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LMS BUSINESS PROCESS ANALYSIS AND RECOMMENDATIONS

ABSTRACT. *The article focuses on LMS information systems that are created by the world's leading companies and universities. The structure and model of the LMS are analyzed; the stages of LMS creation and methods and notations of reengineering of LMS business processes, as well as the capabilities of the software are presented in this article.*

Keywords: LMS, business processes, education, model, e-Government.

INTRODUCTION

In the current world, it is difficult to imagine the daily activities of people without information technologies. Modern man needs to study and work at a time and place convenient for him. The world's leading companies are responding to trends in education by introducing new technologies into the learning process.

LMS and LCMS systems are the most popular and widespread learning process management systems in the world. These education systems allow for the maximum consideration of the needs of the learner. The information systems used in the educational process can be classified as in Figure 1.

Materials and Methods

Modern educational trends in the world focus on the use of blend learning in higher education. That is, the training sessions in the higher educational establishment educational process are traditionally carried out in the classroom, as well as some types of classes in a form of distance learning. Based on this approach, the use of distance learning in the learning process is carried out, while retaining the achievements of traditional educational technologies. It serves to overcome their weaknesses through the use of both learning technologies in the learning process.

Blend learning – is an effective integration of different forms of education, models, that takes into account specific characteristics of students. Educational process management systems address this issue.

Examples of information systems that include open online courses are Coursera, Udacity, edX, Udemy[1] [8,9].

Coursera[2] – is a free online course founding platform developed by the world's leading universities. 106 universities participate in the project as partners. Stanford, Pennsylvania, Princeton, London, Manchester universities have also contributed to this project. Most of the training courses are in English and consist of a set of video lessons. The training process is free of charge and a certain fee must be paid to obtain a certificate.

Udacity[3] – is a platform developed in collaboration with Google, AT&T, Facebook, Salesforce, Cloudera, and consists mainly of training courses in the field of information technology. All courses are designed in English and are supported with subtitles in Chinese, Spanish, French and Portuguese.

edX[4] – is a collaboration between Massachusetts and Harvard. In the edX information system, in addition to refresher courses, it is possible to conduct classroom lessons.

Udemy – is a platform that mainly includes paid training courses based on the use of mobile devices.

Academic Earth[5] is home to the course from Massachusetts Institute of Technology (235 courses and more than 1,000 lectures), Yale University (43 courses and more than 1,000 lectures), Stanford University (161 courses and more than 1,700 lectures), Harvard University (17 training courses and more than 195 lectures).

The Blackboard CourseSites[6] platform allows creating training courses. The platform is designed specifically for university teachers. Unlike CourseSites, the Open Education platform is designed for higher education. At the beginning of 2015, 57 free training courses for 37 universities were developed on the Open Education platform.

The Russian Federation also has a mass creation of online courses. An example of this is the **Universarium[7]** portal. This portal represents an open e-learning system and provides users with free training courses. In 2015, the platform hosted 52 training courses

[1]https://www.udemy.com/
[2] https://www.coursera.org/
3 https://www.udacity.com/
4 https://www.edx.org/
5 https://academicearth.org/
6 https://www.coursesites.com/
[7] https://universarium.org/

developed by professors of MSU, REU, IRLC universities, which are the leading universities of the Russian Federation.

The Uniweb portal features 41 training courses developed by teachers from 10 leading Russian universities.

The INTUIT[8] project, developed in Russia, is an open university that provides access to a variety of educational programs and an electronic certificate based on final controls. The **INTUIT** information system is available online and offline and provides a variety of educational services:

- higher education and secondary specialization;
- professional retraining;
- professional development.

Today, LMSs such as “ГалактикаУправлениевузом”, “1С: Университет”, “GS-Ведомости”, “Аксиома”, “Tandem University”, “Universys WS” are used in Russia's leading higher education institutions [10].

The development of training courses by university teachers on the above-mentioned educational platform will raise the image of the university, rise to the top of the list of university rankings in the world, attract foreigners to universities and finally improve the quality of education.

The growth of the world economy and the development of new information technologies require the training of highly qualified specialists. This problem can be solved by applying education management systems to the learning process.

Unfortunately, currently, the use of LMS systems in our country lags behind the world's leading universities. Many of our local universities have automated business processes related to attendance, schedule, and scholarships, covering certain parts of LMS functions. The introduction of LMS systems in the universities of the country ensures the organization of a modern and effective educational process through.

Improving the quality of education is achieved through the visualization of educational materials in the organization of the educational process on the basis of new modern technologies, increasing the types of interactive communication between student and teacher, constant monitoring of the educational process [11-13].

[8] https://intuit.ru/

LMS systems expand the possibilities of tools for interacting with students:

- use of chat, video conferencing, webinars, virtual auditoriums;
- discussions and joint work on projects.

Also, the student's direct communication with the teacher through the LMS can be done at any time. The presence of feedback from the teacher and the fact that the approach to the teacher does not depend on time or place increases the effectiveness of teaching. As a result, the constant use of quality educational services by students serves to enhance the reputation of the university.

The creation of quality course content in the LMS system is an important factor in improving the quality of education. Therefore, teachers of higher educational institutions of the republic must have a high level of computer literacy. The introduction of LMS systems in higher education requires the student and the teacher, as well as university staff involved in the learning process, to be computer literate.

Today, leading foreign publishers are creating textbooks in electronic format in accordance with LMS systems.

The introduction of ready-made textbooks in the LMS system of higher education will save time spent on the creation of training courses and manuals. Students will also have access to quality-formulated learning materials.

