

Utilization of Learning Management System (LMS) in Improving Learning Independence

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Abstract

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The utilization of Learning Management Systems (LMS) in education has seen significant advancement, particularly in supporting students' learning autonomy in the digital era. LMS has become a vital platform that enables learning to take place in a flexible, structured, and adaptive manner, catering to individual student needs. This study aims to systematically review scholarly literature focusing on the implementation of LMS in the context of autonomous learning, emphasizing the students' role in managing their own learning processes. The method used is a literature review, drawing from international peer-reviewed journals. The findings indicate that LMS contributes positively by enhancing flexibility, accessibility, and intrinsic motivation among students. Moreover, a well-designed LMS can increase student engagement, individual responsibility, and self-efficacy in online learning environments. This review highlights the importance of integrating educational technology with effective learning management strategies to create systems that genuinely foster independent and sustainable learning practices.

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1. Introduction

Digital transformation has fundamentally changed the global education paradigm. This change doesn't just touch technical aspects of material delivery but also reshapes the approach to the learning process, especially in terms of independent learning. Amidst the rapid development of information and communication technology, Learning Management System (LMS) emerges as a key innovation that plays an important role in the provision of education, both in distance learning and hybrid learning formats. An LMS is a web-based digital system specifically designed to manage, distribute, and monitor all learning activities taking place in a virtual or online environment. LMS provides a variety of features highly relevant to current educational needs, such as managing digital learning materials, conducting online evaluations, providing interactive discussion forums between students and educators, and real-time student progress tracking features.

These capabilities make LMS a strategic tool in supporting personalization and flexibility in the learning process. LMS also provides opportunities for students to learn according to their own time, style, and pace, something that is essential in self-reliant learning. One of the main challenges in the contemporary educational context is how to develop and strengthen students' learning independence as part of 21st-century learning competencies. Learning independence not only includes the ability to absorb information but, more than that, emphasizes students' skills in designing learning strategies, managing time efficiently, self-evaluating, and taking full responsibility for the success of their learning process. This concept is closely related to the constructivist approach in education, which views students as active

subjects who independently construct their understanding of material through interaction with learning resources and their environment.

Within this framework, LMS is not merely an administrative tool that facilitates classroom management but can also function as a highly potential pedagogical platform for fostering independent learning attitudes and skills. By using LMS, students are given the freedom to access learning materials anytime and anywhere, adjust their learning pace to personal preferences, and develop learning strategies according to their own learning styles (da Costa et al., 2020). This ability gives students greater control over their learning process, which ultimately strengthens their sense of responsibility and internal motivation. A study by Adinda and Mohib (2020) provides strong evidence that the appropriate use of LMS can enhance self-directed learning. This is possible because LMS provides personalized content and adaptive learning to individual needs. Thus, learning is no longer uniform but more accommodating to the diversity of students' learning styles and speeds.

Nevertheless, the effectiveness of LMS in promoting learning independence cannot be measured solely by the presence of its technology. The success of LMS implementation is highly determined by several other non-technical factors, such as appropriate learning design planning, instructional support from educators, students' digital literacy levels, and a learning culture that supports independent exploration. If these aspects are neglected, instead of fostering independent students, the use of LMS can create new dependencies on digital systems without a significant increase in students' autonomous learning capacity (Zhong, 2021). Some studies even show

that an LMS not supported by a clear pedagogical approach and effective instructional intervention can lead to reduced active student participation. In such a scenario, LMS becomes merely a material repository without being able to move the potential for independent learning of students.

Therefore, it is important for educational institutions to design a comprehensive and sustainable LMS implementation strategy. Through a literature review approach, this paper will critically examine how LMS is utilized in the context of modern education to promote student learning independence. This review will include the identification of various features within LMS that support self-directed learning, an empirical analysis of previous research findings on the effectiveness of its utilization, and an exploration of common obstacles encountered along with relevant optimization strategies. By referring to various findings from international scientific literature, this paper is expected to contribute theoretically and practically to educators and policymakers in building a learning system that empowers students independently and sustainably.

