

THE PERFORMANCE OF LMS USE AND ITS IMPACT ON ENGLISH LEARNING OUTCOMES

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ABSTRACT

Learning management systems (LMS) are integrated solid systems that help teachers and students complete various tasks during the online learning process. This study aims to (1) describe the accomplishment of twelfth-grade students' online English learning activities using LMS Moodle; (2) identify differences in twelfth-grade students' English learning outcomes based on LMS Moodle performance, and (3) identify differences in twelfth-grade students' English learning outcomes based on gender. 182 Titian Teras, Senior High School students, were assigned as the research sample based on the Slovin formula. Data collection instruments used in this study: (1) Moodle log data which shows student performance in learning using LMS Moodle; and (2) computer-based semester exam results from data on English subjects. Analysis of performance data using the LMS Moodle using the Sum Activity Rating (SAR) instrument developed by Singh et al. The statistical test used in this study is the Mann-Whitney U Test. The results showed that the level of achievement of the twelfth-grade students' English learning activities was high (84.3%). The English learning outcomes of students with high LMS usage performance are better than those with low LMS usage performance. English learning outcomes of female students are better than male students.

Keywords: *LMS Performance; Moodle log; English Learning Outcome*

The application of Information and Communications Technologies (ICTs) to the learning process is one of the most significant changes in education today. This offers new learning spaces, ways to complete learning exercises, and the opportunity to further information and activities (Conde et al., 2014).

One e-learning tool that has been extensively used to enhance students' learning experiences and develop their understanding of specific topics is the Learning Management System (LMS) (Kasim & Khalid, 2016).

Learning management systems (LMS) are potent integrated systems that support a variety of tasks carried out by instructors and students throughout the e-learning process.

Teachers use an LMS to create web-based quizzes, discussions, assignments, and course notes, connect with students, and track and grade their progress. It is used by students for learning, communication, and teamwork (Despotović-Zrakić et al., 2017).

As part of the formal curriculum or to obtain institutional certification, various options have been developed to allow students to enroll in online courses. The use of a learning management system (LMS) can also assist students in accessing course instructions, uploading assignments and obtaining grades, interacting with classmates and lecturers, interacting with learning tools, sharing knowledge, and taking online tests and quizzes (Alias & Zainuddin, 2005; Jurubescu, 2008).

LMS Moodle should be the first open-source platform taken into account. Modular Object-Oriented Dynamic Learning Environment is Moodle (Altun et al., 2008). Based on the social constructionist pedagogical philosophy, this LMS was created in 2001. It was made by It was created in violation of the General Public License (GPL), Therefore, the source code is permitted as long as the original license is not altered (Shannon & Rice, 2017).

According to Prasetya (2021), the LMS Moodle includes several functions that are highly helpful for language learning in the online learning environment. The teachers mentioned the following benefits and sound characteristics of this platform. It was feasible to make the process of teaching English to students using the capabilities of Moodle as a learning management system (Butova et al., 2019).

The benefits of utilizing Moodle for teaching and studying English include giving students a chance to learn the language in an engaging manner different from how they are used to learning traditionally, and students can access multimedia resources and programs like animations, music, and photos. Students can so practice speaking, listening, writing, and reading. After each instruction, students can assess their understanding by completing exercises and activities that evaluate their grammar, vocabulary, listening, and writing skills. Students are free to retake these progress exams as often as they like, and the results are available right away (Bošković et al., 2014).

Moodle provides several assessment methods to evaluate students' performance in online learning settings (Dimopoulos et al., 2013). These tools include wikis, blogs, forums, assignments, and quizzes. According to Amer & Daher (2019), quizzes are among the most crucial Moodle learning resources. This platform, including quizzes, could benefit students learning English and other languages. When teachers use the quiz capabilities in the Moodle platform,

especially language teachers, their students' learning will improve.

All user actions on Moodle, including login time, content seen, assignments collected, quizzes taken, and other activities, are recorded as log data (Rotelli & Monreale, 2021). The log data can be examined to evaluate how well students are learning. Sum activity rating, or "SAR," is a tool that Sing et al. (2019) created to track LMS usage activity. These metrics are employed to assess how well students are using the LMS Moodle.

According to a prior study, performance in the usage of LMS has a significant impact on students' learning outcomes. One of them is a study done by Jo et al. (2015) examining the effects of LMS performance on academic accomplishment, including login frequency, learning interval regulation, total task completion, total study time spent, interaction with content, interaction with peers, and interaction with teachers. The findings of this study suggest that login frequency, regulation of learning interval, total task completion, and total study time are the factors that influence academic accomplishment.

