COMPARATIVE EVALUATION OF LEARNING MANAGEMENT SYSTEMS: GOOGLE CLASSROOM AND EDMODO IN HIGHER EDUCATION CONTEXTS

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ABSTRACT The study talks about how the use of Google Classroom and Edmodo LMS in a particular educational establishment is being compared in terms of effectiveness in their application to five different areas. These are distribution, communication, interaction, course management, and device capability. The research method that will be used in conducting this study will be the descriptive and comparative research approach, wherein the researcher will utilize a researcher-made questionnaire among the instructors and students who have experience using the two systems. From the results, Edmodo was highly favored when it came to communication, interaction, and management of classes because of its social networking capabilities. Google Classroom outperformed Edmodo in the use of devices and process effectiveness, especially regarding mobile connectivity and the ability to integrate cloud-based software. However, both online platforms exhibited high levels of efficiency when it comes to delivery methods. In addition, the findings revealed that both LMS systems have certain strengths that include accessibility, ease of use, and facilitating paperless learning systems. Nevertheless, the constraints, such as reliance on the availability of an internet connection and devices, are also very important to take into account. The former LMS system showed more strength than the latter. According to the results of this study, the effectiveness of LMS will depend on the conditions in which it operates. Thus, Edmodo is better suited to an interactive style of education, while Google Classroom works well in a resource-oriented approach.

Keywords: learning management system, Google Classroom, Edmodo, e-learning, higher education

INTRODUCTION

The introduction of Learning Management Systems (LMS) into higher education has become an essential aspect of modern learning and instruction. As a result of rising requirements for technology-based learning, institutions have started implementing LMS solutions for content delivery, communications, assessments, and overall instructional management. Such LMS solutions as Google Classroom and Edmodo can help to achieve greater accessibility, collaboration, and learner engagement. They give instructors the chance to structure their lessons while allowing learners to access all materials from any place. Several empirical studies showed that LMS solutions have a positive impact on learning processes, contributing to greater efficiency, autonomy, and improved performance (Bondarenko et al., 2019; Muslem, 2024). At the same time, the adoption of LMS tools was largely stimulated by recent transformations towards digitalization in the field of education.

The application of LMS in higher education institutions goes beyond content delivery. This involves a deeper change in the process of pedagogy, from the conventional teacher-centered method of pedagogy to learner-centered pedagogy that is both interactive and collaborative. The LMS tools allow for both asynchronous and synchronous learning, hence facilitating continuous communication between the teachers and the students. According to Nguyen (2022), the appropriate utilization of LMS tools leads to increased engagement levels of the learners, self-paced learning, and more efficient communication processes.

Furthermore, LMS tools help in fostering the digital competencies of both the teachers and the learners, as is essential in the contemporary education system.

Despite being highly prevalent, there are various issues associated with the implementation of LMS systems. The obstacles in question are associated with user-friendliness, low levels of digital literacy, and infrastructure-related constraints, such as unreliable Internet connection and insufficient access to hardware. In this regard, studies demonstrate that poor user-friendliness can pose problems for learners, as it can prevent them from concentrating on acquiring new knowledge and skills and make them concentrate on overcoming technical barriers instead (Nakamura et al., 2018). At the same time, implementing ICT into learning activities is also dependent on various factors (Nguyen, 2022; Ekuase-Anwansedo et al., 2021)

In relation to the Philippines, there have been additional empirical studies that indicate that even if the LMS platforms, such as Google Classroom, are considered efficient and convenient, learners still face various issues due to technological and infrastructural limitations. For example, there was research conducted among Bachelor of Science in Criminology students, which showed very positive results on the effectiveness of Google Classroom when it comes to accomplishing learning activities and fostering academic participation. Nevertheless, there were also some persistent problems that included poor internet connectivity and a lack of devices, thus impacting learners' ability to effectively leverage the LMS (Gerada and Efondo, 2020).

Additionally, high satisfaction levels coupled with difficult levels suggest that there is a complicated correlation between usability and accessibility. Although students might appreciate the advantages of LMSs, their learning process may continue to be confined within specific context limitations. It is necessary to pay attention to both sides in order to create an appropriate environment for learning.
One more crucial challenge associated with implementing an LMS system is the problem of the digital divide in countries that do not have sufficient technological infrastructure, especially in developing nations. Economic differences have a great impact on students' ability to engage in e-learning systems. The fact is that students from economically disadvantaged families may experience problems when trying to access LMS platforms. This demonstrates the significance of taking into account context in the process of implementing and adopting LMS systems.

