

## Cloud technologies in distance learning of specialists in physical culture and sports

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### Abstract

In the article the problem of choosing cloud technologies for distance education of specialists in physical culture and sports is reviewed. With a view to resolving the issue the authors described the main features and functions of the most popular foreign and domestic systems of distance learning (e-Learning Management System, LMS). The need for more rational system selection and analysis of comparative characteristics of functionality of LMS-systems and cloud services showed that cloud technologies is the prospective way for implementing the distance learning of specialists in physical education.

**Keywords:** distance learning, cloud, distance learning, e-Learning Management System.

### Introduction

The current system of higher education that fully meets the requirements of the time, is one of the most important growth factors for human capital, generator of new ideas, the key to the dynamic development of economy and society in general. To effectively carry out these important tasks, the system of higher education around the world, including in Ukraine should implement significant changes when the foundation of traditional learning models rely on ICT, which change all the time and transform.

Among the new information and communication technologies, cloud computing plays an important role, in particular as one of the effective ways to distance education of future specialists of physical culture and sports.

Analysis of recent studies have shown that the problem of development, implementation and modeling of distance learning in the educational space has been reviewed in works of many scientists. At the same time the problem of distance education using cloud technologies in higher education for athletes is not developed.

The aim of research - to explore the issue of implementation of distance learning using cloud technology in the practice of training specialists in physical culture and sports.

**Methods:** Analysis of special and scientific literature, data network «Internet», systematization and generalization.

### Results and discussion

The development of information and communication technology today has reached such a level that the system to create a single information environment of the institution is available and provides many opportunities for the implementation of distance learning [4, 5].

According to the experts, distance learning is one of the key positions of modern higher education system, which technology can be used not only to organize the learning process «at a distance», but also to support classroom teaching [4, 5]. According to the classification of A.A. Andreev [1] there are the following models of distance education: without the use of global networks; Network distance learning: distance learning and mobile cloud distance learning. The latter is the most promising model for higher education athletic type.

Several researchers generalize the concept of «distance learning» as a set of teaching and ICT to allow distance learning, provide interactive communication of students and teachers in the process of training to support high quality independent work. This means that distance learning should be considered as a part of the educational process information and education system of remote access based on modern information and communication technologies.

In terms of distance education today is quite popular in our country. According to the information-analytical portal on higher education in Ukraine about 40 universities use distance learning system (Eng. E-

Learning Management System, LMS), designed for the development, management and distribution of online training materials on software sharing, learning management, monitoring learning outcomes.

Together, programmers and educators developed a sufficient number of systems for distance education (DLS), among which the most popular are: Moodle; Lotus Learning Space; Blackboard Learning System; REDCLASS; Prometheus; «Virtual University»; «HEKADEM»; e-University; «Web HPI class» and so on.

From a technical point of view the main characteristics of DLS is a centralized administration of the educational process and its active support; Speed and ease of formation and transmission of information; required communication and cooperation of participants of the educational process in different forms; opportunity to expand and increase the processed information; Web orientation.

From a didactic point of view DLS are designed to create dynamic information space, which aims to provide a productive learning activities take into account all the educational needs of students, namely the presentation of structured and motivated teaching materials; support cognitive and activity user activity.

Let's try to analyze some DLS.

System Learning Space, developed by IBM, provides an opportunity to learn and teach in asynchronous mode (referring to the course material at a convenient time) and attend classes on-line in real time. Users can create course content in any application and then place the material created in the Learning Space. The program has a flexible system of editing and administering course allows you to select different modes of teaching and to monitor the results of current students. Learning Space makes learning independent of the location of the participants.

Blackboard system, the development presented by the company Blackboard Inc., is a Web-based platform for server software. It has a system of management courses, open architecture and scalable framework that enables integration with informational profiles of students and to support various authentication protocols. Blackboard platform can be installed on a local server or hosted by application providers who support her.

The system Moodle (acronym of Modular Object-Oriented Dynamic Learning Environment - modular object-oriented dynamic learning environment) – is a learning platform designated for the association of teachers, administrators and students in a safe, secure and integrated system for creating personalized learning environment.

An important advantage of distance learning system Moodle is that it extends the open source code, allowing it to adapt during the specific tasks to be solved with its help.

Distance learning system «Prometheus», which was developed by «Virtual Technologies in Education» is designed to create Internet or Intranet virtual university and to implement distance learning for a large number of listeners just as well as automate the whole learning cycle - from accepting applications to the mark on the issuance of the final certificate. The advantages of the system «Prometheus» include 10 types of tests, the use of graphics and multimedia tests, the possibility of building additional reports, creating a distributed distance learning system (based on the central universities and branches), the ability to integrate with personnel, accounting and information systems.

A more detailed comparative analysis of the educational opportunities the most common DLS and clarification of the characteristics of their application according to the distance learning enables educational institutions select and adapt them to their own needs. Criteria in selecting DLS can be: the minimum technical requirements for workstation user, server, communication channels; limiting the number of students registered in the system; user-friendly interface; of the system on user administration and content; Cost of services available training and support; the possibility of upgrading and expansion; service reliability and safety [1, 5].

