

CLOUD LMS AS A TOOL FOR DESIGNING CLOUD-BASED LEARNING ENVIRONMENT FOR BACHELOR OF INFORMATICS

T. Vakaliuk¹

¹Zhytomyr Ivan Franko State University, Zhytomyr, Ukraine

Abstract. The aim of study was theoretical justification learning management systems (LMS) for the SaaS service for designing cloud-based learning environment university. Object is a process of learning bachelor science in higher educational institutions of III-IV level of accreditation. Research subject - cloud platform for designing cloud-based learning environment for bachelors of computer science. Methods of study: theoretical, comparative and systematic analysis of educational, scientific sources; synthesis, synthesis and conceptualization. The article presents the basic model representation of cloud services that provide global providers, reviewed existing learning management system for the service SaaS, given their basic functionality, and conducted a generalized systematization and comparative characteristics of cloud learning management systems.

Keywords: *cloud, cloud technologies, LMS, cloud-oriented learning environment.*

Corresponding Author: Tetiana Vakaliuk, Ph.D., Zhytomyr Ivan Franko State University, Department of Applied Mathematics and Computer Science, office 329, build. 40, Velyka Berdychivska Str. 10008 Zhytomyr, Ukraine, e-mail: neota@zu.edu.ua, neota@mail.ru

Manuscript received: 10 April 2017

1. Introduction

In recent years greatly increased interest in education both by educational institutions, and by business and political. This is actively investigated the use of Internet technologies to provide people with quality education and give them a chance to improve life. New technologies, including web, virtual and cloud enough to radically change the educational process in schools, education in general and its availability both in financial terms and in distance.

In terms of informatization of educational process learning environment in his work paying attention to many scientists, including the following scientists: A.V. Babich, M.I. Bashmakov, V. Yu. Bykov, B. E. Bim-Bad, C. L. Bugaichuk, A.M. Gurzhiy, M.I. Zhaldak, S.V. Zenkina, M.Yu. Kulyutkin, V.V. Lapinsky, E. D. Patarkin, S. O. Semerikov and others. Create and use a cloud-based learning environment in the educational process have been addressed in their work S. G. Litvinova, M. V. Popel, M. V. Rassovytska, A. M. Stryuk, M. P. Shishkina and others.

2. Presenting main material

Due to the popularity of the use of cloud technology for all schools, there are many opportunities to control the educational process. One of the major Universities Management is to improve teaching of a particular institution.

The educational platform based on cloud oriented technologies would allow effective use of available resources universities and students be given the opportunity to use modern technology in practice.

Educational process of high school today is not possible without information and communication technologies. However, the immediate problem is the financing of public institutions, for constant updating of computer hardware, software not possible given the crisis in the country.

Companies that provide cloud services offer a variety of software and hardware from the usual e-mail to IT platforms that are in the cloud.

Models provide cloud services are developing very rapidly. Consider the basic model representation of cloud service providers worldwide providers:

1. Software as a Service (SaaS) - software as a service. The user functions are within the application-specific configurations for users.

2. Platform as a Service (PaaS) - platform as a service. You can place a variety of cloud infrastructure services, applications or tools that support specific provider providing cloud services. Unlike the previous model, the user is given the ability to control the placement applications, and configuration settings specific hosting environment.

3. Infrastructure as a Service (IaaS) - Infrastructure as a Service. The user is given the opportunity to place and use different software and operating systems.

4. Desktop as a Service (DaaS) - desktop as a service. The user has access to the software system as a whole, which is required to complete the work, rather than to individual software applications, as in previous models. That is, the user is given their own virtual workspace that he can adjust as necessary.

5. Storage as a Service (STaaS) - storage as a service. The user is given the ability to remotely store data, with constant access to them, manage them, and archived, regardless of size.

That's why scientists to one of the most important tasks appears deployment of the educational process in the university network [6, p. 11].

Using cloud technology offers great promise in education and science, so there are many opportunities to control the educational process Universities [7, p. 98]. One of the main issues management educational process is to increase university teaching [7, p. 98].

Also, to solve the problem of deployment of the educational process in the university network and to design a cloud-based learning environment in higher education constantly created specialized platform called Learning Management System (LMS) - Learning Management System. Used for the development, management and dissemination of educational materials with online software sharing. The materials are placed in a learning environment with the task of studying the sequence. The structure of the LMS includes various kinds of individual tasks, projects to work in small groups and educational elements for all students focused on a meaningful component and the communicative.

