Abstract. In the modern world, qualitative transformations are constantly taking place. Technology is a part of the effective educational system. The relevance of this topic is caused by the global introduction of computer technologies in all spheres of activity, the formation of new communications and a highly automated information environment have become not only the beginning of the transformation of the traditional education system, but also the first step towards the formation of an information society. The main existing segments of the education system are educational programs and curricula, teacher qualifications, education management and support infrastructures in the field of information technologies (IT). According to UNESCO, information and communication technology (ICT) can complement, enrich and transform education for the better [1]. These values are also significant for society, since the rapid development of technologies in all areas of science, culture, production involves the use of the creative potential of educated people not only in the field of management, but also for servicing technologies. Therefore, the “new learning” method is considered as one of the priority directions of informatization of society. Integration of ICT is being integrated into educational system and we can call it as a “new learning” approach.

Keywords: ICT, “new learning” approach, informatization of higher education, new technologies.

Introduction

The main directions of the formation of an effective education system, which have fundamental importance for Kazakhstan are at the stage of complex economic transformations including the process of improvement of the quality of education
and new forms of using ICT in various of educational processes. The ICT provides a broad perspective on the nature of technology on how to use and apply a variety of technologies, and the impact of ICT on education and society. Technology is about the ways things are done; the processes, tools and techniques that alter human activity [1]. The recent developments in digital technologies, the social, business and educational uses of these technologies have resulted in almost unimaginable accumulation of data from various sources. Conventionally, some of these sources are intranets, spreadsheets and databases. These sources include emails, PDF documents, photos, videos, audio, social media posts, data resulting from various business operations and transactions on billions of pages of the internet sites on the World Wide Web. The sources and the data are therefore often distributed and connected, related and often have inter-dependencies. There are in fact two major reasons why we are interested in big data (Shnurenko I., Murovana T., Ibrahim Kushchu I., 2020):

1) Discovering new and original insights in the data to support social and business lives in changing dynamical environments, and

2) Solving an existing social or business problem better by gathering more useful information through big data. Artificial intelligence (AI) has already come into our daily lives mainly through mobile devices and the Internet. Similarly, governments and businesses are increasingly making use of AI tools and techniques to solve educational, business problems and improve many business processes, especially online ones. Such developments bring about new realities to the social life that may not have been experienced before. This has led to the developments of tools and techniques to deal with the “big data”. Digital industry developed various ways to support utilization of big data via “the cloud computing” or the cloud for short. Added to this connected world are intelligent automation and robotics as the core strengths of a new concept “industry” [2,12]. The followings are relevant technological components influencing AI: “big data”, the cloud, industry 4.0, automation and robotics. Therefore, the role of education in this case is very essential.

However, there are some problems in mastering ICT in education which arise
due to the lack of not only a methodological basis for their use in this area, but also a methodology for the development of ICT for education, which forces the teacher in practice to focus only on personal experience and the ability to empirically look for ways to effectively use information technologies.

**Main body**

New technologies and innovations are being introduced, IT technologies are developing, and the mobility of human resources is growing. In such conditions, education and science should play a major role. Analyzing the issues of using ICT in higher education it is important to highlight that it is on the way of the process of introducing ICT into the education system, providing educational institutions with computer equipment, the development of telecommunications, global and local educational networks. There is a need to mention also a positive experience of introducing ICT into education system through the use of the program software. Use of ICT allows to develop reflexive learning which can increase motivation for learning of students; to form key competencies of students in the learning process, organize independent and research activities of students; to develop spatial thinking and cognitive abilities of students.

