of training of IT analysts for education

will not improve the current state of affairs, but will minimize the positive results that have been achieved through the implementation of specialty programs. It is connected with the fact that high-quality training in the field of computer science and information technology, which is an important component of the training computer analyst, is possible with a slow progressive development of the respective competences of trainees, during the acquisition of sufficiently large volume of knowledge, skills in the field of computer science and ICT skills. Moreover, success largely depends on how intensive is the process of development of procedural and critical thinking of students [8, p.31]. The latter can be implemented most successfully in teaching of Information Processing cycle disciplines, and on the other hand, as noted by psychologists, intensive development of individual thinking may be up at the age to twenty years.

Another aspect of this problem is the persuasion of the need to remove from the list of professions, informatics-analysts for education.. According to the formal approach to this issue the teacher training institutions cannot receive the state order for training of future informatics – analysts for education, which absolutely cannot be permitted. No institution other than teacher training institution cannot provide high-quality training of future specialists in accordance with the qualifying characteristics of computer analyst for the following tasks [9, p.172]:

– introduction of computer techniques in the subject area;

– the development of opportunities and adaptation of professionally-oriented information systems at all stages of their life cycle;

– the creation of information-logical models of objects, the development of a new software package and information in the subject domain;

– application of methods of system analysis and mathematical programming algorithms for adaptation of information systems in the subject domain.

Teaching Informatics and Computer Science in English language is experiencing a challenge in Kazakhstan. Despite the reforms, the quality of higher education in Kazakhstan remains a big question. What prevents the development of our universities is the management system in higher educational institutions, as well as the low proportion of foreign teachers with decent skills, the problem of teaching in three languages. The main trends and prospects of the development of higher education in Kazakhstan are:

1. The internationalization of higher education and mobility of teachers and students, the possibility of a broader exchange of experience, training abroad.

2. Strengthening of the practical orientation of education, the implementation of educational programs in applied disciplines, attracting teachers and practitioners. Master classes and workshops must be conducted with the participation of well-known businessmen, managers, heads of large companies, well-known representatives of science, culture. Current requirements of modern employers must be at the core of curriculums.

3. The widespread introduction of distance and e-learning technologies and, as a result, the rising popularity of distance education. Distance education is indispensable for remote towns, villages where there is no other opportunity to get the desired education. It should be noted that distance education programs are much cheaper than similar training courses conducted by the traditional system. Integrating computer technology can help in bringing changes to the teaching and learning environment in order to create a 'dynamic' learning environment.

Conclusion
The era of global information requires new forms of teaching. The traditional educational model worked for centuries. The educational reconstruction, creation of new universities programs, joint international projects will help to develop Kazakhstan's own model of education which can become competitive based on its own experience and traditions. The process of changes in education of Kazakhstan needs time, governmental and international support. Nowadays the main goal of education is to give knowledge to students equipping them with the wide range of 21st century skills and competences required in the global economy, to develop skills of a global citizen. Education has become a multipurpose social service. The future of Kazakhstan will significantly depend on the initiative and intention of teachers to implement innovations, to use new technologies, methodologies. The concept of e-learning identifies the priorities to create a single information educational environment. This concept identifies the necessary measures to enhance the processes for the implementation of a uniform system of e-learning at all levels of training. We note that the preparation of the competent and competitive trilingual specialist, computer analyst for education is a very important problem, the relevance of which is constantly increasing due to the dynamic development of the information society. Our country has reformed

the national education system in the line with the main provisions of the Bologna Declaration. The problem of language training becomes urgent for students and teachers for implementation of the mobility process. New generation of trained and skillful teachers who know three languages: Kazakh, Russian and English is an urgent need for Kazakhstan. Nowadays trilingual education is being implemented in Kazakhstan from secondary school. The number and quality of teachers who will be able to teach in three languages will increase if adequate support is given to a language-teaching policy. If the country wants to become more competitive on the world stage and intends to equip its citizens with the skills to compete in the global arena, more serious consideration should be given to providing as many students as possible a full command of three languages.

Being at the crossroads of Eastern and Western cultures, the Kazakhstan education system should include the modern international standards, introduce the latest educational technology, strengthen the material-technical base; actively integrate into the world educational space The concept of "education" has radically changed its meaning by UNESCO recognition. Now we are talking about a single continuous education, which lasts a lifetime. This provision defines the educational strategy that focuses on the formation of personality, capable of active and effective life in the multinational environment, having a strong sense of respect and understanding of different ethnic cultures. This educational strategy is able to accomplish the following educational goals: to promote deep and thorough mastery of the foundations of national culture, which in turn acts as an essential condition for integration into other cultures, forming ideas about the diversity of ethnic cultures, upbringing the tolerant attitude to ethnic and cultural differences, joining to the foundations of the world culture. This creates the conditions for self-realization in a multinational environment. This explains the focus of state policy in the field of education, culture and science in order to ensure respect for other cultures, tolerance and cooperation.

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