It has also been demonstrated by Surjono's earlier research findings that integrating a learning management system (LMS) into the teaching and learning process has enhanced learning outcomes (Surjono et al., 2019).

Gender issues also influence the outcomes of learning English. Previous studies have shown that female students do better than male students because they are more receptive to novel linguistic forms in the target language and more willing to eliminate interlanguage forms that depart from target language norms (Robbins, 1995).

Results from Główna's earlier research (2014) provide a window into the relationship between students' social traits and performance in learning a foreign language, highlighting gender as the social aspect that has the most significant impact on language learning.

Since the Covid-19 lockdown period, specifically when they were still in the eleventh grade, the twelfth-grade students of SMAN Titian Teras H. Abdurrahman Sayoeti have been attending online courses utilizing LMS Moodle (Omika, 2022). Due to limitations on the number of students who could participate in online learning, the twelfth-grade student continued to participate even after restricted face-to-face learning was instituted. After around three semesters, no scientific study has been done on how well students perform when learning English online using the LMS Moodle.

Based on the above information, this study aims to: (1) describe the accomplishment of twelfth-grade students' learning activities in online English learning using LMS Moodle; (2) know the difference in English learning outcomes of twelfth-grade students based on the performance of using Moodle LMS; and (3) know the difference in English learning outcomes of twelfth-grade students based on gender.

METHOD

This research uses a quantitative approach with the comparative method. The variables studied were student performance of LMS use (X1) and gender (X2) as the independent variable and English learning outcome (Y) as the dependent variable.

The population of this research is grade 12 students of SMA Negeri Titian Teras H. Abdurrahman Sayoeti in the academic year 2021/2022, totaling 336 students. The sampling method used was simple random sampling; based on the Slovin formula, 182 students were assigned as the research sample. Sample descriptions are shown in the table.

Table 1. Sample Breakdown

Category	Frequency	Percentage %
Program Math & Natural Science	119	65%
Social	63	35%

Science			
Gender	Male	87	48%
	Female	95	52%

Data gathered from an investigation of the Moodle log data is used to measure student performance in the LMS. Moodle log data is derived from the outcomes of two semesters of online English instruction during the 2021–2022 academic year. The following topics are those of this study's online English learning: (1) May I assist? (2) Why don't you travel to Seattle?; (3) Caption; (4) Instructions for writing an application letter; and (5) News Items. The sum of activity rating (SAR), which Singh et al. (2019) established using Moodle log data, is the indicator used to assess student performance presented in Table 2.

Table 2 Moodle Log Data Activity Rating

Event Name	Rating
Course viewed	1
Discussion viewed	1
Submission form viewed	1
Quiz attempt viewed	1
Submission created	2
Discussion created	2
Quiz attempt started	2
Course activity completion updated	2
A Submission submitted	3
Online text uploaded	3
File upload	3
Quiz attempt submitted	3

Based on the results of the calculation of the activity rating using the Moodle LMS, the data is further classified into two categories, namely high and low. The range of scores for each classification is as follows: (1) 289 - 582 (High); and (2) 29 - 288 (Low).

Data on English learning outcomes are obtained from computer-based exam results in the odd and even 2021/2022 academic year semesters.

The data analysis technique used in this research is descriptive and inferential analysis. Descriptive analysis to thoroughly

describe student performance in English Learning using LMS Moodle. The inferential analysis is a research activity carried out intended to conclude. Mann-Whitney U test was an inferential analysis used in this study.

FINDINGS

Using the Kolmogorov-Smirnov test, normality is first tested before data processing. The normality test results had a significance level of $0.00 < 0.05$. It is recognized that the data are not regularly distributed because the significance value is less than 0.05. Therefore, non-parametric statistics like the Mann-Whitney test were used to continue the study of the data.

The level of completion of English learning activities using the Moodle LMS is reported in descriptive data before the inferential analysis.

Twelfth-grade English learning consists of 5 primary materials as follows: (1) May I help you; (2) Why don't you visit Seattle?; (3) Captions; (4) Application letters; and (5) News items. There are homework and instructional resources for each subject. Assignments take the shape of practice questions in an essay format, while teaching materials are electronic modules and videos.

The level of completion of learning activities on subject matter 1 to 5 by twelfth-grade students is presented in Table 3.