The impact of this new technology of learning is very high. As time shows, different pedagogies have evolved and society has changed and emerged by new IT trends. This “new learning” approach involves reflective learners, and pedagogy which is transformative. It is because didactic pedagogy or as we call it traditional teacher-led approach includes student learning, gaining knowledge and the ability to express that knowledge, interaction with a teacher seems to be commonly used and appropriate. Simultaneously a “new learning” approach is developing and represents ITC as an effective learning method. Advantages of using ICT in education over didactic, traditional education as E.I. Mashbits refers, is a set of essential advantages of using a computer in teaching over traditional classes [3]. Information technologies significantly expand the possibilities of presenting educational information. The use of color, graphics, sound, all modern means of video technology allows to recreate the real environment of the activity. A computer can significantly increase the motivation of students to learn. Motivation is increased
through the use of effective tools for correct problem solving. ICT involve students in the educational process, contributing to the widest possible disclosure of their abilities, enhancing mental activity. The use of ICT in the educational process increases the possibilities for setting educational tasks and managing the process of solving them. Technically computers make it available to build and analyze models of various objects, situations. Moreover, ICT phenomena allows to qualitatively change assessment of students’ activities, while providing flexibility in managing the educational process. The computer contributes to the formation of reflective learning of students. The training program allows students to visualize the result of their activities, determine the stage in solving the problem at which a mistake was made and correct it [3].

“New learning” approach is the process of providing the education sector with methodology and practice for the development and optimal use of modern ICT tools, focused on the implementation of psychological and pedagogical goals. The main goals of a “new learning” approach are development of informational culture (development of general skills in the use of information technologies, both by teachers and students to improve the efficiency of their activities), flexibility and accessibility of education (informatization of education makes education more flexible and accessible in terms of timely response to changes in the social educational system);

The most important tasks of a “new learning” approach are:

– Improvement of the quality of training for students through the use of modern information technologies in the educational process;

– Use of active teaching methods, increasing the creative and intellectual components of educational activities;

– Integration of various types of educational activities (educational, research, etc.);

– Adaptation of information technologies of teaching to the individual characteristics of the student;

– Development of new information technologies of teaching, contributing to the activation of the cognitive activity of students and increase of the motivation to
master the means and methods of informatics for effective use in professional activity;

– Ensuring the continuity and consistency of learning;

– Development of information technologies for distance learning;

– Improving the software and methodological support of the educational process;

– Introduction of information technology training in the process of special professional training of specialists in various of fields.

One of the most important mission of a “new learning” approach to highlight is the formation of a specialist’s information culture, the level of formation of which is determined, firstly, by knowledge about information, information processes, models and technologies; secondly, the skills and abilities of using the means and methods of processing and analyzing information in various of activities; thirdly, the ability to use modern information technologies in professional (educational) activities; fourthly, the worldview vision of the surrounding world as an open information system.

The main values of the “new learning” approach in higher education system are the ability to think independently, relying on knowledge, experience, the ability to apply this knowledge to solve specific problems, as opposed to just erudition, possessing a wide range of knowledge of ITC technologies open up completely new technological training options associated with the unique capabilities of modern computers and telecommunications.

The use of ICT can make it possible to search for an answer to many questions, simultaneously work in several directions, process huge information in a minimum of time. At the same time, the position of both the student and the teacher changes significantly: there are more opportunities for organizing and developing cognitive and teaching activities. “New learning” approach leads to filling didactic principles with a new content. So, the scientific principle is manifested in the reliability of educational information obtained from information resources of the Internet, and the correct presentation of educational material using multimedia and hypermedia technologies, as well as through built-in learning technology. “New learning”
approach nature of education using ICT means are manifested in the creation of conditions for the formation of such socially significant personality traits as activity, independence, creativity, the ability to adapt in an information society, for the development of communication skills and the formation of the information culture of the student. Visibility is provided on the basis of multimedia technology, thanks to which information can be presented in such a way that a student perceives it with several senses at once, which significantly increases the effectiveness of learning. The study of the works of researchers in the field of informatization of education (K.G. Krechetnikov, I.V. Robert, N.V. Sofronova) made it possible to identify and reveal the following didactic principles underlying teaching using ICT tools [6]:

– the principle of adaptability of teaching, which is implemented at different levels ensured by various means of visualization, differentiation of educational material in terms of complexity, volume and content; the principle of interactivity of teaching, which is expressed in the active interaction of the user with the computer in the form of a dialogue of pedagogical orientation and presupposes the student’s conscious activity, supported by the assessing activity of the computer and implemented at various levels;

– the principle of individuality of teaching, which includes creation of conditions for independent work of students by providing them with individual tasks and evaluating the results of their implementation, which contributes to the activation of educational activities and increases the level of the assimilation of educational material.

