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THE USE OF LEARNING MANAGEMENT SYSTEMS IN THE EDUCATIONAL PROCESS: THE EXPEDIENCY AND BENEFITS

The article is dedicated to analyzing the ways that help the pedagogue organise the educational process using modern technologies. Technology has been developing rapidly and constantly. Therefore, pedagogues use modern-day technological achievements, particularly the learning management systems (LMSs) at higher education institutions. This study aims to provide information regarding the learning management systems, defining essential principles of their use at the university level and outlining the apparent benefits. The research considers the expediency of using LMSs in the educational process. The author notes the proliferation of open-source software (OSS) within the sphere of education. The reasons for the spread and acceptance of OSS in higher education institutions are delineated. The paper describes Moodle, Claroline, and ILIAS as learning management systems that help effectively organize the learning process online or in a blended learning format. The conclusions support the idea that the learning management systems, being at the forefront of the latest technological advancements, satisfy the requirements of pedagogues and students within the interaction in a virtual learning environment.
Keywords: *learning management systems (LMSs), open-source software (OSS), blended learning, Claroline, Moodle, ILIAS, higher education, virtual learning environment (VLE).*

Introduction

Technology has considerably enriched training practices across the world. During the pandemic, universities moved to online education and used learning management systems (LMSs) resources. Today's blended learning format effectively encourages "student-teacher" cooperation, thanks to using LMSs at universities. It is worth pointing out that a learning management system (LMS) as a software application is used to organize, plan, and manage the learning process.

The article **considers** the expediency of using LMSs in the educational process. Also, the paper reviews the apparent benefits of using LMSs such as Moodle, Claroline, and ILIAS to manage the teaching-learning process and deliver learning content for university students in a blended learning environment.

Methods and materials

This theoretical research (scientific methods: an analysis of up-to-date knowledge in existing publications on the topic of the study; a conceptual analysis of benefits and the expediency of LMSs application in higher education institutions, abbreviated as HEIs) provides a comprehensive understanding of open sources (OSs) and emphasizes the practical benefits of applying LMSs (Claroline, Moodle, ILIAS) in university-level education (Cavus & Momani, 2009; Cavus, 2015; Balogh & Turčáni, 2011). The paper focuses on the use of web-based technologies for assigning work, posting grades, sharing knowledge, interacting on forums, and providing access to course content for university students. Logical exploration of scientists' beliefs and assumptions delineates the logical circle around the topic under analysis. Notably, the issues related to using LMSs in education are in the view of scientists (Cavus & Momani, 2009; Cavus, 2015; Turnbull et al., 2023). Scholars focus on the effectiveness of LMSs and their applicability for teaching English in higher education (Salahuddin et al., 2020). The appropriateness of LMSs for a blended learning format became a focal point for scientists' research (Gördeslioğlu & Yüzer, 2019; Cao, 2023; Shumeiko & Mandáková, 2023). The use of LMSs for organizing online education, including in the pandemic period, is in the focus of many scholars (Bradley, 2021; Daar et al., 2023). Researchers investigate the benefits and difficulties of using LMSs (Multazam et al., 2022). They also pay attention to general issues related to the use of education technology in the modern educational space (Akay & Gumusoglu, 2020; Veluvali & Surisetti, 2022; Shumeiko & Krajčovičová, 2023). The basic requirements imposed on LMSs from the point of view of the needs of a pedagogue are to present

the contents of education, communicate with learners, motivate them to study, observe their progress, and assess their knowledge (Balogh & Turčáni, 2011).

Analysing the scientific publications enables us to explore the apparent benefits of LMSs.

Results and discussions

Contemporary Internet technologies suggest solutions for sharing learning content and information. To date, LMSs are commonly used at higher education institutions, providing web-based learning opportunities (Balogh & Turčáni, 2011, p. 94). Moreover, *"an LMS provides the virtual platform for the e-learning by enabling the management, monitoring students, delivery, tracking of learning, testing, communication, registration process and scheduling"* (Cavus, 2015) (*Figure 1*).

The latest opportunities available via LMSs make it possible to conduct testing (quizzes, exams), track learning outcomes, share online course materials (audio, video) and offline course materials (documents in PDF format, text format, etc.), conduct communication sessions via chat, and maintain correspondence by e-mail.