Table 3. The level of completion of learning activities

No	Learning Activity	Completed	Not Completed
1	Video "May I Help You"	96,7%	3,3%
2	Module "May I Help You"	96,4%	3,6%
3	Assignment "May I help you 1."	96,1%	3,9%
4	Assignment "May I help you 2."	95,8%	4,2%

No	Learning Activity	Completed	Not Completed
5	Assignment "May I help you 3."	95,2%	4,8%
6	Video "Why Don't You Visit Seattle?"	97,9%	2,1%
7	Module "Why Don't You Visit Seattle module"	97,6%	2,4%
8	Assignment 1	96,1%	3,9%
9	Assignment 2	95,5%	4,5%
10	Video about Caption	96,4%	3,6%
11	Caption Module	96,4%	3,6%
12	Assignment Caption 1	95,8%	4,2%
13	Assignment Caption 2	93,8%	6,3%
14	Video "How to make Application Letter"	94,9%	5,1%
15	Modul "How to make an application letter."	94,9%	5,1%
16	Assignment Application Letter 1	90,5%	9,5%
17	Video News Item	57,1%	42,9%
18	News Item Module	47,6%	52,4%
19	Transcript and video as a presenter	53,9%	46,1%
20	Video News Item 2	43,8%	56,3%
21	Module News Items 2	36,9%	63,1%

Generally, the achievement of learning activities for twelfth-grade students is high, with a general average of 84.3%. The highest achievement was in the video activity "Why don't you visit Seattle?" and the module

"Why don't you visit Seattle?" while the lowest was in the news item 2 activity.

The results of hypothesis testing using the Mann-Whitney U test about differences in learning achievement based on LMS performance and gender are shown in Table 4.

Table 4. The Results of Hypothesis Testing

Variables	Test	English Learning Outcome
LMS Performance	Mann-Whitney U	163
	Wilcoxon W	4349
	Z	-11,20438984
	Asymp. Sig. (2-tailed)	,000
Gender	Mann-Whitney U	3032,500
	Wilcoxon W	6860,500
	Z	-3,102
	Asymp. Sig. (2-tailed)	,002

Based on the data in Table 4, it is known that the results of hypothesis testing 1 obtained a significance value of $0.00 < 0.05$. Thus, there are differences in English learning outcomes based on the performance of using LMS. The results of hypothesis testing 2 obtained a significance value of $0.02 < 0.05$. Thus there are differences in English learning outcomes based on gender. The difference in the average value of each variable is presented in Table 5.

Table 5. Average English Learning Outcomes

Variables		N	Mean Rank
LMS Performance	High	91	135,21
	Low	91	47,79
Gender	Male	87	78,86
	Female	95	103,08

Based on the data in Table 5, it is known that the average student learning outcomes with high LMS performance (135.21) are better than the intermediate student learning outcomes with low LMS performance (47.79). Meanwhile, the average learning outcomes of female students (103.03) are better than male students (78.86).

DISCUSSION

Level of Activity Completion in English Learning

Based on the data in Table 3, it is known that the level of completion of English learning activities is high. These findings indicate that students do not experience difficulties in participating in learning using the LMS Moodle. This condition is to the characteristics of the LMS Moodle, which is easy to use and user-friendly. If students need help using LMS Moodle, their performance tends to be low. Kasim & Khalid (2016) suggested several characteristics of the Moodle LMS: (1) flexible, (2) easy to use; (3) able to integrate with other systems, (4) accessible; (5) user friendly; (6) synchronous and asynchronous interactions; and (7) can see who is online.

Moodle gives the teacher a chance to use electronic resources to organize information interaction between the teacher and students for completing various tasks in the classroom and outside of the school, expanding cooperation and collaboration in learning, transmitting large amounts of information and knowledge control, organizing learning more logically, and leaving simple topics for independent work (Butova et al., 2019; Omika et al., 2023).

For learning material 1, the learning activities prepared by the teacher are; (1) "May I Help You" video; (2) Module "May I Help You"; (3) Assignment "May I help you 1"; (4) Assignment "May I help you 2"; and (5) Assignment "May I help you 3". Moodle

features used: (1) page for videos; (2) files for modules; and (3) assignments.

For learning material 2, the learning activities prepared by the teacher are; (1) The video "Why Don't You Visit Seattle?"; (2) the Module "Why Don't You Visit Seattle module"; (3) Assignment 1; and (4) Assignment 2. Moodle features used: (1) page for video; (2) files for modules; and (3) assignments.

For learning material 3, the learning activities prepared by the teacher are (1) a Video about Captions; (2) a Caption Module; (3) Assignment Caption 1; and (4) Assignment Caption 2. Moodle features used: (1) page for video; (2) files for modules; and (3) assignments.

For learning material 4, the learning activities prepared by the teacher are (1) the Video "How to make an Application Letter,"; (2) the "How to make an application letter" module; and (3) the Assignment Application Letter. Moodle features used: (1) page for videos; (2) files for modules; and (3) assignments.

For learning material 5, the learning activities prepared by the teacher are (1) Video News Items; (2) News Items Module; (3) Transcript and video as a presenter; (4) Video News Item 2; and (5) Module News Items 2. Moodle features used: (1) page for videos; and (2) files for modules.

