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Research Paper

Empowering Higher Education Students: Enhancing Self-Regulated Learning through LMS Implementation

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Abstract

The purpose of this study is to prove and examine how to improve students' SRL skills through the implementation of LMS. The Learning Management System (LMS) is one of the most popular e-learning platforms. The effect of using LMS in education is to strengthen students' self-regulated learning (SRL). SRL is an individual's awareness to actively participate in organizing, controlling, and managing their own learning process. There are three aspects, might enhance students' SRL in terms of SRL aspects such as metacognition, motivation, and behavior. The research method used is descriptive-qualitative research on SPADA LMS. 80 students who utilized the LMS for learning were observed and interviewed by the researcher. The motivation aspect is proven by the grades; indirectly, this will motivate students to study well and get the appropriate grades. LMS also provides learning progress monitoring, allowing students to monitor their learning progress. The behavior aspect of SRL is implemented in the LMS with a deadline feature that forces students to work on assignments according to a predetermined time. This will force students to practice discipline and manage their time well. The metacognition aspect has been applied in LMS through assignment, discussion, and quiz features that force students to be responsible when performing activities given by lecturers. The results concluded that LMS has a positive contribution to enhancing students' SRL. By using LMS, students can manage their own study time and study strategy. This research indicates that if we want to achieve SRL, all aspects of SRL must be well fulfilled. This study has implications for all academics, learners, and institutions that have adopted LMS, particularly the institutions under study. The limitations of this study only focus on the role of LMS and factors that influence students's SRL, especially at the higher education level in related universities.

Keywords: *Academic Writing, Higher Education, LMS, Self-Regulated Learning (SRL)*

INTRODUCTION

Technology is one of the most important characteristics of 21st-century learning. The role of technology in learning is to facilitate the formation of collaborative interactions and build a more meaningful learning process (Agustian and Salsabila, 2021). Technological advances in the 21st century have given rise to alternative approaches to supporting learning, especially in higher education. One of the impacts of technological advances in learning is the emergence of various platform options that can be used in the learning process. Teaching methods that are usually carried out conventionally using only simple tools are now required to adopt technology in the learning process so that they can support more modern teaching. One of the alternative technologies is the Learning Management System (LMS). The LMS allows learners to enhance a more interactive and structured learning process. Learning using LMS can be defined as learning that facilitates learning experiences using computing devices such as cell phones and laptops connected to the internet (Geovanny, Chisag, and Tabuena, 2022). LMS becomes one of the most widely used platforms in educational institutions.

The results of early observations conducted by researchers through interviews with students and lecturers on November 2, 2023, at one of the universities in Surakarta indicated that "Academic Writing" is one of the courses that must be taught to 6th semester English education students at the university concerned. This course is important to teach because it can improve students' ability to write and communicate scientifically. In this course, students are also honed in basic writing skills such as paraphrasing, synthesizing, citing, and documentation. This course prepares students to be able to write articles that will later be published in indexed and reputable journals. The goal of the academic writing course is to help students be able to publish indexed and reputable scientific articles.

The researcher also revealed that so far, the learning process in the academic writing course has not been monitored or related to exercises and discussions carried out directly by the relevant lecturers. Thus, many students put aside and pay less attention to the course. The main factor in this problem is the low self-regulated learning (SRL) ability of students. SRL is the ability to manage and organize individual learning strategies for achieving learning goals. In addition, researchers also found the problem that students do not have strong motivation and desire to learn. So far, students have only focused on learning outcomes without prioritizing the process and objectives of this course.

So far, the academic writing learning process has not applied technology. Before the application of technology, the learning process still used traditional methods, such as lecturers explaining and students listening, or what is commonly called the teacher center. In addition, lecturers only provide a little training to students. Although the learning process is conducted face-to-face, the LMS is still needed as a supplement to support face-to-face learning. So, this is a gap for researchers to examine the role of LMS in improving SRL. LMS is an alternative and interesting solution offered by researchers to solve existing problems. By implementing LMS in learning, students will be easier to learn, manage learning, and choose their own learning time and strategy. In other words, LMS allows students to learn anywhere and anytime.