There are several learning management systems, with which you can study on the use of the Internet. Thus, the learning process can be performed in real-time, online organizing lectures and seminars. LMS characterized by a high level

of interactivity and can participate in the learning process to people in different countries and have access to the Internet.

LMS using the form conventionally divided into two types [5, p.117]:

1. LMS as software that is designed to be installed on their own servers universities. Using this type LMS involves taking appropriate university service provider for cloud IaaS model. It is clear that the operation of LMS requires appropriate personnel, and software.

2. LMS platform as a Web-established provider used by users to manage the educational process. Using this type LMS involves taking appropriate university service provider for providing cloud services model SaaS. Due to which all the main functions to ensure the efficiency and technical support relies on a specific provider.

Consider existing LMS based on the model of SaaS, providing for use worldwide providers.

Schoology [10] - a technology that combines LMS and cloud technologies for universities and schools (see Figure 1). Schoology - it's LMS, which allows pupils, students and teachers to communicate and learn, and not only within one university, but also worldwide. Schoology teacher will monitor student performance. Teachers are also provided tools that quickly identifying the team develop strategies and carry out maintenance and streamlining reporting procedures for accreditation.

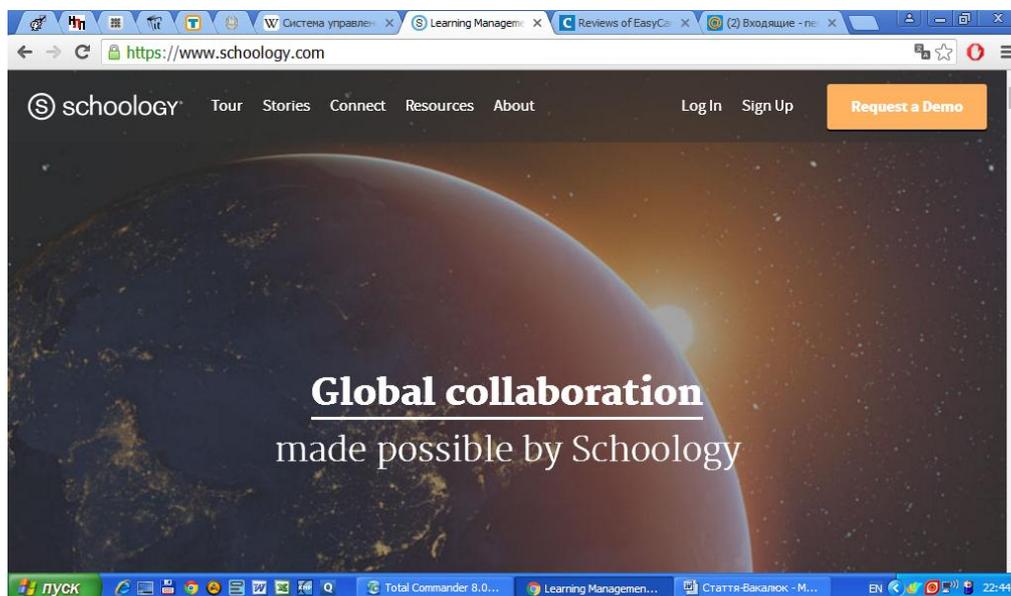


Figure 1. LMS Schoology

Edmodo - when working with this system, teachers and students create a free account and then creates his teacher group. In one teacher may be several groups and each student can belong to several groups.

Teachers can keep the system training materials available for download for students to receive and evaluate task. Edmodo - a convenient platform for

communication and interaction, especially for those who have experience of using social networks VKontakte or Facebook.

The peculiarity of this LMS: English-language interface, but the platform is very easy to use, completely free and contains no advertising.

iSpring [1] - easy to use cloud based learning management system for training and evaluation of employees or students on the Internet (see Figure 2). In iSpring have everything in one e-learning platform - complete with cloudy LMS and PowerPoint. The possibility of creating multimedia courses and quizzes and publish them instantly and directly to the LMS. Existing user roles powerful system that allows control access across the LMS for certain groups and organizations. Possibility for students and teachers to communicate. A detailed reporting system analyzes the progress of students through knowledge learned material.

