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Collaborative Learning Strategy with Learning Management System (LMS) Based Application in The Accounting Study Program

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***Abstract*—This research aims to develop a collaborative learning model utilizing an LMS (Learning Management System) based application in the Accounting Study Program. The research method employed is development research, which includes stages such as needs analysis, model design, development, testing, and evaluation of results. Data were collected through surveys, interviews, observations, and documentation related to the use of LMS-based applications in collaborative learning. The research findings indicate that the development of a collaborative learning model using an LMS-based application in the Accounting Study Program can create productive learning experiences by involving active interaction between lecturers and students to enhance understanding of the material and facilitate problem-solving. Additionally, the research results show that the use of LMS-based applications can provide learning autonomy, accessibility, and flexibility for students facing constraints during the learning process.**

***Keywords*—Educational Technology, Collaborative Learning, Learning Management System (LMS)**

I. INTRODUCTION

In the continually evolving digital era, information technology has transformed the learning paradigm across various fields. Educational institutions are transitioning from face-to-face learning processes to online learning. The societal mobility towards educational access is increasingly creating new opportunities for more practical and innovative learning media. The shift from traditional face-to-face learning to online learning is inseparable from a technological approach. The utilization of technology can aid in making learning easier, especially for students and professors requiring high mobility.

The use of technology in the educational process needs to be maximized with the development of technology and innovation, various digital learning platforms have emerged to facilitate mobility in learning. The educational transformation has altered the learning process, making online and offline learning services more accessible. The introduction of Learning Management Systems (LMS) has become popular in educational institutions, enabling students to access learning more flexibly, both on and off campus. The implementation of this system is beneficial for students to engage in interactive learning and connect. It also facilitates professors in enhancing student learning outcomes through collaborative learning.

The lack of learning access and communication between students and professors remains a significant challenge. Schedule congestion, workload demands, time constraints, distance, and various technical issues can lead to gaps that hinder the learning process. On the other hand, constantly changing curricula and teaching methods pose a challenge for educators to adapt to students' preferences and learning styles. Students need a more relevant learning approach aligned with current conditions. Additionally, the lack of active engagement between students and professors during the learning process can impede the success of the learning experience.

Collaborative learning is a learning approach that emphasizes the active role of individuals and groups in a learning forum. Collaborative learning can be applied in both offline and online learning settings by leveraging technology. The collaborative learning model involves guidance from instructors to learners through communication tools such as discussion forums, chat rooms, email, websites, and mobile phones. Collaboration between instructors and learners fosters social interaction, aids in deepening understanding of the material, and promotes problem-solving, project-based learning, and other activities.

According to Douglas, Lane, and Colasante (2014), there are four considerations in designing and implementing collaborative learning models, including curriculum determination, planning and communication objectives, time and energy costs, and potential.

According to Supri Wahyudi Utomo (2023), students need to be prepared for dynamic changes in the digital era, where learning innovations can create competition and opportunities to replace human roles with the latest technology. Learning innovations in the digital era can refer to the design, models, methods, and instructional materials integrated with technology. The implementation of the MERDEKA curriculum, Problem-Based Learning (PBL), and LMS platforms have proven to be suitable for enhancing self-directed learning, critical thinking, creativity, and problem-solving.

According to Jared M. Carmen in Charles & Graham (2005), combining conventional learning with self-paced learning enables students to learn anytime, anywhere using specially designed content (teaching materials). These learning materials can be delivered online via the web or mobile devices in the form of e-books, streaming videos, streaming audio, and others, as well as offline in the form of hard copies or CDs/DVDs.

Based on the research conducted by Priyanka (2023), the majority of students face challenges in online learning due to a lack of access to information and network limitations. However, some also consider online learning more efficient as it can save time and address issues for students who are unable to reach a physical location, especially those who are working. The study concludes that both offline and online learning models have their shortcomings, but over time, almost all institutions utilize technology to support learning.

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According to Douglas, Lane, and Colasante (2014), there are four considerations in designing and implementing collaborative learning models, including curriculum determination, planning and communication objectives, time and energy costs, and potential. Based on the background, the goal of this research is to evaluate the extent to which the Learning Management System (LMS) application in a collaborative learning approach can influence students' abilities to master both the practical and theoretical aspects of accounting. Due to the lack of access to collaborative learning platforms complementing face-to-face and online learning, this research will explore a learning model capable of improving the learning performance of accounting students at Wira Bhakti University.

II. RESEARCH METHODS

The research method employed is development research, which includes stages such as needs analysis, model design, development, testing, and evaluation of results. Data were collected through surveys, interviews, observations, and documentation related to the use of LMS-based applications in collaborative learning.This study sampled 65 respondents randomly selected from accounting program students. The information-gathering process was assisted by a lecturer from Wira Bhakti University to assess or measure students' tendencies towards predetermined indicators. The aspects or indicators assessed include self-directed learning, feedback, learning models, and tools or learning platforms.