2. Literature Review

2.1. LMS as a Facilitator of Learning Independence

LMS has characteristics that allow learning to be more flexible, personalized, and independent. This flexibility includes aspects of time, place, and learning methods that can be adapted to the needs of each student. This system opens up space for students to learn asynchronously, allowing them to access materials anytime without being tied to a fixed schedule. Students using LMS experienced an

increase in time management, learning planning, and reflective abilities towards the learning process. This indicates that LMS has a positive influence on the development of metacognitive learning skills, where students consciously regulate strategies and assess the effectiveness of their learning.

In addition, LMS allows students to choose their own time and learning methods, which has an impact on increasing motivation and self-efficacy. This internally grown motivation is very important in encouraging long-term learning success, as students become more responsible for their own academic achievements. LMS features such as discussion forums, automatic quizzes, and learning progress reports significantly contribute to increasing learning autonomy because students are able to monitor and self-evaluate independently (Song & Kim, 2021). The existence of these features creates a learning environment that is more supportive of individual learning, and encourages the growth of a sense of ownership over the learning process itself.

2.2. LMS Implementation Strategies in Increasing Independence

Bradley (2021) emphasized the importance of appropriate instructional design in LMS to truly support student learning independence. They explained that LMS will not provide optimal impact if it is not designed with a strategic pedagogical approach. LMS equipped with gamification elements, periodic formative assessments, and automatic feedback systems can increase students' active engagement in the learning process. This engagement is not only limited to technical aspects but also reflects an increased sense of student ownership of their own learning. Gamification, for example, can create challenges and rewards that motivate

students to continue participating, while formative assessment provides constructive feedback for self-reflection.

LMS-based blended learning strategies also provide added value in promoting independence, especially when combined with interactive elements such as learning videos, simulations, and self-paced modules. These elements allow students to absorb material at their own pace and learning style, so that the internalization process of concepts becomes more effective (Nchia et al., 2019). On the other hand, teacher involvement in providing feedback and facilitating discussions is also key to LMS success. Bedou et al. (2017) mentioned that LMS that only contains passive content without pedagogical interaction tends to demotivate students. Therefore, active support from lecturers through discussion forums, reflection, and clarification is greatly needed to maintain the direction of learning and provide scaffolding when students experience confusion or difficulty in understanding the material.

2.3. Obstacles in Utilizing LMS for Independence

Despite offering many potentials and advantages in supporting independent learning, the implementation of LMS in increasing learning independence is not without various complex challenges. One of the main obstacles often encountered is the gap in students' digital literacy. A study by Alshira'h et al. (2021) stated that most students experience difficulties in utilizing LMS features optimally. This is due to their lack of familiarity with the system interface and technology used in digital learning platforms. The inability to navigate LMS makes many students feel insecure and reluctant to actively participate, so the potential for independent learning offered is not fully achieved.

In addition, technical factors such as limited internet connectivity and access to adequate technological devices are also serious obstacles, especially for students in environments with limited digital infrastructure. This barrier widens the participation gap in online learning and weakens the foundation of learning independence. Motivation is also an important concern in LMS implementation. Chen et al. (2018) found that without strengthening students' intrinsic motivation, the use of LMS tends not to be done consistently and continuously. Therefore, a pedagogical approach that integrates andragogy principles and personalized learning concepts becomes an important strategy that must be adopted so that LMS truly functions as a learning vehicle that encourages individual autonomy and responsibility in learning.

3. Methods

This research uses a literature review approach with the main objective of examining and understanding the role of Learning Management System (LMS) in increasing student learning independence. This research is based on the need to collect and synthesize various relevant scientific study results to obtain a comprehensive picture of the effectiveness of LMS utilization in the context of independent learning. Data and reference sources were collected from various scientific journals published internationally. The main platform used in reference search was Google Scholar, supported by access to a number of other credible and peer-reviewed indexed international journals. The literature collection process was carried out systematically using a number of predetermined keywords to ensure

thematic relevance to the focus of the study. Some of these keywords include “Learning Management System”, “autonomous learning”, “student-centered learning”, “LMS effectiveness”, and “online learning self-regulation”. With these keywords, the researchers successfully identified 30 scientific articles as initial selection results.

