Analysis of the Need to Improve Learning Quality through the Utilization of Learning Objects (LO) on the Learning Management System (LMS) Platform

Ivan Putranto*[1], Kusworo[1], Nadya Fadillah Fidhyallah[1]
[1] Business Education, Faculty of Economics and Business, State University of Jakarta
Email: ivanputranto@unj.ac.id

Article Info
Article History
Received: May, 2025
Revised: June, 2025
Published: June, 2025

Keywords:
Needs Analysis, Learning Object (LO), Learning Management System (LMS)

doi:http://dx.doi.org/10.23960/E3J/v8.i1.94-102

Abstract
The purpose of this study is to analyze the need to improve the quality of learning through the use of Learning Objects (LO) on the Learning Management System (LMS) platform. This research is an exploratory descriptive research. The subject of this research is a student of the Business Education Study Program, Economics Education, Accounting Education, and Office Administration Education, Faculty of Economics and Business, State University of Jakarta class of 2023. The sample was randomly selected by 70 students. Data was collected using questionnaires. The results showed that 65.7% of students regularly access LMS and 81.4% of students follow a regular learning schedule in LMS which shows that the integration of LMS in students' learning habits. As many as 70% of students have no difficulty using LMS features, and 81.4% of students feel that LMS can help in self-paced learning that reflects technical readiness and great potential for LO implementation. A total of 67.1% of students stated that LO helps achieve learning goals, although 28.6% of students are neutral, indicating the need for improvement in LO design. The majority of students (91.4%) expect LO to present real and more applicable examples, and 77.1% of students understand the material more easily if it is presented through videos or interactive visuals. On the other hand, learning activities predominantly use conventional media such as PowerPoint, so there is still a gap between the learning media provided and student expectations. Difficulties in understanding the material are mostly caused by the use of monotonous and inappropriate learning media, which emphasizes the importance of developing LO that is interesting, applicative, and in accordance with today's digital learning needs.

INTRODUCTION

The development of digital technology has fundamentally changed education. The development of technology forces the world of education to integrate technology into the learning process. One form of transformation carried out is the use of Learning Management System (LMS) as the main platform in supporting online learning. LMS is an information technology system developed to manage and support the learning process, distribute lecture materials and enable collaboration between lecturers and students. LMS allows learning management to be carried out systematically, including the distribution of materials, the implementation of evaluations, and communication between lecturers and students (Fitriani, 2020; Almarashdeh, 2016).

LMS has great potential to improve student learning effectiveness, despite the various challenges faced. More intensive efforts are needed to overcome technical obstacles for both lecturers and students, to improve user understanding of LMS features, and to develop supporting features so that the use of LMS in the learning process can be more optimal. Nonetheless, the effectiveness of an LMS in improving the quality of learning is not only determined by the availability of the system, but also highly dependent on the digital content provided within it (Amelia & Suranto, 2025).

Learning Object (LO) is a form of digital content that plays a strategic role in enriching learning materials in LMS. LO is defined as a small, modular, and reusable learning unit, designed to achieve specific learning objectives through a systematic pedagogical approach. The results of the study

conducted by show that the use of LO can significantly improve concept understanding, learning engagement, and knowledge retention. In the context of higher education, the existence of a quality LO not only increases learning interactivity, but also provides flexibility for students to learn according to the student's style and rhythm. LO is a combination of pedagogical and technological aspects that must be carefully and strategically designed to have a positive impact on student learning (Wiley, 2000; Kay & Knaack, 2007; Quiroz & Muñoz González, 2020).

The results of previous research also noted a number of challenges in the use of LO, especially related to the lack of technopedagogic competence of lecturers in designing digital content, limited institutional resources, and lack of integration of LO in instructional design as a whole. While interactive LO can improve understanding of concepts, there are technical barriers, such as technical difficulties and grading formats, that hinder the effectiveness of its use. In Indonesia, a study by By found that although LMS has been widely used in universities, the use of LO is still relatively low and is often limited to uploading materials in static formats, such as PDF or PowerPoint (Hernández-Leo, et al., 2018; Keiller et al., 2022; Wiragunawan, 2022).

This condition shows that there is a gap between the potential use of LO in LMS and its actual implementation in the field. Therefore, a systematic needs analysis is needed that is able to identify the extent to which the use of LO has taken place, the obstacles faced, and the students' needs for relevant, interesting, and meaningful digital learning content. Needs analysis is an important first step in developing a strategy to improve the quality of technology-based learning contextually.

Based on the results of observations made on students in four study programs at the Faculty of Economics and Business, State University of Jakarta, it shows that in general, students routinely access LMS and follow regular learning schedules. Students also consider that the material available in the LMS is quite good, and hope that there is material that is applicable and in accordance with real needs. As many as 81.4% of students also stated that the existence of an LMS can help student learning activities. These results show that there is awareness and potential for maximum use of LMS.

