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ANALYSIS OF USE OF THE INFORMATION AND COMMUNICATION PLATFORMS IN EDUCATION

The purpose of the article. *The article highlights the use of information technologies in education and their impact on educators. The research and analysis of the use of information and communication technologies in education such as the Learning Management System and ePortfolio were conducted. The comparative analysis of data technologies is given.* ***Methodology.*** *Methods of research: literature analysis - studying the capabilities of each technique and indicating their functional set; the way of the system and comparative analysis - for analyzing various information platforms, identifying their advantages and disadvantages, comparative study of technologies.* ***The scientific novelty*** *of the work is to conduct a comparative analysis of information and communication platforms in education. Opportunities, advantages, and criteria of evaluation of information platforms from self-development of the applicant of education are investigated.* ***Conclusions.*** I*nvestigation of the functional of LMS-systems and ePortfolio, analysis of their possible impact on the educational process; the advantages of the introduction of such technologies are outlined, and a comparative analysis of these technologies is carried out.*

Key words: *education, information systems, technologies; LMS systems, ePortfolio.*

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АНАЛІЗ ВИКОРИСТАННЯ ІНФОРМАЦІЙНО-КОМУНІКАЦІЙНИХ ПЛАТФОРМ В ОСВІТІ

Мета роботи. *Стаття висвітлює використання інформаційних технологій в освіта та їх вплив на здобувачів освіти. Проведено дослідження та аналіз використання в освіті інформаційно-комунікаційних технологій таких як Learning Management System та ePortfolio. Надано порівняльний аналіз даних технологій.* ***Методи дослідження****: аналіз літератури – дослідження можливостей*

кожної з технологій і зазначення їх функціонального набору; метод системного і порівняльного аналізу – для аналізу різних інформаційних платформ, визначення їх переваг та недоліків, порівняльний аналіз технологій. ***Наукова новизна роботи*** *полягає у проведенні порівняльного аналізу інформаційно-комунікаційних платформ в освіті. Досліджено можливості, переваги та розроблено критерії оцінки інформаційних платформ з точки зору саморозвитку здобувача освіти.* ***Висновки****. Дослідження функціоналу LMS-систем та ePortfolio, аналіз їх можливого впливу на освітній процес; зазначено переваги від впровадження подібних технологій та проведено порівняльний аналіз даних технологій.*

Ключові слова: *Освіта, інформаційні системи, технології; LMS-системи, ePortfolio.*

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АНАЛИЗ ИСПОЛЬЗОВАНИЯ ИНФОРМАЦИОННО-КОММУНИКАЦИОННОЙ ПЛАТФОРМЫ В ОБРАЗОВАНИИ

Цель работы*. Статья освещает использования информационных технологий в образование и их влияние на соискателей образования. Проведено исследование и анализ использования в образовании информационно-коммуникационных технологий как Learning Management System и ePortfolio. Предоставлено сравнительный анализ данных технологий.* ***Методы исследования:*** *анализ литературы – исследование возможностей каждой из технологий и указания их функционального набора; метод системного и сравнительного анализа – для анализа различных информационных платформ, определение их преимуществ и недостатков, сравнительный анализ технологий.* ***Научная новизна работы*** *заключается в проведении сравнительного анализа информационно-коммуникационных платформ в образовании. Исследованы возможности, преимущества и разработаны критерии оценки информационных платформ с точки зрения саморазвития соискателя образования.* ***Выводы****. Исследование функционала LMS-систем и ePortfolio, анализ их возможного влияния на образовательный процесс; указано преимущества от внедрения подобных технологий и проведен сравнительный анализ данных технологий.*

Ключевые слова: *Образование, информационные системы, технологии; LMS-системы, ePortfolio.*

The urgency of the article. Information technology is a tool that allows you to benefit from any industry. Education is not an exception; modern technologies provide such benefits as: facilitating the transfer of information between teachers and students; overcoming communication and geographical boundaries; improving student knowledge; control over student's progress, continuous improvement of teachers' knowledge; providing students with relevant knowledge.

Analysis of recent research and publications. Researchers from this field were: Helen Barrett, author of many methodological recommendations and the developer of the first rules for compiling ePortfolio [1]; Karen Barnstable has created many blogs with recommendations for the compilation of ePortfolio [2]; John DiMarco, George Lorenzo and John Ittelson are authors of the basic textbooks on ePortfolio [3; 4], Charlotte Denisson and Leslie Abrutin. Of the domestic scientists, there are such scholars who popularized and developed the first works on these areas, such as: B. Demida, S. Sagaidak, I. Kopyl, L.F. Panchenko, Y. Polat and T. Novikova, O. Smolyaninov, A. Skornyakova, O. Shevchenko, N. Ostrazhkova [5; 6].

