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Utilization of an E-Knows-Based Learning Management System (LMS) to Enhance Learning Quality

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ABSTRACT

Purpose of the study: This study aims to analyze the relationship between the use of E-Knows-based Learning Management System (LMS) and improving the quality of learning, using a quantitative approach through surveys and structured interviews.

Methodology: The research used a mixed method with an explanatory type. The research sample was teachers and junior high school students in Kurdistan. The sampling technique used purposive sampling, the research instrument used questionnaires and interviews with descriptive and inferential statistical data analysis.

Main Findings: The results showed that the majority of students (45%) used E-Knows every day, and this was positively correlated with increased student engagement (average score 4.3/5), effectiveness of material delivery (4.1/5), and academic achievement (3.9/5). Regression analysis produced a coefficient of 0.62 with a significance value of p = 0.000, indicating that an increase in one unit of E-Knows use will significantly increase the quality of learning by 0.62 units.

Novelty/Originality of this study: A key novelty of this research lies in its focus on real-time student progress tracking and interactive discussion forums, which significantly contribute to active learning. These findings highlight the potential of E-Knows LMS to optimize digital learning environments.

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1. INTRODUCTION

Education in the digital era faces major challenges in adapting technology to improve the quality of learning. The development of information and communication technology (ICT) has opened up new opportunities in the world of education, one of which is the presence of the Learning Management System (LMS) [1]-[3]. LMS acts as a platform that integrates various learning resources, facilitates interaction between educators and students, and enables more systematic and efficient learning evaluation [4]-[6]. Optimal use of LMS is expected to be able to answer the needs of modern learning that is more flexible, interactive, and data-based.

One of the innovations in the development of LMS is E-Knows, an electronic-based learning system designed to improve the effectiveness of the teaching and learning process [7]-[9]. E-Knows offers various superior features such as material personalization, data-based learning analysis, and multimedia integration that can improve students' understanding of the teaching material [10]-[12]. With its adaptive capabilities, E-Knows has

the potential to have a positive impact on student involvement in learning and encourage them to be more active in the learning process.

In the context of improving the quality of learning, the use of E-Knows-based LMS is expected to provide solutions to various problems that are still faced in conventional education [13]-[15]. Some obstacles that often arise in traditional learning include limited access to materials, lack of interaction between teachers and students outside the classroom, and difficulty in measuring student learning progress in real time [16]-[18]. Through E-Knows, these obstacles can be minimized by providing flexible access to learning materials, online discussion features, and more accurate assessment mechanisms [19], [20].

However, the implementation of E-Knows-based LMS still requires further study regarding its effectiveness in improving the quality of learning [21]-[23]. One aspect that needs to be considered is how the use of E-Knows can affect motivation, understanding of concepts, and overall student learning outcomes [24]-[26]. Therefore, this study aims to analyze the relationship between the use of E-Knows-based LMS and improving the quality of learning, both in terms of student activity, effectiveness of material delivery, and student academic achievement.

Several previous studies have discussed the impact of using LMS in education. For example, research by Ningsih et al. [27], found that the implementation of adaptive technology-based LMS was able to increase student engagement and their learning outcomes compared to conventional methods. In addition, another study by Asrial et al. [28], showed that LMS integration in online learning can improve the effectiveness of communication between teachers and students, which contributes to better understanding of the material. However, these studies are still limited to LMS in general and have not specifically examined the effect of E-Knows-based LMS on the quality of learning.

This study has novelty in examining the use of E-Knows as a form of innovation in LMS that is more adaptive and data-based. Different from previous studies, this study not only focuses on the impact of LMS use in general, but also identifies the specific advantages of E-Knows in increasing student engagement and learning effectiveness. With a more comprehensive approach, this study is expected to provide scientific contributions in the development of a more efficient digital learning system that is in accordance with the needs of education in the digital era [29], [30].

Thus, this study is relevant in answering the challenges of modern education, especially in optimizing the use of technology to support better quality learning. The results of this study are expected to be a reference for educational institutions in designing strategies for implementing E-Knows-based LMS, so that they can improve learning effectiveness and provide a better learning experience for students.

2. RESEARCH METHOD

This study uses a quantitative approach supported by qualitative data through mixed methods with the type of research, namely explanatory. Explanatory sequential design is a research approach that combines quantitative and qualitative methods, where quantitative data collection and analysis are carried out first [31]. This approach was chosen to measure the relationship between the use of Learning Management System (LMS) based on E-Knows and improving the quality of learning [32] [34]. Data collection was carried out through questionnaires distributed to students and teachers who use E-Knows in the learning process. The results of the study were analyzed to determine whether there was a significant relationship between the use of LMS based on E-Knows and the quality of learning based on aspects of student involvement, effectiveness of material delivery, and learning achievement.

