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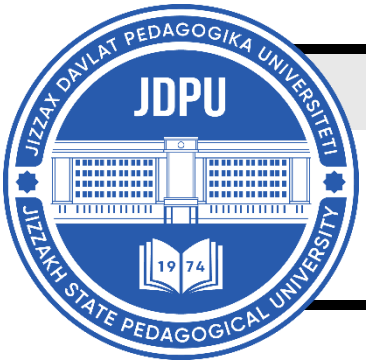

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CREATION AND USE OF E-LEARNING RESOURCES FOR LMS PLATFORMS

Khurram Tangirov
associate professor of the department of Informatics and digital educational technologies
Jizzakh state pedagogical university
Jizzakh, Uzbekistan
E-mail: xurramtangirov@gmail.com;

Mahliyo Abdullayeva
2nd stage master's student of the specialty of information technologies in education
Jizzakh state pedagogical university
Jizzakh, Uzbekistan
E-mail: mahlyo9928@gmail.com

ABOUT ARTICLE

Key words: LMS, Learning Management System, online education, assessment system, e-learning platforms, monitoring of learning outcomes, higher education, foreign experiences, achievements and shortcomings of LMS.

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Abstract: Nowadays, the role of technology in education is increasingly increasing. In particular, LMS (Learning Management System) platforms, i.e. learning management systems, play an important role in optimizing educational processes, implementing distance learning, and creating a more convenient and interactive learning environment for students. The rapid development of the e-education sector has led to the introduction of new educational methodologies and technologies on a global scale. Today, one of the modern educational platforms in education systems is the Learning Management System (LMS). LMS platforms allow teachers and students to effectively manage educational processes and ensure learning. This article discusses the creation of electronic educational resources for LMS platforms and how to effectively use them. Also, valuable information is provided on the effective use of LMS platforms in the education system, its benefits and disadvantages, based on foreign experience.

INTRODUCTION

The introduction of new educational standards reflecting this trend predetermines the need to change not only the content of training future professionals, but also to search for innovative ways to organize the educational process.

In solving this issue, an increasingly important role is given to e-learning and distance learning technologies. In this regard, the choice, scientific justification and successful practical implementation of technological platforms for e-learning are becoming relevant, providing, on the one hand, the possibility of effective transformation of traditional didactic procedures of the educational process, and on the other hand, the development of independent and critically thinking, mobile, creatively active individuals with a high level of professional competence. Such tools today include learning management systems (aTutor, WebCT, Prometheus, Virtual University, etc.), among which the modular object-oriented dynamic learning environment Moodle has gained particular popularity [10]. The appeal to the problem of organizing asynchronous independent work of university students in the electronic learning environment Moodle is due to its insufficient development in pedagogical science in the context of the existing need of educational practice for tools with rich pedagogical potential, allowing to optimize asynchronous independent work of university students and, as a result, improve the quality of the educational process.

The rapid development of the e-education sector has led to the introduction of new educational methodologies and technologies on a global scale. Today, one of the modern learning platforms in education systems is the Learning Management System (LMS). LMS platforms allow teachers and students to effectively manage and ensure learning processes. One of the biggest changes in the education sector today is the widespread use of e-learning. In particular, Learning Management System (LMS) platforms have created opportunities for further modernization and effective management of the education system. Through LMS platforms, teachers and students have the opportunity to access educational materials online, optimize the learning process, and implement assessment systems.

LMS (Learning Management System) is a platform that allows online management and monitoring of educational processes. This system makes it easier for teachers, students, and administration to create educational materials, access them, and implement interactive learning processes.

LMS (Learning Management System) is a system designed to manage teaching, learning, and assessment processes. Through LMS, teachers have the opportunity to create educational materials, organize courses, and track student activity. LMS platforms can take various forms:

traditional systems, online learning platforms, and systems that support blended learning methods. These platforms provide students with convenient and flexible learning opportunities, as they can view materials according to their needs, take interactive tests, and exchange ideas.

MATERIALS AND METHODS

If we look at the work of foreign scholars on the use of LMS platforms, we can see that a number of foreign scholars have conducted scientific research on the study and development of e-learning and LMS platforms. For example, Anderson (2008) noted that LMS platforms increase the learning efficiency of students, as they have access to materials at any time and from anywhere. In his opinion, LMS systems are not just a technological tool, but a platform that serves to further strengthen the connection between teachers and students [1].