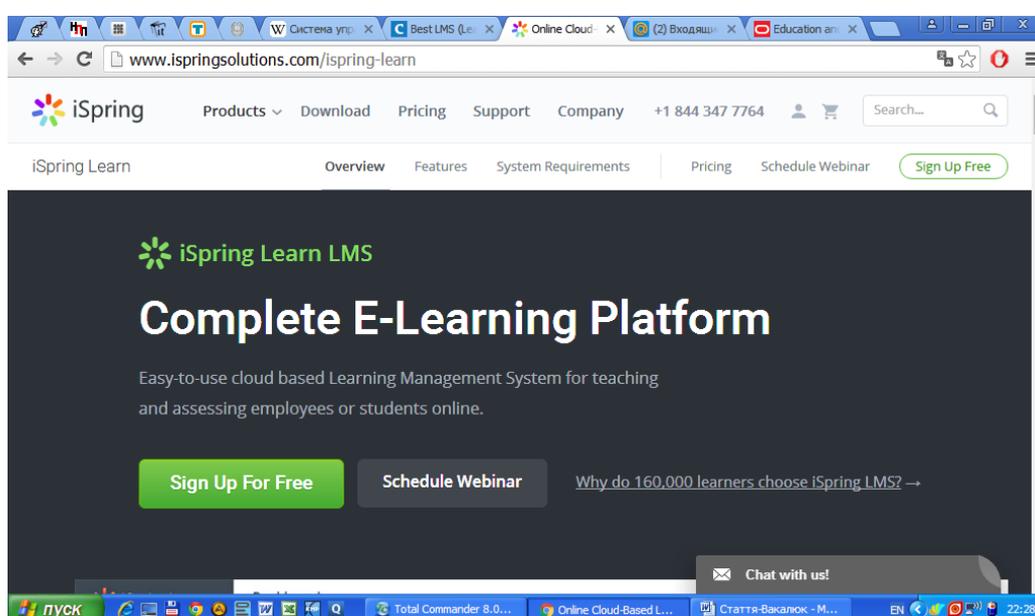


Figure 2. LMS iSpring

Studyboard - a service that requires no special knowledge in IT, but to optimize the learning process and discuss related issues.

Features Studyboard:

- allows you to download, test, evaluate tasks online;
- helping evaluate the true success and student engagement;
- cooperates with recruiting firms, helps with employment.

Blackboard - one of the most popular LMS worldwide, especially in higher education. The only fully paid platform with all listed in this section. Online Price not available available on request only. This LMS provides all the features that can be a learning management system, constantly there are new features such as: the ability to put anonymous evaluation or grading assistant delegate, the ability to use audio or video as feedback, analysis and more.

Learner Nation [2] - LMS-based clouds, which enables organizations to create and deploy educational environment for any purpose. Key features provided by this LMS: availability of free trial versions deploy the image on the server, mobile and web - interface, training records, to conduct webinars, online training, personal space online support, etc. (see Figure 3).