It is recognized that the LMS Moodle resource features employed in English learning are videos and electronic modules based on the learning activity in Table 3. One multimedia tool that supports education is video. Utilizing multimedia tools and applications, such as graphics, sounds, animations, and video, is one of the key benefits of using the Moodle platform for English language instruction (Bošković et al., 2014).

While the Moodle LMS activity feature used is an assignment, the assignment is an element of the LMS's Moodle activity system. Terms can be set using activity completion to determine student progress in doing the task. Teachers can keep an eye on

the learning activities of their students using these tools (Rotelli & Monreale, 2021).

The teacher needs to optimize the activity capabilities in the Moodle LMS, even though the completion rate of the activities by the 12th graders utilizing the Moodle LMS is relatively high. Quizzes are a crucial component that can be used to learn English. Students became highly motivated to study both intrinsically and extrinsically, according to the findings of prior research on student acceptance of LMS Moodle-based English learning enhanced with quizzes (Amer & Daher, 2019).

The forum is another LMS Moodle feature that has yet to be utilized by teachers for online English learning in this study. A forum is one of the best activities for fostering communication between students and teachers. Using this option, students can ask their teachers questions regarding lexical and grammatical constructions; external files (attachments) can be posted within this activity (Bošković et al., 2014).

LMS Performance and English Learning Outcome

The results of this study are consistent with those of earlier studies, which found a substantial correlation between learning achievement and LMS performance (Firat, 2016; Jo et al., 2015; Surjono et al., 2019; Whitmer, 2013).

The results of this study are different from those of Broadbent's study, which highlights the crucial part that self-efficacy plays in predicting learning outcomes. Academic success cannot be predicted based on LMS performance. This study demonstrates how psychosocial variables dominate academic competence in predicting learning outcomes for online learning (Broadbent, 2016).

The relevance of this research to that done by Jo et al. (2015), both of which looked at how well students performed when using LMSs. The two research do, however, differ in a few ways. This study analyzes performance using the LMS using a cumulative activity rating. Jo et al. study's

meanwhile, looked at variables including login frequency, regularity of learning intervals in the LMS, complete tasks finished, total study time spent in the LMS, interaction with the content, interaction with peers, and interaction with teachers (Jo et al., 2015). Another distinction is that this study aims to investigate variations in learning outcomes based on LMS performance. In contrast, Jo's investigation seeks to establish a link between LMS performance and academic success.

The research results support Surjono's findings even more. This study and Surjono's study aimed to determine how a learning management system (LMS) influences learning outcomes. The distinction is that Surjono's research contrasts learning in the experimental class and the control class through a quasi-experimental design. During the control class solely utilized face-to-face instruction, the treatment group for the control group employed a blended learning model that combined face-to-face instruction with online learning, including online discussions and quizzes via LMS (Surjono et al., 2019). This study, however, is an ex post facto comparison study.

Gender and English Learning Outcome

The effect of gender on language learning has been proven in earlier studies. Learning English significantly affects academic success and relates to gender difficulties (Zoghi et al., 2013). The results of this study support previous studies' findings that gender differences impact language learning processes. Women often use learning tactics more than men (Green & Oxford, 1995). The results of this study indicate that the English learning outcomes of female students are better than male students.

The results of this study further strengthen the findings of Glowka's research, which proves that gender is an essential social aspect that has a very significant influence on English learning outcomes (Główka, 2014).

The results of this study go opposite to those of earlier studies on how gender affects English learning. According to Akram, there are no statistically significant variations between men and women in their opinions or readiness to study the English language (Akram & Ghani, 2013).

The findings of this study go counter to earlier research on how gaming flow can aid English learning. The study showed that male students earned more interactive incentives than female students. Still, there were no appreciable variations in how male and female students made other rewards (Yang & Quadir, 2018).

CONCLUSION

Learning English online using LMS Moodle has increased the achievement of twelfth-grade students' learning activities. The average completion rate of English learning activities on Moodle LMS is 84.3%. The performance of using the Moodle LMS obtained from the Moodle log data analysis results affects English learning outcomes. Students with high performance in learning English using LMS Moodle have better scores (135.21) than students with low performance (47.79). Based on gender differences, it was found that female students had better English learning outcomes (103.08) than male students (78.86).

The limitations of this study are the Moodle LMS features used in the learning process. The assessment features used are only limited to assignments, even though many other features can be used, such as quizzes, forums, and lessons that have been proven effective in helping the assessment process in English learning assisted by Moodle LMS. Thus, further research is needed to complement the limitations contained in this study.

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