

Learning Management Systems in Online Learning: Effects on Student Engagement and Interaction

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DOI: <https://doi.org/10.5281/zenodo.21184268>

Published Date: 03-July-2026

Abstract: Distance learning creates learning conditions that differ from traditional face-to-face classrooms, particularly in terms of learning environment characteristics and interaction patterns. These factors play an important role in determining the success of online learning. However, in many online courses, learning objectives are often not optimally achieved due to limited interaction and the ineffective use of learning media. This study aims to examine how changes in learning management systems influence the learning environment and student interaction in a distance learning context. This field research involved 58 pharmacy students at the University of Ubudiyah Indonesia and employed behavioural observation as the primary method of data collection. At the time this study was conducted, the course initially used Google Classroom as the learning platform, which was later replaced with Edmodo to improve student engagement. The findings indicate that the change of learning platform contributed to a more dynamic learning environment and increased student participation. Nine previously passive and shy students (15.52%) became more actively involved in the learning process after the platform transition. Furthermore, the change in the learning management system positively influenced interaction patterns, creating more balanced interactions among instructors, students, and learning materials. These findings suggest that the selection of appropriate digital learning platforms can enhance student engagement and interaction in online learning environments.

Keywords: Learning Management System; Online Learning Environment; Students' Engagement; Students' Interaction.

1. INTRODUCTION

In recent years, the concept of distance learning has become increasingly prominent in the field of education. Its implementation rose significantly following the outbreak of the COVID-19 pandemic in early 2020, which prompted many countries, including Indonesia, to restrict face-to-face activities in order to prevent the spread of the virus. As a result, learning processes across various levels of education were shifted to online systems, commonly referred to as Distance Learning. In general, distance learning is a process in which educators and students are located in different places, requiring communication media and digital technologies to facilitate teaching and learning activities. Moore and Kearsley define distance learning as a process designed to take place outside the traditional classroom environment, thus requiring different instructional designs, communication methods, and learning management compared to conventional face-to-face learning.

The development of digital technology has driven the adoption of various Learning Management Systems (LMS) in distance learning. LMSs function not only as platforms for distributing learning materials but also as tools for managing learning activities, academic communication, and interactions between lecturers and students. Several studies have shown

that LMSs play a crucial role in supporting the success of online learning by providing features such as discussion forums, online assignments, interactive quizzes, and collaborative activities that enable more dynamic academic interaction (Bond et al., 2020; Al-Fraihat et al., 2020). Along with technological advancements, the learning environment in higher education has also undergone significant changes. In the context of online learning, these changes relate not only to the mode of content delivery but also to patterns of interaction and levels of student engagement. Martin, Sunley, and Turner (2023) state that well-designed interactive digital learning environments can enhance student participation and create more meaningful learning experiences.

In online learning, student engagement is a key factor in determining the success of the learning process. Students who actively participate in learning activities tend to have higher motivation and achieve better learning outcomes compared to those who are less engaged (Bond et al., 2020; Redmond et al., 2021). Student engagement in online learning can be reflected in various forms of participation, including involvement in class discussions, collaborative activities, responses to learning materials, and academic interactions with lecturers and peers.

Despite offering flexibility in access to education, online learning also presents several challenges, particularly in fostering effective interaction between lecturers and students. Less interactive online learning environments may lead to low student participation and the emergence of learning isolation—a sense of detachment experienced during the learning process (Dhawan, 2020; Rapanta et al., 2021). This condition can negatively affect students' motivation and limit academic communication between students and lecturers. In this context, the selection of digital learning platforms becomes a critical factor influencing the characteristics of the learning environment and interaction patterns in online classes. LMS platforms designed with strong communication and collaboration features can promote more active academic interaction among lecturers and students, as well as among students themselves. Conversely, the use of less interactive platforms may limit student participation and reduce engagement in the learning process (Martin et al., 2023).

Although research on online learning and LMS usage has grown rapidly in recent years, most studies have focused on the general effectiveness of online learning, user satisfaction with learning platforms, or the impact of LMS on learning outcomes. Studies that specifically examine how changes in LMS platforms influence learning environments, student engagement, and interaction patterns in online learning remain relatively limited. For instance, in the implementation of online English courses at Universitas Ubudiyah Indonesia, learning was initially conducted using Google Meet for virtual face-to-face sessions, while Google Classroom served as a supporting platform for distributing materials, assignments, and exercises. However, over more than half of the total 16 class meetings, differences were observed in students' responses and enthusiasm compared to face-to-face learning. Some students demonstrated relatively low participation in the ongoing online learning activities.

