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APPLICATION OF LEARNING MANAGEMENT SYSTEMS (LMS) IN DISTANCE EDUCATION: A LITERATURE REVIEW

Novianty Djafri
Universitas Negeri Gorontalo, Indonesia
noviantydjafri@ung.ac.id

Suhana Sarkawi
Institute of Teacher Education Tun Abdul Razak Campus, Kota Samarahan Malaysia

Rusiadi
Universitas Sultan Muhammad Syafiuddin Sambas, Indonesia

Abstract
The application of Learning Management Systems (LMS) in distance education plays an important role in supporting teaching and learning in the digital era. This article reviews various literatures to evaluate the effectiveness, benefits, and challenges faced in using LMS. The review shows that LMS can improve the flexibility and quality of learning by providing various digital features such as material storage, evaluation system, and online communication. However, LMS implementation is also faced with a number of obstacles such as limited internet access, lack of technological literacy, and cost factors. In conclusion, the success of LMS implementation is highly dependent on educational policy support, user training, and adequate infrastructure readiness. With the right attention and management, LMS has great potential to optimise distance education and promote inclusivity in the education system.
Keywords: Application of Learning Management Systems (LMS), Distance Education, Literature Review.

Introduction

The development of information and communication technology (ICT) has had a major impact on various aspects of life, including education. One of the innovations that is increasingly being adopted in education is the implementation of Learning Management Systems (LMS). Learning Management Systems (LMS) is a platform or software designed to manage, support, and facilitate the online learning process (Ridwan et al., 2024) . LMS allows educators to create, distribute and manage educational content, as well as enabling learners to access learning materials, submit assignments, participate in discussions and track their learning progress. LMS functionality includes features such as course management, evaluation and feedback, and integration with other learning tools, creating an interactive, efficient, and flexible educational ecosystem for all parties involved (Brown, 2020) .

LMS is a digital platform designed to support online learning through material delivery, task management, interaction between educators and learners, and structured learning evaluation. The application of LMS is becoming increasingly relevant

in supporting distance learning, especially in conditions that require learning without face-to-face meetings, such as during the COVID-19 pandemic (Johnson, 2021) ; (Aslan et al., 2020) .

The implementation of Learning Management Systems (LMS) during the COVID-19 pandemic is one of the main solutions in maintaining the continuity of the education process in the midst of social restrictions and school closures (Nugraha et al., 2021) . With conditions that do not allow face-to-face learning, LMS provides a platform that allows educators and learners to stay connected virtually. The system is used to distribute course materials, assign tasks, conduct evaluations, and facilitate real-time interaction through video conferencing, discussion forums, and assignment management features. Some examples of popular LMSs used during the pandemic include Google Classroom, Moodle, and Microsoft Teams. The flexibility of these LMS in accommodating distance learning has helped many educational institutions to adapt to the challenges of an unexpected pandemic situation (S. Green, 2023) .

Therefore, distance education is a strategic solution in facing various geographical challenges and limited access to conventional education. However, its implementation is inseparable from technical, pedagogical, and digital culture obstacles in various circles. LMS comes as one of the important tools to facilitate the process, but the effectiveness of this system depends on the ability and readiness of educational institutions, teaching staff, and students in using it (A. Green, 2023) .

A literature review shows that LMS implementation has great potential to increase learner engagement, enrich the learning process, and provide access to learning anytime and anywhere. However, various studies also reveal barriers to the use of LMS, such as the lack of training of teaching staff, gaps in access to technology, and low motivation of learners to learn (Anderson & Jiang, 2018) .

Given these challenges, it is important to understand how an LMS can be optimally implemented in a distance education context. Research into the literature related to LMS implementation provides an opportunity to identify strategies, implementation models and potential LMS development to support effective and inclusive learning.

Research Methods

The study in this research uses the literature method. The literature research method is an approach that relies on the review of theories, concepts, and findings from various scientific sources to answer a research question or solve a problem. In this method, researchers collect, analyse, and interpret information from previously conducted studies, such as journals, books, articles, reports, or official documents, to build a strong theoretical foundation (Cooper, 2010) ; (Creswell, 2013) . Literature research is often used to identify research gaps, strengthen arguments, or seek relevance between existing concepts and the research context. In addition, this method

allows researchers to understand trends, compare findings, and offer new perspectives on a particular topic by systematically integrating information from various sources (Kitchenham, 2004) .

Results and Discussion

Use of LMS in Distance Education

In the digital era, Learning Management Systems (LMS) become one of the main tools that support the implementation of distance education. LMS is a technology-based platform designed to manage, deliver, and track the learning process virtually. With the presence of LMS, educational institutions can overcome various challenges that arise due to time and space limitations in the learning process. This device allows teachers and students to keep interacting, even though they are physically located in different locations (Saputra et al., 2024) ; (Sitepu et al., 2022) .