Furthermore, a more detailed filtering process was carried out based on criteria that included content relevance to the topic, quality of research methodology, and theoretical and empirical contributions to the study of LMS and learning independence. From the filtering results, 11 articles were deemed most eligible for in-depth analysis. The analysis method used in this research is content analysis, which involves evaluating and interpreting the content of each article to identify similarities, differences, and main findings. The information analyzed includes the type of LMS used in the study, the instructional design approach applied, the indicators of learning independence measured, and the results or impact on students. The analysis process was carried out thematically to produce a comprehensive and in-depth narrative synthesis. To ensure data validity, triangulation between sources was carried out to strengthen the validity of the information found. This entire process was carried out while maintaining content validity by referring to credible and recognized academic literature in the field.

4. Results and Discussion

Based on an in-depth analysis of 11 relevant international scientific articles, it was found that the utilization of Learning Management Systems (LMS) in the

context of learning has a strong positive correlation with the development of student learning independence. These studies, originating from various educational institutions and different methodological approaches, generally show that consistent use of LMS has a significant impact on increasing students' capacity to manage their learning processes independently and responsibly. The majority of the analyzed studies indicate that LMS platforms such as Moodle, Canvas, and Google Classroom provide a flexible and structured learning space, allowing students to plan, adapt, and evaluate their learning activities more autonomously. The main advantage of LMS lies in its flexibility. Students are no longer tied to specific times and places, because with LMS, they can access various learning materials online anytime and anywhere. LMS also allows students to set their learning schedules according to their personal preferences and learning pace, without excessive external pressure.

In this context, the LMS system gives students greater control, which directly impacts an increased sense of responsibility for the learning process. This is also supported by automatic tracking systems in LMS, such as progress tracking features and analytics dashboards, which greatly help students monitor their academic progress. Thus, students can build higher learning awareness and are able to make independent learning decisions based on real-time data about their performance. Not only that, LMS systems equipped with interactive features such as online discussion forums, computer-based quizzes, self-assignments, and transparent grading rubrics have been proven to significantly enhance self-regulated learning. Self-regulated learning involves three main phases: planning, execution, and reflection. LMS provides support for these three phases through digital features

designed to enable students to develop the metacognitive skills necessary for independent learning.

In this regard, research conducted by Adinda & Mohib (2020) affirms that LMS enables a balanced integration between structured learning guided by instructors and self-directed learning controlled by students themselves. In other words, LMS acts as a bridge between instructional control and learning independence. Students in these studies showed the ability to adjust their learning pace, repeat material they had not understood, and organize learning strategies based on personal goals. This is a key advantage of LMS compared to conventional learning methods, which tend to be one-way and unresponsive to individual student needs. However, it is important to note that not all LMS can provide an optimal learning experience if not supported by effective and relevant learning design (Zanjani, 2017).

A good learning design must include a clear navigation structure, logical and interactive material presentation, and evaluation arrangements capable of measuring critical thinking skills and student independence. Most of the analyzed articles also highlight the important role of teachers as facilitators in the LMS-based learning ecosystem. Although LMS is designed to encourage autonomy, the presence of educators is still needed to provide guidance, clarify concepts, and build healthy social interaction in an online environment. In this case, providing regular and timely feedback is key to maintaining students' learning spirit. Such feedback can be given in various formats, such as written comments on assignments, voice messages, or personalized video explanations.

The analyzed studies found that constructive and continuous feedback can increase student confidence, help them recognize personal strengths and weaknesses, and strengthen the metacognitive process underlying independent learning. Furthermore, interactivity in LMS is considered a determining factor in the success of creating reflective and self-development-oriented learning. The interaction referred to is not only limited to communication between teachers and students but also includes collaboration among students in discussion forums, online group projects, and the exchange of ideas in synchronous and asynchronous activities (Onyema et al. 2020). With pedagogically designed interaction spaces, students not only learn individually but also develop social skills and cooperation essential for 21st-century learning. In this context, LMS becomes more than just a digital platform; it evolves into a dynamic and collaborative learning ecosystem.