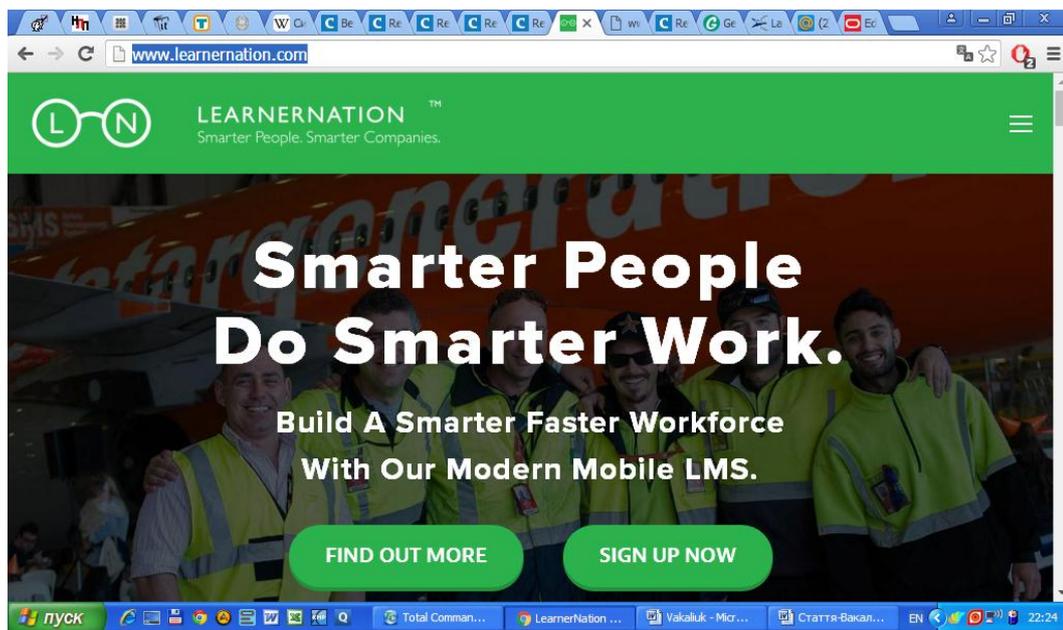


Figure 3. LMS Learner Nation

NEO LMS [3] - LMS world level, was awarded numerous awards LMS for use in schools and universities. The platform is known for its ease of use and has a gorgeous interface, a comprehensive set of innovative features. With NEO easy to create great courses that students can use at any time and anywhere. NEO is the LMS for use by individual teachers, schools, districts and universities, which allows for online learning.

NEO provides a variety of functionality, such as support classes, full featured gradebook, educational programs and materials, collaboration tools, and more.

NEO has a nice, easy to use interface with responsive design for mobile applications Android.

This LMS is the most convenient tool for creating cloud-based learning environment in universities. After all, this LMS provided all the necessary functionalities that are important in the educational process, providing a single integrated system monitoring Initial achievements bachelor of computer science, maintenance of electronic journals; the use of on-line services for educational purposes; of correspondence, testing and assessment online; the possibility of distance learning, library books, manuals, textbooks, media; file storage; conduct video conferences, remote communication entities providing educational process

without violating their personal space; informing subjects of remote learning process.

Note that using the latest LMS, we have considered cloud tentative designed learning environment for Bachelor Informatics [4] (see Figure 4, 5, 6), which has all the basic functionality that scientists refer to the educational environment of higher education.

