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INFORMATION AND COMMUNICATION COMPETENCY DEVELOPMENT IN EDUCATION SYSTEM: MODERN STUDIES AND PROSPECTS

Abstract. The article shows the results of international and Ukrainian experience on the development of information and communication competency of secondary education process participants, based on research and scientific achievements of academic staff of the Comparative Studies Department for Information and Education Innovations of the Institute of Information Technologies and Learning Tools of NAES of Ukraine. The main obstacles for school teachers towards the formation of computer-based learning process are underlined. The article justifies actuality, significance and necessity for creation, development and evaluation of the ICT competency in education, as well as it further investigation in order to make substantial recommendations on the improvement of education system.

Keywords: ICT competency; information and communication technology; informatisation of education; education.

1. INTRODUCTION

The main trends of modern society which affect all spheres of human activity became the development processes of knowledge and information and communication technologies (ICT). The level of these processes, in line with global trends, is determined by the needs of society to improve the value of human capital, knowledge, competitive experts, development of the education market and rapid increase of the ICT.

The need of the study and of the resolution of the problem of development of information and communication competency (ICT competency) of education process participants is explained by fast development of the information society, as well as by the necessity of integration of the ICT in the education system. A particular attention among studies on ICT competency is paid to the analysis of international experience, its comparative study and giving recommendations to domestic experts.

The objective of this article is to analyse international experience on the development of ICT competency of education process participants within comparative research conducted by staff members of Information and education innovation institute of information technologies and learning tools of NAES of Ukraine, in order to review the existing approaches and correction models of its development.

2. RESULTS OF THE STUDY

First of all, it is important to note that comparative educational study has to analyse the whole process of educational systems in different countries by comparing their similarities and differences which were discovered through the study (7). As our domestic scientists Loshkin O.I. and Bednaya V.B. noted, general and specific research in education allows you

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to find and give a scientific interpretation of education traditions, its systems, allows to enrich national pedagogical culture through international experience, accumulating the knowledge on current trends of global development of education, permits to better understand national priorities of education, direct and predict its development.

The problems of development of ICT competency in the education system were raised in analytical studies of the following researchers of the Institute of Information Technologies and Learning of NAES of Ukraine: Bykova V.U., Bilous O.V., Gurzhiy A.M., Grytsenchuk O.O., Ivaniuk I.V., Kravchina O.E., Leshchenko M.P., Malytska I.D., Morze N.V., Ovcharuk O.V., Rozhdestvenska D.B., Soroko N.V., Spirina O.M., Tymchuk L.I., Tkachnko V.A., Shinenko M.A., etc.

ICT competency occupies a particular place among conceptual international instruments and strategies. The recommendation of the European Parliament and of the Council of Europe of 18th December 2006 on key competencies for lifelong learning (2006/962/EC) describes eight key competencies important for lifelong learning education, where digital competence is present and principally covers the issue of technologies and its usage for work, leisure time and communication. However, the above mentioned competencies contain the components of ICT competency, namely the ability to search, collect and process information data, its critical use, ability to differentiate real from virtual, use tools including software Internet tools for production, presentation and processing of information and data (12).

The concept of ICT competency has different degrees of interpretation depending on the type of education system, Ukrainian researchers Gurzhiy .M and Ovcharuk O.V have pointed out. Researchers give different connotation to this notion; they usually use the notion which is already described and enshrined in national documents and sometimes add their own colours in the research works. It is important to note that in international environment the notion of ICT competency is in line not only with technological or digital field, but it is associated with various aspects, including social, communication and civic aspects of human life and society.

Summarising all the debates on the issue of the ICT competencies, Gurzhiy A.M. and Ovcharuk O.V. (3) noted that this term should be understood as an ability to work individually or collectively, using necessary tools, resources, processes and systems, enabling to access and evaluate information obtained through any media resources and to use this information to solve problems, communicate generate innovative solutions, products and to obtain new knowledge.

Such researches as Leshchenko M.P., Kapoustian I.I. focus in their works on the development of ICT school teacher's competency in Nordic countries, in particular in Denmark, Finland, Iceland, Norway and Sweden. The experience of these countries is very important as they are in the top ten developed countries according to the Global Information Technological Report. Researchers (6) noted that due to the introduction if ICT in continuous education process, long-term systematic development of IC teachers competence and due to creation of cyberspace in general, higher and postgraduate education institutions, Nordic countries are considered as a well informational advanced and computerised society. The concept of continuous pedagogical education aimed at development of ICT teachers competency in Sweden is implemented on the basis of the official documents and strategies of international and non-governmental organisations (UNESCO, UNISEF, UNDP, Council of Europe, OECD, Swedish National Agency for education (Skolverket), etc), respecting educational traditions of Swedish society. Analysis of Swedish experience shows that teachers can benefit from systematic training by practicing ICT system, taking into account their qualification, motivation and age.