Several important indicators show the need for quality improvement efforts such as ease of understanding the material and its relevance to the real world. In addition, not all students feel competent enough to utilize LMS features optimally. The motivational aspect also still needs to be improved. This shows that even though LMS is already in use, it is not yet fully capable of creating meaningful learning engagement. The high expectations for more applicable LO and the need for the development of contextual teaching materials, emphasize the importance of comprehensive needs analysis in designing and presenting learning content in LMS.

This study aims to analyze the need to improve the quality of learning through the use of LO on the LMS platform within the Faculty of Economics and Business, State University of Jakarta. Referring to the results of previous research and supported by empirical data obtained from the field, this research is expected to contribute to improving the quality of digital learning through the development of LO that is more targeted and based on the real needs of students.

METHODS

This study uses an exploratory descriptive approach. Descriptive-exploratory research is a study that aims to describe in detail a phenomenon or phenomenon that has not been studied before, with the intention of exploring new and deeper information about the phenomenon.(Moleong, 2019)

The subjects in this study are students of the class of 2023 in four study programs, namely Business Education, Economic Education, Accounting Education, and Office Administration Education. The research sample was randomly selected as many as 70 students. Data collection was carried out through the distribution of questionnaires to identify the level of LMS utilization, student perception of LO, and the need for digital content development to support higher quality learning.

RESULTS AND DISCUSSION

A. Results

The results of the analysis of the need to improve the quality of learning through the use of learning objects (LO) on the learning management system (LMS) platform were obtained through observations carried out by filling out a google form by 70 students from four different study programs, namely

Business Education, Economic Education, Accounting Education, and Office Administration Education. The results of the research were obtained as follows:

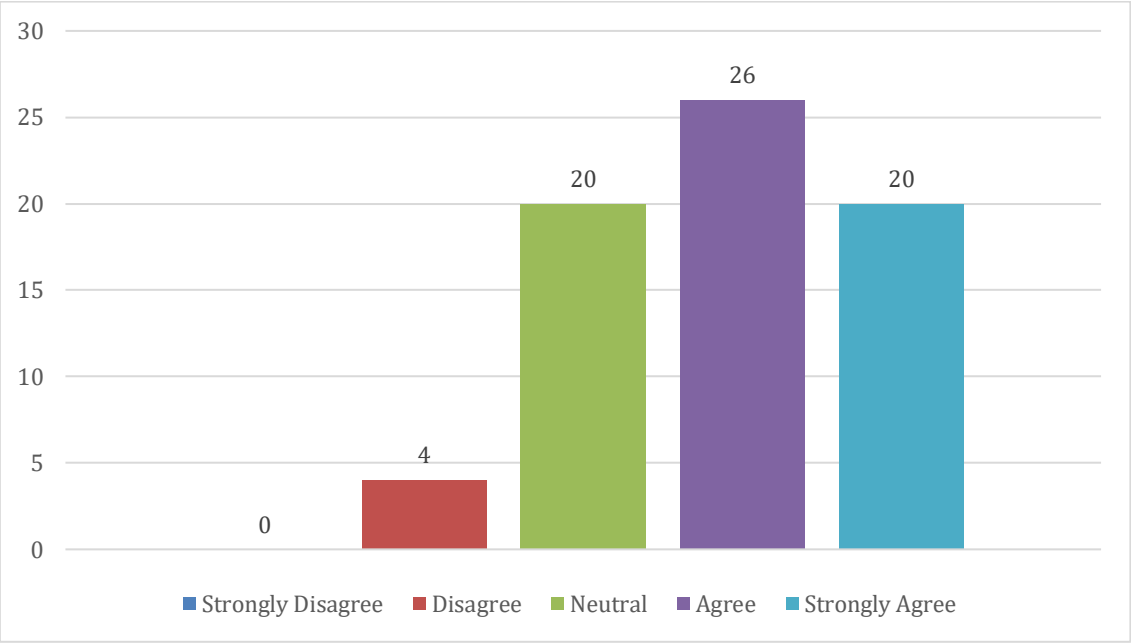

Figure 1. Frequency of Students Accessing LMS

Based on the image above, it can be seen that most students admit to regularly accessing the LMS every week, which can be seen from 65.7% of students who agree or strongly agree. This shows the readiness of the LMS infrastructure to use which has great potential for optimizing LO-based learning. However, there are still students who show a neutral attitude, which indicates the need to evaluate the quality and relevance of the learning materials available in the LMS. If a quality and interactive LO is available in the LMS, then it is very possible to be used optimally by students.