However, behind this great potential, several challenges in LMS implementation were also identified in various studies. One of the main challenges that often arises is the limited digital literacy among students. Some students, especially those unfamiliar with using technology in learning, experience difficulties in understanding and operating features within the LMS. A study by Alshira'h et al. (2021) showed that the inability to understand the LMS interface can cause students to feel frustrated, which ultimately impacts a decrease in motivation and engagement in the learning process. Therefore, LMS usage training is an important first step so that students can use the platform optimally. In addition, the readiness of technology infrastructure is also a significant obstacle, especially in areas with limited internet access or technological devices.

Not all students have personal devices such as laptops or tablets that are compatible with the LMS system, and unstable internet connections can also hinder the learning process. This access inequality creates a digital divide that can directly impact disparities in learning outcomes. Therefore, efforts are needed from educational institutions and policymakers to ensure that facilities and infrastructure supporting online learning are available fairly and equally for all students. On the other hand, student motivation in using LMS continuously is also a challenge in itself. Some studies found that students tend to lose interest if LMS only functions as a material storage or assignment repository.

In Chen et al.'s (2018) research, it was stated that without strengthening intrinsic motivation, the use of LMS will not yield maximum results. Therefore, teaching strategies capable of arousing curiosity, providing intellectual challenges, and providing space for expression and creativity are very necessary to maintain student engagement. Pedagogical approaches that integrate andragogy principles such as appreciation for previous learning experiences, relevant learning needs, and problem-solving-centered approaches can help create meaningful learning experiences and support independent learning. In addition to the andragogy approach, personalized learning models are also a promising strategy in this context. LMS allows the application of learning models tailored to the needs, abilities, and interests of individual students (Mansur et al., 2019).

By providing flexible and adaptive learning paths, LMS can reach the diversity of student learning styles and help them achieve academic goals more effectively. This also creates space for students to learn in a context that is more relevant to their

real lives and personal aspirations, which ultimately strengthens their sense of ownership of the learning process. The literature synthesis shows that LMS is not just a technical-administrative digital learning tool, but a complex and integrated learning ecosystem with great potential to shape the character of independent learners. LMS not only provides access to learning materials but also creates a flexible, interactive, reflective, and collaborative learning space. Through features that support planning, execution, and self-assessment, LMS helps students develop lifelong learning competencies.

Success in utilizing LMS to enhance learning independence certainly depends heavily on the extent to which the integration between three main components can be achieved: namely relevant and functional technology, pedagogical design based on contemporary learning theories, and social support from educators and the learning community. All three complement each other and cannot stand alone. When these three elements are integrated synergistically, LMS can act as a catalyst in a learning process that empowers students to become active, reflective, and independent learners. Therefore, the future development and application of LMS must continue to be directed not only at the technological aspects but also at strengthening the quality of interaction, content relevance, and inclusive and student-centered learning strategies.

5. Conclusion

LMS has proven to be a strategic instrument in supporting and enhancing student learning independence. The presence of LMS as a digital platform serves not

only as a material storage medium but also as a learning environment that encourages the development of independent learning abilities. Through features such as flexible access, progress tracking, and automated feedback, LMS creates a learning space that facilitates self-directed learning more systematically and measurably. Students can plan their learning schedules according to their personal pace, monitor their academic progress, and receive immediate feedback for self-evaluation. However, the effectiveness of LMS does not stand alone, but is greatly influenced by the quality of the learning design applied, the level of digital literacy of the users, and the presence of pedagogical support from instructors. Without a proper implementation strategy, LMS can lose its potential as a liberating tool. Therefore, a holistic approach is needed in implementing LMS, which is by combining relevant technological aspects, adaptive pedagogical approaches, and strong social support. Based on the literature reviewed, it is recommended that educational institutions develop inclusive digital learning policies, provide continuous training for educators and students, and integrate motivational strategies so that LMS truly functions as a driver of student learning autonomy in this digital era.

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