Also, Siemens (2004) in his theory of "Connectivism" describes LMS systems as a form of learning and knowledge exchange that arises on the basis of social networks. He emphasizes the interaction of students and the process of mutual learning in LMS systems. This, in his opinion, has a great impact on the future development of education [2].

In addition, Garrison and Anderson (2003) consider LMS platforms as a means of enhancing interactivity and interaction in distance education. Their research shows that a well-organized LMS system not only increases learning efficiency, but also develops teamwork among students [3].

Now let's pay attention to the use of LMS platforms abroad. In the USA, LMS systems are widespread in the education sector. One of the most popular systems is Blackboard, which is used to manage teaching and learning processes in universities, schools, and corporations. The Blackboard platform allows users to upload educational materials, conduct tests, create interactive forums, and monitor results. Another popular LMS platform in the USA is Moodle. Moodle allows teachers to create and manage a variety of interactive materials, and maintain constant contact with students. The advantage of Moodle over similar systems is that it is an open source system, which allows the creation of free and customized applications.

In Europe, the use of LMS systems has been introduced in many educational institutions. For example, the France Université Numérique (FUN) platform is used in France to conduct online courses. This system creates effective communication between students and teachers and simplifies the organization of learning processes. The Edmodo LMS platform is also widely used in primary and secondary education institutions in various European countries. Edmodo allows teachers to manage the learning process with their students, assign tasks, track grades and leave comments. In Australia, LMS systems are used in many higher education institutions.

The Canvas platform, for example, is widely used in Australian universities. Canvas is distinguished by its intuitive interface, ease of creating and managing resources, and real-time communication between students and teachers. Moodle is also widely used in Australia. The main advantage of Moodle is that it works on a modular basis, that is, teachers have the opportunity to install various additional modules depending on their needs. This, in turn, makes the learning process more flexible.

One of the countries in Asia, South Korea, is one of the countries with innovative experiences in the education system. LMS systems developed by the Korean Education and Research Information Service (KERIS) are widely used. Through this system, distance learning and interactive educational materials can be created at all stages of education. In particular, the e-Learning system is aimed at increasing the efficiency of online education for students. South Korea also has the Edu-Platform system, which is used at each stage of education (from school to higher education institutions). This platform allows teachers to assess students, display their results, and at the same time create interactive exercises.

LMS platforms have a number of advantages, in particular, the main advantages of using LMS platforms are:

- **user-friendly interface**: Many LMS platforms provide an intuitive interface for students and teachers, which simplifies the learning process;

- **maximum flexibility**: LMS systems often allow you to create courses tailored to individual needs, where students can access learning materials at any time, making learning independent of time and place;

- **monitoring the learning process**: teachers will have the opportunity to assess students through LMS, monitor their activities and analyze their results, that is, with the help of LMS systems, teachers can monitor student activity and effectively establish an assessment system;

- **support for distance learning**: LMS systems are of great help in implementing distance learning, especially in the context of a pandemic, the role of these systems has increased;

- **interactivity**: the learning process becomes interesting and effective with the help of interactive materials such as tests, forums, video lessons;

- **centralized presentation of resources**: LMS systems allow you to collect all educational materials on one platform, which makes it easier to access information.

Of course, along with the above advantages, there are also some disadvantages of using LMS platforms:

- **technological difficulties**: some LMS systems can be very complex and may not be understandable to all users;

- **infrastructure problems**: especially in less developed countries, the lack of internet and technical equipment can hinder the effective operation of LMS platforms;

- **resistance**: some teachers and students may be resistant to new technologies, which prevents the full functioning of the system.

LMS platforms usually provide the following functions:

- **course management**: A teacher or educational organization can create courses through the LMS and deliver them to students;

- **interactive resources**: Make the learning process more interesting through various interactive elements such as videos, tests, quizzes, forums;

- **assessment system**: Students can evaluate their knowledge by taking tests and teachers can monitor the results of the assessments;

- **summary and analysis**: The LMS system monitors the activities of students and teachers, helps to identify achievements and shortcomings in the learning process.

