



Research in Engineering Education Symposium (REES)  
Regional Conference in Engineering Education (RCEE)  
& Research in Higher Education (RHed)  
September 29 – October 3, 2025  
Johor, Malaysia



# **Evaluation of the Influence of Learning Management System (LMS) Actions on the Performance of Masters and Bachelors Students (Case Study of Professional Ethics, Information Technology Regulation and Intellectual Property and Cyber Law and Ethics Courses)**

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## **ABSTRACT**

### **BACKGROUND & CONTEXT**

Higher education has an important role in equipping students with knowledge, skills, and experience to contribute positively to society, this function is assisted by LMS as a platform to help its implementation.

### **PURPOSE OR GOAL**

This study examines the factors that influence student performance through assessments in Cyber Ethics Law and Professional Ethics courses.

### **APPROACH OR METHODOLOGY**

With the Action Research method using the Think Pair Share approach, an iterative process including learning modules in the LMS, quizzes, discussions, oral tests, and simulations of SKCK procedures was carried out.

### **OUTCOMES**

The results show differences in performance between undergraduate and master students. Passive understanding of the RPS and materials requires further evaluation, Quizzes show an increase in master students but decrease in undergraduate students. Discussions and oral tests reveal variations in individual and collaborative skills. Simulation of the SKCK experience shows higher engagement and understanding in postgraduate students.

### **CONCLUSIONS**

This study provides insight into optimizing learning methods and tools for student performance as seen from several dimensions such as methods, actors, and division of tasks, so that they can be refined for future research.

### **KEYWORDS**

Student Performance, Think-Pair-Share, LMS.

## Introduction

Higher education plays a vital role in equipping students with the knowledge, skills, and experiences needed to contribute positively to society (Pee & Vululleh, 2020). Higher education institutions serve as centers of knowledge development, providers of education that combine theory and practice, and promote social justice by providing greater access to education. In addition, higher education innovation and building relationships with communities, contribute to research and innovation, and play a role in the development of educational and social policies. These functions are interrelated and support individual development and overall social progress as noted by Brennan & Teichler (2008).

One indicator of the success of higher education highlighted by Alyahyan & Düşteğör (2020) is Student Performance, which reflects the quality of education, support services, and learning environments provided. Student performance is a component of learning in higher education. Various indicators of academic achievement are gaining knowledge and developing skills and self-development, academic grades, cognitive skills, and study habits (Iqbal et al., 2021).

In accommodating student performance and activities in lectures with various models such as blended learning, Sitompul et al. (2022) proposed a digital platform is needed to facilitate students in carrying out lectures, namely by using a Learning Management System (LMS). LMS is a technology developed to improve the learning process through proper planning, implementation, and evaluation in educational institutions.

The use of LMS in the learning process helps facilitate e-learning because it provides educational materials without time or place restrictions, allows students and teachers to interact via the internet and facilitates the sharing of information and resources related to courses (Raza et al., 2021). This platform facilitates the implementation of lectures due to the 2019 Covid pandemic (Bhadri & Patil, 2022).

This study will focus on factors that influence student performance through assessment forms such as discussion results, quiz results, and assignment submission. These factors were chosen because they represent the main elements of student experience in an educational institution, especially in the context of technology-based learning through the Learning Management System (LMS). Previous studies have shown a relationship between these components and academic performance. However, research that comprehensively connects all of these components is still relatively limited.

In a study by Louis Cohen & Morrison (2018), the Action Research method was used with the Think-Pair-Share approach (Salim & Disman, 2023). The approach involves a series of iterations designed to systematically enhance student engagement and learning outcomes. Through iterative cycles of implementation and reflection, students were exposed to varied instructional formats, including discussions and LMS supported collaborative activities. Within the blended learning context, the method effectively expanded interaction opportunities for master's students that enable them to discuss with peers unconstrained by physical distance.