The results of research conducted by (Wong, Baars, *et al.,* 2019); (Wong, Khalil, *et al.,* 2019); (Albelbisi, 2019); and (Rahmadi and Hayati, 2020) indicate a strategic relationship between SRL, which is seen as very important to increase participant engagement, achievement, and success, especially in online learning. Empirical studies using meta-analysis have proven the impact of learning by optimizing self-regulated learning on academic achievement in both online and face-to-face learning environments (Xu *et al.,* 2022). Students who have the skills to manage self-regulated learning and have a conducive learning environment will more easily achieve success in learning.

This research contributes to providing an understanding of SRL, the positive impact, and the strategies of SRL on student engagement and learning outcomes when using an LMS. The purpose of this study is to prove and examine how to improve students' SRL skills, especially in learning academic writing, through the implementation of LMS.

LITERATURE REVIEW

According to Zimmerman (1989), self-regulated learning (SRL) is the awareness of individuals to play an active role in organizing, controlling, and managing their own learning process. Self-regulated learning also refers to how a person organizes each individual's learning patterns and strategies. SRL theory highlights the importance of managing learning strategies in terms of metacognition, motivation, and behavior. Metacognition relates to how individuals manage their understanding or awareness of the learning process and learning strategies to achieve goals. Motivation relates to individual interests, beliefs, and emotions that influence learning goals.

Meanwhile, behavior refers to behaviors that support the learning process, such as managing study time and creating a conducive learning environment. The LMS allows users to

create, organize, and manage their learning and provides access for users to carry out learning independently (Kraleva, Sabani and Kralev, 2019).

SRL is a combination of a person's ability and attitude toward learning and achieving their goals. Individuals can monitor their learning activities and strategies and how effective their learning is. Learners' ability to manage their own learning is an important factor in determining the success of their learning (Wong et al., 2019). Nowadays, the ability to self-regulate learning is becoming increasingly important, especially in the application of technology in learning (Viberg, Khalil and Baars, 2020). Research indicating the effective application of self-regulated learning is on students at the tertiary level. The research also revealed that strategies and interventions have a positive effect on student learning outcomes (Xu et al., 2022). Santrock (2008) developed a self-regulated learning model as follows: evaluating and monitoring oneself, determining goals and strategic planning, implementing plans and monitoring them, and monitoring results and improving strategies. Students' ability to manage SRL determines the success of learning.

Learning Management System (LMS) was first introduced by Watson & Watson (2007:28–33), who stated that LMS is a platform that contains infrastructure that manages learning content, examines learning goals, and identifies progress during the learning process. LMS is a system that is widely used in all educational institutions in various countries, including Indonesia. The Learning Management System implements a web-based platform and social media so as to enable more effective, efficient, and user-friendly learning (Mahmudah et al., 2023). The LMS allows users to create, organize, and manage their learning and provides access for users to carry out learning independently (Kraleva et al., 2019).

The Learning Management System (LMS) is widely used in higher education institutions, such as universities. Through LMS, lecturers can communicate easily with their students both inside and outside of class hours. LMS becomes a bridge between lecturers and students. With the help of LMS, lecturers can distribute the material to be taught, and students can download the material easily and quickly. In simple words, learning with LMS has the potential to build a digital learning environment that allows users to access information through several sources regardless of location or time limitations (Simbolon et al., 2023).

A previous study was undertaken by (Jansen et al., 2019) who investigated the relationship between SRL intervention and achievement, SRL interventions and SRL activity, and SRL activity and achievement. The findings of this research indicate that additional factors such as motication and rime on task may impact the effectiveness of SRL interventions. Another similiar research conducted by (Zhu et al., 2020) that students' SRL ability, online engagement, and attitude all have a big impact on their willingness to study online. It is critical for educators to create online courses with the goal of improving social connections, enabling students to take charge of their learning, and implementing SRL methods. Such methods can lead to pleasant online learning experiences for students, enhance their attitudes about online learning, and raise their desire to try online learning in the future.