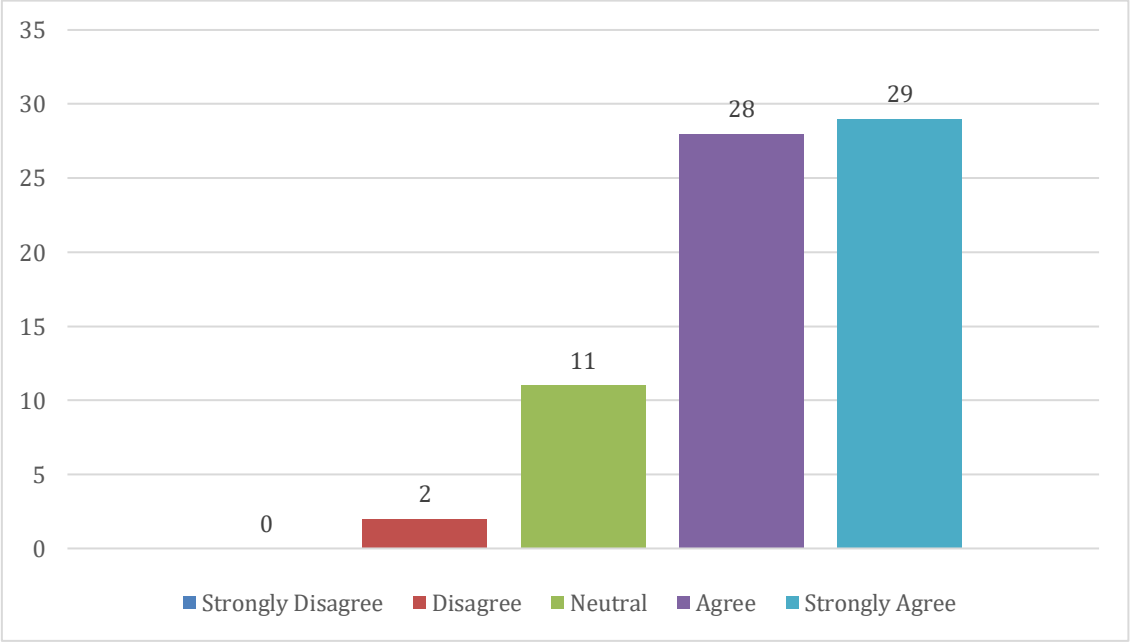

Figure 2. Regularity of Following the Learning Schedule in the LMS

Based on the image above, it can be seen that as many as 81.4% of students stated that they follow the learning schedule at the LMS regularly. This fact shows that LMS has been well integrated in student learning activities. Therefore, the availability of quality LO will greatly support the effectiveness of

learning. The LO needs to be designed to strengthen student engagement in each session. The LO content presented will have a greater chance of being accessed and learned in a timely and continuous manner.

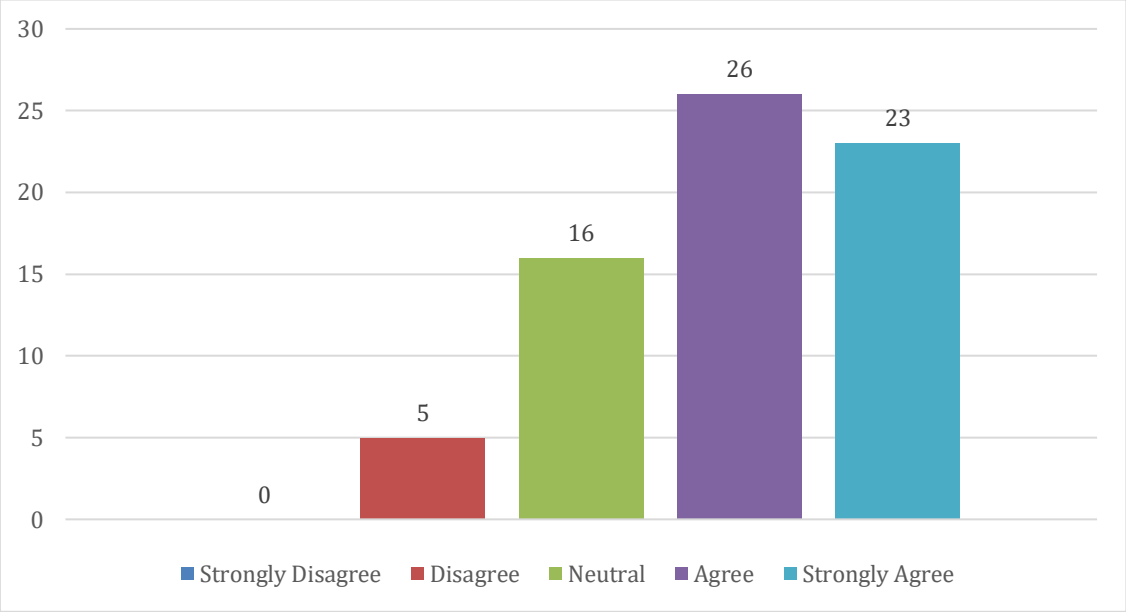

Figure 3. Difficulty in Using LMS Features

Based on the image above, it can be seen that as many as 70% of students stated that they did not have difficulty using the LMS feature. This shows the technical readiness of users in utilizing LMS as a means of digital learning. LO development has a great opportunity to be implemented effectively. However, there are still 30% of students who are neutral or disagree, which shows the need to design a simpler, more intuitive, and well-integrated LO in the LMS in order to reach all levels of users. This can be a strong foundation to utilize and develop LO to the fullest, as technical barriers have been relatively minimal.