The theoretical grounding of this study is anchored in the Technology Acceptance Model (TAM), which emphasizes perceived ease of use and perceived usefulness as key determinants of technology adoption. TAM has been widely used in educational research to explain user behavior toward digital technologies, including LMS platforms. Studies have consistently shown that students’ and teachers’ acceptance of LMS platforms is strongly influenced by how easy the system is to use and how effectively it supports learning tasks (Nguyen, 2022; Le, 2022). When users perceive an LMS as useful and user-friendly, they are more likely to adopt and continue using the system.

However, recent studies suggest that TAM alone may not fully explain LMS adoption, as external factors such as digital skills, infrastructure, and institutional support also play significant roles. For instance, extended models of TAM highlight the influence of social factors, technological readiness, and behavioral intention in determining LMS usage (Le, 2022). Additionally, cultural and contextual factors may affect how users perceive and interact with LMS platforms, indicating the need for a more holistic approach to understanding technology adoption in education (Panicker, 2020). These insights suggest that LMS implementation should consider not only system usability but also broader environmental and institutional factors.

In the context of higher education institutions, particularly in developing regions, LMS adoption is influenced by both technological and socio-economic factors. Issues such as limited access to devices, unreliable internet connectivity, and inadequate technical support continue to affect students' ability to fully utilize LMS platforms. These challenges highlight the importance of selecting appropriate LMS tools that align with institutional capabilities and learner needs. Furthermore, institutional commitment, including training programs and infrastructure development, plays a critical role in ensuring successful LMS implementation (Alrasheedi et al., 2018).

Comparative studies on LMS platforms reveal that different systems offer distinct advantages depending on their design and functionality. Google Classroom, for instance, is known for its simplicity, integration with cloud-based tools, and efficiency in managing academic workflows. Its features support the organization of learning materials, assignment submission, and feedback mechanisms, making it a practical tool for structured learning environments. On the other hand, Edmodo is recognized for its social networking features, which promote interaction, collaboration, and student engagement. It provides a more interactive and less formal learning environment, which can enhance communication and peer-to-peer learning.

The distinction between these LMS platforms reflects two different pedagogical orientations: Google Classroom as a workflow-oriented system and Edmodo as a social learning platform. Workflow-oriented systems focus on efficiency, organization, and administrative functions, while social learning platforms emphasize interaction, collaboration, and engagement. Studies suggest that both approaches are essential for effective learning, as they address different aspects of the educational process. However, the effectiveness of each LMS depends on how well it aligns with instructional goals and learner needs.

While previous studies have examined LMS adoption, usability, and effectiveness, there remains a significant research gap in comparative analyses of LMS platforms within specific institutional contexts, particularly in Philippine higher education. Existing studies often focus on a single LMS or general technology adoption trends, with limited attention to how different LMS platforms perform across specific functional clusters such as communication, interaction, and course administration. Furthermore, there is a lack of empirical evidence on how user preferences vary between faculty and students in relation to LMS features.

Additionally, much of the existing literature emphasizes technological factors while giving less attention to pedagogical implications. There is a need for studies that not only compare LMS platforms but also examine how these systems support teaching and learning processes. Understanding these aspects is crucial for developing effective LMS implementation strategies that enhance both instructional delivery and student learning outcomes.

This study addresses these gaps by providing a comparative evaluation of Google Classroom and Edmodo within the context of higher education. By analyzing LMS performance across functional clusters and examining user preferences, the study offers insights into the strengths and limitations of each platform. This approach contributes to a more comprehensive understanding of LMS effectiveness and supports evidence-based decision-making in educational technology adoption.

Thus, this study aimed to evaluate and compare Google Classroom and Edmodo based on user perceptions and functional effectiveness. Specifically, it sought to:

1. Determine the preferred LMS tools across functional clusters
2. Identify LMS preference among faculty and students
3. Examine the advantages of each LMS
4. Determine the disadvantages of each LMS

By addressing these objectives, the study contributes to the improvement of LMS implementation strategies in higher education. It provides valuable insights for educators, administrators, and policymakers in selecting and optimizing LMS platforms to enhance teaching and learning outcomes. Ultimately, the study underscores the importance of aligning technological tools with pedagogical goals and institutional contexts to achieve effective and sustainable digital learning environments.