“Informatization of society” and education

The main values of the information society are knowledge, qualifications, independent thinking, ability to work with information and make a reasoned decision on this basis; awareness not only in a narrow professional field, but also in related fields. The ability to think independently, based on knowledge, experience, is valued much higher than just erudition or possession of a wide range of knowledge without the ability to apply this knowledge to solve specific problems. ICT as “new learning” method can serve as a basis for continuous training in professional life, as well as in personal and social life. Thus, the concept of “informatization of society”
can be defined as a global social process which consists of collection, accumulation, processing, transmission and use of information, carried out on the basis of microprocessor and computational technology, as well as on the basis of various means of information exchange. Since the ability to work with information becomes one of the priorities for a modern person, the education system is designed to form the student’s ability to think critically, starting from first year of study (critical thinking is characterized by knowledge, comprehension, application, analysis, synthesis and evaluation). Education, flexibility of thinking, the ability to navigate in a huge flow of information become significant values for a person throughout his life.

**Didactic teaching and a “new approach”**

As it is known, didactics is a theory of teaching, showing the patterns, principles of teaching tasks, content of education, forms and methods of teaching, learning and assessment in the educational process, characteristics of all academic subjects, at all age stages of learning. Didactic teaching includes IT technologies as technical and technological qualities of the course that can be used for didactic purposes in the educational process. Didactic features of educational information transfer technologies in the following ways:

- Preparation, editing and processing of educational, education-methodical, scientific information

- Didactic features of technologies for organizing the educational process:
  1) e-mail: transmission of messages simultaneously to a large number of students;
  2) asynchronous exchange of information (text, graphic, sound) between the teacher and students;
  3) the possibility of organizing consultations and assessment;
  4) teleconferencing: providing synchronous and asynchronous communication.

The influence of ICT on pedagogical technologies is expressed in their enrichment through the use of ICT capabilities. They provide educators with effective aids that, if integrated in a meaningful and harmonious way, provide new
opportunities for both educators and learners. So, the inclusion of ICT in the educational process allows:

1) Organize various forms of educational and cognitive activities in the class;
2) Make students’ independent work active and purposeful
3) Provide wider access to educational information through computer technologies of search, access, selection and structuring information in Internet and Intranet;
4) Ensure the delivery and storage of information
5) Create a possibility of choosing an individual educational program which ensures implementation of a personality-oriented approach in organizing the learning process;
6) Ensure the possibility of combining information resources of educational and scientific centers;
7) Involve leading teachers and specialists in the educational process;
8) Develop creation of a distributed scientific laboratory (when the equipment is located not only in different rooms, but also in different buildings, cities and even countries);
9) Organize joint scientific experiments and educational programs;
10) Provide new forms of control and assessment of knowledge

**Integration of ICT into educational process**

The creation and development of pedagogical information technologies is a prerequisite for the functioning of the information and educational space of the state, since these technologies, on the one hand, are based on the foundations of the theory of pedagogy, psychology, computer science, management, on the other hand, they use the wide possibilities of modern information and telecommunication technologies. A partial solution to the problems of fragmentation of educational resources was carried out on the basis of the creation of information educational portals (integrated Web systems), which combine the main information resources of high educational value since the most popular resources are collected and systematized on them. The trend of modern education is the integration of these materials into unified software and methodological complexes (EMC) [7],
considered as educational electronic publications and resources, electronic training courses. There are three stages in the development of EMC:

1. Preparatory (planning, selection of tools);
2. Production (project implementation);
3. Final (product testing).

There are five groups of tools used in the development of EMC. General purpose tools are the followings: graphic and text editors; spreadsheets; programs for creating presentations; - programs for creating animations (for example, Macromedia Flash); sound editors and others. In connection with the beforementioned focus of the educational process on the development of activity and independence, the development of infrared technologies has also intensified allowing to solve these problems. Multimedia technologies are one of the most promising and popular educational information technologies. The effectiveness of multimedia technologies is due to their interactivity (due to hypertext technologies), which allow the student to actively interact with the named means. Interactivity means the existence of conditions for educational dialogue, one of the participants in which is ICT. Thus, multimedia courses, in comparison with other electronic educational resources, have the following didactic advantages - they are means of complex influence on students, which uses different channels of information perception and simultaneously all types of activities: mental, speech, physical and perceptual [7].