The purpose of the article is to analyze the use of information and communication platforms in the modern educational system. The main objectives of the article are: research and analysis of the widespread Learning Management System; analysis of ePortfolio technology within education; Comparison of the Learning Management System and ePortfolio technologies.

The novelty of the work is that a comparative analysis of information platforms, which are actively implemented in the educational process in Ukraine, was conducted.

Presenting main material. To resolve and standardize all learning management systems, the Advanced Distributed Learning group has developed the Sharable Content Object Reference Model standard or shortened SCORM. The SCORM standard manages two things - the content of the system and the exchange of data during its work. At the moment, the current and latest standard is SCORM 2004 or SCORM 1.3, which includes requirements for the management system of training [7].

In this article, technologies such as the Learning Management System and ePortfolio will be considered Figure 1.

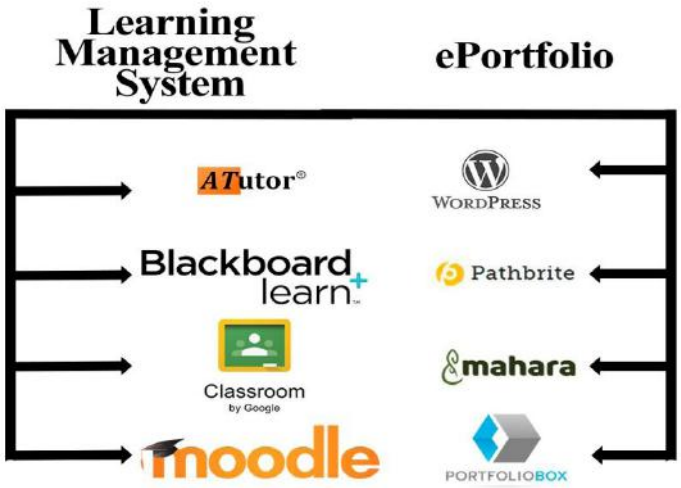

Figure 1 – Modern Educational Platforms.

Learning Management System or LMS-system is a learning management system that allows you to create a single base of electronic courses and study materials with the ability to manage their content and remote access to the system itself [8]. An example of LMS-systems is: Blackboard Learn; ATutor; Moodle; Google Classroom.

Blackboard Learn is an LMS-system for interactive teaching, learning, community building and knowledge sharing. Blackboard Learn is an open and flexible system designed to improve the performance of students and students. Blackboard supports employees from all educational institutions, from general education schools and higher education institutions to adult education and training in the workplace.

Blackboard Learn allows you to conduct online learning in both synchronous and asynchronous environments. In a synchronous environment, students and faculty interact in real time. In an asynchronous environment, the interaction takes place over long periods of time, for example during a discussion. Students and students have the time to make communication more meaningful.

In Blackboard Learn there are three types of courses, this one:

- fully interactive course: communication takes place on the Internet, course materials are transmitted electronically, student and student work

is evaluated on the Internet, communication is carried out using interactive means of communication;

● combined course: the participants meet at the appointed time for classes or laboratory work, the duration of studies is reduced through online classes, eye and interactive exercises enhance and complement each other;

● traditional course with auxiliary web components: the participants meet in the classroom for scheduled classes, but online teaching materials such as homework, schedules and additional discussions are posted. [9].

To create a course in the teacher's system, it is necessary to adjust the access to the course, that is, under which conditions and who has the right to view and record, and the course, for example, the course may be free for all. Then you need to set the course type by selecting the subject, audience, time and course of the course in the settings. At the discretion of the teacher, you can invite other teachers or assistants to the course.

The advantages of Blackboard Learn are that this LMS-system is cross-platform and has a large amount of methodological material for both teachers and students. It should be noted that the system is paid, depending on the type of educational institution and the volume of users, the price may be different.

ATutor is a LMS web based Open Source system and distributed under the GNU GPL License. ATutor is used to develop and provide courses on the Internet. The program is easy to install, customize, and configure. This LMS is modular, that is, it consists of separate modules, and it is possible to upgrade and expand the system [10].

The main features of the ATutor system depend on the type of user, they are in systems of 3 types: students; instructors; administrators.

