cultural and professional competences, without the use of advanced specialized information technology. The most significant problem of development of a modern education system is integration of modern information technologies which can be introduced in the educational process in order to increase the quality of education.

References:

1. A. P. Podlevskikh, E-learning with application of distance learning technologies, In 2012 International Conference «YEES 2012», 164-167 (2012).

2. E. V. Borisova, Transformation of higher education, In 2014 International Scientific-practical Conference «Educational environment today and tomorrow», P. 28-30 (2014).

3. S.A. Titov, Cloud of science, 1, 21-23 (2013)

4. K. Pandey, Handbook of Mobile Teaching and Learning, In Expectations from future technologies in higher education, P. 829-834 (2015).

Mariia Mohylska, Kateryna Zakharova,
Research supervisor: Nadiia Khoma
Candidate of Physics and Mathematics, Associate Professor
Language tutor: Inna Shylinska
Candidate of Pedagogical Sciences, Associate Professor
Ternopil National Economic University

USING A CLOUD-BASED LEARNING ENVIRONMENT IN INFORMATIZATION OF THE EDUCATION SYSTEM

At the current stage of education development, one of the key issues is the informatization of the education system. It involves new information and communication technologies (ICT), namely, educational oriented technologies, the advanced tools of training, the creation and use of a modern computer-oriented learning environment, the gradual development of computer-based technology platform of information learning space, electronic information educational resources (collections of digital educational resources) and network services.

The tools and technologies of information and communication networks (ICN), including the Internet are being increasingly and dynamically developed. Due to the science and technology achievements in the field of ICT, the leading functional and technological characteristics of the ICN have evolutionarily

transformed from the closed local to the information-adaptive ones [1]. Functions and corresponding structure of the adaptive ICNs reveal the concept of electronic data processing on the basis of the cloud computing (CC) information technology [2]. Under this concept, virtual network ICT objects are formed in the adaptive ICN according to the special user interface supported by the system software for network configuration [3].

Such objects are network virtual platforms serving as a situational component of a logical network infrastructure of the ICN with a temporary open flexible architecture that according to its structure and durability corresponds to the personalized needs of the user (individual and collective), and their development and application is supported by the CC technologies.

New technologies, including Web, virtual and cloud technologies drastically change the educational process in the educational institutions, the education in general and access to it (payment, distance).

Cloud technologies (cloud computing) is a fundamentally new service that allows us to remotely use data processing and storage means. Cloud technologies are "distributed technologies", that is, data is processed using not only one computer, but the processing is distributed over several computers that are connected to the Internet.

Cloud computing [4] is an information technology paradigm that enables ubiquitous access to shared pools of configurable system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet. Cloud computing relies on resource sharing to achieve coherence and economies of scale, similar to a public utility.

The cloud computing is composed of five essential characteristics, three service models, and four deployment models [3]. Its essential characteristics are: On-demand self-service; Broad network access; Resource pooling; Rapid elasticity; Measured service. Service Models include Software as a Service (SaaS); Platform as a Service (PaaS); Infrastructure as a Service (IaaS). Deployment Models consist of Private cloud; Community cloud; Public cloud; Hybrid cloud.

A *cloud-based learning environment* (CBLE) is considered as an artificially built system consisting of cloud services and providing, in particular, learning mobility and collective collaboration of teachers and students for efficient and successful achievement of didactic goals.

In 2017, Cisco introduced a new solution to collaboration and training – Cisco Spark. Cisco Spark is a ready-to-use cloud service and a collaboration program. Using it, teachers, students, and employees can have classes,

seminars, meetings, exchange messages and files, call each other and use an interactive whiteboard no matter where they are: in different rooms, offices or in the same class-room. An important part of this technology (excepting audio and video communication) is the exchange of materials in electronic form, text chats and online surveys and polls.

Cisco cloud-based Cisco Spark service was designed to provide each action as simple and intuitive for the user and the administrator. Cisco Spark combines various communication channels (chat, telephone and video connection) and content sharing resources in one application. The application does not depend on devices and operating systems and runs on Windows, MacOS, IOS, Android, as well as a Web-based client. Open applied programming interfaces (APIs) and bots are integrated with other applications. The application can run from the browser without requiring a preinstallation on the computer. Inside, there are integrated tools for working with popular services such as Dropbox, Google Drive and OneDrive for content storage, or GitHub, a popular Web service with the software developers. There are also various translation tools and dictionaries that will facilitate the work of international teams.

In the latest upgrade, the technology has been significantly advanced, for example, a new uniform design style for different devices appeared. But the main thing is a new component of the system, i.e. an interactive electronic Cisco Spark Board. It is designed in order to be used on collaborative project development and in conference halls.

References:

1. Биков В. Ю. Технології хмарних обчислень – провідні інформаційні технології подальшого розвитку інформатизації системи освіти України // Комп'ютер у школі та сім'ї. – 2011. – №6. – С. 3-11.

2. Hewwit C. ORGs for Scalable, Robust, Privacy– Friendly Client Cloud Computing / Carl Hewitt // IEEE Internet Computing, vol. 12, no. 5. – NY, USA, Sep.– Oct. 2008. – Pp. 96– 99. – doi :10.1109/MIC.2008.107.

3. NIST Definition of Cloud Computing v15 [Electronic resource]. – Access mode: [http ://csrc.nist.gov/groups/SNS/cloud– computing/cloud– def– v15.doc.

4. Cloud computing [Electronic resource]. – Access mode: https://en.wikipediaorg/wiki/Cloud_computing.