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Informatization of Kazakhstani Higher Education

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Abstract

This paper presents Kazakhstani scientific literature in the field of using ICT in education. We examined key milestones in development of educational system. We tried to study the process of informatization in higher education of Kazakhstan for the last 15 years. This process requires a deeper critical thinking in identification of main problems and sharing of Kazakhstan experiences in English-language research literature. In spite of the systematic work on implementation of ICT in higher education, Kazakhstan still has not a unified information educational environment, and the process of informatization is gradually losing effectiveness. We have found the possible solutions and recommendations.

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1. Introduction

Since 1997, Kazakhstan has systematically plans of informatization in higher education. Kazakhstan education community carefully studies the international experience of information educational systems in developed countries. According to The Global Information Technology Report (Dutta & Bilbao-Osorio, 2012) Kazakhstan is one of the best performers among the Commonwealth of Independent States (CIS). Country counts on affordable access to ICT infrastructure. Moving forward, in addition to continuing to upgrade and develop their ICT infrastructure, Kazakhstan should improve the quality of educational system and build effective innovation system with the active participation of the private sector. Unlike the cases of mineral-rich Kazakhstan, government has not yet led the process of fully deploying ICT; this results in inevitable lower economic and social impacts.

Nowadays, Kazakhstan has telecommunication network that was implemented through a large-scale state project called the National Information Super-Highway (NISH). The total length of the NISH is about 11,500 km, of which 9,600 km of the Fiber Optic Communication Lines (FOCL) have been laid (Nurgalieva, Tazhigulova & Artykbayeva, 2010). All cities of Kazakhstan are connected via digital channels. The breakup of the Soviet Union, the Central Asian countries of Kyrgyzstan, Tajikistan, Uzbekistan, Kazakhstan and Turkmenistan have been in great need of social, economic and educational reform (Latchem and Jung, 2009).

In recent years the introduction of e-Learning in Kazakhstan has become the top priority in the process of informatization of higher education. According to Ministry of Education and Science (2011), government plans to allocate 1 billion USD for e-Learning development in next 10 years. In 2011 the e-Learning project was launched in

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44 education institutions in a pilot mode. Nurgaliyeva and Artykbayeva (2010) point out that development of e-Learning in Kazakhstan has special social significance and relevance. For example, many people live in villages and towns that are far from the administrative and regional centers; schools of small towns lack teaching staff and have poor methodological provision of information and learning resources; more than 2 million people need annual retraining. E-Learning is actively introduced into the national high education. Kazakhstani high education moves towards the annexation of the national education system to the Bologna education model, involvement into the European and world educational system with the preservation of the good experience of the previous national educational system (Zhakupova, Gazdiyeva & Tavlyu, 2011). However, the active development of e-Learning is only one component in informatization of education in Kazakhstan. In our study, we will consider the informatization of Kazakhstani education as a whole process. We will define the main directions and trends of further informatization of higher education in Kazakhstan.

2. Methodology

Kazakhstani researchers have conducted numerous studies in the field of informatization. This process requires a deeper critical thinking in identification of main problems and sharing of Kazakhstan experiences in English-language research literature. In our study, we analyzed the scientific literature in the field of informatization of higher education in Kazakhstan in the past years. We received data for the study from papers of Kazakhstani researchers (doctoral and PhD's theses, articles of journals, book chapters, conference proceedings and government documents in Kazakh, Russian and English). We also tried to identify the main milestones in the development process of informatization Kazakhstani education from 1997 to 2010. And also government plans to continue this process for subsequent years until 2020.

3. Results

3.1 Informatization of higher education system

Many Kazakhstani researchers have attempted to determine special features in development of higher education in the informatization context. For example, Mynbayeva (2001) identifies the taxonomy of information technology learning goals. The author had presented a package of measures, which was aimed as "humanizing information technology learning". The paper discussed the concepts - information technology learning and teaching fundamentals of information technology learning. The author developed a model of didactic information and technology education and proposed a package of training programs in pedagogy. This software package is designed for use in the educational process of university. Mynbayeva (2010) shows the pattern and principles of the scientific activity of Kazakhstani higher education in the context of informatization in society and education. The author suggests an updated understanding of the principle of scientific didactics of higher education in Kazakhstan.

Akhmetova (2009) presents the essence of informatization in higher education. The author presents the pedagogical technology in the organization of professional networking community of Kazakhstan. Tazhigulova (2009) creates a conceptual model of informatization in secondary education that reflects the real needs of the educational process of schools in Republic of Kazakhstan. Informatization of education should not be legislative method. As a pedagogical system it must be democratic, the process should be organized for teachers and students (Tazhigulova, 2011).

3.2 ICT competences in Kazakhstani education

An important direction in the process of informatization is the acquisition and development of specialized ICT skills that are necessary for the successful dissemination of knowledge in the twenty-first century. For the Kazakh scientists this area has become a priority. For example, Zhaksybayeva (2010) creates the levels of college tutor' information competence (there are basic, functional, advanced, professional-networking, professional-methodical and professional-creative levels). The author proposes a model and method of formation the information

competency of college teachers. Bekturganova (2004) presents a teaching technique forming on the college students' research competence. This teaching technique based on information and communication technologies in the computerization of education system. Moreover, Chaklikova (2009) reveals the essence in the category of intercultural and communicative competences as the goal of socio-technological development in foreign language education. The author has developed a system of foreign language education, representing the unity and interdependence the concepts of informatization in foreign language education.