Students can personalize and edit personal information, view and write down new courses, browse course materials and download packs of training materials for personal training. The system allows for testing, interviewing and viewing their results; the system also allows participants to communicate with such means of communication as: synchronous (chats, teleconferences, whiteboards); asynchronous (ads, forums, forums, emails, blogs, wikis, comments in file sharing). ATutor also implements a group of systems and file exchanger to share files within their group and course.

Instructors or teachers have the same capabilities as students, and they have access to tools for creating training courses. Instructors have the opportunity to create training courses within the system, define access rights to them and other properties. The built-in content editor allows you to manage the structure, period of access, and view usage statistics. Wide opportunities for creating and managing tests, questions, organizing the course questions database, previewing tests, reviewing user test attempts, the ability to evaluate them, viewing statistics by tests. The system has a built-in vocabulary with course dates and a list of references where the sources are listed.

The administrator in the system has such features as managing user accounts and defining their role. The administrator also manages common system parameters, such as design, interface language, and installation or removal of modules [10; 11].

ATutor is a very user-friendly LMS system that is easy to use. One of the advantages is its multiplatform and distribution under the GNU GPL license, which is free of charge.

Moodle is a free and open LMS system designed to bring together educators, administrators and students (students) into one robust, secure and integrated system for creating a personalized learning environment. Moodle primarily focuses on the interaction between the teacher and student groups [10]. The Moodle system can be customized and personalized for each organization, Figure 2 shows a customized system for the needs of the Vasyl Stus Donetsk National University.

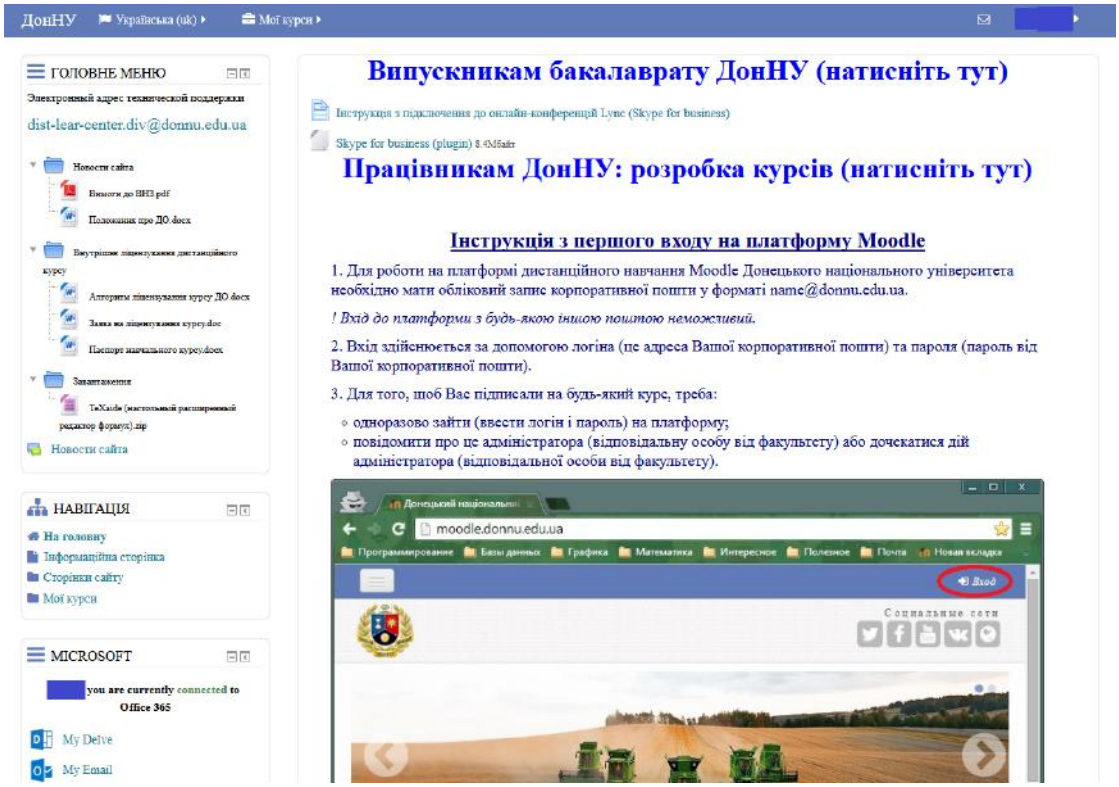

Figure 2 – LMS-system Moodle at Donetsk National University named after Vasyl Stus.