Research has revealed that an online learning environment has the ability to improve student SRL. The utilization of internet resources and technologies may benefit SRL in a variety of ways. (Xu et al., 2022). There has been some research on the interaction between SRL and online learning. In this study, researchers attempted to apply the function of LMS to improve students' SRL, particularly their writing abilities.

The research method used in this research is descriptive-qualitative. According to (Adlini et al., 2022), qualitative research describes events that are described narratively based on the activities carried out. In this study, researchers made observations that aimed to see the extent to which the LMS could affect students' self-regulated learning. The LMS used is SPADA LMS. Data collection techniques used observations and interviews by recording and taking photos for

documentation conducted by researchers. In in-depth interviews, students will share their learning experiences using the LMS. This research was conducted at one of the universities in Indonesia, with the research subjects being students who actively use LMS in their learning. This research aims to improve students' SRL, in particular in academic writing courses, which in turn can help students complete the learning outcomes of these courses.

The data processing of interview results includes the transcription of recordings into written text. Furthermore, separating the answers of interview participants based on certain topics will make the data more structured. The data is coded in the form of keywords or phrases that represent the topic and then analyzed using narrative analysis. The last step was to summarize and report the results of the interview data analysis systematically. Interview data was obtained from the total number of interview participants, namely 80 6th semester students at the given university. The specification of participant data can be found in Table 1.

Table 1. The Participants' Background

No	Aspect	Item	Quantity
1.	Gender	Female	49
		Male	31
2.	Major	English Department	80
6.	Skill of academic writing	Good	10
		Fair	32
		Poor	38

FINDINGS AND DISCUSSION
Finding

The data collection process begins with a statement on students' experiences using LMS in learning. The results showed that the application of LMS in learning can provide changes in learning strategies, motivation levels, and student involvement in learning. Three aspects of SRL have been applied in the learning process so that students begin to feel responsible for themselves regarding the learning process. SRL related to behavior is shown by the "deadline" in the LMS system. Motivational aspects are related to the set goals by the LMS. Studens can easily plan their goals with the help of the LMS. The behavior aspect is proven by deadline features will spark students' willingness to do their assignments on time. Metacognition in this study is shown by the discussion, assignment, and quiz features that will help students choose study time, study strategies, and what material to study. Overall, the LMS's features help students understand learning materials more easily. Moreover, LMS offers learning that can be accessed from anywhere and anytime. This will certainly shape students' obligations in determining their learning strategies without being influenced by others.

This initial question was asked in relation to how far students could express their learning process using the LMS. The quote is, "So far, learning with the LMS is interesting and fun. It provides its own challenges.". In the 21st century of learning, LMS is also an alternative application of technology in learning that is familiar to be used in learning. The quote is "LMS becomes an innovative and varied learning solution, in which there are activities that support learning. Not only in online learning, LMS is still relevant to be used in face-to-face learning.".
One of the most favorable factors for students regarding the use of LMS is the ease of access anytime and anywhere. As we know, every student has different learning strategies and patterns. Proven by the quote "Learning with LMS is more flexible in managing study time so that you can study anytime

and anywhere...". The application of LMS gives students full rights to be able to manage their own learning time. "With LMS, I can manage and control my study time without being forced to study and without any time limit.". Another student stated that "The feedback feature at each meeting will help in optimizing learning with the LMS.".

In addition, another student said that "there are features that can accommodate material that has been grouped by subject to be more structured, so there is no confusion in finding material. "This statement is in line with the question asked by the researcher regarding what features are most helpful to students in learning. A total of 29 students argued that the availability of subject matter features is the feature that helps students the most in managing learning materials. Researchers also asked students about the availability and quality of materials on the LMS. One student said, "The material on the LMS is organized, structured, and efficient.". Indirectly, this statement indicates that the LMS features have functioned well. The researcher also asked about the students' feelings and opinions before and after using the LMS. Almost all students stated that they were happy and helped by the LMS applied in the learning process.