METHODOLOGY

This study employed a descriptive-comparative research design, which is appropriate for examining similarities and differences between variables without manipulating them (Creswell, 2013). The design enabled the researchers to systematically compare the features, advantages, and disadvantages of two Learning Management Systems (LMS), namely Google Classroom and Edmodo, as perceived by faculty members and students. Descriptive-comparative research is widely used in educational studies to identify patterns, relationships, and distinctions across variables within a given context. As noted by Esser and Vliegenthart (2017), comparative research provides a structured approach to understanding how variables differ or align within specific conditions. In this study, the design facilitated a comprehensive evaluation of LMS effectiveness in supporting teaching and learning processes in higher education.

The survey's respondents were composed of teachers and students of the Guimaras State College with previous experiences in both Google Classroom and Edmodo. Through the set criteria, participants were guaranteed to have sufficient knowledge about both online tools. Slovin's formula was used to determine the sample size needed for the research, considering that the said formula is often used in computing sample sizes with acceptable margins of error. Also, purposive sampling was done to ensure that participants were qualified for the research.

This study made use of an investigator-created questionnaire as the primary research tool. The research tool consists of two sections. Section I collects information about the characteristics of the respondents, which include the classification (whether faculty member or student), the degree of ICT orientation, and prior exposure to LMS systems. Section II, on the other hand, is comprised of questions for evaluating the features of Google Classroom and Edmodo in accordance with five sets of functionality: distribution, communication, interaction, course administration, and device capability. The five functional sets were taken from established evaluation models of LMS.

The validity of the instrument was assured through content validation conducted by three experts specializing in the area of education and research. The experts provided an evaluation of the instrument concerning its clarity, relevance, and alignment with the research objectives. Modifications were made to improve the questionnaire. Before conducting data collection, a pilot test was carried out on the instrument. The reliability of the instrument was tested using the Cronbach alpha coefficient, resulting in an $\alpha = 0.87$ score.

The method of data gathering was carried out in a systematic manner. First, permission was secured to conduct the study. The participants were then briefed about the nature and importance of the study, and the steps needed to answer the questionnaires were clearly explained to them. The main tool used for gathering the data was an online questionnaire form.

For the statistical treatment, the study employed descriptive statistical tools, particularly the mean, to analyze and interpret the data. The mean was used to determine the average level of agreement of respondents for each LMS feature and cluster.

The study has been conducted in accordance with ethical standards. Participation was voluntary, and participants were assured that they had the freedom to leave the process at any time without repercussions. Confidentiality was maintained in the handling of all the data collected. The researcher was committed to upholding ethical standards such as truthfulness and sincerity.

RESULTS AND DISCUSSION

Preferred LMS Tools per Functional Cluster

The findings indicate that both Learning Management Systems demonstrate strong performance in distribution tools, while Edmodo shows higher preference in communication, interaction, and course administration. In contrast, Google Classroom demonstrates superiority in device compatibility and workflow efficiency.

The comparative evaluation of Learning Management Systems across functional clusters reveals a nuanced understanding of how platform design influences instructional effectiveness. The strong performance of both platforms in distribution tools reflects the fundamental purpose of LMS technologies—to provide reliable access to instructional materials. Distribution tools, which include document sharing, syllabus dissemination, and multimedia integration, are core features embedded in most LMS platforms. As emphasized by Bondarenko et al. (2019), LMS platforms are inherently designed to support asynchronous learning by ensuring that educational resources are accessible anytime and anywhere. This explains why both platforms achieved high levels of agreement in this domain, as content delivery is a baseline expectation for any digital learning environment.

However, the distinction becomes more evident in higher-order functionalities such as communication and interaction. Edmodo's higher ratings in these clusters can be attributed to its social networking architecture, which supports dynamic and collaborative learning environments. The platform integrates features such as threaded discussions, real-time messaging, and peer interaction tools, which facilitate active engagement. This aligns with Nguyen (2022), who argued that LMS platforms that promote interaction significantly enhance student engagement and learning outcomes. The ability to engage in meaningful dialogue, exchange ideas, and collaborate with peers is essential in fostering deeper learning, particularly in online environments.

From a theoretical perspective, Edmodo's design aligns closely with constructivist learning theory, which emphasizes that knowledge is constructed through social interaction and collaborative processes. The platform's features enable learners to actively participate in the learning process rather than passively receive information. In contrast, Google Classroom operates as a workflow-oriented system, focusing on efficiency, organization, and task management. While this design enhances administrative efficiency, it may limit opportunities for interactive learning experiences.