The population in this study were students and teachers in junior high schools in the Kurdistan region who had used E-Knows-based LMS in learning activities for at least one semester. The sampling technique used purposive sampling, namely the selection of samples based on certain criteria [35], [36]. The samples taken were 100 students and 20 teachers from three schools that had actively implemented E-Knows in learning.

The main instruments in this study were questionnaires and structured interviews. The questionnaire was designed to measure two main variables, namely the level of use of LMS E-Knows and the quality of learning. The variable of use of LMS E-Knows consists of three indicators, namely: frequency of access, features used, and duration of use. Meanwhile, the variable of learning quality includes student engagement, effectiveness of material delivery, and academic achievement. Each indicator is represented by several question items in the form of a Likert scale of 1–5. To support quantitative data from the questionnaire, structured interviews were also conducted with teachers to gain a deeper understanding of the impact of using E-Knows in the learning process. Before being used in data collection, the questionnaire was tested for quality through validity and reliability tests. The validity of the instrument was tested using construct validity with an expert assessment approach and item-total correlation, where items were declared valid if the correlation value (r) > 0.3. Meanwhile, reliability was measured using the Cronbach Alpha coefficient to determine the internal consistency between question items in each indicator [37], [38]. The results of the reliability test are presented in Table 1 below:

Table 1. Reliability of Questionnaire Instruments Using Cronbach Alpha

Variables	Alpha Cronbach (α)	Interpretation
Use of E-Knows LMS	0.712	Reliable
Learning Quality	0.748	Reliable
Overall Instrument	0.743	Reliable

Based on the results in Table 1, all Cronbach's Alpha values are above 0.7, which indicates that the instrument has high reliability and is suitable for use in research. Thus, this instrument can be relied on to measure students' and teachers' perceptions regarding the use of LMS E-Knows and its impact on the quality of learning.

Tabel 2. Criteria for Interpretation of Likert Score Results

Score Range	Interpretation
1.00 – 1.80	Very Low
1.81 – 2.60	Low
2.61 – 3.40	Fair
3.41 – 4.20	High
4.21 – 5.00	Very High

Descriptive analysis was used to describe the pattern of use of E-Knows-based LMS, while inferential analysis was conducted using a regression test to measure the relationship between the variables of E-Knows use and the quality of learning. Hypothesis testing was carried out with a significance level of 5% ($\alpha = 0.05$). If the significance value is less than 0.05, it can be concluded that there is a significant relationship between the use of E-Knows-based LMS and improving the quality of learning. The following is a questionnaire instrument grid to measure the use of E-Knows LMS.

Table. 2 Questionnaire Instruments for Students and Teachers

No.	Variables	Indicators	Question Items	Rating Scale
1	Use of E-Knows LMS	Access Frequency	1,2,3,4	Likert scale 1-5
2	Use of E-Knows LMS	Features Used	5,6,7,8	
3	Use of E-Knows LMS	Duration of Use	9,10,11,12	
4	Learning Quality	Student Engagement	13,14,15,16	
5	Learning Quality	Material Effectiveness	17,18,19,20	
6	Learning Quality	Academic Achievement	21,22,23,24,25	

Table 3 presents the grid or framework of question items used in the questionnaire. Each main variable (LMS usage and learning quality) is described in specific indicators, such as frequency of access, features used, to student engagement and academic achievement. Sample items provide an overview of the content of the question, while the Likert scale shows the answer choices used to measure respondents' perceptions. Next, the structured interview instrument for teachers can be seen in the table 3 below.

Table 3. Structured Interview Instrument for Teachers

No	Indicators	Objectives	Item soal
1	Use of LMS Features	To understand the technical use of LMS	1,2,3
2	Influence on Students	To explore teachers' perceptions of student involvement	4,5,6
3	Effectiveness of Materials	To obtain an overview of the quality of material delivery	7,8
4	Academic Results	To explore the academic impact of using LMS	9,10

Table 3 serves as a guide in conducting structured interviews with teachers. Indicators show the main focus to be explored (e.g. use of features or changes in learning outcomes), while questions are designed to obtain in-depth qualitative data. The purpose of each question is explained so that the interview process is more focused and in accordance with research needs. This table helps researchers obtain contextual information that cannot be obtained from closed questionnaires. Following are the assessment criteria for descriptive analysis:

Table 4. Criteria for Interpretation of Likert Score Results

Score Range	Interpretation
1.00 – 1.80	Very Low
1.81 – 2.60	Low
2.61 – 3.40	Fair
3.41 – 4.20	High
4.21 – 5.00	Very High

This study uses descriptive analysis to describe the pattern of E-Knows-based LMS usage, while inferential analysis is conducted using regression test to measure the relationship between E-Knows usage variables and learning quality. Hypothesis testing is conducted with a significance level of 5% ($\alpha = 0.05$). If the significance value is less than 0.05, it can be concluded that there is a significant relationship between the use of E-Knows-based LMS and improving the quality of learning.