Based on these conditions, it is necessary to evaluate the learning media used in online courses to create a more interactive learning environment. Therefore, this study attempts to replace the secondary learning platform used in the learning process with another platform that had not been previously utilized, namely Edmodo. At the time this study was conducted, Edmodo was a widely used web-based learning platform known for supporting online learning through social interaction features, class discussions, and various assessment tools. Previous studies have shown that Edmodo offers features that support collaborative learning, such as discussion forums, grading systems, and feedback mechanisms, which facilitate more active interaction between instructors and learners. Additionally, the platform provides features that can enhance student engagement, including digital badges, interactive quizzes, and community-based learning activities.

Based on the background outlined above, this study aims to examine how changes in learning platforms in distance learning affect the learning environment, student engagement, and interaction patterns in English courses at Universitas Ubudiyah Indonesia. The findings of this study are expected to provide insights into the role of digital learning platform selection in creating more interactive online learning environments and increasing student engagement in distance English learning in the future. Furthermore, distance learning is not only relevant during the COVID-19 pandemic but also has the potential to be continuously developed as part of an adaptive and sustainable education system. In the context of Aceh, which has diverse geographical conditions and potential natural disasters, distance learning can serve as a strategic solution to ensure the continuity of education in various situations. With the support of continuously advancing digital technologies, distance learning can be sustainably integrated as a complement to face-to-face learning to enhance access, flexibility, and the quality of education in Aceh.

2. METHODS

This study employed a field research approach using a qualitative descriptive method to examine changes in the learning environment and student interaction patterns in distance English learning following the use of different digital platforms. The participants were 58 Pharmacy students at Universitas Ubudiyah Indonesia who attended online English classes. Initially, learning was conducted using Google Meet for synchronous sessions and Google Classroom for distributing materials, assignments, and exercises. Subsequently, Google Classroom was replaced with Edmodo to observe changes in the learning environment, student engagement, and interaction dynamics. The selection of Edmodo was based on its features that support collaborative and interactive learning, such as discussion forums, feedback systems, assessment tools, and community-based learning activities.

The research procedure consisted of three stages: preparation, implementation, and data analysis. Data were collected through direct observation of students' behavior during online learning, focusing on their engagement in discussions, interaction patterns with lecturers and peers, and responses to the LMS used. All learning activities were documented through recordings and observation notes. The data were analyzed using the qualitative analysis model by Miles and Huberman, which includes data reduction, data display, and conclusion drawing. This analysis aimed to identify patterns of interaction and changes in student engagement throughout the online learning process, based on indicators of student engagement, interaction patterns, and student responses to the LMS.

3. RESULTS AND DISCUSSION

The English course in this study was conducted online using two digital learning platforms. Initially, Google Meet was used for synchronous sessions to deliver materials and facilitate discussions, while Google Classroom functioned as the Learning Management System (LMS) for distributing materials, assignments, and other learning activities. However, early observations indicated a decline in student responsiveness and enthusiasm when using Google Classroom, as participation in discussions and interactions among students and lecturers remained limited.

To address this issue, the LMS platform was replaced with Edmodo, which offers more interactive features such as discussion forums, feedback systems, and social learning tools. This change aimed to create a more engaging online learning environment, increase student engagement, and improve interaction patterns. Following the transition, observations showed improvements in students' responsiveness, participation in discussions, and involvement in completing tasks during the learning process.

The findings were based on both classroom observations and in-depth interviews with 12 students. The interview results revealed that the new LMS had a positive impact on students' learning experiences, particularly in enhancing engagement and interaction. Many students reported becoming more active in discussions and more confident in expressing their opinions. Additionally, classroom interactions became more dynamic, with increased peer-to-peer communication rather than being primarily lecturer-centered. Observation results over seven meetings showed that 15.52% of previously passive students demonstrated increased engagement, 81.03% remained consistently active, and 3.45% showed no significant change, mainly due to low attendance. Overall, the study indicates that changing the LMS platform can significantly influence the digital learning environment by improving student participation and interaction. The observation scale further confirmed that most students reached a high level of engagement, highlighting the importance of interactive LMS features in creating a more participative and communicative online learning experience.

1. Observation Scale of Student Behavior in Online Learning

The observation of student behavior in this study employed an observation scale to assess the level of student engagement and responsiveness during the online learning process. The scale consisted of four categories: very low, low, high, and very high. These categories were determined based on the frequency of students' involvement in responding to learning materials, participation in discussions, and their commitment to completing assignments provided through the online learning platform.