Likewise, in this study Action research was also used to see the complexity through the CLO in the course and the perspective of Bloom's taxonomy of learning that can be accommodated through the LMS. The iterative process in the action research that will be carried out includes discussions based on the Semester Learning Plan (RPS), where students are involved in structured group discussions with the RPS as the main guide.

In addition, students will also learn independently through digital materials provided in the LMS, where they will study the material passively. The next activity includes activating students through quizzes held on the quiz platform, as part of the formative evaluation.

In the next stage, students will work collaboratively on tasks facilitated by the LMS, which aim to improve digital collaboration and interaction skills. After that, students are tested through an oral test to assess their understanding of the material that has been studied in depth.

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The Action Research method used by Louis Cohen & Morrison (2018) with the Think-Pair-Share approach by Salim & Disman (2023) was adopted in this study. This approach involves a series of iterations designed to increase student engagement and performance in the learning process. Each iteration provides students with the opportunity to participate in various learning formats, from discussions to collaborative activities that utilize the LMS. This method also helps master's students with the blended learning model get discussion partners who are not limited by distance. Action research was also used to see the complexity through the CLO in the course and the perspective of Bloom's taxonomy of learning that can be accommodated through the LMS. The iterative process in the action research that will be carried out includes discussions based on the Semester Learning Plan (RPS), where students are involved in structured group discussions with the RPS as the main guide.

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Furthermore students will conduct a simulation of SKCK management as part of enrichment experience, where they can apply practical understanding in the context of the Cyber Law and Ethics course in the Masters class of Information Systems and Professional Ethics, Information Technology Regulation and Intellectual Property as well as in the undergraduate class of Information Systems. This course was chosen related to the deep dimensions of its application which are not only in its science but require direct practice in the field to see how the application of legal and ethical understanding to the behavior and actions taken. Therefore several iterations will later be used to accommodate the existing assessment process. This is in line with Moral education initiated by the Indonesian nation (Sari et al., 2023) in the era of rapid internet progress today (Oktaviani et al., 2022). So that from the practice carried out, the depth and breadth of CLO and Bloom's taxonomy that students will get are obtained.

This research was conducted in the context of the Cyber Law and Ethics course along with Professional Ethics, Information Technology Regulation and Intellectual Property by involving Bachelor and Master students in Information Systems as the main data source. By focusing on various aspects of the learning process involving LMS, this study aims to see the extent to which non-academic factors affect student grades which are then referred to as student performance. It is hoped that this study can provide insight for educational institutions to optimize the learning process and services they offer, as well as contribute to the development of more effective and inclusive technology-based education.

## **Literature Review**

### **Action Research**

Action Research is a very useful tool for promoting change and improvement at the local level. The work of Kurt Lewin, considered one of the founders of action research, was designed to bring about positive change in the lives of disadvantaged groups, especially in terms of housing, employment, prejudice, socialization, and training (Adelman, 1993). According to Lewin, action research is practice-based because it focuses on learning and knowledge creation. It is also considered value-laden, educational, collaborative, critical, risky, and always

political. Lewin provides much advice for researchers working in this mode, including the importance of reflection and direct involvement in the change process (Louis Cohen & Morrison, 2018).

Action research can be applied to almost any situation involving people, tasks, and procedures that require solutions or changes to achieve better outcomes. Action research is not only focused on solving existing problems but can also include developing specific areas of interest for improvement or enhancement. The research can be conducted by individuals, groups of teachers working together in a school, or even by researchers working together with other stakeholders, such as advisors or university departments. This emphasizes the collaborative nature of the research, which often involves researchers and participants working together in an ongoing relationship.

### **Think-Pair-Share**

Think-Pair-Share (TPS) is a cooperative learning strategy designed to increase student participation and engagement in the learning process. This method was first developed by Frank Lyman and his colleagues at the University of Maryland in the early 1980s. This strategy consists of three main stages: think, pair, and share. In the first stage, students are asked to think individually about a question or problem given by the teacher. Then, in the second stage, they pair up to discuss their answers or thoughts. The final stage involves sharing the results of the pair discussion with the class as a whole (Singh et al., 2021).