Moodle provides such features as:

- a modern and simple interface with the ability to fully customize it for your needs;
- a single calendar that allows you to monitor the dates of courses, group meetings and follow the corporate calendar.;
- synchronize files with cloud storage, for example: MS OneDrive, Dropbox and Google Drive;
- embedded text editor, with the ability to format text and add media files;
- a notification system for new tasks, posts in forums, responses to tasks and the ability to exchange messages between users;
- the system has a built-in authentication, registration and user role management system;
- the ability to connect additional plugins and modules;
- Moodle has a built-in reporting journal where you can view and create a detailed user activity report [13].

The LMS Moodle system is not the first year used in the Vasyl Stus Donetsk National University. The system allows you to improve the educational process, both remotely and internally. The Moodle assignments and courses allow students to study the material more deeply and in more detail, and in the event of difficulties accessing study materials or courses in previous years, as well as watching video lessons and contacting teachers. An example of setting the course «System Analysis of Information Processes» in the system at the Donetsk National University named after Vasyl Stus is the image in Figure 3. In this image, you can see the following tools like: event calendar, course management, rating log, and recent actions.

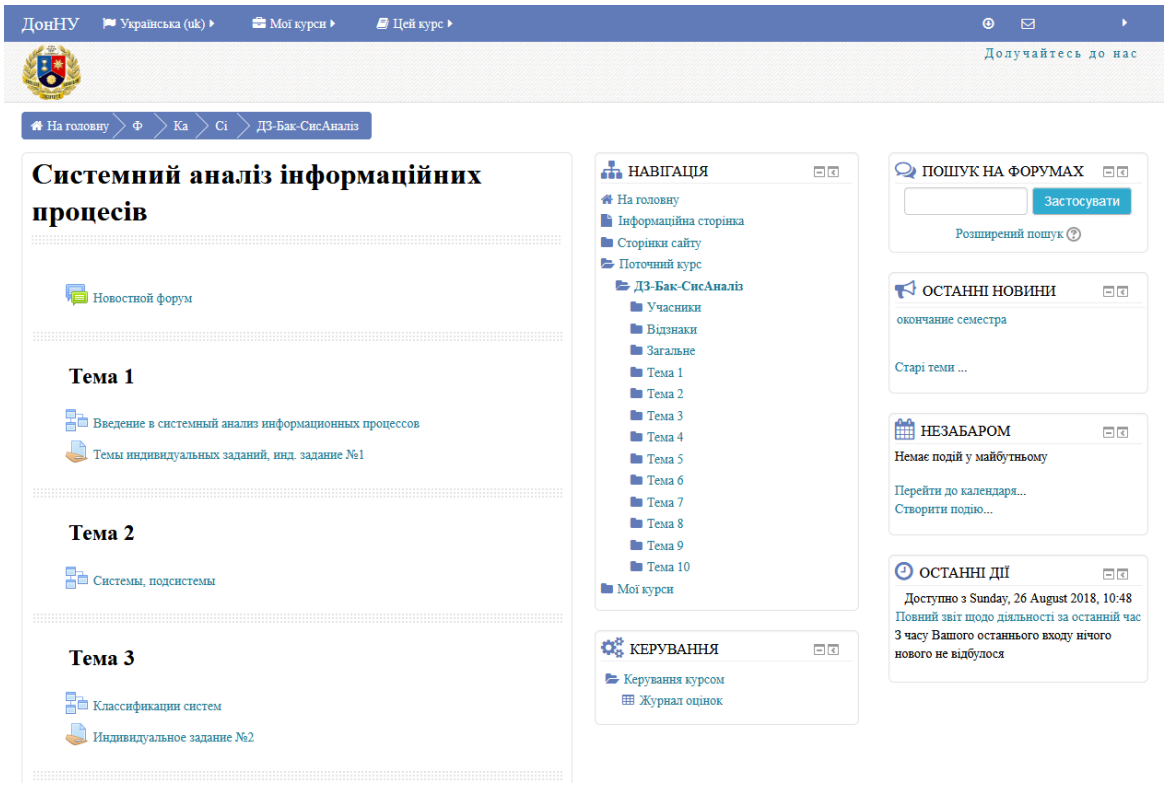

Figure 3 – Setting up courses in LMS-system Moodle.

The LMS Moodle system is a multifunctional and powerful educational platform, with its advantages such as complexity, multiplatformity, the ability to control user actions and powerful tools for improving the system. One of the drawbacks is the difficulty in setting up and installing a system with the help of a small group.

