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**ПРИМЕНЕНИЕ ОБЛАЧНЫХ ТЕХНОЛОГИЙ В СИСТЕМЕ  
ДИСТАНЦИОННОГО ОБУЧЕНИЯ**

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**THE USE OF CLOUD TECHNOLOGY IN DISTANCE LEARNING**

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***Аннотация** В статье рассматривается возможность использования облачных вычислений при обучении программированию, проблемы реализации дистанционных технологий при подготовке специалистов и бакалавров. В работе анализируются облачные технологии с точки зрения их использования в образовательном процессе, упоминаются их преимущества и ограничения исходя из технических и экономических аспектов. Показаны возможности и перспективы использования облачных технологий в высших учебных заведениях.*

***Abstract** The article considers the possibility of using cloud computing in teaching programming, the problems of implementing distance technologies in training specialists and bachelors. The work analyzes cloud technology from the point of view of the use in education process. It is mentioned the advantages and limitations of usage of cloud technology from the technical and economic aspects. It is also showed their perspectives in higher education institutions.*

***Ключевые слова:** дистанционные технологии; облачные технологии; образование.*

***Keywords:** distance technologies; cloud technology; education.*

There is a tendency of "cloud" technology (or, otherwise, cloud computing) to spread over the past few decades. In the subprogram "Information State" [4], within the framework of the development of e-government, it is envisaged to create a national platform for "cloud computing". The inclusion in the state program of a position providing for the creation of a national platform for "cloud computing" within the framework of e-government development shows that cloud technologies will be actively introduced into the sphere of state and municipal management.

The second legal act of the Government of the Russian Federation [1] mentioning cloud computing establishes the basic principles for the creation of a technical architecture that must be observed when designing and developing an electronic budget. They include, in particular, the use of centralized or cloud technologies (provided to users as a service) for storing and processing information.

Today, the scientific research is important for the legal provision of the wide application of cloud services, which is confirmed by the inclusion in the Program of Basic Research in the Russian Federation for a long-term period (2013-2020), which provides fundamental research in the field of information and communication technologies and systems, strategic computer technologies and programs [3].

The American Institute of Standards and Technology (NIST) introduces the following definition of cloud computing: cloud computing is a computational model that provides fast, easy and convenient network access to a pool of computing resources (network, servers, disks, applications and services) on demand, requires minimal involvement of administrators, or service providers [6]. In accordance with the definition of NIST, the main models of cloud computing such as SaaS, PaaS and IaaS are considered.

Distance learning systems can consist of several components such as: authorized software developed for a specific task; learning Management System (LMS); content management system (CMS); learning Content Management System (LCMS). The most advanced distance learning systems simultaneously support the capabilities of LMS, CMS and LCMS systems [2].

The use of cloud technology is the integral component of modern education and promotes dynamic transition to innovations on introduction of virtual educational technologies in educational process. Cloud services provide access to information resources of any level and any power, using only connection to the Internet and the web browser. In other words, cloud technology is remote use of means of storage and data processing. The first ideas, indirectly related to what we now understand by cloud computing, and describing the possibilities of computing using remote computing centers, dates back to the 1970s and 1980s. However, the public history of actual cloud computing in modern implementation begins around 2006 [5].

Panyukova S. claimed that “currently, more and more teachers use Web 2.0 services for distance learning, communication with learners and colleagues, for organizing group interaction, creating and sharing content” [7]. Tools and services of

social networks are easy to learn and use, accessible and reliable, they allow the user to create content both individually and collectively, use the collected material off-line and on-line, create conditions for information and learning interaction in the network, allow the user to enter the training, professional communities or communities of interest.

One of the solutions in the organization of distance learning can be the implementation of access to the Moodle system as a SaaS service which makes available Internet access. The use of cloud technologies 1C can significantly facilitate the work in cases where potential users of the software product are not integrated into one local network, use different hardware and software and do not have the ability to meet any special technical requirements. The web client supports work under all the most popular browsers, on Linux and Windows operating systems, and on mobile iPad devices.

The advantages of this approach for students and the institution as a whole can be formulated as follows. Students have a real opportunity to use modern application software and thereby improve their practical training. The student has the opportunity to work with application software in any place that has access to the Internet. The teacher has the opportunity, in addition to the theoretical part of the training course, to use application software. The teacher, having access to the information bases of students through the cloud, has the ability to monitor the quality of the performance of practical tasks and, if necessary, provide assistance to students in the event of difficulties. There is no need for the institute to purchase licenses and install expensive software, as well as to maintain it. The software can be rented in the cloud for a short time, during which you can schedule the execution of practical work by students. At the same time, payment for rent will be minimal.

Thus, speaking about perspectives of introduction of information technology in education it is necessary to allocate the most important, in our opinion, moments, namely: information culture of teachers and readiness of teachers for application of information technology on a practical training as well as necessary

equipment of higher educational institutions. The possibility of using new technologies give a noticeable impetus to the development of educational technologies in the near future, especially for the purposes of self-education and self-development, providing training in technologies on an individualized trajectory in a remote mode. The constant development of the "cloud Internet technologies" makes them widely available and easily used in education and professional activity.

### *Список литературы*

1. A legal act of the Government of the Russian Federation that mentions cloud computing - Order No. 1275-r of July 20, 2011. Available at: <http://base.garant.ru/55171780/> (Accessed December 5, 2017).

2. Bazhenova, I. U. The use of Cloud Technology in distant learning programming languages. Bulletin of the Moscow State Linguistic University, 13(699), 2014, C. 45-52.

3. Decree of the Government of the Russian Federation of December 27, 2012 // No. 2538-r. On the State Program of the Russian Federation Information Society (2011-2020). Available at: <http://legalacts.ru/doc/rasporjazhenie-pravitelstva-rf-ot-27122012-n-2538-r/#100006> (Accessed November 29, 2017).

4. Decree of the Government of the Russian Federation of October 20, 2010 No. 1815-r (as amended by the order of the Government of the Russian Federation of December 2, 2011 No. 2161-r). Available at: <https://normativ.kontur.ru/document?moduleId=1&documentId=191771> (Accessed December 2, 2017).

5. Emelyanov, A., Klygin, R.A. Cloud Technology in Education: Problems and Perspectives. Informatization of society: socio -economic, socio -cultural and international aspects: materials of the VI international scientific conference on January 15-16, 2016. Prague: Vědeckovydatelské centrum «Sociosféra -CZ», 2016, C. 71 -72.

6. Mell, P., Grance T. The NIST Definition of Cloud Computing. 2011. Available at: <https://csrc.nist.gov/publications/detail/sp/800-145/final> (Accessed December 5, 2017).

7. Panyukova, S. Distance learning on the basis of cloud technologies: problems and solutions. The present and future of innovative forms of education and the formation of an open educational environment: materials of the III International Scientific and Practical Conference "Innovations in Information Technologies and Education» on December 4-5, 2014. Available at: <http://msk.ito.edu.ru/2014/section/229/95631/index.html> (Accessed December 2, 2017).

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**К ВОПРОСУ О ПОДГОТОВКЕ НАУЧНО-ПЕДАГОГИЧЕСКИХ  
РАБОТНИКОВ К ИСПОЛЬЗОВАНИЮ ЭЛЕКТРОННОЙ  
ИНФОРМАЦИОННО-ОБРАЗОВАТЕЛЬНОЙ СРЕДЫ ВУЗА**

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