III. RESULT AND DISCUSSION

A. Flowchart of Learning Management System

The research design describes how the LMS-based application is used as a learning platform to support a collaborative learning model in both online and offline classes. Students will be given access as users or participants to log into the platform, and then select classes according to the schedule to join the classroom. If the class is conducted online, students can access the link that appears to join the discussion forum. Meanwhile, for offline classes, students can access modules and assignments anytime to supplement what was covered during online learning. The lecturer, serving as a facilitator, will coordinate the learning process, including taking attendance, scheduling classes, providing study materials (modules), and scoring assignments.

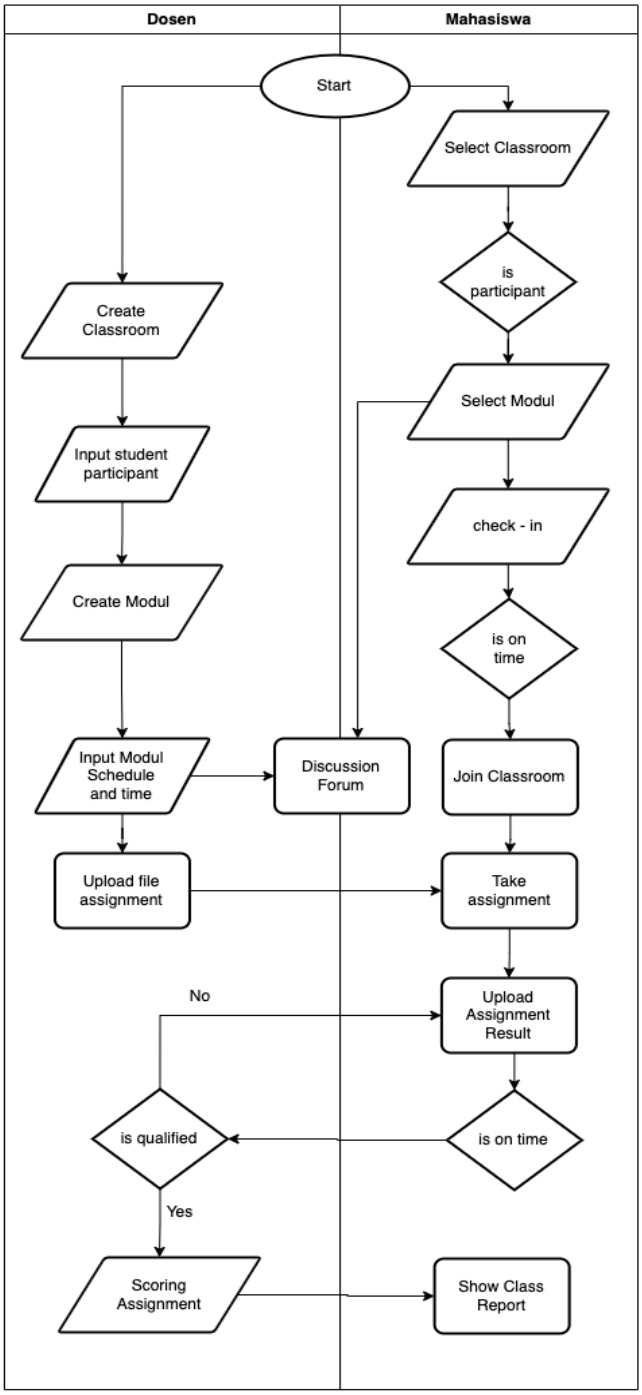

Fig. 1. Flowchart of Learning Management System

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B. The Application Testing

Researchers create a user interface design according to the system development model using a mobile application. This application can be utilized by both lecturers and students in offline and online learning activities. The application can only be used when connected to the internet. Here are the steps for testing the application by the instructor (lecturer) or students:

1. The first step is for the instructor or student to register with the system to have an account, then access the login page on the application by entering their NIDN/NIM and password.

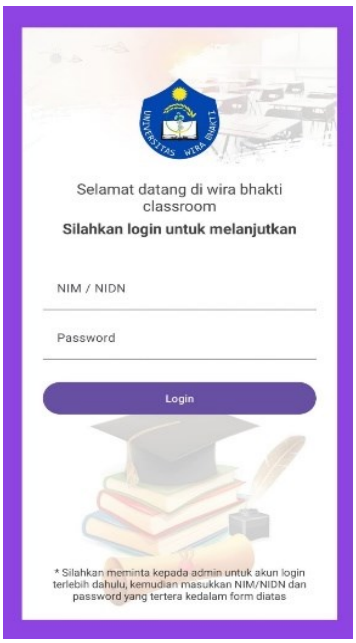

Fig. 2. Log in System

2. After successfully log in system, the instructor can create a new classroom so that students can join the class as participants.