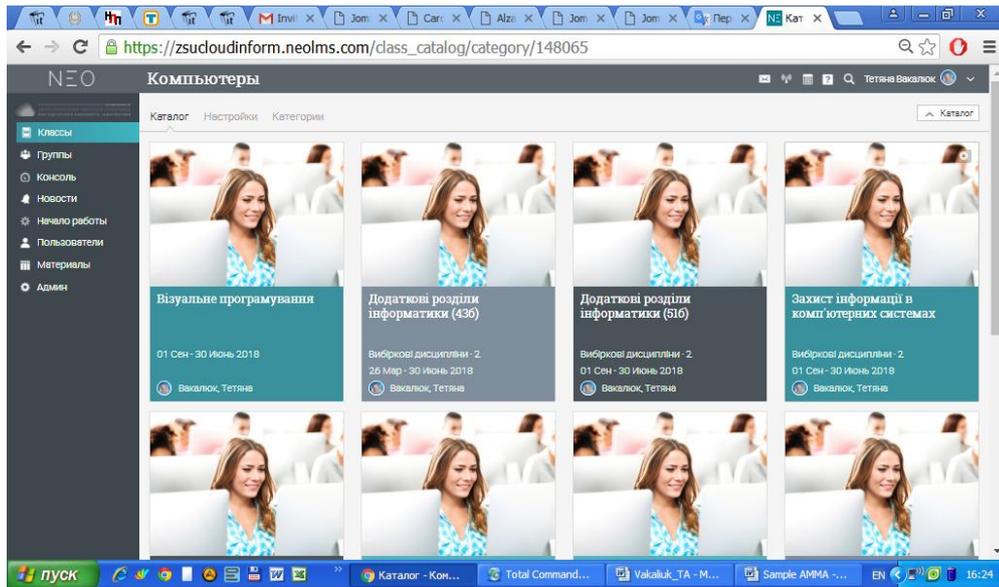


Figure 4. Cloud-oriented learning environment for Bachelor of Informatics

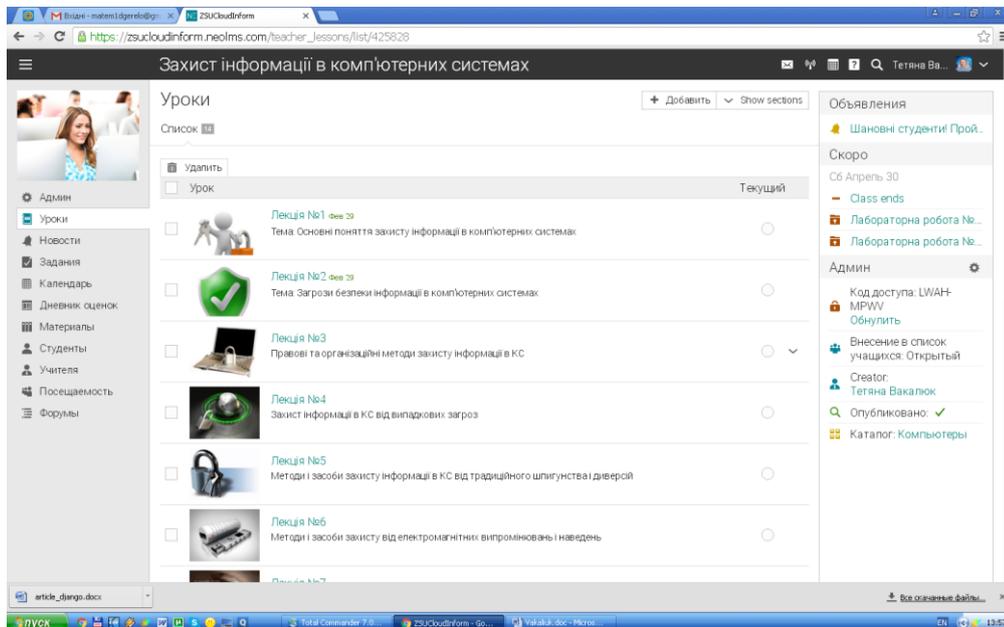


Figure 5. Cloud-oriented learning environment for Bachelor of Informatics

Студенты	М	I	AB	X	Окончательный	Лабораторные работы									
						101	102	103	104	105	106	107	108	109	110
Норгулус, Валентина	1				82%	B-	90	100	90	M	85	90	88	88	95
Копняк, Ольга	10				0%	F	M	M	M	M	M	M	M	M	M
Мельничук, Марина	3				60%	C	74	100	85	M	85	85	82	M	90
Риванка, Уля	10				0%	F	M	M	M	M	M	M	M	M	M
Рев, Ніла	5				0%	F	M	M	M	M	M	M	M	M	M
Смоленко, Татяна	2				59%	C-	70	M	74	M	85	M	82	74	80
Захарчук, Вікторія	2				56%	C-	70	M	65	M	70	75	70	70	70
Вакалиук, Віталій	10				0%	F	M	M	M	M	M	M	M	M	M
Вакула, Ірина	10				0%	F	M	M	M	M	M	M	M	M	M
Вичинська, Оксана					87%	A-	99	100	85	85	75	85	88	90	80
Вой, Олеся	5				34%	F	M	75	M	65	60	80	M	60	M
Гавриловський, Ол...	10				0%	F	M	M	M	M	M	M	M	M	M
Галочко, Людмила	5				37%	F	M	60	M	100	60	75	M	75	M
Гнетцька, Дарина					91%	A	99	90	95	80	88	88	88	100	90
Горпини, Іван	5				37%	F	M	90	M	80	65	70	M	60	M
Гришок, Алексій	5				34%	F	M	90	M	60	60	60	M	74	M
Данильченко, Ольга	10				0%	F	M	M	M	M	M	M	M	M	M
Курчак, Світлана					86%	A-	90	M	74	75	85	88	85	99	90

Figure 6. Cloud-oriented learning environment for Bachelor of Informatics

3. Conclusion

Thus, the combination of SaaS LMS for the service - there is an alternative solution to the problem of designing a cloud-based learning environment university.

References

1. <http://www.ispringsolutions.com/>.
2. <http://www.learnernation.com/>.
3. <https://www.neolms.com/>.
4. <https://zsucloudinform.neolms.com/>
5. Kopniak N., Korytska G., Litvinov S., Nosenko J., Poyda S., Sedoy V., Sipachova O., Sokol J., Spirin O., Stromylo I., Shishkina N., (2015) Modeling and Integration services, cloud -based learning environment: monograph, CPU "Komprynt", 163.
6. Vakaliuk T.A., (2014) The need for cloud-based learning environment for bachelors Informatics, Reporting Scientific Conference of the Institute of Information Technologies and learning NAPS Ukraine: Materials Conference, 9-11.
7. Vakaliuk T.A., (2013) Possibility of using cloud technologies in education, Actual problems of modern pedagogy, Proceedings of the international scientific conference (m. Ostrog, 1-2 November 2013), 97-99.
8. Vakaliuk T.A., (2015) Prospects for cloud-based learning environment to prepare bachelors Informatics, Papers at scientific workshop "Cloud technology in the modern university", 5-6.
9. Vakaliuk T.A., (2016) Review of existing models of cloud services for use in higher education, Proceedings of VIII International scientific conference "Information and computer technology - 2016", 215-217.
10. www.schoolology.com.