Google Classroom is a Google Developer API, an application that allows you to link third-party services to Google's infrastructure. With its help, educational institutions and IT companies can create tools for working with the class and G Suite for Education, as well as customize the class for their own needs [14].

Google Classroom provides the following features:

- convenient addition of students, students can join the courses themselves with code;
- joint teaching, the possibility to invite up to 20 other teachers to the course;
- convenient templates, quick creation of individual tasks for each student;
- flexible course settings, the ability to add a deadline for assigning tasks, customize a task score scale, track probe tasks, create surveys and create individual tasks, as shown in Figure 4;
- the system is cross-platform, it can be used both on personal computers and on mobile devices, provided that a special application is downloaded;
- integration and synchronization with other Google services [15; 16].

The Google Classroom has the following benefits:

- quick setup and simple interface;
- the speed of information exchange;
- saving time for teachers and students;
- productive and quick communication between all parties in communications;
- integrate with services like Google Docs, Calendar, Gmail, Google Cloud Storage, and Forms;
- free and secure users.

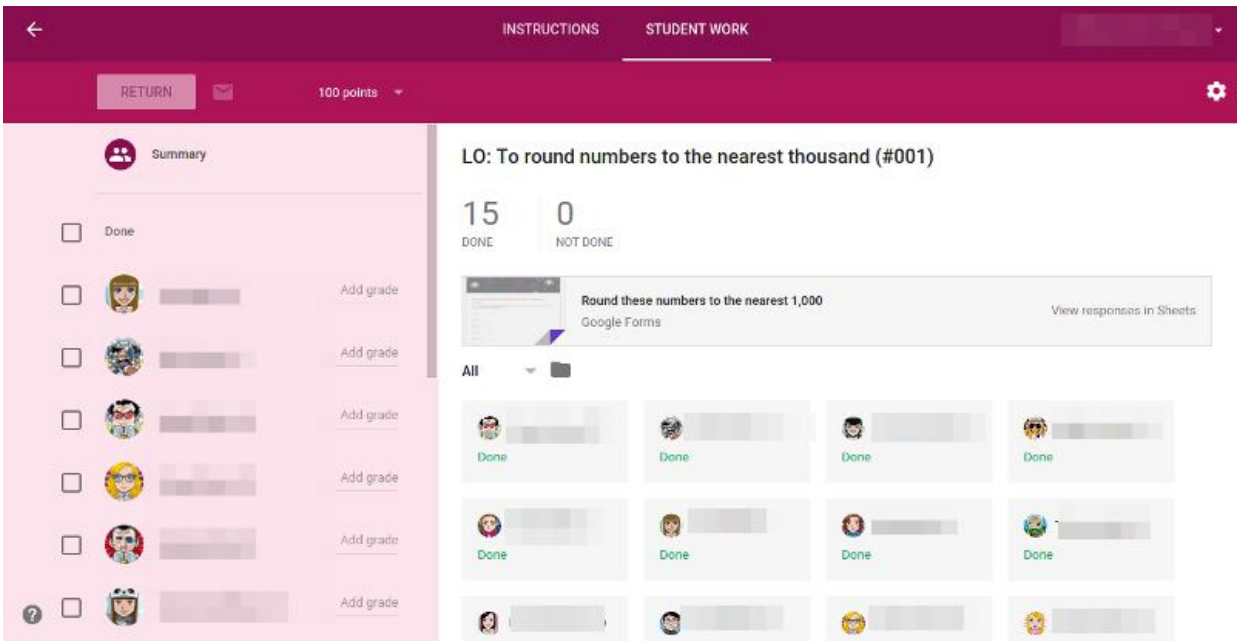

Figure 4 – Managing the course in Google Classroom.

The Google Classroom technology is relatively new, but has already managed to gain popularity. The system has such advantages as ease and free of charge, but with respect to previous systems there is not such a great tool for customization.

The ePortfolio technology is a modern approach to assessing student knowledge and continuous demonstration of their knowledge. ePortfolio technology is a webpage or website that hosts students' work, their achievements and work experience, usually they are placed on the educational institution's website. These pages or sites are written personally by the student in languages such as: HTML, CSS, JavaScript and other languages. In case of impossibility to write a page or a site, students can use a large toolkit of ready-made platforms, students can only correctly fill out and personalize their site, for example, with the help of constructors like Pathbrite, WordPress, Mahara, PortfolioBox or using the CMS of the Joomla system. Each of these tools has its own peculiarities and advantages, but writing a portfolio of your own is an invaluable opportunity to demonstrate your real skills. An approach to using constructors is popular in Western higher education institutions where students use a university-written service to demonstrate their knowledge, for example, as it was done at the San Francisco State University.