Levels of using ICT in education

The nature of these issues indicates the need to develop a concept that would formulate the principles of using ICT in the educational process at three levels: technological (the level of individual technologies for the formation of skills and development of skills), integration (the level of the system for the formation of communicative competence, integrating individual technologies) and strategic (the level of organization and planning of the educational process in the context of the use of ICT) [8].

Support of UNESCO

United Nations agency UNESCO supports successful ICT in education practices. It develops capacity-building activities, technical advice, publications,
fieldworks, and international conferences such as International Conferences on ICT and Post-2015 Education and Mobile Learning Week, and fieldwork, UNESCO helps governments and other stakeholders leverage technology for learning. The 2009 UNESCO World Conference examined the “new dynamics” of higher education and research and identified the relationship between the growing role of ICTs and the spread of open and distance learning [9]. identified four key trends in higher education in the United States: the rise of online learning, the acceleration of this growth, the large share of the commercial sector in distance learning and the challenge of ensuring the quality of distance learning outcomes in higher education. In 2010 US distance learning increased to 21% in comparison with 2009, compared with a 2% increase in total university enrollment. Over 80% of American students are likely to choose online courses in 2014, up from 44% in 2009. Seven of the top ten US institutions with the highest enrollment in online education are also developing. Already well established in this learning format, commercial providers are likely to profit from the student’s choice of online learning. In addition, paid forms of study are more convenient for online promotion, as they face less resistance from the teaching staff and do not depend on investment in the university program. In 2012, several US universities took a step forward and began offering Massive Open Online Courses (MOOCs) around the world. Today, the percentage of graduates from these non-credit courses is very small, but this is, in any case, a dynamic that is worth watching [9].

The UNESCO World Report Towards a Knowledge Society (2005) notes the rapid development of social media and new technologies, which is associated with the concept of the “Age of Socialization”. The pace of modern development and the ability to work remotely has led to the emergence of new business models such as the use of open-source software on the Internet for open discussion and collaborative development from the beginning. Therefore, UNESCO programs related to ITC include:

- capacity building and policy advice for the use of technology in education, in particular in emerging areas such as mobile learning;
- Train educators skills necessary to use ICTs in all aspects of their careers
through tools such as the ICT Competence Framework for Educators;

- Encouraging the creation and use of multilingual educational resources and software that are reusable through open licenses (open educational resources - OER; free open source software);

- Use of ICTs for inclusive education and gender equality, as well as for the benefit of persons with disabilities;

- Collection of statistics and development of indicators on use of ICT in education [10].

**Advantages of using ICT in education**

The creation and development of the information society (IS) presupposes the widespread use of information and communication technologies (ICT) in education, which is determined by a number of factors. First, the introduction of ICT in education significantly accelerates the transfer of knowledge and the accumulated technological and social experience of mankind, not only from generation to generation, but also from one person to another. Secondly, modern ICT, improving the quality of training and education, make available to student to more successfully and quickly adapt to the environment and the ongoing social changes. ICTs affect all of these areas, but perhaps the most positive impact they have on education, as they “open up the possibility of completely new methods of teaching and learning” [11].

**Conclusion**

The higher education system exists now in an environment in which ICT plays a very significant role. Organization various forms of educational activities in the classroom, make students independently work with information, search, access, selection and structuring via ICT determined modern method in pedagogy called “new learning approach” which includes an understanding of the interaction of modern information technologies, the meaning of competence approaches, principles and requirements for development, as well as the ability to use competent means of preparation, information transfer (computer literacy), the ability of students to work with any information, knowledge and certain skills of using information resources, technologies. The development of computer technology and IT based on it has led to the emergence of the concept of an informatization of
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