One of the main advantages of TPS is its ability to give students more time to think and reflect before they have to speak or share their thoughts. This not only helps students to develop a deeper understanding but also increases their confidence in participating in class discussions. TPS allows students to think critically and be more involved in the teaching and learning process because they have time to reflect and discuss with their partners before sharing their thoughts with the whole class.

Research conducted in various educational contexts shows that TPS can improve various aspects of learning, including students' mathematical communication skills and learning outcomes. For example, research by Tarigan (2022) at SMP Negeri 1 Tigabinanga found that the implementation of TPS significantly improved students' mathematical communication skills. This study showed an increase in the average score of students' mathematical communication skills from the first cycle to the second cycle, which confirms the effectiveness of the TPS strategy in improving student engagement and learning outcomes (Tarigan, 2022). However, the implementation of TPS also has challenges, such as the need for effective classroom management and teacher readiness to manage discussions that occur in the classroom. However, with good preparation and adequate training, TPS can be a very effective tool to increase students' active participation and help them develop a deeper understanding of the subject matter. As a learning strategy that combines cognitive and social aspects, TPS has great potential to be used in various disciplines and levels of education.

### **Justification**

The issues and research trends raised from this study cover various important aspects in technology-based education starting from the rapid implementation of online learning due to the 2019 COVID pandemic that occurred, which intervened educational institutions to immediately use online platforms such as LMS (Szopiński & Bachnik, 2022), which will be related to One of the issues is a comprehensive approach to evaluating student academic performance which was initially offline to a combination of online with the use of the Learning Management System (LMS) platform (Delgado et al., 2020), by integrating various components such as discussion results, quizzes, attendance, and assignment submission. In addition, innovation in learning methods through Classroom Action Research (CAR) is an important trend that increases student involvement iteratively, by using the Think-Pair-Share approach through collaborative activities (Salim & Disman, 2023) so that this study also shows a trend in the use of LMS to encourage collaborative learning through interactive discussions, group

assignments, and iteration-based oral evaluations, this study contributes to the measurement of practical skills through simulation activities, such as SKCK management, which directly connects theory with real skills that are relevant in the world of work and socializing with law enforcement officers.

Courses based on ethics and technology law such as Cyber Law and Ethics and Professional Ethics, Information Technology Regulation and Intellectual Property were chosen. The contextual focus on this interdisciplinary course reflects a new trend in the development of learning that is relevant to the world of work. On the other hand, the issue of inclusive and technology-based education is a trend that emphasizes the development of learning models that not only support academic performance, but also students' practical and collaborative skills that need to be accommodated in the courses that will be the subject of this research.

## Methods

This study was designed with a qualitative method. The use of qualitative methods in this study is to use action research with the Think-Pair-Share approach. Action Research is a qualitative research method that focuses on problems in a social system, such as schools, organizations, or communities. The main goal is to gather knowledge and take action to overcome problems in the social system.

This study uses a qualitative approach with the action research method to explore how the Learning Management System (LMS) plays a role in improving student performance, both in terms of academic grades and non-academic factors. The research process begins with an in-depth understanding and analysis of the problems that occur in the subjects and objects of research (see Figure 1). At this stage, researchers collaborate with students to identify relevant problems and formulate specific action plans.