It is also necessary to pay attention to some shortcomings of certain DLS. For example, system Black Board, Learning Space and Learn eXact are expensive, it is tens of thousands of dollars, except high requirements to the server, particularly for Learning Space required license for the software IBM Lotus Notes.

WebCT system is significantly cheaper which provides it with high popularity, but its operation payment (for each student) is growing every year.

The system Moodle has a significant drawback: the system is not provided for groups of visitors, making very complex accounting students of different specialties. Groups in Moodle exist not to manage permissions to courses but to separate groups of students in one course. In addition, there is no possibility to make a final statement, for example, in all disciplines of the semester, and the very concept of the semester system in the basic version is missing.

Thus, we agree with the conclusions of experts, almost all modern DLS meeting the requirements of users, are available for most schools because of the cost. Free platforms also have certain drawbacks, including difficulty of use and the need to maintain its operation by qualified users - IT professionals [3, 6].

At the same time, the introduction of distance learning in the practice of training specialists in physical culture and sports is an absolute requirement today. In terms of university sports activity profile is a significant proportion of students - athletes of national teams of Ukraine of the sports that do not always have the opportunity to attend classes due to the busy schedule of training and participation in competitions. Among

others students - athletes with disabilities. This distance learning can provide a continuous learning process and, thus, improve the quality of education of students in this category.

According to the above classification model of distance education cloud and virtualization computing platform is the highest degree of distance education because they do not require higher education institution from financial costs for expensive advanced hardware and software.

Cloud technology (cloud computing Cloud Computing) - a new service that involves the use of remote data processing and storage. With the «cloud» services can access information resources at any level and any power division rights of different groups of users in relation to resources by using only an Internet connection and a web - browser.

The advantages of cloud technology is the management of large infrastructures, security, no modifications depending on computers and software. The disadvantages include dependence on the availability and quality of the communication channel, the risk of technical failures and legal issues.

«Cloud services» can be divided into three main categories: infrastructure as a service; Platform as a service; software as a service.

1. Infrastructure as a Service (Infrastructure as a Service (IaaS)) - representing IT infrastructure that includes operating systems, systems software and hardware server.

2. Platform as a Service (PaaS - Platform as a Service). This form of cloud services delivers as a service development environment. In other words, the teacher provides an integrated platform for development, testing, deployment and support services, such as distance learning courses located on infrastructure «cloud.»

3. The highest level of cloud computing is «Software as a Service» (SaaS, software as a service). This type of cloud service uses multiuser architecture: provides access through a browser to a specific application an unlimited number of students. It is this level of most interest to educational institutions, because it requires upfront investment in server or software licensing. At this level, the «cloud» stores not only data, but also the associated program and for students only need a web browser.

Mass distribution of cloud acquired after the implementation of Google's platform Google Apps for Web applications. Among the most common services and education systems are also called Google Groups and Microsoft Live @ edu.

These news sites are devoted to this technology and e-learning are comparing functionality of the two most common LMS-systems - Blackboard and Moodle, with the opportunities offered by cloud services Microsoft and Google (Table. 1). By comparison also included service «Google Groups», which can be added to the «Google Apps for Education» as a platform to work together in groups. However, it is necessary to remember that changes in this area are of a permanent nature and new features being added to all these systems.

Table 1 - E-learning services provided by different systems

LMS-systems	Blackboard	Moodle	Microsoft Live@edu	Google Apps for educational establishments	Google groups
<b>Connectivity</b>					
Forum	+	+	+		+
Instant messaging	+	+	+	+	
Email			+	+	
Blogs	+	+	+		
Wiki Resources / co-editing	+	+	+	+	
Survey / reviews	+	+		+	
Create groups to work together		+	+		+
<b>Tools for evaluation</b>					
Quizzes	+	+		+	
Loading homework	+	+			
Gradebook	+	+			

Content					
Bulk document repository	+	+	+		+
Personal document repository	+	+	+	+	
Dictionary		+	+		
News streams		+	+		

Analyzing the data from the table, we can say that cloud services actually implement most of the functionality of distance learning based on LMS. However, there are some drawbacks. Thus, in some cloud services there is no system of evaluation. Google Apps platform allows you to create reviews that can be used for student assessment, supports automatic generation of reports for expert (teacher) about the level of knowledge acquired by the students. However, this system has no developed testing tools as both in Moodle or Blackboard, required for major electronic evaluation. Also, in any system of cloud applications there is no gradebook. This is because in the early development of these services do not take into account the specifics of education. Analytical review of Internet information resources shows that Microsoft and Google are planning to introduce educational programs specific to their range of services.

### Conclusions

Program information and computerization of the educational process of higher education institutions in the sphere of physical culture and sports provides for the introduction of new forms and methods, where distance learning is of a great importance. At the same time, the analysis of market LMS systems has caused controversy in the optimal choice of platform for distance learning of specialists in physical culture and sports, as most systems require significant financial investments and free systems which could be found in the open sources is quite difficult to maintain, which makes it necessary to attract experienced IT experts for the implementation and support of such systems.

The need for more rational system selection and analysis of comparative characteristics of functionality of LMS-systems and cloud services showed that cloud technologies is the prospective way for implementing the distance learning of specialists in physical education.

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