Ukrainian researcher Morze N.V. (10) has analysed the problems of development of school and higher education teacher's ICT competency and has claimed that ICT competency affects their level of professional competency and remains one of crucial needs of modern

training and self-development of academic staff. Therefore, it is of vital need to determine the content, pedagogical technologies of competence development and methods of its evaluation which will ensure its effective implementation of ICT functions in the learning process. After analysing the requirements for teachers for e-learning process, UNESCO recommendations on ICT competency framework, latest scientific and pedagogical investigations on formation of pedagogical competences and relying on personal pedagogical e-learning experience, researcher Morze N.V. has proposed the following teaching modules for ICT competency development: "Understanding the role of ICT in education", "Education curriculum and evaluation", "Pedagogical practices", "Technical and software tools", "Organisation and management of educational process", "Professional development". Based on comprehensive analysis of specified components, the behaviour indicators, that characterise the quality of academic staff in terms of knowledge and skills related to ICT using methodologies, have been identified. This allowed building up a profile of e-learning competence for higher education teachers and a background of behavioural indicators which helps to determine the level of skills excellence within ICT competency.

One of the major roles in ICT competency development is allocated to the creation of virtual education communities, created within training activities or educational project, Ukrainian scientists Ivaniuk I.V., Leshchenko M.P., Malytska I. D., Soroko N.V. affirmed. Among such projects, scientists highlight the following: European Schoolnet (EU project), Teachers network (Great Britain project), Open class/Networking educational community (Russia project), International Education and Resource Network (iEARN, international project). The above mentioned projects are important for creation of computer-based learning environment, connect the process of learning and communication of students and teachers, and give opportunity to demonstrate their own competences through ICT competency. Ivaniuk I.V. insists that the interaction between students and teacher in the framework of virtual learning communities, whatever their purpose or category, mainly leads to the acquisition of certain skills, competencies and abilities such as: ICT competency, sense of initiative, self-confidence, cultural awareness, multicultural competence, critical thinking, communication and organisation skills, knowledge of foreign languages, creativity and professional skills and social and civic competencies.

We consider that virtual learning communities form a virtual education environment, where we can educate, use a variety of data and information, practicing ICT tools. However, such tools are constantly in the process of improvement and development. Nevertheless, the process of cooperation between the parties is not limited in time and space, all participants of the educational process have the opportunity of professional cooperation, can develop their personal skills, improve their quality of teaching and learning, acquire and develop their ICT competency within of creation of the educational environment on global dimension (9).

Ukrainian researcher, Soroko N.V. shows in her works that is crucially important to create such programmes that would be aimed at improving of ICT competency of teachers and will be incorporated in training system and have practice-oriented character, updated according to the teachers needs and demands and development of information society (12). Analysis of theoretical and methodological approaches on ICT competency issues, allowed developing teacher competence in terms of computerised environment. This model includes several components: a target component (setting goals, objectives, principles and training), methodical component (development of training content, development of the assessment system), technological (forms and types of educational activities), result oriented component (main types of professional activities); it provides continuity of learning process, self-education, based on exchange of experience through participation in educational networking communities, forums and projects, distance learning and gives opportunity for teachers to work on further development of ICT competency.

Scientist O. O. Hrytsenchuk [2] between the conditions of the process and development of ICT competency of students sees the process of conducting monitoring studies, during which it appears the current state of their academic achievements in the field of ICT, identifies the main problems encountered in the process and their projected paths solution. She drew attention to the experience of international organizations such as the International Association for the Evaluation of Educational Achievement, Organization for Economic Cooperation and Development, documents and analytical materials of the Council of Europe and European Commission, EURYDICE, Educational Testing Service (USA), Australian Council for Educational Research etc. The researcher [2] pays attention to the analysis of documents and materials of international pedagogical research in the sphere of ICT implementation and its influence on the quality of education. The monitoring surveys of students' ICT competency development should be executed on the base of competence-based and practice-oriented approaches to education. Thus, the modelling of ICT competency development monitoring process can be observed in two aspects: the evaluation of the level of knowledge, skills and personal attitudes as well as in the scope of values in the sphere of ICT and the ability to use them in for life and work, and the evaluation of the ICT competency level which it is necessary in the concrete learning subject. Hrytsenchuk O.O. stresses that students' IC-competency monitoring perspective in national practices can be defined, by improving the process of systematic procedures and monitoring implementation into school practice which will influence on the whole education quality learning achievements.

Bilous O. V. [1] notes that for many European countries the issue of standardization and certification infrared competence of teachers is relevant.

The standards are the guarantee that students graduate from secondary schools will be ready for the challenges and demands of the labour market and able to contribute to society development. In the same time teachers and school heads are able to take advantage of ICT to provide quality educational services. Bilous O. V. analyses international programs of certification in the sphere of ICT: ECDL (European Computer Driving License) and European Pedagogical ICT License (EPICT). ECDL consists of the modules devoted to the skills and competencies needed for the PC and basic computer programs use. In the same time, EPICT is focused on teachers' competencies to use ICT.