Quality control systems for teachers can be introduced in universities where LMS systems have been introduced. In many leading Western universities, methods of improving the quality of education and the development of the educational process are identified through anonymous surveys of students and teachers.

Through a survey of students through the LMS, a list of mass training courses and skilled teachers is determined. Each student can at any time see his / her mastery in higher education and compare it with other students. Key performance indicators (KPIs) will be identified through the introduction of the LMS system in higher education [14,15].

The introduction of LMS systems in higher education will increase the potential audience of the university (number of students) and attract foreign students to the university. Through LMS systems, it is possible to create, import / export training courses in cooperation with the world's leading universities. The world's leading universities are working to introduce and improve LMS systems in the educational process.

The Moodle website is made free of charge to users of the support platform. There are opportunities to expand the functionality of the Moodle system to a certain extent. Significant expansion of Moodle's functionality can be achieved through the integration of component systems for organizing webinars and web-conferences. In addition to Moodle system support and design samples, it can also be connected to the following modules:

- Course element;
- Development reports;
- Administrator report;
- Export of grades on disciplines;
- Assignment type;
- Import of grades by subject;
- Authentication plugins;
- Portfolio;
- Blocks;
- Types of questions on control materials;
- Course formats;
- Import / export assignment format;
- Training course reports;
- Reports on the results of control;
- Database fields;
- File savers;
- Course enrollment plugins;
- Types of resources;
- Filters;
- Information retrieval plugins.

The Moodle system only covers and is limited to the learning process, i.e. the relationship between the professor and the learner. Learning process management issues are not addressed in the system.

Neither Moodle, nor Blackboard can be used for the process of enrollment, the formation of curricula, the distribution of students in the field of training, writing a register of modules (subjects), calculating the staff and department workload, managing attendance

and mastering issues such as the formation of generalized reports of higher education institutions on the indicators, the development of electronic lesson schedules or the management of internal documents of the educational process.

A separate class of component systems interconnected with LMS through integration mechanisms is used to address these issues in the world.

A few years ago, the market of our country was dominated by distance learning systems, especially ones of Western origin. Currently, more than a dozen Russian state-owned companies have developed their own similar products. Among them are the distance learning system Redclass (a joint development of Redlab and Redcenter Training Center), ASME's production ITM's Prometheus system, e-Learning's GiperMetod system and Naumen's open source NauLearning system. They offer ready-made online courses or services for their creation, rather than solutions designed primarily for independent development, creation and management of training courses.

The analysis of LMS / LCMS in our country and abroad showed that in them, in most cases, separate processes that are not integrated into a single system with a single database are automated.

Many LMSs are similar in terms of their functional characteristics, and each LMS provides an e-learning environment that includes the business processes required for the learning process. Several LMS analyzed included the creation of training courses, the ability to work individually with students, the activities of the faculty and the department.

Conclusions and Recommendation

The main achievements of the comparative analysis of LMS are:

- support of electronic document management system in the educational process;
- use of user training courses based on the international standard SCORM;
- control over student fees;
- providing a number of services (e-mail, forum, chat, virtual board (for tutors and students to use different graphics schemes in the traditional learning process)) to ensure communication between tutors and students in the learning process;
- monitoring the activities of students and staff in the system through an electronic journal;

- ensuring a high level of security of the system (encryption of passwords and necessary information);
- providing a secure communication channel between users and the system;
- formationof a single information environment of the university and its branches and departments.

REFERENCES

1. Zaoudi M., Belhadaoui H. (2020). Adaptive E-learning. *Proceedings of the 3rd International Conference on Networking, Information Systems & Security.*https://dl.acm.org/doi/10.1145/3386723.3387890
2. Mishchenko E. (2021) LMS Technical Analysis: Problems of choice. *E3S Web of Conferences. https://www.e3s-conferences.org/10.1051/e3sconf/202124407005*
3. Matulčíková M., Breveníková D. (2020) Distance education in further professional training in enterprises during pandemic period. *NORDSCI Conference proceedings, Book 1 Volume 3* https://www.scribd.com/document/483703520/Distance-Education-in-Further-Professional-Training-in-Enterprises-During-Pandemic-Period
4. Kulikova, T., Poddubnaya, N. (2019) The Tools of Realisation of the Distant Learning Technologies. *Standards and Monitoring in Education, (2019), 7(1).* http://naukaru.ru/en/nauka/article/26779/view
5. Walsh P. (2015) Evaluating the Data Analytic Features of Blackboard Learn 9.1. *Irish Journal of Academic Practice, (2015), 41(1).*
6. Viloria A., Crissien B., et all. Differential evolution clustering and data mining for determining learning routes in moodle (2019). *Communications in Computer and Information Science, (2019). https://doi.org/10.1007/978-981-32-9563-6_18*
7. Wan Han, Yu, Qiaoye, Ding, Jun, Liu, Kangxu. (2018) Students' behavior analysis under the Sakai LMS. *Proceedings of 2017 IEEE International Conference on Teaching, Assessment and Learning for Engineering, TALE 2017, (2018)https://doi.org/10.1109/TALE.2017.8252342*
8. Cronje J. Towards a new definition of blended learning. (2020) *Electronic Journal of e-Learning, (2020), 18(2). https://doi.org/10.34190/EJEL.20.18.2.001*

9. Stefan H. (2019) What Do We Mean by Blended Learning?*TechTrends, (2019), 63(5)* *https://doi.org/10.1007/s11528-019-00375-5*
10. В.А. Богомолов. Обзор бесплатных систем управления обучением. *Образовательныетехнологии и общество, (2007), 10(3).*