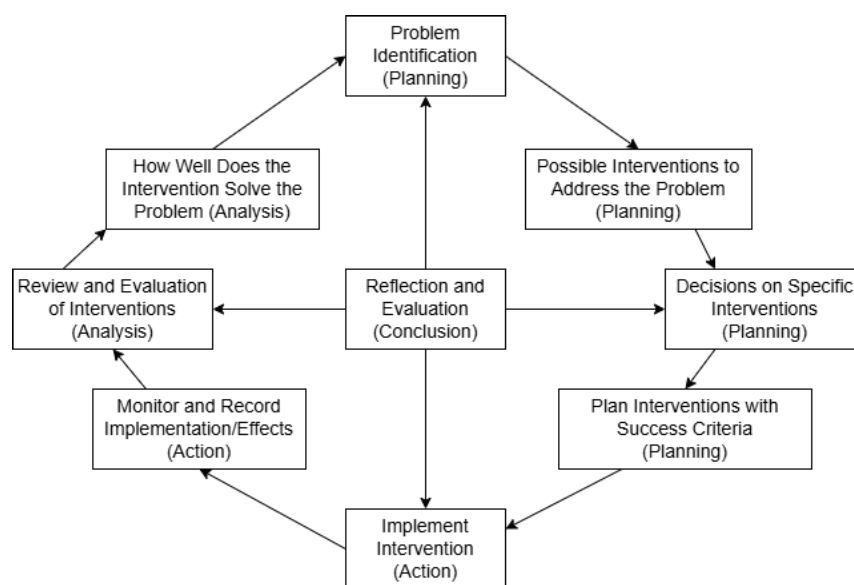


**Figure 1: Action research plan**

Referring to the guidelines from IS 2020 (The Joint ACM/AIS IS2020 Task Force et al., 2021), this study emphasizes the importance of effective communication, both verbally and in writing, in the context of higher education, so that students can interact optimally in a technology-based learning environment.

The Think-Pair-Share approach was chosen as a strategy to facilitate discussion and collaboration between students, especially in the context of master's and undergraduate classes that implement a blended learning model. This study involved a series of interventions

designed to create an interactive and collaborative learning experience. The interventions included group discussions, collaborative activities, and practical experiences, such as the creation of SKCK, which were synchronized with Course Learning Outcomes (CLO) and Bloom's taxonomy. In this way, the study aimed to activate various dimensions of student learning, including cognitive, psychomotor, and affective aspects, so that they could develop a deeper understanding of the material being taught.

Success indicators were set for each iteration, with data collection conducted through LMS logs, quizzes, and group discussions. Each iteration (see Figure 2) was designed to trigger student understanding at different levels, from basic understanding to practical application. After data collection, analysis was conducted to evaluate the effectiveness of the interventions that had been implemented, as well as to determine which interventions were most suitable and effective for undergraduate and postgraduate students. Thus, this study is expected to provide valuable insights for the development of better and more inclusive technology-based education.