The standardization of ICT competency is one of the key solutions to the problem of the development of teachers' ICT competency and bringing the results of teacher training in information and communication technologies in compliance with the Information Society progress.

Kravchyna O.E. [5] focuses on the role of ICT competency of teachers in administrative work within the educational process in secondary schools. Analysis of the activity of the Department for Education and Skills of Great Britain, BECTA (2009) and foreign researchers studies such as K. Green, B. Lee, E. Springall, R. Bemrose, J. Irving, J. Mayo on the ICT competency development gave the possibility to the above mentioned researcher to underline the necessary skill for teachers which allow to: create electronic repositories in the Internet and intranet, find, select and demonstrate the data according to the tasks of the education process; use basic peripherals tools; master the techniques of creating their own electronic material from available sources; process and present the information in effective for the task form, compose their own material summarizing, comparing, contrasting, converting different data; select, install and use the software; use Web 2.0 services in order to organize educational process; choose convenient form of data to transfer data and knowledge to students, parents, colleagues, school administration etc.

3. CONCLUSIONS AND PROSPECTS OF FURTHER RESEARCH

Investigation of formation and development of ICT competency experience is now in the focus of the Ukrainian and foreign researchers of Europe.

It was found out that school education should take into account the need of through the use of ICT to overcome the challenges and obstacles that arise in teaching various subjects, including strategies of developed countries on the role of ICT in lifelong learning and in the context of competency oriented education. The most common practice of the standardization of ICT competency of teachers in the European educational space is done by the use of international certification programs.

It was determined that the cooperation of the educational process participants in virtual educational, academic communities (media), collaborative approach, mastering the latest web services, etc., increases the motivation to develop ICT skills, encouraging them to interact and learn new different subjects knowledge, involving ICT instruments, creating opportunities of ICT competency development.

A number of obstacles for schools and teachers to the creation of computer-based learning environment are revealed: the lack of computers in the home use of students and teachers; lack of opportunities to learn independently in computer classes; teachers lack time to prepare lessons that uses multimedia; lack of computer literacy of teacher; lack of cooperation between teachers of different subjects with the ICT teacher; teachers do not set enough time to study the possibilities of the Internet in their work schedule; difficulties of integration of the computer in lessons' structure of classes; lack of computer time for all students and teachers in school; in the school schedule it's not provided a special time for the Internet use in the classroom; lack of sufficient motivation of students to academic work, while they are interested more in a variety of games, music, checking performance of the PC.

Formation, development and evaluation of ICT competency of teachers and students are extremely important issue that requires further research to provide recommendations for areas of improvement of education in the information society.

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РАЗВИТИЕ ИНФОРМАЦИОННО-КОММУНИКАЦИОННОЙ КОМПЕТЕНТНОСТИ В СИСТЕМЕ ОБРАЗОВАНИЯ: СОВРЕМЕННЫЕ ИССЛЕДОВАНИЯ И ПЕРСПЕКТИВЫ

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Аннотация. В статье представлены результаты анализа международного и отечественного опыта относительно развития информационно-коммуникационной компетентности участников учебного процесса в общеобразовательных учебных заведениях, которые вошли в основные научные статьи сотрудников отдела компаративистики информационно-образовательных инноваций Института информационных технологий и средств обучения Национальной академии педагогических наук Украины. Выделены основные препятствия для учебных заведений и учителей на пути создания компьютерно ориентированной учебной среды. Обосновано, что формирование, развитие и оценка ИК-компетентности участников образовательного процесса являются актуальными вопросами, требующими дальнейших исследований для предоставления рекомендаций по направлениям совершенствования системы образования в условиях информационного общества.

Ключевые слова: информационно-коммуникационная компетентность; информационно-коммуникационные технологии; информатизация образования; система образования.

РОЗВИТОК ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНОЇ КОМПЕТЕНТНОСТІ В СИСТЕМІ ОСВІТИ: СУЧАСНІ ДОСЛІДЖЕННЯ ТА ПЕРСПЕКТИВИ

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Анотація. У статті представлені результати аналізу міжнародного та вітчизняного досвіду щодо розвитку інформаційно-комунікаційної компетентності учасників навчального процесу в загальноосвітніх навчальних закладах, які увійшли до основних наукових доробків співробітників відділу компаративістики інформаційно-освітніх інновацій Інституту інформаційних технологій і засобів навчання Національної академії педагогічних наук України. Виокремлено основні перешкоди для навчальних закладів та вчителів на шляху створення комп'ютерно орієнтованого навчального середовища. Обґрунтовано, що формування, розвиток та оцінювання ІК-компетентності учасників навчально-виховного процесу є актуальними питаннями, що потребують подальших досліджень для надання рекомендацій щодо напрямків удосконалення системи освіти в умовах інформаційного суспільства.

Ключові слова: інформаційно-комунікаційна компетентність; інформаційно-комунікаційні технології; інформатизація освіти; система освіти.

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