Based on the results of observations conducted over seven meetings, the majority of students demonstrated a high level of engagement. This was evident from the increased student responses to lecturers' questions, active participation in class discussions, and the promptness in completing assignments through the Learning Management System (LMS). Changes in engagement levels were particularly noticeable among students who had previously tended to be passive when using earlier learning platforms. Further details of these findings are presented in the following table.

International Journal of Novel Research in Education and Learning

Vol. 13, Issue 4, pp: (1-7), Month: July - August 2026, Available at: www.noveltyjournals.com

Table 1. Recapitulation of Observation Results on Student Engagement in Online Learning

Student Response Category	Number of Students	Percentage
Students active since the beginning of online learning	47	81.03%
Students showing increased engagement after LMS changes	9	15.52%
Students showing no change in engagement	2	3.45%
Total	58	100%

2. Observation of Student Engagement

The observation of student engagement was conducted to assess the extent to which students actively participated in the online learning process. The indicators of engagement in this study included participation in learning discussions, responsiveness to questions or materials provided, involvement in completing exercises and assignments, and students' initiative in giving responses or comments.

Based on the observation results, 9 students (15.60%) showed increased engagement after the change in the learning platform. These students were previously relatively passive, but after the implementation of a different LMS platform, they became more active in providing responses, participating in discussions, and completing assigned tasks. Meanwhile, 47 students (81.03%) had already demonstrated a relatively high level of engagement from the beginning, both before and after the platform change. This group consistently participated actively in online learning activities. In addition, 2 students (3.44%) did not show significant changes in engagement during the learning process. This condition was mainly influenced by their relatively low attendance throughout the course.

Table 2. Average Scores of Student Engagement Observation

Observed Aspect	Average Score	Category
Participation in LMS discussions	3.3	High
Responsiveness to lecturer's questions	3.4	High
Providing responses to learning materials	3.2	High
Commitment in completing assignments	3.5	Very High
Overall Average	3.35	High

3. Observation of Interaction Patterns in the LMS

The observation of interaction patterns was conducted to identify the forms of communication occurring in the online learning process through the LMS. The interaction patterns examined in this study included lecturer–student interaction, defined as communication that occurs when students respond to the lecturer's explanations or questions; student–student interaction, referring to communication that takes place when students respond to their peers' comments or opinions; and student–learning material interaction, which reflects students' engagement in understanding and responding to the learning materials provided through the LMS.

The results of the observation indicate that after the change in the learning platform, interaction patterns in the online classroom became more balanced. Students not only responded to the lecturer's questions but also began to provide feedback on their peers' comments or opinions. In addition, students appeared more active in reading the uploaded learning materials and responding to the available content.

Table 3. Average Scores of Interaction Patterns in the LMS

Type of Interaction	Average Score	Category
Lecturer–student interaction	3.4	High
Student–student interaction	3.1	High
Student–learning material interaction	3.3	High
Overall Average	3.27	High

4. Observation of Students' Responses to the Use of LMS

Students' responses to the use of the LMS were observed through several indicators, including students' enthusiasm in participating in learning activities, the frequency of providing responses or comments, the speed in responding to assignments or learning instructions, and their level of commitment in completing learning activities.

The observation results indicate that the change in the LMS platform generated a relatively positive response from students. This was reflected in the increased enthusiasm in participating in learning discussions, as well as greater involvement in various online learning activities. Some students even demonstrated initiative by providing responses to learning topics before being prompted by the lecturer. This condition suggests that the use of a more interactive LMS platform can create a more communicative and participatory online learning environment.

Table 4. Average Scores of Students' Responses to LMS Usage

Response Indicator	Average Score	Category
Enthusiasm in using the LMS	3.4	High
Speed in responding to assignments	3.3	High
Activity in accessing learning materials	3.2	High
Positive attitude toward online learning	3.4	High
Overall Average	3.33	High

The findings obtained through observation indicate that the majority of students demonstrated a high level of engagement in the online learning process. Out of a total of 58 students, 47 students (81.03%) had shown active participation since the beginning of the online learning implementation. Meanwhile, 9 students (15.52%) exhibited increased engagement after a change in the learning platform used in the course. Students who were previously passive began to participate more actively in class discussions, respond to learning materials, and show greater responsiveness to assignments delivered through the LMS. On the other hand, 2 students (3.45%) did not demonstrate significant changes in their level of engagement during the observation period. These findings suggest that changes in the learning platform within an online learning environment can contribute to increased student engagement and strengthen interaction patterns between lecturers and students in distance learning.