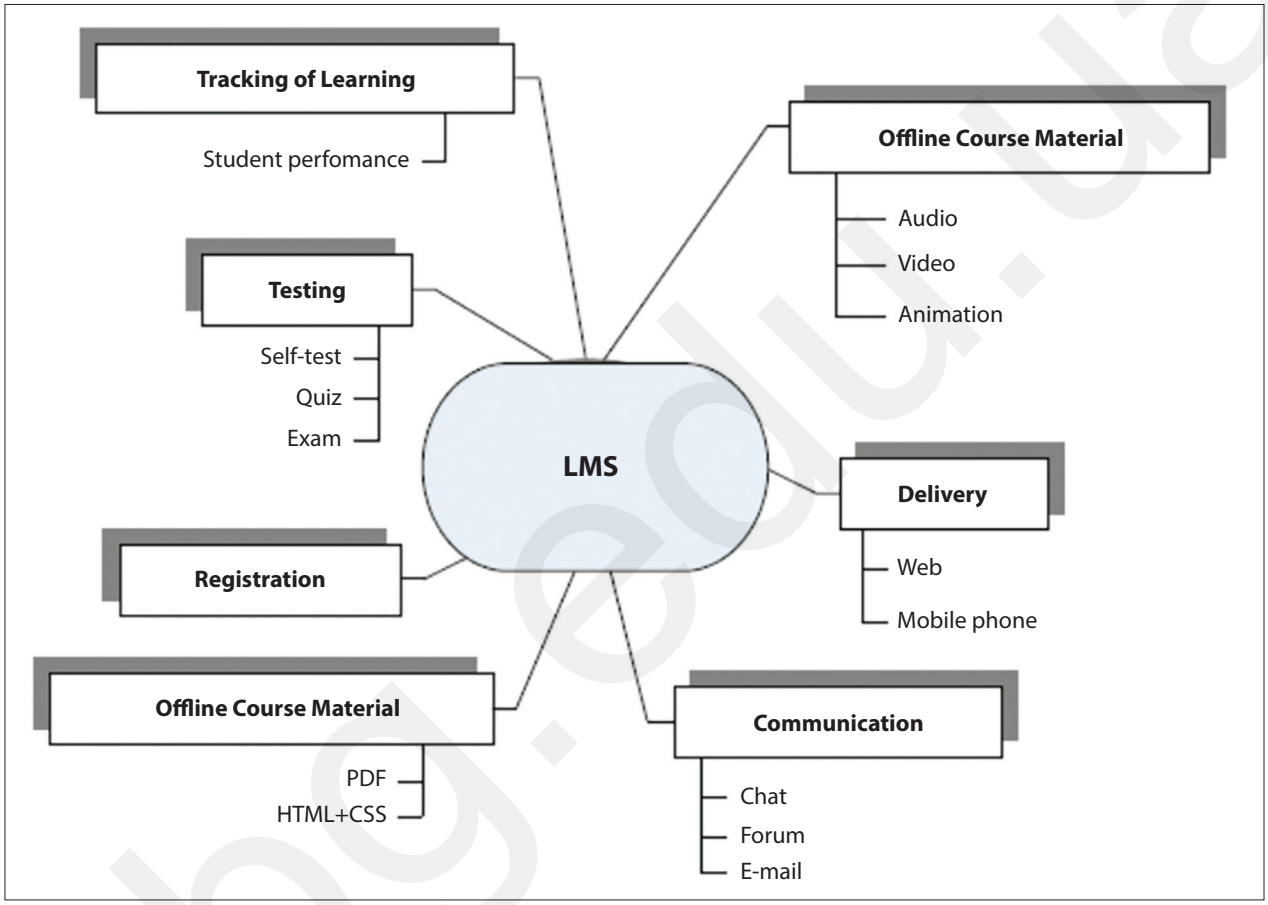

Figure 1: Structure of the LMS (in Balogh & Turčáni, 2011, p. 94)

LMSs, the most significant characteristic of which is their applicability for tertiary education, are an integral part of the training seminars conducted online or blended-learning lessons today. Using LMSs allows educators to organize the teaching-learning process and plan well-structured lesson materials for students. The basic requirements for LMSs, from the point of view of the needs of a pedagogue, are to present the contents of instruction, communicate with students, motivate them to study, observe their students' progress, and assess their knowledge (Balogh & Turčáni, 2011). The results of technological innovations have led to the fact that pedagogues conduct foreign language classes from almost anywhere (Shumeiko & Mandáková, 2023). Using LMSs in a blended learning format helps create a course to facilitate foreign language learning (Gördeslioğlu & Yüzer, 2019). Recent scientific investigations confirm that LMSs have great potential for teaching English (Salahuddin et al., 2020; Daar et al., 2023; Shumeiko & Mandáková, 2023). The benefits of LMSs are apparent to the pedagogues as LMSs are easy to use and effective in conducting online meetings and assigning tasks for students. Besides, the benefits of LMSs, perceived by the students, are easily accessible educational materials, predominantly well-organized structure, easy assignment submission, helpful video explanations, and less paperwork (Multazam et al., 2022).