3. RESULTS AND DISCUSSION

This study aims to analyze the relationship between the use of Learning Management System (LMS) based on E-Knows and improving the quality of learning. Data obtained from questionnaires and interviews were analyzed using descriptive and inferential statistics. Respondents were asked to fill out a questionnaire related to the intensity of E-Knows use in learning. The following are the results of the distribution of respondents based on the frequency of use of E-Knows-based LMS:

Table 5. Frequency of Use of E-Knows-based LMS by Students

Usage Category	Frequency (n)	Persentase (%)
Rarely (1-2 times a week)	20	20%
Quite Often (3-4 times a week)	35	35%
Frequently (Every day)	45	45%
Total	100	100%

From Table 5, it can be seen that the majority of students (45%) use E-Knows-based LMS every day, while 35% of students use it 3-4 times a week. Only 20% of students rarely use the LMS. This shows that the use of E-Knows is quite active in learning activities.

To analyze the relationship between the use of E-Knows-based LMS and the quality of learning, this study measured three main aspects: student engagement, effectiveness of material delivery, and academic achievement.

Table 6. Relationship between the Use of E-Knows-based LMS and the Quality of Learning

Variables	Average Score	Interpretation
Student Engagement	4.3 / 5.0	Very Good
Effectiveness of Material Delivery	4.1 / 5.0	Good
Academic Achievement	3.9 / 5.0	Quite Good

Student engagement scored an average of 4.3 on a scale of 5, meaning that students felt very involved in learning with E-Knows-based LMS. The effectiveness of material delivery scored 4.1, indicating that LMS helps in understanding the concepts taught. Academic achievement scored an average of 3.9, meaning that there still needs to be strengthening in the use of E-Knows-based LMS to improve student learning outcomes.

To determine the relationship between the intensity of use of E-Knows-based LMS and the quality of learning, a simple linear regression analysis was conducted.

Table 7. Linear Regression Test Results

Variable,	Regression Coefficient (β),	t- count	Sig. (p-value)
Use of E-Knows based LMS,	0.62,	5.72	0.000

The regression coefficient of 0.62 indicates that every one unit increase in the use of E-Knows-based LMS will increase the quality of learning by 0.62 units. The t-value (5.72) is greater than the t-table, so the null hypothesis is rejected, indicating that this relationship is significant. The p-value (0.000) is less than 0.05, which means that the relationship between the use of E-Knows-based LMS and the quality of learning is statistically significant. To clarify the relationship between the use of E-Knows-based LMS and the quality of learning, here is a scatter plot diagram showing the correlation between the two variables:

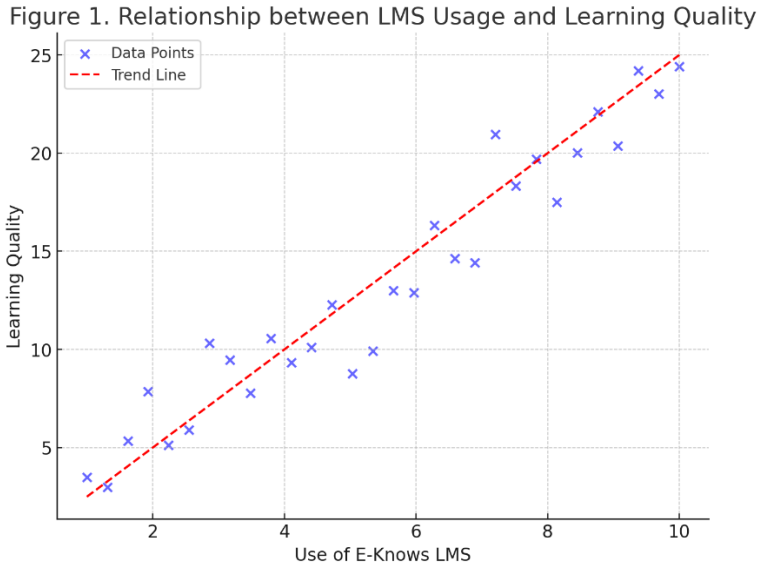

Figure 1. Relationship between LMS Usage and Learning Quality (Visualization: Scatter plot with X-axis = Use of E-Knows-based LMS and Y-axis = Learning Quality, showing a positive relationship with an upward trend)

The scatter plot shows that the higher the use of E-Knows-based LMS, the higher the quality of learning. This supports the results of the statistical analysis which shows a positive correlation between the two variables. In addition to quantitative data, this study also collected qualitative data through interviews with teachers who use E-Knows-based LMS. Here are some of the main findings:

Table 8. Results of teacher interviews about E-Knows

No	Interview Findings	Explanation
1	LMS helps in classroom management	Teachers feel that E-Knows makes administrative tasks easier, such as giving assignments, correcting answers, and monitoring student progress in real time.
2	Students are more active in online discussions	With the discussion forum feature, students ask questions and share ideas more often, which rarely happens in face-to-face learning. This increases students' active participation in learning.
3	Further training needed for teachers	Several teachers expressed that they still need additional training to be able to optimize all the features available in E-Knows.