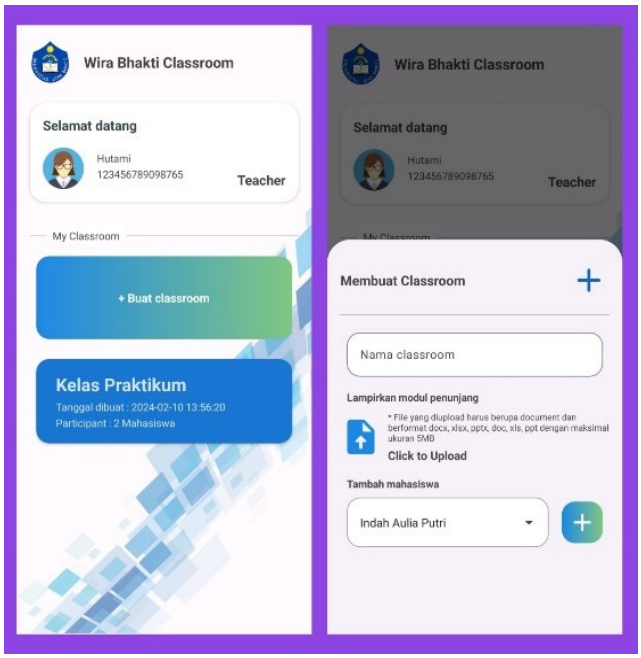

Fig. 3. Create a Classroom and add Participants

3. The instructor provides teaching materials such as learning modules, fills in brief information about the upcoming meeting's content, adds links (for access to online learning), fills in the date, selects the start and end times, and then students can attach assignments by clicking to upload.

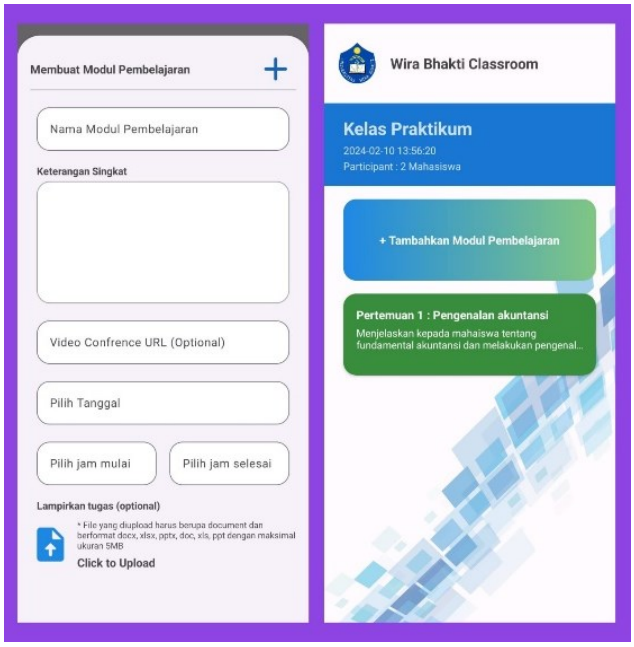

Fig. 4. Set a schedule, meeting content, and add a link

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C. Evaluations(Assessment)

The results of the indicator assessment are presented in the form of a diagram to determine the percentage of effectiveness of the collaborative learning model using the LMS-based application in the accounting study program.

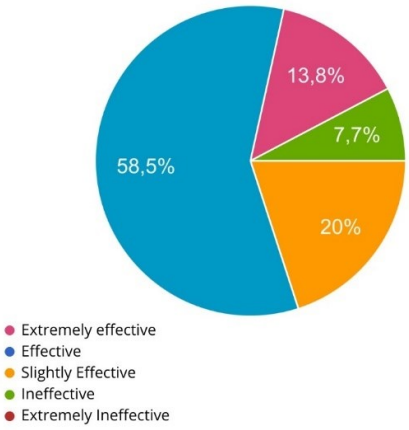

Fig. 5. Diagram of Slef-Directed Learning

The self-directed learning indicator aims to assess how effective the collaborative learning model using the LMS-based application is when applied to the accounting study program. This aspect is evaluated based on the student's ability to absorb information and understand the material. Students should also be capable of self-regulation, managing their available time, devising learning strategies, seeking references, and solving problems. The research results show that students who stated "Extremely effective" amounted to 13.8%, and those stating "Effective" were 58.5%. Meanwhile, those who stated "Slightly Effective" were 20%, and "Ineffective" was 7.7%. This indicates that the majority of students have effectively reflected on their learning experiences using the collaborative learning model through the LMS-based application. However, some other students may still lack proficiency in utilizing the LMS-based application in their learning process. It raises questions about how learning can be improved and how these experiences influence their self-directed learning.