LMSs are platforms in the virtual learning environment (VLE). There are standard features

of LMSs. Let us list the most important of them: to support students' learning online or in a blended-learning format; to equip students with knowledge by providing information through videos or audio; to check homework (Cavus, 2015); to conduct the registration, to plan the schedule (Woods et al., 2004; Cavus & Momani. 2009; Cavus, 2015); to maintain records on the school attendance, to share the knowledge and ideas (Cavus, 2015).

Open Source (OS) LMS platforms are tremendous for online and blended learning. OS LMSs provide an opportunity to spread knowledge. They are easy to use and provide personalized education and flexibility (Teachfloor, 2023).

There are reasons for using Open Sources (OSs) in higher education within the four domains of education: economic, technological, pedagogical, and philosophical (MacHado Garcia & Thompson, 2005). An '*economic*' domain is essential for higher education institutions regarding an OS environment and the need to use it for educational purposes, particularly for conducting the educational process online or in a blended learning format. From a technological standpoint, OSS assists pedagogues in delivering materials for students. These materials are open but well protected by copyrights and licenses. Online platforms and their appropriate use in offline lessons, online classes, or in a blended learning format help achieve pedagogical purposes in teaching. From a philosophical perspective, OSS supports *"free education."* It promotes knowledge sharing and encourages using open resources for educational purposes (MacHado Garcia & Thompson, 2005) (*Table 1*).

Table 1

REASONS OF THE PROLIFERATION OF OSS IN HIGHER EDUCATION WITHIN THE FOUR DOMAINS OF EDUCATION

Domain	Reasons
Economic	✓ *Eases the burden of software license management.* ✓ *Open Sources cost less to acquire and run than proprietary software* ✓ *Independence* ✓ *Generic Product*
Technological	✓ *Reliable and secure technology* ✓ *Open architecture* ✓ *Inter-operational* ✓ *Open but well-protected copyrights and licenses*
Pedagogical	✓ *Possibility of using different learning scenarios* ✓ *Web-based learning* ✓ *Modular and multilingual* ✓ *Variety of tools*
Philosophic	✓ *Collaborative approach* ✓ *Anti-monopolistic* ✓ *Free as education* ✓ *Promotes pan-European vision and social cohesion*

Source: MacHado Garcia & Thompson, 2005

Moodle (that means the following: Modular Object-Oriented Dynamic Learning Environment) is an OS LMS (Moodle, 2023). It is oriented on the organization of interaction between the teacher and the students. It is appropriate for organizing distance courses and supporting the blended training approach. Teachers develop and prepare teaching materials, comprise lesson plans, and conduct surveys or tests. It also facilitates communication between the teacher and the students. It enables submitting the completed assignments, giving feedback, or exchanging ideas. The Moodle OS LMS is helpful when it comes to providing educational materials. This platform is highly functional (Teachfloor, 2023).

ILIAS is the OS LMS platform that has gained widespread popularity in higher education institutions in Europe, primarily in Germany, where it originated (ILIAS, 2023). Apart from Germany, it is also adopted in Austria, Switzerland, and other European countries. ILIAS supports various learning situations, including e-learning and blended learning. Teachers use ILIAS to prepare language learning resources. This LMS promotes the integration of the students and student-teacher interaction to exchange information (Müller, 2012).

Claroline (Classroom Online) is the LMS platform. Teachers create and deliver online courses to students on this educational platform and collaborate with students through web communication devices (Claroline, 2023). Using the Claroline LMS allows pedagogues to develop and administer courses. Notably, *"the Claroline is compatible with GNU / Linux, Mac OS and Microsoft Windows"* (Awang et al., 2012). The Claroline LMS is used in more than 80 countries. It is available in more than 30 languages. Moreover, the Claroline LMS offers a list of tools enabling the pedagogue to write a course description, publish documents in any format, such as text format, PDF, or HTML, share videos, administer public and private forums, create groups of students within their courses, prepare online exercises and tasks, publish announcements, see the statistics of the user's activity (Awang et al., 2012).