Based on a number of works (T.E. Alekseeva, P.I. Pidkasisty, I.V. Robert, E.V. Rybalko, A.V. Khutorskoy, etc.), we give the following characteristics of the general didactic principles as applied to the conditions of e-learning [10].

The principle of scientific learning is based on the logical connection between the content of science and the subject matter and requires the development of students' skills and abilities in scientific research. The implementation of this principle in e-learning also presupposes the optimal construction of the knowledge transfer process, that is, the adequacy of this process to the psychological characteristics of the student, as well as the reliability of the educational information presented using electronic means.

The principle of systematicity and consistency requires that knowledge, skills and abilities be formed in the e-learning system in a certain order, when each new element of the educational material is logically connected with others, the subsequent one is based on the previous one, and prepares for the assimilation of the new. The principle of unity of the educational, upbringing and developmental functions of training assumes that e-learning as a didactic process performs not only educational, but also educational and developmental functions. The possibility of implementing this principle is laid down when choosing teaching methods using electronic means, in addition, it is assumed that, being carriers of the content of education transformed into educational material, electronic means implement not only the procedural, but also the target and content aspects of various learning functions.

The principle of consciousness and activity assumes awareness of the need for knowledge is expressed in the fact that students are aware of the goals of learning, plan and organize their

work, show interest in knowledge. In the context of e-learning, the implementation of this principle is ensured by the ability of the student to choose his own strategy for achieving the educational goal, providing the student with a wide range of means to support the educational process, focusing the learning process on developing the skills of students' academic work, which leads to the development of their own technology for assimilation of knowledge. These conditions require high activity and consciousness of students.

The principle of the connection of theory with practice requires a harmonious connection of scientific knowledge with the practice of everyday life. In the context of e-learning, it is implemented by creating conditions for the application of acquired knowledge in practice, as well as the transition from concrete-practical to abstract-theoretical thinking and back, forming an understanding that practice acts as a criterion for the truth of the acquired knowledge.

A detailed analysis of theoretical and practical works in the field of e-learning (N.A. Alexandrova, T.E. Alekseeva, E.V. Rybalko, V.P. Tikhomirov, A.V. Khutorskoy, S.A. Shchennikov) allowed us to define a number of private didactic principles for organizing asynchronous independent work of university students in LMS, to which we include the principles of; students' starting knowledge, adaptability, personally-mediated interaction, cooperation, pedagogical appropriateness and optimality of the electronic means used, unity with the traditional learning environment.

The principle of students' starting knowledge suggests that the effectiveness of training in the LMS environment is ensured by taking into account the starting knowledge of ICT and working on the network, as well as the level of subject knowledge and skills of students. The adaptability principle is closely related to taking into account the individual characteristics of students when developing electronic training courses in the LMS environment. According to this principle, modules are created in the developed electronic courses that pre-provisionally provide for the individual characteristics of the student's personality at the psycho-physiological, psychological and socio-psychological levels. That is, in the created training modules of the course, as well as in the methods of organizing asynchronous independent work, individual ways of perceiving information, dominant styles of thinking, and the internal position of students are taken into account.

RESULTS AND DISCUSSION

E-learning resources are the most important content for LMS platforms. The process of creating e-learning resources for LMS platforms includes several stages:

1. Course planning and design: The task of the teacher or educational organization is to determine the purpose, structure and learning materials of the course. The topics, sections and

learning materials of the course should be planned. In this case, defining the content of the course, providing learning materials, developing assessment criteria and preparing guides for students are the main tasks of this stage. When creating a course, the goal, topic, methods of student assessment and forms of resource presentation are determined.

2. Content creation: At this stage, videos, text, images, infographics, audio materials and other educational resources are prepared. Educational content should be interactive and interesting not only to present knowledge, but also to create opportunities for students to learn the subject. For example, presenting learning materials through videos, animations or simulations helps students to understand more easily. In this case, teachers prepare video lessons, slides, audio materials, interactive infographics, text content and other various materials. For e-learning resources to be effective, their presentation and design are very important. For example, animations, ideas and simulations can be used to focus students' attention.

3. Assessment and tests: Tests, tasks and practical work can be prepared to assess the learning process of students. LMS platforms allow you to create these tests and use them to assess the level of learning of students. In this case, tests, quizzes, practical work and other various forms of assessment are used to assess the course on LMS platforms. This allows students to check and consolidate their knowledge, and the online assessment system provides teachers with the opportunity to assess each student individually.