The observed differences in communication tools further highlight the importance of system design in shaping user experience. Communication tools in LMS platforms are not merely supplementary features but are central to the learning process. Effective communication facilitates feedback, clarification, and engagement, which are critical for student success. Heggart and Yoo (2018) emphasized that LMS platforms must support both pedagogical and technological dimensions to maximize their effectiveness. In this context, Edmodo's integrated communication tools provide a more holistic learning experience by combining instructional delivery with interactive engagement.

In terms of interaction tools, Edmodo again demonstrates superiority due to its ability to support collaborative activities such as group discussions, project-based learning, and peer feedback. These features are essential for promoting active learning and critical thinking. According to Panicker (2020), the effectiveness of LMS platforms is significantly influenced by their ability to facilitate meaningful interaction and collaboration. The presence of interactive features reduces cognitive isolation, which is a common challenge in online learning environments.

On the other hand, Google Classroom's strength in device compatibility reflects its integration with cloud-based technologies and its adaptability across multiple platforms. The system's compatibility with mobile devices and seamless integration with Google Workspace enhance accessibility, making it a practical choice for institutions with diverse technological infrastructures. Alrasheedi et al. (2018) identified accessibility and technological compatibility as critical factors influencing LMS adoption, particularly in higher education settings.

The findings also highlight the role of usability in determining LMS effectiveness. Usability refers to how easily users can navigate and utilize a system to achieve their objectives. Nakamura et al. (2018) noted that poor usability can hinder learning by increasing cognitive load, as users may struggle to navigate complex interfaces. In this regard, Google Classroom's simplified interface contributes to its high rating in device compatibility, as it minimizes technical barriers and enhances user experience.

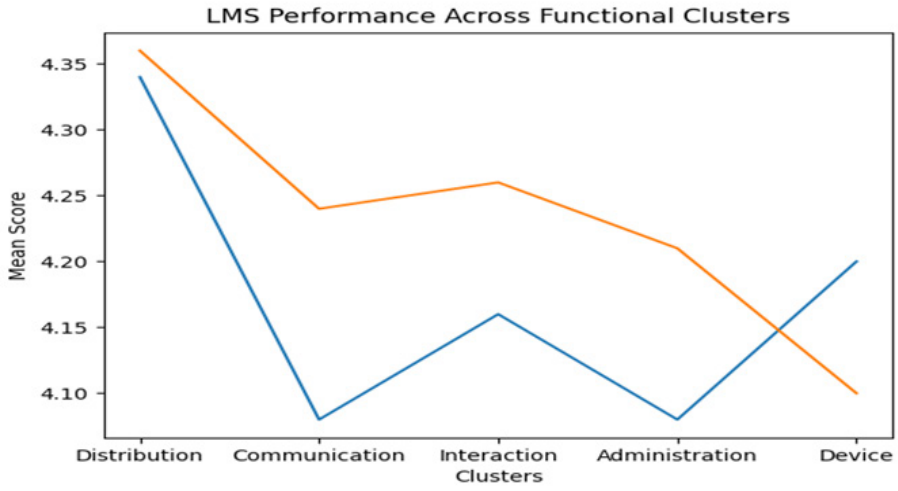
Furthermore, the differences observed in course administration tools suggest that Edmodo provides a more comprehensive set of functionalities for managing instructional processes. Features such as built-in quizzes, analytics, and progress tracking enable educators to monitor student performance more effectively. This aligns with Shishakly (2021), who emphasized that LMS platforms play a critical role in managing instructional processes and supporting data-driven decision-making in education.

Overall, the findings suggest that LMS effectiveness is not determined by a single factor but by the interplay of multiple dimensions, including functionality, usability, and pedagogical alignment. While both platforms demonstrate strong performance in distribution tools, their differences in communication, interaction, and administration highlight the importance of aligning LMS selection with instructional goals and user needs. This reinforces the notion that LMS implementation should adopt a flexible approach, integrating multiple platforms to address diverse educational requirements.