Each of the above LMSs (Moodle, ILIAS, Claroline) can be used as a platform for blended learning and help create a conducive environment for the educational process. Pedagogues can leverage these platforms to deliver course content, engage students in activities, facilitate discussions, assess learning progress, and promote collaborative learning experiences in a friendly, supportive environment.

Conclusion

Summing up the results of the research, we outlined the apparent benefits of using LMSs (Moodle, Claroline, and ILIAS) in the educational process based on a blended learning model or carried out online. So, LMSs provide the opportunity:

— to develop tutorial resources, monitor students' progress, assign homework, and prepare tests;

— to conduct testing (quizzes, exams);

— to share online course materials (audio, videos, or documents in PDF format, text format, etc.);

— to plan well-structured lesson materials for students;

— to conduct online meetings, communication sessions (chat, forum);

— to avoid large amounts of paperwork.

Considering the conducted theoretical analysis of the expediency of using LMSs in the university-level educational process, especially in a blended learning format, it was concluded that LMSs:

— support the teaching-learning process and enhance communication and collaboration in the online environment;

— provide planning and management options.

Thus, LMSs like Claroline, Moodle, and ILIAS are used at HEIs to enhance the accessibility of teaching and learning materials (videos, audio, texts, lectures) for students. These online platforms help effectively manage the educational process, prepare exercises and materials for the lessons, teach students remotely, or use a hybrid approach that blends face-to-face training with distance learning techniques. In our further researches we will focus on exploring AI-based LMSs.

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ВИКОРИСТАННЯ СИСТЕМ УПРАВЛІННЯ НАВЧАННЯМ В ОСВІТНЬОМУ ПРОЦЕСІ: ДОЦІЛЬНІСТЬ ТА ПЕРЕВАГИ

У статті зосереджено увагу на застосуванні сучасних інформаційно-комунікаційних технологій в освітньому процесі. Зважаючи на те, що останні постійно й стрімко розвиваються, викладачі закладів вищої освіти, крокуючи в ногу з часом, використовують їх у своїй професійній діяльності. Зокрема, чільне місце у структурі інформаційно-освітнього середовища посідають системи управління навчанням (LMSs — Learning Management Systems). Метою статті є обґрунтування доцільності використання LMSs в освітньому процесі та виділення низки переваг, якими наділені LMSs. У ході дослідження автор

конкретизує значення поняття «система управління навчанням»; аналізує структуру LMS-системи; наводить причини використання відкритого програмного забезпечення (OSS — open-source software). Детально схарактеризовані економічні, технологічні, педагогічні та філософські причини. Виділено переваги застосування LMSs, зокрема Moodle, Claroline та ILIAS, в навчальному процесі. Claroline допомагає викладачам готувати онлайн-вправи, публікувати мультимедійний контент тощо. Moodle — модульне об'єктивно-орієнтоване динамічне навчальне середовище. Ця система орієнтована на організацію взаємодії між студентом і викладачем. ILIAS — вільне програмне забезпечення, що підтримує функції керування контентом, уможливлює підготовку онлайн-вправи тощо. Зазначено, що LMSs забезпечують авторизацію учасників освітнього процесу, надають їм доступ до матеріалів уроку, уможливлюють оцінювання навчальних досягнень студентів. Інтерактивні онлайн-ресурси допомагають вчителю організовувати онлайн-навчання та змішане навчання, підвищують якість і результативність освітнього процесу. Підтримуючи цю ідею, педагоги готують навчальні матеріали, представлені у вигляді презентацій, текстів, відео та аудіо, і розміщують їх у LMS-системі. Студенти отримують онлайн-доступ до матеріалів курсу. З огляду на вищезазначене висновки статті засвідчують думку про те, що системи управління навчанням, перебуваючи в авангарді останніх технологічних досягнень, задовольняють вимоги як студентів, так і педагогів у контексті взаємодії у віртуальному навчальному середовищі.
***Ключові слова**: системи управління навчанням, відкрите програмне забезпечення, змішане навчання, Claroline, Moodle, ILIAS, вища освіта, інформаційно-освітнє середовище.*

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