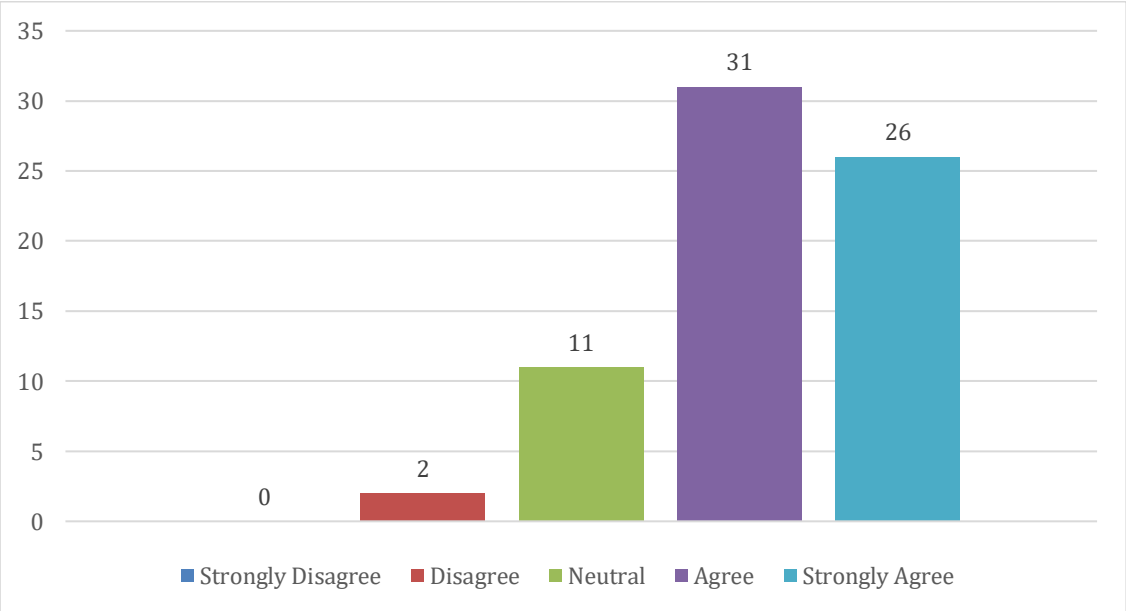

Figure 4. Uses of LMS for Self-Study

Based on the image above, it can be seen that 81.4% of students feel helped by the use of LMS in supporting independent learning activities. LMS has great potential in supporting flexible and independent learning models. One optimization strategy is through the use of LO that is specifically designed to support independent exploration, with interactive, structured, and accessible content presentations. However, around 18.6% of students still show doubt or uncertainty, which indicates the

need for a more responsive LO approach to individual needs, both in terms of design, content, and instructional support. This can be an indicator that the use of LO will receive a positive response because LO is very suitable to support self-paced learning.

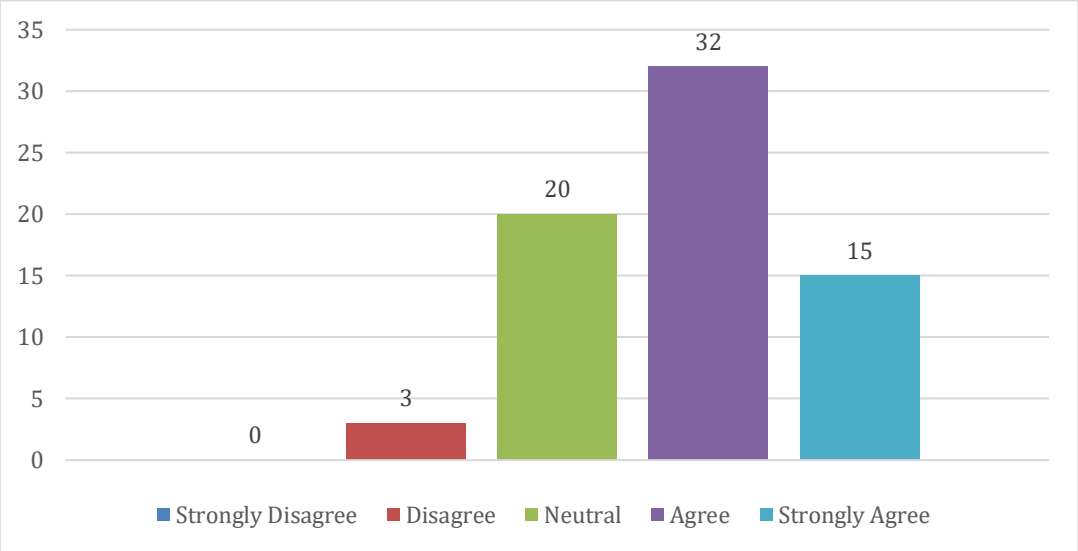

Figure 5. Benefits of LO in Achieving Learning Goals

Based on the image above, it can be seen that as many as 67.1% of students stated that LO in the LMS helps in achieving learning goals. This shows that LO has great potential to increase the effectiveness of digital learning. However, the high proportion of students who are neutral (28.6%) is an important indication that improvements are still needed in the design and implementation of LO. Therefore, needs analysis is an important step to produce LO that is more directed, structured, and in accordance with learning outcomes, and easy to use by all students. Through the proper use of LO, LMS can transform into a more personalized, independent, and effective learning ecosystem.