Table 1. Preferred Learning Management System (LMS) Tools per Functional Cluster

Cluster	Google Classroom (Mean)	Interpretation	Edmodo (Mean)	Interpretation
Distribution Tools	4.34	Strongly Agree	4.36	Strongly Agree
Communication Tools	4.08	Agree	4.24	Strongly Agree
Interaction Tools	4.16	Agree	4.26	Strongly Agree
Course Administration	4.08	Agree	4.21	Strongly Agree
Device Compatibility	4.20	Strongly Agree	4.10	Agree
Grand Mean	**4.17**	**Agree**	**4.23**	**Strongly Agree**

Figure 1. Performance Across Functional Cluster



2. Learning Management System (LMS) Preference of Faculty and Students

The findings indicate that Edmodo is generally preferred over Google Classroom, although preferences vary depending on user roles and functional requirements. The preference for LMS platforms reflects a complex interplay of user needs, technological familiarity, and pedagogical expectations. The overall preference for Edmodo suggests that users value platforms that support interaction and collaboration. However, this preference is not uniform across all users, as faculty and students exhibit different priorities when selecting an LMS.

Faculty members tend to prioritize efficiency, organization, and ease of management. Google Classroom's integration with cloud-based tools allows for streamlined workflow management, including assignment distribution, grading, and feedback. This aligns with Bhat et al. (2018), who highlighted that Google Classroom enhances instructional efficiency by simplifying administrative tasks. For educators, the ability to manage courses effectively is a critical factor in LMS selection, as it directly impacts teaching productivity.

In contrast, students prioritize engagement, interaction, and ease of use. Edmodo's social networking features create a more interactive learning environment, which enhances student participation and motivation. Encalada and Leyba (2020) emphasized that interactive LMS platforms significantly improve student engagement and learning outcomes. The ability to communicate with peers, participate in discussions, and collaborate on tasks makes Edmodo more appealing to students.

The divergence in preference can be explained through the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use are key determinants of technology adoption. Faculty members perceive Google Classroom as more useful for managing instructional tasks, while students perceive Edmodo as easier to use and more engaging. According to Al-Maroof and Al-Emran (2018), user acceptance of LMS platforms is influenced by how well the system aligns with user expectations and needs.

Furthermore, the findings highlight the role of digital familiarity in shaping LMS preference. Students are generally more accustomed to social media platforms, making Edmodo's interface more intuitive. This familiarity reduces cognitive load and enhances user experience. Panicker (2020) noted that user-friendly design is a critical factor in technology adoption, as it influences user satisfaction and engagement.

The preference for Edmodo also reflects the increasing importance of learner-centered approaches in education. Traditional teacher-centered models are gradually being replaced by interactive and collaborative learning environments. LMS platforms that support these approaches are more likely to be preferred by users. Nguyen (2022) emphasized that LMS platforms play a crucial role in promoting self-directed learning and student engagement, which are essential for 21st-century education.

However, it is important to note that preference does not necessarily indicate superiority. The effectiveness of an LMS depends on how well it aligns with instructional goals and institutional context. Google Classroom's strengths in efficiency and accessibility make it a valuable tool for structured learning environments, while Edmodo's interactive features make it more suitable for collaborative learning.

The findings also suggest that LMS preference is influenced by external factors such as infrastructure and institutional support. Gerada and Efondo (2020) highlighted that students' experiences with LMS platforms are affected by factors such as internet connectivity and device availability. These factors may influence user preference by limiting access to certain features.

Learning Management System preference is a multidimensional construct influenced by user roles, technological familiarity, and contextual factors. The findings underscore the importance of adopting a flexible approach to LMS implementation, where multiple platforms are used to address diverse educational needs.

Table 2. LMS Preference Based on Functional Effectiveness

Learning Management System	Grand Mean	Interpretation	Preference
Google Classroom	4.17	Agree	Moderate Preference
Edmodo	4.23	Strongly Agree	High Preference

3. Advantages of Each Learning Management System

Both LMS platforms share common advantages such as accessibility, ease of use, and support for paperless learning, while Edmodo offers additional features related to interaction and collaboration.

The shared advantages of both LMS platforms reflect their fundamental role in modern education. Accessibility and ease of use are essential features that enable students and educators to engage with digital learning environments effectively. Sukmawati and Nurdin (2020) emphasized that LMS platforms facilitate flexible learning by allowing users to access educational resources anytime and anywhere. This flexibility is particularly important in remote and blended learning contexts, where traditional classroom interactions are limited.

The paperless nature of LMS platforms also contributes to cost efficiency and environmental sustainability. By reducing the need for physical materials, LMS platforms minimize expenses and promote eco-friendly practices. This aligns with global trends in digital education, where institutions are increasingly adopting paperless systems to enhance efficiency and sustainability.