In addition to observational data, these findings are supported by student interview results, which indicate that the change in LMS had a positive impact on their perceptions of online learning. Students reported greater comfort in interacting, increased flexibility in expressing their opinions, and a higher intensity of academic communication. This suggests that the success of online learning is not solely determined by the availability of technology, but also by how effectively the technology creates a learning environment that supports active engagement and interaction.

This study reveals that changes in the learning platform in distance learning contribute to shifts in the characteristics of the learning environment and student interaction patterns. The findings highlight that the selection of a Learning Management System (LMS) serves not only as a medium for distributing learning materials but also plays a role in shaping interaction dynamics and student engagement in online classrooms. Based on observations of 58 students, most demonstrated high levels of engagement, with 47 students actively participating from the outset. Meanwhile, 9 students who were initially passive showed increased engagement following the platform change, as reflected in more frequent responses to lecturers' questions, greater participation in discussions, and stronger commitment to completing LMS-based assignments.

These findings are consistent with recent studies emphasizing the importance of designing digital learning environments to enhance student engagement. Online learning environments equipped with interactive features and open communication spaces can encourage students to participate more actively in learning activities. In this context, student engagement is not only reflected through attendance in virtual classes but also through active participation in discussions, interaction with learning materials, and communication with lecturers and peers. Furthermore, this study identified changes in interaction patterns during the learning process. Interaction extended beyond lecturer–student communication to include peer-to-peer discussions, responses to classmates' opinions, and collaboration in completing assignments. This indicates that LMS platforms with social interaction features can foster a more collaborative learning environment in distance education.

From a digital pedagogy perspective, interaction is a key component in building meaningful learning experiences in online education. Several recent studies have shown that limited interaction is a major challenge in distance learning. When students feel less engaged in academic communication, they are more likely to experience decreased motivation and a sense of isolation. Therefore, learning platforms that facilitate two-way communication and social interaction can significantly enhance the quality of students' learning experiences.

The findings of this study provide several important implications for online learning practices, particularly in the context of teaching English in higher education. First, the selection of digital learning platforms should consider interactive features that support communication and collaboration between lecturers and students. LMS platforms that provide discussion forums, feedback mechanisms, and interactive activities can enhance student engagement. Second, lecturers need to design online learning strategies that optimally utilize LMS features to create a more participatory learning environment. The use of discussion forums, online quizzes, and collaborative activities can encourage active student participation. Third, in English language learning, digital platforms that offer both written and oral communication spaces can help students with lower confidence levels to express their ideas more freely. Thus, LMS serves not only as a content delivery tool but also as a medium for developing students' communication skills in digital learning environments.

Moreover, the findings reinforce the view that changes in digital learning media can influence the characteristics of the learning environment. A more interactive digital learning environment can create a more dynamic and communicative atmosphere. This is reflected in the increased enthusiasm of students in responding to learning materials and the higher intensity of discussions during the learning process. However, the study also found that not all students showed significant changes in their level of engagement. A small proportion of students still exhibited relatively low participation levels, indicating that student engagement in online learning is influenced not only by technological factors but also by individual factors such as learning motivation, readiness for independent learning, and attendance frequency.

Overall, the results of this study demonstrate that the selection and design of digital learning platforms play a crucial role in shaping an interactive online learning environment. By effectively utilizing the interactive features available in LMS, lecturers can create more participatory learning spaces, enabling students to engage more actively in the distance learning process.

4. CONCLUSIONS

This study concludes that changes in learning platforms in distance learning have a positive impact on student engagement and interaction patterns in English courses. Most students demonstrated active participation from the beginning, while others showed increased involvement after the implementation of a new Learning Management System (LMS). This improvement was reflected in students' responsiveness to lecturers' questions, active participation in discussions, and greater commitment in completing assignments. Furthermore, the shift in the learning platform contributed to more dynamic and collaborative interaction patterns, transforming one-way communication into more interactive, two-way, and multi-directional exchanges, including peer-to-peer interactions. These findings indicate that the appropriate selection and design of digital learning platforms play a crucial role in creating an interactive and communicative online learning environment. However, this study has several limitations. It relied solely on behavioral observation as the primary data collection method, involved respondents from only one study program, and did not examine the relationship between platform use and academic achievement. Therefore, future research is recommended to incorporate multiple data collection methods, such as questionnaires and interviews, involve a larger and more diverse sample, and further investigate the impact of Learning Management Systems (LMS) on students' academic outcomes.

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