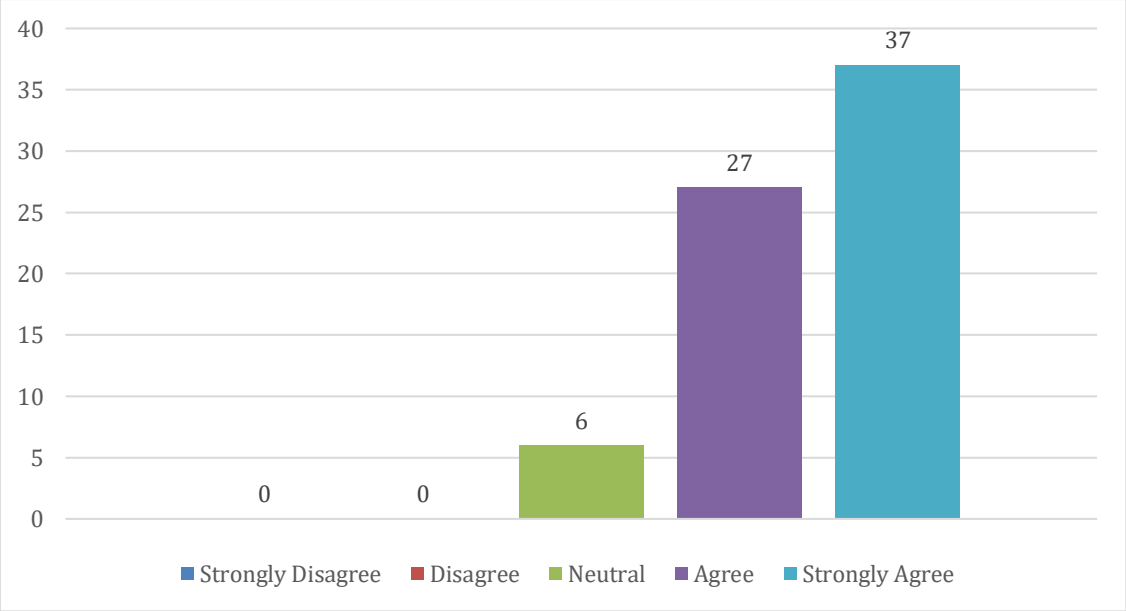

Figure 6. Student Expectations related to LO

Based on the image above, it can be seen that as many as 91.4% of students stated that they hoped that the LO available in the LMS presented real and more applicable examples. These results show the importance of redesigning LO to be more contextual and in line with real-world needs. Therefore, in order to improve the quality of digital learning, it is necessary to conduct a comprehensive needs

analysis to ensure that each LO is able to bridge theory and practice, so as to not only improve conceptual understanding, but also students' applicative competence.