Discussion

The motivational aspect of self-regulated learning refers to the internal and external drives that influence a person to start and perform activities, or, in this case, learning activities. Motivation includes interest, desire, perception, and belief in something. Students will not achieve success in SRL without strong enough motivation from themselves (Jansen et al., 2019). The motivation aspect is proven by the grades; indirectly, this will motivate students to study well and get the appropriate grades. The feedback feature on the LMS will affect student motivation by letting students know how they feel about the system. In addition, the LMS can support customized learning according to students' interests and needs. Motivational factors are linked to the goals established by the LMS. Students may simply plan their goals with the aid of the LMS. LMS also provides learning progress monitoring, allowing students to monitor their learning progress.

The behavior aspect of SRL is implemented in the LMS with a deadline feature that forces students to work on assignments according to a predetermined time. This will force students to practice discipline and manage their time well. The aspect is behavior related to the actions taken to achieve learning goals, such as time management, searching for supporting materials, and selecting effective learning strategies. This will be helped by the existence of an LMS that can provide convenience and flexibility in learning for students. In addition, the progress feature at each meeting in the LMS system will also trigger student awareness about managing their learning progress.

The metacognition aspect relates to the individual's awareness of the process of thinking and the ability to manage and regulate students' cognitive processes. In addition, metacognition is also related to the ability to plan effective learning strategies, monitor learning progress, identify difficulties, set study goals, and determine learning strategies. The metacognition aspect has been applied in LMS through assignment, discussion, and quiz features that force students to be responsible when performing activities given by lecturers.

Features on the LMS that are available include text, visuals, videos, discussion forums, assignments, chat, quizzes, and other formats. However, there are several things that need to be considered in order to achieve student satisfaction, namely, improvements to the appearance or user interface. According to (Koderi and Guntur Cahaya Kesuma, 2023), producing a good user interface requires collaboration between designers and users in order to produce a good appearance and as desired. To develop a quality LMS and support learning, it is necessary to optimize a more varied presentation method (Kadek Suartama et al., 2020).

Perceived ease of use is based on the extent to which prospective users expect a new system that is free from difficulties (Trihutama, 2020). During the implementation of the LMS, students did not feel any difficulties in using the system. The user interface prioritizes the beauty of the display selection of colors, layouts, and images, in order to produce a beautiful and attractive appearance for users. The LMS becomes a tool that facilitates the improvement of students' SRL, which in turn will facilitate students in achieving the goals in the course. According to research by (Zimmerman, 1989), students' willingness to embrace self-regulated learning practices allows them to have more control over their own behavior and surroundings.

CONCLUSIONS AND FURTHER RESEARCH

Based on the overall research results, the use of LMS in learning has a positive impact on students' SRL abilities. The measurement results with self-regulated learning (SRL) showed that the motivation aspect is proven by the grades; indirectly, this will motivate students to study well and get the appropriate grades. The feedback feature on the LMS will affect student motivation by letting students know how they feel about the system.

In addition, the LMS can support customized learning according to students' interests and needs. Motivational factors are linked to the goals established by the LMS. Students may simply plan their goals with the aid of the LMS. LMS also provides learning progress monitoring, allowing students to monitor their learning progress. The behavior aspect of SRL is implemented in the LMS with a deadline feature that forces students to work on assignments according to a predetermined time. This will force students to practice discipline and manage their time well.

The metacognition aspect has been applied in LMS through assignment, discussion, and quiz features that force students to be responsible when performing activities given by lecturers. students' willingness to embrace self-regulated learning practices allows them to have more control over their own behavior and surroundings.The SRL theory reveals that if we want to reach the SRL level, all three aspects motivation, behavior, and metacognition must be fulfilled. The LMS feature that students like the most is the flexibility of using the LMS, which can be used anytime and anywhere.

One way that can be done in order to achieve student SRL in using LMS is by providing training to lecturers to create creative and innovative learning content. In addition, it is necessary to optimize supporting factors such as improving the appearance of the user interface, improving the quality of the LMS system, and increasing the capacity of the internet connection. The limitations in this study only focus on the role of LMS and factors that influence students's SRL, especially at the higher education level in related universities.

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