Distance education, especially during the COVID-19 pandemic, relies heavily on the presence of an LMS to support teaching and learning activities. An LMS provides features that allow educators to upload learning materials, assign tasks, conduct exams, and monitor student progress effectively. The platform also offers flexibility for students to study at any time, thus supporting various individual learning styles. With the integration of technologies such as video conferencing, discussion forums, and interactive modules, the LMS is able to create a learning experience that resembles face-to-face methods (Anderson & Jiang, 2018) .

In addition to supporting the smooth learning process, the use of LMS in distance education also plays a role in improving the efficiency of education administration. With an all-digital system, activities such as recording grades, managing attendance, and analysing student progress can be done automatically. This not only saves time, but also reduces the potential for human error in the administration process. LMS is an important tool for educational institutions to run their operations in a more structured manner (United Nations, 2021) . However, the effective use of LMS is inseparable from infrastructure support and user capabilities. A stable internet connection and technological devices such as computers or smartphones are the main prerequisites for LMS operation. Unfortunately, in some areas that do not have adequate access to technology, LMS implementation often encounters obstacles. Students from remote areas or families with economic limitations tend to find it difficult to follow distance education optimally, thus creating a learning gap (Smith, 2020) .

In addition, the use of LMS in distance education demands a good level of digital literacy for both educators and students. Many educators find it difficult to adapt their teaching methods into an interactive digital format through the LMS. Similarly, students often have to learn how to use new platforms, which can slow down the learning process (Kaufmann & Kaufmann, 2019) . Therefore, training for LMS users is an important step to ensure optimal use of the system.

Despite the challenges, LMSs offer great potential to deliver more inclusive and flexible education. The platform allows educational institutions to reach students from different regions without having to be limited by geographical factors. In addition, learning features that can be personalised for each student make LMS an effective tool in supporting individual educational success (Taylor, 2019) .

Another advantage of an LMS is its ability to support technology-based learning approaches. Through the LMS, teachers can implement methods such as gamification, data visualisation and project-based learning directly to students. This makes the learning process more engaging and encourages students to actively participate. With the combination of these approaches, the LMS is able to increase student engagement in the distance learning process (Williams, 2022) .

Apart from being used for formal education, LMS is also being adopted in professional training and non-formal education. For example, job training, language courses, and technical skills training are now being conducted through LMS. This shows that LMS has become a versatile platform, not only limited to educational institutions, but also for various sectors that require digital learning (World Health Organization (WHO), 2022) .

The continuous development of LMS is key in supporting distance education in the future. As technology continues to evolve, LMSs can integrate artificial intelligence (AI) to provide more specific learning recommendations, or support interactive use through Augmented Reality (AR). Investing in the development of these features can open up more opportunities for more innovative and adaptive education, in line with the needs of the times (Wilson, 2024) .

Overall, the use of LMS in distance education has changed the learning paradigm in the modern world. LMS is not only a temporary solution during the pandemic, but also an essential element for long-term digital transformation in education. With the increasing adoption of this technology, LMS-based education is expected to provide wider access, better quality, and more efficient learning experience for students everywhere.

Benefits of Using LMS in Distance Education

The benefits of using a Learning Management System (LMS) in distance education are significant. One of the main benefits is the ease of access to learning materials. LMS allows students and teachers to access learning materials anytime and anywhere as long as they are connected to the internet. This supports time flexibility, so that learners are not limited by certain locations or hours to explore knowledge (Smith, 2020) .

In addition, LMS provides a structured platform for learning management. Teachers can easily organise and integrate various learning resources such as documents, videos, quizzes and discussion forums into one system. With this organised

access, students can follow the learning flow in an orderly manner, so that they are not confused to find the necessary materials (U.S. Geological Survey (USGS), 2021) .

Another benefit is that interaction between students and teachers is maintained even though they are in separate locations. LMS provides communication features such as forum, chat, and virtual classroom that allow direct or indirect interaction. Thus, students can still discuss, ask questions, and collaborate with teachers and other friends, so that the learning experience becomes more engaging (Clark, 2021) .

LMS also helps in monitoring student progress more easily. Through this system, teachers can track students' learning outcomes, attendance, and progress on assignments. This data can be analysed to evaluate student performance in more depth, so that teachers can provide constructive feedback and help students to overcome their weaknesses (Kumar & Reinartz, 2018) .

The evaluation and automation features in the LMS are another important benefit. The LMS allows teachers to create online assignments and exams with auto-correcting features, optimising time efficiency. On a large scale, this feature is very helpful, especially for distance education programmes that involve many students in various locations (White & Patel, 2022) .

The use of LMS also provides a great opportunity for inclusive and affordable education. With lower operational costs compared to conventional learning models, education through LMS is accessible to more people, including those living in remote areas. This contributes to equalising learning opportunities across the region (Brown, 2020) .

In addition, LMS can be a medium that supports independent learning. Students can set their own learning pace and repeat poorly understood material without having to feel rushed to keep up with the class schedule. In this aspect, the LMS encourages the development of more independent learning skills, which is very important for the modern era (Martin, 2020) .