4. Interactive learning materials: Course materials should be interactive. This ensures more effective communication between students and the teacher. Forums, chats, and various interactive activities make it easier for students to share knowledge and solve problems. Multimedia and various tools are also used: LMS platforms are not limited to text resources, but can also create educational materials using multimedia tools such as video, audio, and graphics. This allows students to better understand and learn topics.

LMS platforms can be used as an important system for organizing independent learning, that is, the capabilities of LMS platforms in organizing independent learning of students are enormous. The independent work system is understood as a set of interconnected, mutually conditioning, logically following from each other and subordinated to common tasks types of work. And like any system it should meet certain didactic requirements: 1) contribute to the solution of the main didactic tasks - acquisition by students of deep and solid knowledge, formation of the ability to independently acquire, expand and deepen knowledge, apply it in practice; 2) satisfy the main principles of didactics, and above all - the principles of accessibility and systematicity, connection of theory with practice, conscious and creative activity, the

principle of training at a high scientific level; 3) be one of the constituent, organic elements of the educational process, carried out systematically and systematically, and not accidentally and episodically. Compliance with these conditions contributed to the development of students' stable skills and abilities in performing various types of independent work, increasing the pace of its implementation. Moodle offers a wide range of tools for organizing independent work of students in a foreign language. A study of the experience of foreign colleagues has shown that the most popular software resources in the field of teaching foreign languages in the Moodle environment are those that require additional installation in the system. After their installation, they become elements of modules or blocks and act as effective means of forming and developing foreign language speech skills and abilities. Such software resources used by us include: - Mediacenter/Inwicast (http://www.inwicast.com) - allows you to place in the system and manage files in Flash FLV, MP3, MP4, WMV, MOV formats); - Nanogong (http://gong.ust.hk) - allows students and teachers to record and add audio messages to assignments, forums, glossaries); - Audacity (http://audacity.sourceforge.net) - allows you to record and edit sound files. In addition, the programs we use, such as Hot Potatoes (http://hotpot.uvic.ca) and TexToys (http://www.cict.co.uk), are effective for creating control and training exercises.

Hot Potatoes is a tool shell program that allows teachers to independently create interactive tasks without knowledge of programming languages and the involvement of specialists in the field of programming. With the help of the program, you can create 10 types of exercises (tests) in various languages using text, graphic, audio and video information. TexToys is an original software product (the only one of the above-mentioned paid), which gives teachers the opportunity to create various types of interactive exercises for working with texts.

As our practice has shown, working with such specific (in courses on other disciplines they are used less often) software resources in the process of asynchronous independent work in the Moodle environment allows students to improve pronunciation and contributes to the development of skills and abilities in listening to foreign language speech, speaking. The following elements serve as tools for developing listening skills and abilities in the Moodle environment: forum (compiling and discussing transcripts of audio recordings, discussion of what was listened to on the forum is organized in the following variations: students listen to the same text or different texts on the same topic (for example, news), express and compare opinions; students listen to an online conversation, speech or lecture and highlight key ideas, discuss them on the forum), tests (creating various types of listening tests), a lesson (listening to an excerpt with subsequent prediction and selection of events), a mind map (jointly

compiling and adding your own relationship diagrams after listening), a survey or questionnaire (listening to songs, commercials with subsequent selection of the most liked audio or video clips). Speaking is best taught in class, in a live communication environment. In this case, distance technologies can only play an auxiliary role, being a supplement to face-to-face meetings. At the same time, it is distance technologies that allow us to organize and monitor the development of some aspects of the language in an independent mode. The creation of electronic training courses opens up fundamentally new prospects and opportunities for improving the processes of education, training and development of students. Electronic training courses are understood as an educational resource of an electronic type corresponding to an academic discipline, including all the necessary educational, training, auxiliary and control materials, as well as methodological instructions for organizing work with the course, using computer technologies and Internet tools. The main goal of electronic training courses in higher professional education is to increase the effectiveness of students' educational activities through the use of didactic ICT tools and improve the quality of training specialists by organizing a system for managing the training and self-education of students [6].