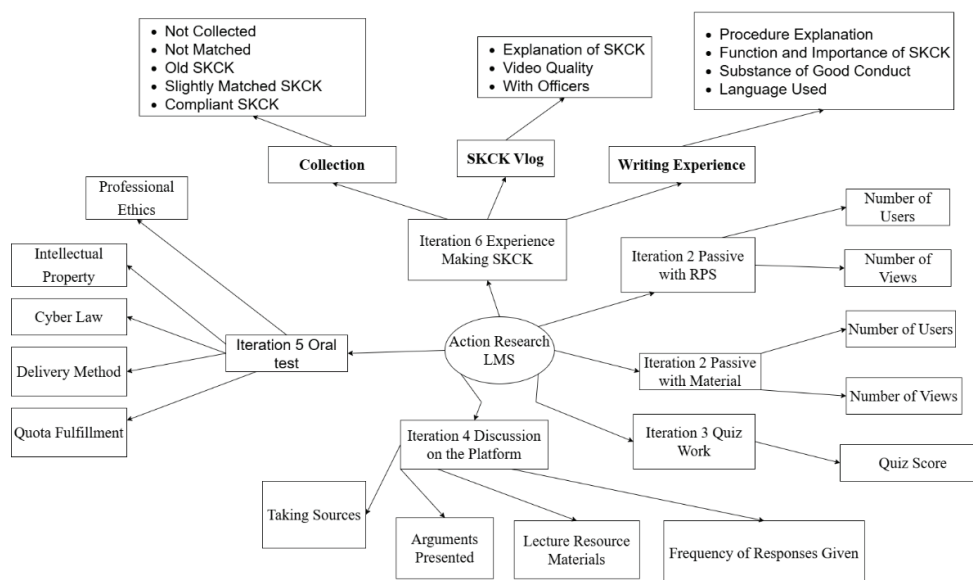


**Figure 2: Step of data collecting with iteration**

LMS functions as the main platform successfully accommodating the entire learning process in the iterations carried out in class. In undergraduate classes, students are less interested in checking the materials and RPS given, they are more focused on the assignments given (as evidenced by the number of comparisons of access to materials and RPS which are less than assignments), this also happens to postgraduate students. In Quiz, students prefer the LMS platform to other platforms such as Quizizz, because undergraduate and master students are already familiar with the LMS platform. In discussion assignments and oral tests, students LMS helps the discussion process because it makes it easier to exchange opinions with their friends through the forum. In the SKCK making assignment, students only use LMS as a place to share experiences and submit assignments, but in terms of performance, master students have a higher average score than undergraduate students in submitting SKCK.

By implementing the iteration above, there are several iterations that are less effective that can be changed by considering the mapping from the perspective of Bloom's Taxonomy and the complexity of CLO in the course so that it can be an evaluation in the future such as in iterations one and two can use the quiz model to understand the material because the access is more than RPS and material because Quiz still accommodates the same Bloom's Taxonomy and CLO, this is supported by data and arguments from students who more often access the assignments or quizzes given.

Figure 3 summarizes the description of the mapping of student performance, Bloom's Taxonomy, and CLO from the research that has been done.