The ePortfolio technology benefits from introducing it to a higher education institution, both for students and teachers.

Students create their own website or page, showing their achievements, skills and abilities. ePortfolio serves as its own repository and platform for demonstrating its scientific achievements, awards and developments. The advantage of using ePortfolio for students is that educators themselves are interested in quality content and create their own e-portfolio, because in the future employers will be able to look at their potential employee and make sure of his knowledge and skills. The introduction of such technology will also help increase the student's information competence and encourage them to learn or improve knowledge of such languages as HTML, CSS, JavaScript and PHP.

The educational institution and teachers will receive a high-quality student knowledge control tool, they will be able to accurately assess student's knowledge of the whole period of their studies, to see students' skills and their weaknesses. The institution of higher education can increase its prestige and popularity, as well as turning

the attention of its potential employer students. But with these benefits, there will be a need to control the ePortfolio created by students, before the task of teachers will be to check ePortfolio to match the student's knowledge. The need to create a mechanism for creating, coordinating and publishing ePortfolio by students.

Currently Vasyl Stus Donetsk National University is engaged in the introduction and development of ePortfolio technology – Figure 5. This system will work together with the LMS-system Moodle and complement one another. The aim of the project is to increase the student's information competence, level of knowledge, productivity of training, and also increase of employer's interest in the students of the educational institution.

Figure 5 – ePortfolio students of the Vasyl Stus Donetsk National University.

Based on data from the LMS-system and ePortfolio, a comparative analysis of these technologies can be made, from the point of view of the impact on self-development of the student during the educational process. To conduct a comparative analysis, it is proposed to use the scale of evaluation of each criterion from 0 to 3, where 0 – is an absent influence, and 3 is a big influence. On the basis of the conducted research using the expert estimation method, the following results were obtained (Table 1). At the end of Table 1 is the summary result for each technology.

Table 1– Comparative analysis of technology of LMS-systems and ePortfolio.

Criterion	**LMS- *systems***	**ePortfolio**
Ability to demonstrate knowledge to others	1	3
Impact on the quality of the educational process	3	3
Ability to personalize your skills	1	3
Creating a single repository of works	2	2
The desire to gain new knowledge for the best result	2	3
Possibility of using technology after graduation	1	3
Total	10	17

Based on the data in Table 1, we can conclude that ePortfolio technology has a better effect on the self-development of the education provider while studying. But it should be noted that in order to maximize the impact of information and communication technologies, it is necessary to use both LMS-systems and ePortfolio technology. Using this stack of technologies will allow the student to develop, as in lecture classes and to improve their knowledge on their own.

Conclusions. Based on the data in Table 1, we can conclude that ePortfolio technology has a better effect on the self-development of the education provider while studying. But it should be noted that in order to maximize the impact of information and communication technologies, it is necessary to use both LMS-systems and ePortfolio technology. Using this stack of technologies will allow the student to develop, as in lecture classes, and improve their knowledge on their own. As a result of the work, the modern Learning Management System was explored and analyzed, their capabilities and advantages described, their functional content is indicated. An analysis of the ePortfolio technology and the principle of its use are presented. A comparative analysis of Learning Management System and ePortfolio technologies was conducted.

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CONCEPT OF SCIENTIFIC JOURNAL IN CONDITIONS OF INTEGRATION INTO THE INTERNATIONAL INFORMATIONAL SPACE

The purpose of the article *is to formulate the conceptual foundations for the functioning of scientific journals in the conditions integration into the international information space.* ***The methodology suggests*** *the use of a number of general scientific methods: logical analysis, generalization, grouping, and systematization, comparison, generalization, and stratification. Application of analytical and synthetic allows the content analysis of the information resources of the leading science-computer databases to formulate and systematize the general principles of the organization and functioning of the scientific journal international standard.* ***Scientific novelty*** *of the work consists in the formation of a single generalized system conceptual principles of the organization and operation of a scientific journal to its integration into the international information space.* ***Conclusions.*** *The general concept of the scientific journal reflects a set of principles based on domestic, international standards publishing and publishing ethics and systematized and generalized requirements of leading science-computer databases.*

Key words: *concept, scientific journal, science-based database, editorial policy, content, website.*