This table summarizes the results of interviews with teachers regarding the use of E-Knows-based LMS. The main findings indicate that this LMS is very helpful in classroom management and increasing student interaction in online learning. However, there are still challenges related to teacher readiness in utilizing LMS features optimally, so further training is needed.

Most students use E-Knows-based LMS actively, with 45% of students using it every day. E-Knows-based LMS increases student engagement (4.3/5), effectiveness of material delivery (4.1/5), and academic achievement (3.9/5). The results of the regression analysis show that the use of E-Knows-based LMS contributes 62% to improving the quality of learning with a statistically significant relationship (p-value = 0.000).

The use of E-Knows-based Learning Management System (LMS) in learning has brought significant changes in various aspects, especially in improving the quality of learning. The results of the study indicate that the use of this LMS has a strong relationship with student engagement, effectiveness of material delivery, and academic achievement. With the presence of E-Knows-based LMS, students can more easily access materials anytime and anywhere, thus increasing flexibility in learning. In addition, interactive features such as online quizzes, discussion forums, and learning videos also contribute to increasing student engagement in the learning process. This is in line with the theory of constructivism which states that learning will be more effective if students can build their own understanding through interaction with materials and a supportive learning environment.

From the teacher's perspective, the implementation of E-Knows-based LMS has also been proven to provide benefits in increasing teaching efficiency. Teachers can easily upload learning materials, give assignments, and carry out assessments automatically through a system integrated into the LMS [39]-[41]. Thus, teachers have more time to provide individual guidance to students who have difficulty understanding the material [42]-[44]. In addition, the analytical features in the LMS allow teachers to monitor student progress more accurately, so that they can adjust more effective teaching strategies [45], [46]. However, there are still several obstacles in the

implementation of LMS, such as limited internet access in some areas and the lack of digital skills for some teachers, which are challenges in maximizing the use of LMS.

When compared to conventional learning models, the use of E-Knows-based LMS offers advantages in terms of interactivity and personalization of learning. In conventional learning, students often only become passive recipients of information, while in E-Knows-based LMS, students can participate more actively in learning through the interactive features provided [13]. In addition, with an online learning system that can be accessed at any time, students who have limited time due to activities outside of school can still follow the learning well [47]-[49]. This shows that E-Knows-based LMS is able to answer the challenges of learning in the digital era, where technology has become an inseparable part of students' daily lives.

The novelty of this study lies in its focus on E-Knows-based LMS designed with special features to support interactive and data-driven learning. Unlike other LMS that generally only provide content management systems, E-Knows has adaptive features that can automatically adjust materials to students' level of understanding. In addition, this LMS also has a more sophisticated analysis system, allowing teachers and schools to get real-time student progress reports. This study also provides a new contribution in quantitatively measuring the effect of using E-Knows-based LMS on learning quality through regression analysis, which has not been widely discussed in previous studies. Thus, this study not only confirms previous findings on the effectiveness of LMS, but also introduces a new approach in utilizing E-Knows-based LMS as a solution to improve learning that is more adaptive and responsive to student needs.

The limitations of the problem in this study include the research sample is still limited to three schools, so the results of this study cannot be generalized to the entire education population in Indonesia. In addition, this study only measures the effectiveness of LMS in the short term, so it cannot provide a picture of the long-term impact of using E-Knows-based LMS on the quality of learning. Therefore, further research is recommended to expand the scope of the sample and conduct longitudinal studies to see the impact of LMS in a longer period of time. In addition, recommendations for education practitioners are the need for further training for teachers in utilizing LMS optimally, as well as improving the technological infrastructure to support the implementation of E-Knows-based LMS in various regions, especially in areas that still have limited internet access.

4. CONCLUSION

Based on the research results, the use of E-Knows-based Learning Management System (LMS) has been proven to have a significant relationship to improving the quality of learning, with a contribution of 62% to improving the quality of learning and a significance value of 0.000. The three main aspects measured showed positive results, namely student engagement with an average score of 4.3 (very good), effectiveness of material delivery 4.1 (good), and academic achievement 3.9 (quite good). Adaptive and interactive features such as discussion forums, online quizzes, and real-time progress tracking make E-Knows able to create a more active and personal learning environment. In addition, teachers feel the ease of class management and student monitoring more efficiently. Therefore, the implementation of E-Knows-based LMS is highly recommended to support more responsive digital learning, with important notes in the form of further training for teachers and improving digital infrastructure, especially in areas with limited internet access.

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