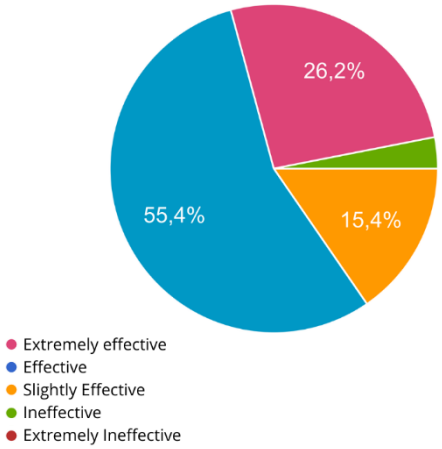

Fig. 6. Diagram of Feedback

The feedback indicator aims to assess how effective the collaborative learning model through the LMS-based application is in providing feedback from students to the instructor (professor) and vice versa. This indicator is evaluated based on the amount of information received that is later corrected or responded to through the given answers. The research results show that students who stated "Extremely effective" were 26.2%, and those stating "Effective" were 55.4%. Meanwhile, those who stated "Slightly effective" were 15.4%, and "Ineffective" was 3%. This indicates that the majority of students can provide effective feedback in the implementation of the collaborative learning model through the LMS-based application. This collaborative learning model facilitates communication, cooperation, and the exchange of ideas or arguments among students. However, there are still some students categorized as slightly effective, which may be attributed to the lack of active participation by students in the learning process, both offline and online.

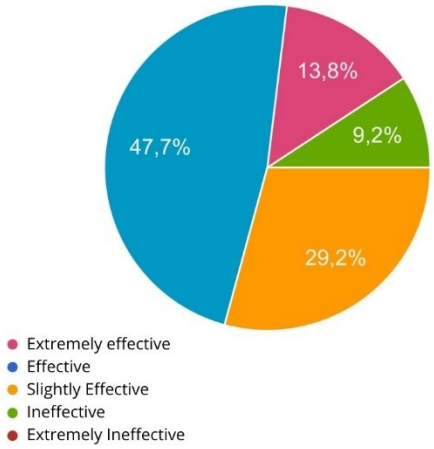

Fig. 7. Diagram of Learning Model

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The learning model indicator aims to assess the effectiveness of the LMS-based application for both offline and online learning. This learning model provides opportunities for students to access lectures easily and reduces barriers that may occur during the offline and online learning processes. The existence of a learning application or platform can enhance the flexibility, accessibility, and overall effectiveness of learning. The research results show that students who stated "Extremely effective" were 13.8%, and those stating "Effective" were 47.7%. Meanwhile, those who stated "Slightly Effective" were 29.2%, and "Ineffective" were 9.2%. The ease of access to collaborative learning provides space for students to manage their study time according to the learning situation and environment, schedule changes, and teaching methods.

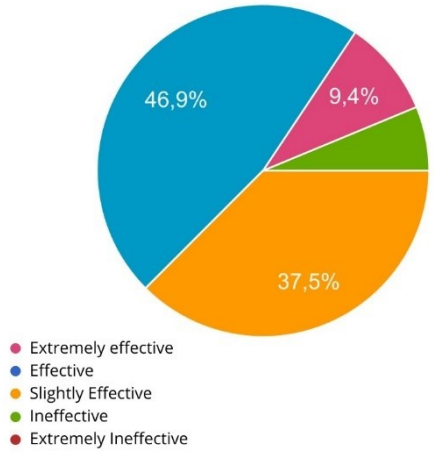

Fig. 8. Diagram of Application Tools

The application tools indicator aims to assess how effective the features of the LMS-based application platform are in supporting collaborative learning activities. The assessment of this indicator considers the needs and learning objectives, including the availability of features such as creating agendas, student attendance lists, modules, discussion forums, document sharing, and learning evaluations. The research results show that students who stated "Extremely effective" were 9.4%, and those stating "Effective" were 46.9%. Meanwhile, those who stated "Slightly Effective" were 37.5%, and "Ineffective" were 6.2%. Overall, it can be concluded that many students still face challenges in their experience using the features of the LMS-based application. This may be due to a lack of information or guidance on the application usage procedures, necessitating video tutorials or direct consultations regarding how to access and use the features within the application.

ACKNOWLEDGMENT

Through cooperative learning, professors and students are interconnected in a system, collaborating in a learning forum to conduct organized cooperative learning. This theory supports collaborative learning that involves cooperation between students and professors through a learning management system. The development of a mobile application based on LMS provides easy access with the assistance of supporting features on the platform. Educational institutions can leverage the use of Learning Management Systems (LMS) as a tool to support self-directed learning and evaluate learning outcomes. The research implications can be re-examined in other fields of study to assess the effectiveness of collaborative learning models using the latest technological innovations.

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