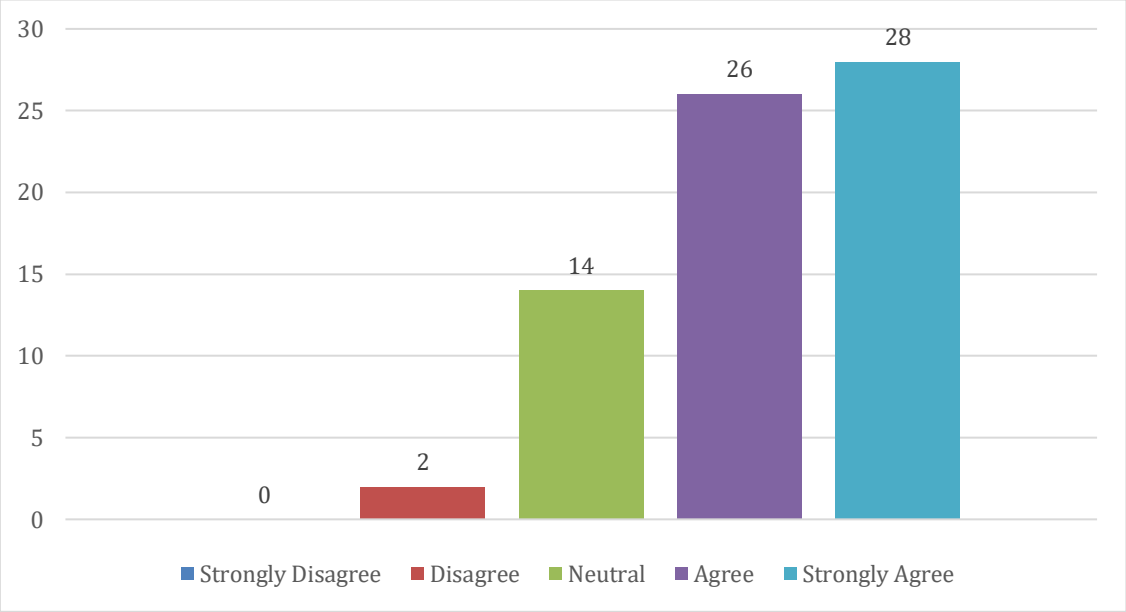

Figure 7. Understanding Material Through Video or Interactive Visual Forms

Based on the image above, it can be seen that as many as 77.1% of students stated that it is easier to understand the material when presented in the form of videos or interactive visuals. This suggests that the LO designed in an LMS needs to accommodate both visual and interactivity-based learning approaches. For this reason, the development of LO no longer relies only on text and documents, but needs to be designed with the integration of learning videos, animations, and other visual components that support the effective improvement of concept understanding.

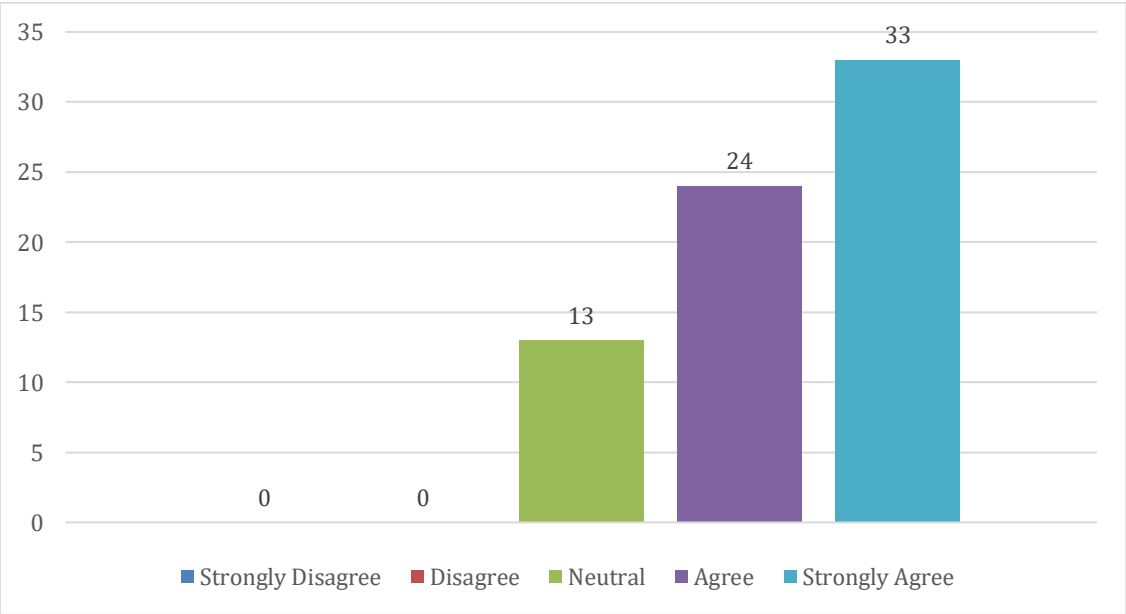

Figure 8. The Need for Teaching Material Development in the Context of LO in LMS

Based on the image above, it can be seen that as many as 81.4% of students stated that the development of teaching materials in the context of LO in LMS is urgently needed. This data shows that students not only need learning materials, but also demand the quality of presentation that is interactive, applicative, and relevant. Therefore, the development of LO in LMS is a strategic need to improve the

quality of digital learning. The focus of its development needs to be directed at the integration of visual, interactive content, as well as the use of problem-based and real-experience learning approaches.