Electronic training courses become educational if not only educational but also educational activities of the student are organized when working with them. Directly educational activity is aimed at mastering a certain educational material and in case of obtaining a high-quality result (i.e. compliance of the student's level of preparation with the requirements of the curriculum) remains educational. If the student's level of preparation does not meet the requirements, which is revealed in the process of comparing the student's educational product (results of tests, tests, essays, etc.) with the standard (requirements for preparation), then repeated work with educational materials is organized, the student's activity is stimulated to improve the quality of mastering the academic discipline, correct inaccuracies, errors made when creating the educational product. Such activity becomes educational.

As an educational course, an electronic educational course contains:

– annotation of the educational course, a curriculum and a program of the discipline, which makes the training transparent, i.e. the student sees the educational volume and the expected final result of the training in advance;

– educational information in the form of lectures, visual and illustrated material (presentations, audio, video, photo materials, drawings, diagrams, tables, Flash animations), media resources (virtual laboratories and workshops), reference materials (dictionaries, subject reference books, online encyclopedias), etc.;

– methodological recommendations for completing practical, independent work;

– links to information resources (educational and reference literature, educational sites, educational and popular science films);

– control and measuring materials (test assignments, essays, case assignments, educational tasks).

As a training course, an electronic training course should contain the ability to manage students' educational activities, organize movement towards the intended goal, namely monitoring, control and evaluation of the quality of educational activities, stimulating the correction of inaccuracies, errors, improving the level of mastering the discipline. This opportunity is provided by placing an electronic training course in a learning management system (LMS) focused on organizing interaction between a teacher and students. One of the most popular open systems is MOODLE (Module Object-Oriented Dynamic Learning Environment), the main purpose of which is organizing distance learning [5]. In addition to distance learning, this system can be used to integrate ICT capabilities into traditional classroom forms of face-to-face learning [4].

For the effective use of e-learning resources, LMS platforms provide the following features:

1. Quick and easy access: LMS platforms provide users with quick and easy access to all resources. Students and teachers can access course materials at any time via the Internet, which makes education more flexible. In this case, LMS systems allow students and teachers to access educational materials at any time and from anywhere. This is especially important in distance learning.

2. Continuous updating of resources: Educational materials are quickly updated on LMS platforms, new resources are added. This allows teachers and students to familiarize themselves with the latest knowledge.

3. Individualization of the learning process: LMS platforms allow students to analyze their achievements and shortcomings and individualize the learning process. This helps students choose learning methods that are suitable for them. In this case, LMS systems allow each student to be monitored individually and create individualized educational programs based on their needs. This process is carried out by analyzing the strengths and weaknesses of the student.

4. Collaboration and discussion: LMS platforms provide opportunities for students and teachers to discuss, ask questions, and exchange ideas with each other. This interactivity makes the learning process more effective for students. In this, LMS systems are in constant contact

between students and the teacher. Forums, chat rooms, and group discussions help students share knowledge.

5. Motivation and participation: LMS systems provide various incentive elements, such as special badges and certificates, which encourage students to actively participate. In this, LMS systems provide elements such as special certificates, special designations, and ratings to motivate students. This, in turn, encourages students to take their activities more seriously.

CONCLUSION

In conclusion, foreign experience shows that the use of LMS platforms in the education system contributes not only to the effective organization of the learning process, but also to the innovative development of teaching methodologies. Although there are significant differences in the use of LMS systems everywhere, the general trend is the same, indicating that they are aimed at making education more qualitative and effective. LMS platforms continue to develop as an important tool for teachers and students in a changing world.

LMS platforms play an important role in the creation and use of electronic educational resources. These systems make the educational process effective and interactive, and provide students with access to materials at any time and anywhere. Electronic educational resources also contribute to the development of individualized learning, effective assessment systems, and collaborative learning. Research by foreign scientists confirms the importance of LMS systems in improving the quality of education and supporting interactive learning. These platforms open up great opportunities for the future of education.

Also, the creation and use of electronic educational resources for LMS platforms significantly increases the effectiveness of the educational process. These platforms allow teachers to create educational materials, implement assessment systems, and maintain constant contact with students. At the same time, students receive convenient and innovative tools for learning, assessment, and development of their knowledge. The successful development and use of electronic educational resources increases the quality of education and becomes an integral part of the modern education system.

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