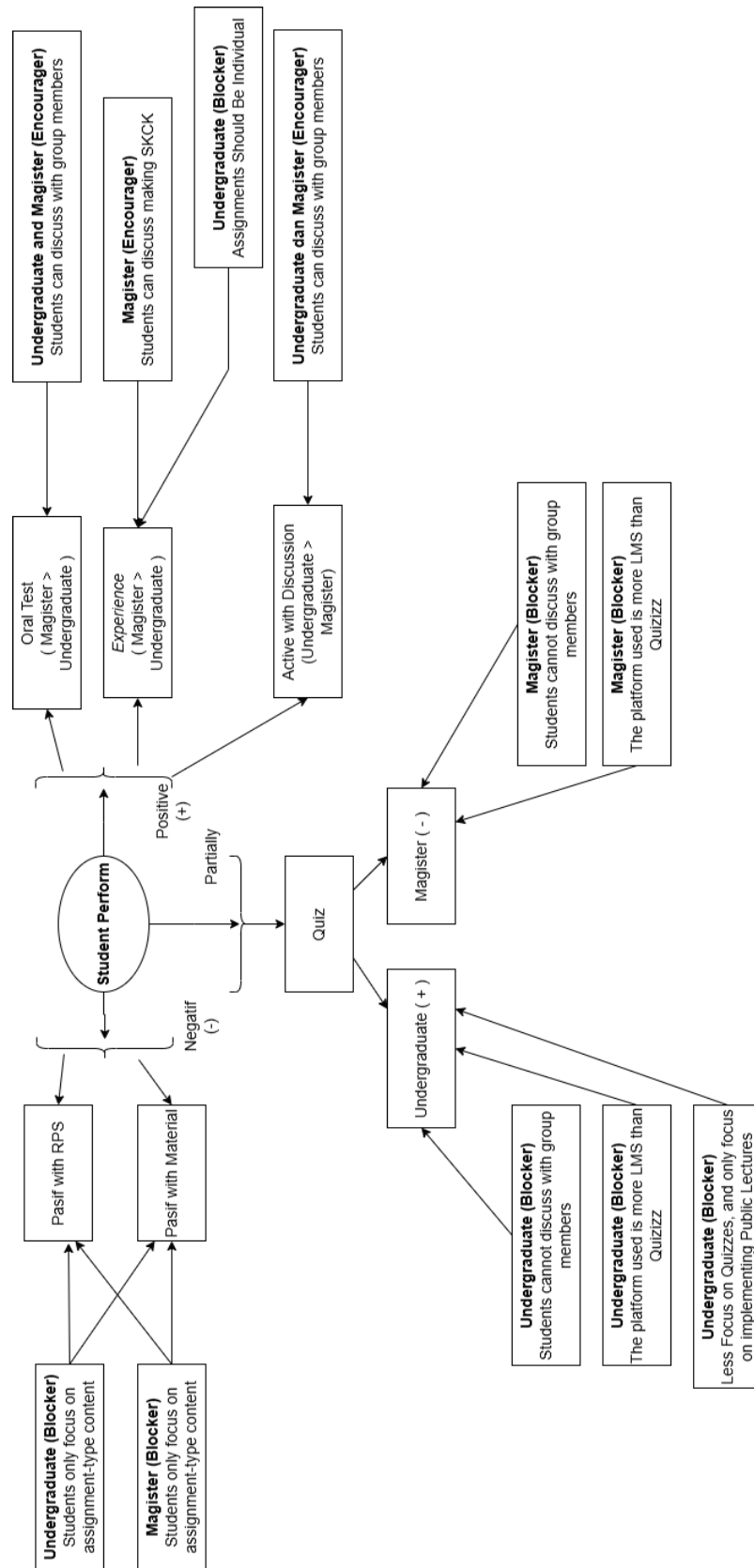


Figure 3: Mapping student's performance

## Results

The Think-Pair-Share method in the context of PTK has various influences on student performance and involvement. The following are factors that influence students from the assessment given at each iteration:

## **Positive Aspect**

### *Increasing Involvement in Discussions and Oral Tests*

This method and LMS facilitate students to exchange ideas, discuss, and complement each other, thus enriching the insight and understanding of both undergraduate and master students, especially in the Masters study program because the blended learning model allows students to get partners to discuss in helping to complete the assignments given so that the scores obtained by master and undergraduate students are quite high compared to quizzes.

### *Helping Conceptual Understanding*

In assignments such as oral tests and discussions, think pair share helps undergraduate and postgraduate students to elaborate on their understanding.

## **Negative Aspect**

### *Less Effective in Quizzes*

Because quizzes are individual, the implementation of think-pair-share is actually considered unhelpful in its implementation, the implementation of quizzes in general lectures makes students focus more on listening to the material than doing quizzes so that in terms of performance, the average quiz score for undergraduates has increased from the pre-test and post-test, but for masters it has decreased.

### *Effectiveness Depends on the Type of Task*

In the assignment of making SKCK, the effectiveness of think-pair-share differs between undergraduate and master students, for undergraduate students it is not very helpful, but for masters it is quite helpful because of their busy time in blended learning lectures so that with its tone partners can help with assignments better. This shows that this method is not always effective for all types of assignments such as Quizzes which are also not very helpful for Bachelor and Master students. From the comparison of data, it also affects the results of masters who collect more SKCKs than undergraduates.

## **Conclusion**

LMS functions as the main platform successfully accommodating the entire learning process in iterations implemented in class. In undergraduate classes, students are less interested in checking the material and RPS given, they are more focused on the assignments given (as evidenced by the number of comparisons of access to material and RPS which are less than assignments), this also happens to postgraduate students. In Quiz, students prefer the LMS platform to other platforms such as Quizizz, because undergraduate and master students are already familiar with the LMS platform. In discussion assignments and oral tests, students LMS helps the discussion process because it makes it easier to exchange opinions with their friends through the forum. In the assignment of making SKCK, students only use LMS as a place to share experiences and submit assignments, but in terms of performance, master students have a higher average score than undergraduate students in submitting SKCK.

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