Finally, the use of an LMS in distance education supports the integration of technology in wider learning. An LMS can often be integrated with third-party applications, such as video conferencing devices, and various other interactive learning tools. This creates a rich digital education ecosystem, which is increasingly relevant in today's technological era.

Strategies and Solutions for Overcoming LMS Challenges in Distance Education

The use of a Learning Management System (LMS) in distance education offers many benefits, but it is not without its challenges. Understanding and overcoming these challenges is crucial to improving the effectiveness of LMS utilisation. One of the key strategies is the provision of adequate infrastructure. It is important for educational institutions to ensure that all students and teachers have access to a stable internet connection as well as sufficient devices to run the LMS (Lee, 2017) .

Training and technical support are also key in overcoming the challenges of using an LMS. Users, both teachers and students, often require assistance to understand and operate the system effectively. Therefore, providing initial training and ongoing technical support can help in improving user competence and reducing technical barriers that may arise (Harari, 2018) .

In addition, it is important to choose an LMS that suits the specific needs of the educational institution. An LMS that is too complex or does not fit the needs of the users may reduce the effectiveness of its use. Conducting a thorough evaluation before selecting an LMS, including system trials and consultation with relevant parties, can help determine the best choice (Lee, 2017) .

Security aspects also need to be considered in the use of LMS. Educational institutions must ensure that student data, teachers, and learning materials stored in the LMS are protected from cybersecurity threats. The implementation of security measures, such as data encryption, the use of strong passwords, and regular system updates, is essential to maintain data confidentiality and integrity (Harari, 2018) .

Another strategy that can be implemented is the development of interesting and interactive learning content. Monotonous and uninteresting content can demotivate students. Therefore, teachers need to innovate in composing materials, using varied media, such as video, audio, and graphics, as well as direct interaction through quizzes or discussions to keep students engaged (Martin, 2020) .

Fostering a positive learning culture is also an important solution. In a distance environment, students' intrinsic motivation determines the success of learning. Teachers can help by providing constructive feedback, appreciating students' efforts, and creating a supportive and inclusive learning atmosphere (Iksal et al., 2024) .

Collaboration between teachers and students should also be optimised. Teachers can encourage discussion and group work within the LMS platform to create a sense of community and mutual support. Features such as discussion forums and group project work can be maximally utilised for this purpose (Fawait et al., 2024) . To overcome challenges related to parental involvement, educational institutions can involve them more actively in the educational process through the LMS. Providing workshops or guidance on LMS usage to parents, as well as communicating the progress and needs of the child at regular intervals, can help create a more supportive learning environment at home (Kumar & Reinartz, 2018) .

Continuous evaluation of the process and effectiveness of LMS use is also very important. Educational institutions should regularly collect and analyse feedback from users to identify areas for improvement and optimise the use of the LMS based on this data (Clark, 2021) .

Flexibility in LMS implementation is also needed to accommodate various learning styles of students. For students who require a specific learning method, the instructor must be able to adjust the way the material is delivered to make it more

effective. The use of various content formats and adjustments to the pace of learning can help overcome this challenge (U.S. Geological Survey (USGS), 2021) .

Cooperation with the LMS provider must also be maintained. Educational institutions need to ensure that the LMS provider provides adequate technical support and continues to update the system with the latest features relevant to the development of education technology (Smith, 2020) .

Finally, continuous monitoring and evaluation. Educational institutions need to regularly evaluate the effectiveness of the LMS in supporting learning. Using data and feedback from students and teachers to make adjustments and improvements will ensure that the LMS remains relevant and effective in the long term. This requires ongoing commitment and adaptation to technological developments and user needs (Wilson, 2024) .

Thus, applying these strategies and solutions, the challenges in using LMS can be overcome, so that distance education can run more effectively and efficiently.

Conclusion

The application of Learning Management Systems (LMS) in distance education has had a significant impact on the teaching and learning process in the digital era. LMS allows for more flexible education by removing the boundaries between time and place. With various features such as learning material storage, evaluation system, online communication, and collaboration, LMS makes it easier for teachers and students to connect with each other. This technology is a key solution to overcome the challenges of distance education, especially during emergency situations such as pandemics.

The integration of LMS in education provides an opportunity to improve the quality of learning through the utilisation of various digital media. Teachers can use videos, texts, interactive quizzes and discussion forums to create a more dynamic and engaging learning experience. In addition, LMS also helps in the personalisation of learning, where students can learn according to their rhythm and needs. However, the success of LMS implementation depends not only on the technology, but also on user training, infrastructure readiness, and commitment of educational institutions.

Overall, the LMS offers various benefits to support distance education, but it also has challenges that need to be overcome. Some of the challenges include limited internet access in certain areas, lack of technological literacy for users, and cost. The literature shows that optimal LMS implementation requires adequate educational policy support, technology competency training for relevant parties, and improved technology access in remote areas. Therefore, LMS is a step towards inclusive and technology-based education, but it still requires continuous attention and management to achieve maximum results.

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