Edmodo's additional advantages, particularly in interaction and collaboration, highlight its strengths as a social learning platform. Features such as discussion boards, group activities, and peer interaction tools create a more engaging learning environment. According to Nguyen (2022), interactive LMS platforms enhance student engagement by promoting active participation and collaboration. These features are essential for fostering critical thinking and problem-solving skills.

The ability to connect with parents and integrate social networking features further enhances Edmodo's functionality. These features promote transparency and accountability, allowing stakeholders to monitor student progress and engagement. This aligns with the concept of collaborative learning communities, where multiple stakeholders contribute to the learning process.

Google Classroom's advantages, on the other hand, are rooted in its simplicity and efficiency. Its integration with Google Workspace allows for seamless organization of instructional materials and streamlined workflow management. Philipose and Rajagopal (2019) highlighted that Google Classroom is an effective tool for managing academic tasks due to its user-friendly interface and integration capabilities.

The differences in advantages reflect the distinct design philosophies of the two platforms. Edmodo prioritizes interaction and engagement, while Google Classroom focuses on efficiency and organization. These differences highlight the importance of aligning LMS selection with instructional goals and user needs.

Table 3. Advantages of Google Classroom and Edmodo

Advantage	Google Classroom	Edmodo
Easy Access	✓	✓
Online Submission	✓	✓
Paperless System	✓	✓
Cost Efficiency	✓	✓
User-Friendly	✓	✓
Collaboration	✓	✓
Resource Sharing	✓	✓
Parent Connection	X	✓
Online Quiz/Poll	X	✓
Social Networking	X	✓
Total Advantages	**7**	**10**

4. Disadvantages of each Learning Management System

Both LMS platforms share common disadvantages related to internet dependency, device availability, and lack of offline functionality, while Google Classroom exhibits additional usability challenges.

The shared disadvantages of both LMS platforms highlight the broader challenges associated with digital learning environments. Internet dependency is a significant limitation, particularly in developing regions where access to reliable connectivity is limited. Gerada and Efondo (2020) emphasized that internet connectivity issues significantly affect students' ability to participate in online learning.

The lack of offline functionality further exacerbates this issue, as students without stable internet access are unable to fully utilize LMS platforms. This highlights the need for LMS systems that support offline access or low-bandwidth environments.

Device availability is another critical challenge, reflecting the digital divide in education. Students from resource-constrained backgrounds may lack access to appropriate devices, limiting their participation in online learning. Alrasheedi et al. (2018) identified technological infrastructure as a key factor influencing LMS adoption and effectiveness.

Google Classroom's additional disadvantage related to interface confusion suggests usability challenges that may affect user experience. Nakamura et al. (2018) noted that usability issues can increase cognitive load, making it more difficult for users to navigate the system effectively.

Edmodo's fewer disadvantages suggest a more user-centered design, which enhances usability and satisfaction. However, it is important to recognize that no LMS is without limitations, and addressing these challenges requires a comprehensive approach that includes infrastructure development, user training, and system improvement.

Disadvantage	Google Classroom	Edmodo
Internet Dependency	✓	✓
No Offline Access	✓	✓
Device Availability Issues	✓	✓
Interface Confusion	✓	✗
Total Disadvantages	**4**	**3**

CONCLUSION

This study concludes that both Google Classroom and Edmodo are effective Learning Management Systems that support essential instructional functions such as content delivery, accessibility, and paperless learning. However, their effectiveness varies depending on system design and instructional context. Edmodo demonstrated greater strength in communication, interaction, and course administration due to its social networking features, making it more suitable for collaborative and engagement-driven learning environments. In contrast, Google Classroom excelled in device compatibility and workflow efficiency, supporting structured and task-oriented instruction. The findings further reveal that LMS preference is influenced by user roles and needs. Faculty members tend to favor efficiency and organization, while students prioritize interaction and engagement. This highlights that LMS effectiveness is not universal but context-dependent. Additionally, challenges related to internet connectivity, device availability, and lack of offline access remain critical concerns that affect the overall utilization of LMS platforms. Study emphasizes that no single LMS can fully address all instructional demands. Effective implementation requires a flexible and context-sensitive approach that aligns technological tools with pedagogical goals and institutional capabilities. By strategically selecting and integrating LMS platforms, higher education institutions can enhance teaching effectiveness, improve student engagement, and support sustainable digital learning.

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