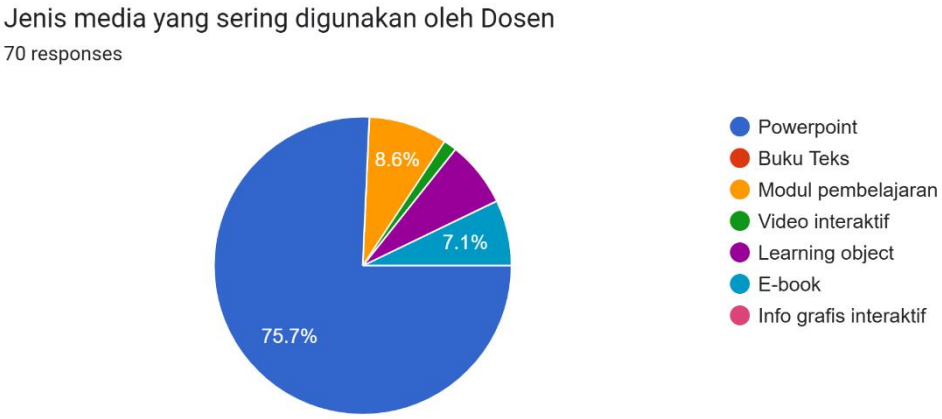

Figure 9. Types of Media Frequently Used in Learning

Based on the data above, it can be seen that as many as 75.7% of students say that learning still relies on PowerPoint as the main medium, while the use of more interactive digital learning media such as Learning Objects, videos, and infographics is very low. This shows that there are limitations in the delivery of varied and applicable material. Therefore, to answer the needs of students and in order to improve the quality of learning, it is necessary to integrate and develop LO in the LMS. This development will enrich delivery methods, improve learning interactions, and facilitate a deeper and contextual understanding of concepts.

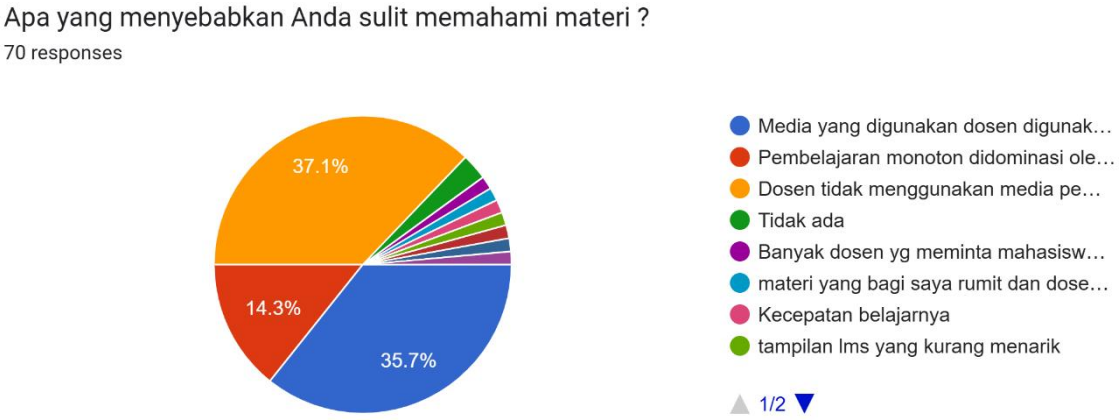

Figure 10. Causes of Difficulty Understanding the Material

Based on the data above, it can be seen that the majority of students have difficulty in understanding the material because learning activities do not use the right media and tend to be monotonous. It can be concluded that there is a real need to improve the quality of learning media. One potential solution is the development of an integrated LO in an LMS. By presenting materials that are more interactive, visual, and applicative, LO will encourage better understanding and increase students' interest in learning.

B. Discussion

The results indicate that the use of LO in LMS platforms has significant potential to improve the quality of student learning. The majority of students (65.7%) have regularly accessed LMS, which reflects the readiness of digital infrastructure as well as the integration of LMS in students' learning

habits. This can show the importance of LMS access habits as an indicator of readiness in the implementation of learning technology.

The level of regularity of students in following the learning schedule in the LMS (81.4%) shows that the LMS has become an integral part of the learning system. This creates a great opportunity to optimize learning through the presentation of structured and engaging LO. As explained by that the success of an LMS in improving learning is greatly influenced by the quality of the digital content provided (Sun et al., 2008).

As many as 70% of students said they did not have difficulty using the LMS feature. These results show that technical barriers are not the main problem, and provide an opportunity for optimal LO development. However, LO design should still pay attention to simplicity, intuitive navigation, and ease of access, as suggested by the principles of multimedia-based instructional design.(Clark & Mayer, 2023)

In addition, 81.4% of students feel that students get help in independent learning through LMS. This confirms that LO is very relevant to support independent learning models. Interactive and flexible content has been proven to encourage independence in learning.

However, although 67.1% of students revealed that LO contributes to the achievement of learning goals, there are still 28.6% who show a neutral attitude. This indicates that not all LO are able to meet learning needs optimally. A needs analysis-based approach is needed to design LO that is more contextual, applicative, and in accordance with learning outcomes.

Furthermore, 91.4% of students want an LO that presents real and applicable examples. This shows that students need learning that is not only theoretical, but also relevant to real-world contexts. Problem-based learning approach (Problem-based learning) through LO can be an effective strategy, as expressed by (Savery, 2015).

The preference for interactive video and visuals that reached 77.1% strengthens the argument that LO should adopt a visual and multimedia approach. It is easier for students to understand the material through visual displays compared to text alone. This is in line with the theory Cognitive Theory of Multimedia Learning By, which emphasizes that learning will be more effective if information is conveyed through a combination of text, images, and sound (Mayer, 2002).

The data obtained also shows that 81.4% of students stated the need to develop LO-based teaching materials in LMS. This confirms that conventional learning with media such as PowerPoint (which still dominates 75.7%) has not been able to meet student expectations in the digital era. The disparity between student expectations and the media used today shows that there is a significant instructional gap.