3.3 ICT structure of education

In recent years, some scientists continue to create a theoretical basis for ICT structure of education in Kazakhstan. For example, Nurgaliyev (2010) develops the pedagogical conditions for establishment and development of information and educational environment with modular vocational-oriented content. The author proves the methodology of distance interaction between students, teachers and employers. Samatokina (2010) develops an info-communication infrastructure of Kazakhstani urban education system based on teaching architecture that provides the interaction of subjects in educational process. The author has created a model of management of urban education system as a set of pedagogical criteria and indicators. Abdraimov (2010) reveals the specifics and structure of teacher training management system in process of colleges' informatization. The author has identified the basic goals of creating educational portal for the informatization of professional education. Mukushev (2010) describes the creation of ICT conception of legal education in higher schools of Kazakhstan. The author shows the aims, purposes, content and principal directions of information technology in legal education.

3.3 Milestones in informatization of Kazakhstani education

In our study, we identified four main stages in the informatization of education in Kazakhstan. It should be noted that these stages are based on state initiatives for development of ICT in education. Chronologically, the period of information stretched over more than 20 years.

3.3.1 The State Program of Informatization of Secondary Education System for 1997-2002

In September 1997 the government approved the State Program of Informatization of Secondary Education System for 1997-2002. The purpose of this Program was the creation of unit information and educational system in Kazakhstan. Program was divided in 5 phases: for the first phase (1997/98 academic year) there were equipped the secondary schools in cities and regional centres. In the second phase (1998/99 school year) there were started the computerization of secondary schools. In the third phase (1999/2000 academic year) it was ended the period of computerization of all secondary schools. In the fourth phase (2000/01 academic year) was carried out the computerization of all primary schools. Finally, in the fifth phase (2001/02 academic year) there was completed the education management information system. As the results of Program implementation there were created flexible, methodological and technical support of education system, the development of information culture and the basics of computer literacy in schools (Ministry of Education & Science of Kazakhstan, 1997).

3.3.2 The Concept of Informatization of Education System in Kazakhstan for 2002-2004

In August 2001, government adopted the Concept of Informatization of Education System in Kazakhstan for 2002-2004. The main goal of informatization of the education system is the creation of a unified educational information environment in the Republic of Kazakhstan and the integration of information system into the world educational space. The Concept is scheduled for implementation from 2002 to 2005 and covered all levels of primary and secondary education. However, there were no systematic coordination and purposeful planning and financing of Concept. In the field of distance education, some universities started to research and development this sphere. E-Learning carried out mainly by enthusiasts who have developed a series of electronic textbooks for university courses (Ministry of Education & Science of Kazakhstan, 2001).

3.3.3 The State Program for the Development of Education in Kazakhstan for 2005-2010

In October 2004 the government presented the State Program for the Development of Education in Kazakhstan for 2005-2010. The aim of Program was the modernization of education system and improvement of human resource quality. One of the main directions of Program was the total computerization. The expected outcomes of the Program were implemented in 2 phases. In the first phase (2005-2007) there were increased use of ICT in educational process and improved the quality of education by providing data access facilities to electronic resources. In the second phase (2008-2010) there were developed and implemented the modern e-textbooks for all subjects of secondary school. In 2010 the number of personal computers in schools has reached to the ratio of 1 computer per 20 students (Ministry of Education & Science of Kazakhstan, 2004).

3.3.4 The State Program for Development of Education in Kazakhstan for 2011-2020

In December 2010, the government approved the State Program for Development of Education in Kazakhstan for 2011-2020. The main objective of the program is to increase the competitiveness of education, human capital development by providing access to quality education for sustainable economic growth. One of the main directions of education program is the e-Learning development in Kazakhstan. The purpose of this direction is to ensure equal access for all participants in the educational process to the best educational resources and technologies. The introduction of e-Learning will require changes and additions to the series of regulatory documents. By 2012, it will be made the State Educational Standards of higher, technical and vocational education in terms of training teachers to work with national e-Learning system. According to Program all high schools will be provided 100% access to broadband Internet by 2020 (Ministry of Education & Science of Kazakhstan, 2010).

4. Discussion

Informatization of higher education in Kazakhstan, despite strong support from the government, still has some problems. This is primarily due to the uneven development of ICT infrastructure within the country. The most developed regions are the two largest cities Astana and Almaty. Accordingly, in these cities contained the largest financial and human resources that contribute to the rapid development of information systems, not only in the economic sphere, but in education. Here are the best-equipped universities, colleges and schools. In these two cities, are created favorable conditions for the informatization of education at all levels. But at the same time, other regions and towns of the country are developing at a slower rate, which directly affects on development of ICT in education. In the regions, universities often do not actively develop their ICT infrastructure, although there are many initiatives in the deployment of distance education systems, many universities still suffer from insufficient funding to continue the work on informatization of educational services.

Another major problem is the fact that teachers and professors are often moved to Astana and Almaty in order to pursue a career in the major universities, thus human resources in the region are gradually deprived of highly qualified and motivated personnel. Thus, university students in Kazakhstan initially placed in an unequal information and access to digital learning resources. Also, young teachers are unable to learn from older colleagues because of the lack of systematic work to improve the skills and improvement.

In our opinion, the main error in the implementation of state programs for informatization of higher education is that each program is aimed primarily at the development of technical infrastructure and support of leading universities. However, it is ignored the fact that the first need is to develop and teachers. It should be noted, that regional universities are often forced to develop their own ICT infrastructure without state support, and sometimes this is done with no real desire of management of the universities. Although almost all the universities of Kazakhstan today are equipped with good technical quality, yet human resources (teachers, assistants and technicians) cannot fully develop its own ICT system of education and the need to justify the use of ICT in learning process. We hope that the new initiatives from the government will stimulate the process of informatization of higher education in the aspect of new teachers' generation.

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