In the end, the results of the study show that the difficulty in understanding the material is caused by the use of monotonous and inappropriate media (Figure 10) is the reason for the importance of immediately innovating learning media. An attractive, interactive, and contextual LO will not only increase understanding, but also students' motivation and active participation in the learning process.

CONCLUSIONS AND SUGGESTIONS

A. Conclusion

Based on the results of the study, it can be concluded that most students (65.7%) regularly access LMS and 81.4% of students follow a regular learning schedule. This can show that LMS has become an important part of student learning behavior and opens up great opportunities for optimizing the use of LO. As many as 70% of students did not have difficulty using the LMS feature and 81.4% felt helped by the LMS for independent learning. This indicates the technical readiness of users and great potential for the implementation of LO as a flexible and adaptive learning tool. As many as 67.1% of students feel that LO in LMS helps achieve learning goals, but there are still 28.6% who are neutral, indicating the need to improve the design and function of LO to be more contextual and effective. As many as 91.4% of students expect LO to present real and applicable examples, and 77.1% stated that it is easier to understand the material if it is delivered through videos or interactive visuals. This emphasizes the importance of a visual and real-life experience-based approach in LO development. As many as 75.7% of learning activities still use PowerPoint as the main medium. Meanwhile, the use of LO, videos, or interactive infographics is still very low. Students have a need for learning media that is more varied, interesting, and applicative. The majority of students admitted that they had difficulty understanding the material

because the learning media used was not appropriate and learning tended to be monotonous. This can be the reason for the need to improve the quality of teaching materials through the development of interactive and interesting LO.

B. Suggestion

Based on the results of the research, it is suggested that the development of LO on the LMS platform be carried out in a more structured and innovative manner by prioritizing interactive, visual, and applicative aspects. LO should be designed to support the achievement of learning objectives by integrating videos, animations, infographics, and simulations that suit the needs of students. In addition, the development of LO must consider the diversity of student learning styles and strengthen the material's connection with the real-world context, so that learning becomes more relevant, interesting, and meaningful.

REFERENCES

Almarashdeh, I. (2016). Sharing Instructors Experience of Learning Management System: A Technology Perspective of User Satisfaction in Distance Learning Course. *Computers in Human Behavior, 63*, 249–255.

Amelia, P., & Suranto. (2025). Transformation of Accounting Education through E-Learning Platforms The Role of LMS in Increasing Student Learning Effectiveness. *Jayapangus Press Cetta: Journal of Educational Sciences, 8*(1), 236-247. doi:https://doi.org/10.37329/cetta.v8i1.3947

Clark, R., & Mayer, R. (2023). *E-learning and the science of instruction: Proven guidelines for consumers and designers of multimedia learning.* John Wiley & Sons.

Fitriani, Y. (2020). Analysis of the Utilization of Learning Management System (LMS) as an Online Learning Media During the Covid-19 Pandemic. *JISICOM (Journal of Information System, Informatics and Computing), 4*(2), 1-8.

Hernández-Leo, D., Asensio-Pérez, J., Derntl, M., Pozzi, F., Chacon-Perez, J., Prieto, L., & Persico, D. (2018). An Integrated Environment for Learning Design. *Technology Report,* 1-19.

Kay, R., & Knaack, L. (2007). Evaluating the Learning in Learning Objects. *Open Learning: The Journal of Open, Distance and e-Learning, 22*(1), 5–28. doi:https://doi.org/10.1080/02680510601100135

Keiller, L., Alblas, A., Foiret, J., & Keiller, A. (2022). Interactive Learning Objects as a Solution to Challenges In Basic . *AJHPE, 14*(3), 129-134.

Mayer, R. (2002). Multimedia Learning. *Psychology of Learning and Motivation - Advances in Research and Theory*, 85-139. doi:https://doi.org/10.1016/S0079-7421(02)80005-6

Moleong, L. (2019). *Qualitative Research Methodology (Revised Edition).* Bandung: Remaja Rosdakarya.

Quiroz, G. V., & Muñoz González, L. (2020). Learning Objects in Online Education: A Systemic Approach. *European Journal of Education, 3*(2), 142-152.

Savery, J. (2015). Overview of Problem-Based Learning: Definitions and Distinctions. *Essential readings in problem-based learning: Exploring and extending the legacy of Howard S. Barrows, 9*(2), 5-15.

Sun, P., Tsai, R., Finger, G., Chen, Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & Education, 50*(4), 1183-1202. doi:https://doi.org/10.1016/j.compedu.2006.11.007

Wiley, D. (2000). Connecting Learning Objects to Instructional Design Theory: A Definition, A Metaphor, and A Taxonomy. *Learning Technology*, 1-35.

Wiragunawan, I. N. (2022). The use of the Learning Management System (LMS) in the management of online learning in educational units. *EDUTECH: Journal of Technology-Aided Education Innovation, 2*(1), 82-89. doi:https://doi.org/10.51878/edutech.v2i1.981