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Implementation of Learning Management System (LMS) in mathematics learning

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Implementation of Learning Management System (LMS) in mathematics learning

T S Hadi[1*], Z Mastur[2], Wardono[3] and Khotimah[4]

[1]Doctoral Students of Graduate School Universitas Negeri Semarang
[2,3]Department of Mathematics, Faculty of Mathematics and Science Universitas Negeri Semarang
[4]Universitas Serang Raya

*Corresponding author: tubagusaja31@students.unnes.ac.id

Abstract The world of education during a pandemic is forced to use an online learning system. This is evidenced by the issuance of regional and central regulations relating to online learning rules. There are many platforms that can be used to do online learning, one of which is edmodo. The edmodo platform can be used more flexibly with the help of laptops and cellphones that students often use, besides that, it does not require much quota. The research method used is a mix method by combining quantitative and qualitative methods. The population of this study is students from University of Serang Raya. The object of the research was students of civil engineering, unsera in engineering mathematics courses. The result of this research is that the experimental class is better than the control class in terms of the mean value. The application of learning uses a learning management system, namely students upload assignments, download material, collect assignments and ask questions in the comments column related to the material provided by the lecturer.

1. Introduction

Education in a state of the Covid-19 pandemic has decreased in terms of the quality and motivation of student learning, especially because lectures cannot be done face-to-face (directly), but must use electoric media (e-learning). Many media that can be used to minimize these difficulties, namely electronic-based learning, namely by cellphone, radio and others. Learning can also use website media to transfer knowledge and knowledge in the world of education. The website used is very diverse and varied, this learning model is often called LMS-based learning (learning management system). Websites that can be used include schoology, google meet, google classroom, or the university's internal LMS. The purpose of implementing this LMS is to make it easier for lecturers to provide knowledge and make lectures more flexible and not limited by time. In its application, learning with the help of LMS can also measure creativity and learning outcomes for students. Students are able to express opinions directly on the learning process and can ask questions without having to hesitate and be embarrassed. Students are given the opportunity to discuss with their friends who are in their respective residences [1].

The flexible learning process can determine the level of student learning outcomes towards mathematics learning. Learning outcomes are still the main point in the learning of each subject and

provide the greatest contribution to a student's study results. Learning outcomes are the most important part of learning. Nana Sudjana (2009: 3) defines student learning outcomes as behavioral changes as a result of learning in a broader sense covering the cognitive, affective, and psychomotor fields. Dimyati and Mudjiono (2006: 3-4) also state that learning outcomes are the result of an interaction of learning and teaching actions. From the teacher's side, the teaching act ends with a process of evaluating learning outcomes. From the student's point of view, learning outcomes represent the end of teaching from the top of the learning process. With high learning outcomes, the final grade can also be proud of. In addition to learning outcomes, by applying this LMS, students are more flexible in looking for material references by browsing material on the internet and being able to search for more diverse questions [2].

E-learning is an educational system or concept that utilizes information technology in the teaching and learning process. Here are some meanings of E-learning from various sources: (a). Learning is structured with the aim of using an electronic or computer system so that it is able to support the learning process 2013: 27 [3], (b) The distance learning process combines the principles of the learning process with technology 2010 [4], (c) The learning system is used as a means for the teaching and learning process which is carried out without having to meet face to face directly between teachers and students 2013[5].

LMS-assisted learning is using the edmodo platform, students can fulfill lecture assignments given by the lecturer without having to come to meet the lecturer, students simply upload the assignment to the LMS that has been determined. In addition, exams both midterm and final semester exams can also be done and students can learn using learning videos either from YouTube or from other websites [6]. Based on this description, this research aims as follows: (a) Are the student learning outcomes using better than conventional students?, (b) How is the implementation of LMS with the Edmodo platform in learning?

2. Methods
This study uses a mix method by combining quantitative and qualitative to determine the results. according to Sugiyono (2011: 18) mix methods is a research method by combining two research methods at once, qualitative and quantitative in a research activity, so that more comprehensive, valid, reliable, and objective data will be obtained. The technicality of this research is to prioritize quantitative and followed by qualitative to describe the results of data processing obtained from the results of the study. The population of this study were all civil engineering students at the University of Serang Raya taking Mathematics courses. The sample in this study were 30 students of class A1 and 34 students in A2 [1].

The data analysis techniques used in this study included testing the validity and reliability of the data. The next step is to test the normality of the data and test the difference between the two classes. The difference test was conducted to determine the difference in learning outcomes between the experimental class and the control class [2].

3. Results and discussion
The first step in analyzing the data of this study was to test the description of the learning outcome data from the experimental and control classes. For the experimental class the average student learning outcomes at the pretest was 72.94 while the posttest score was 75.94. For the standard deviation value at the pretest was 2.35 while at the posttest the standard deviation value was 3.67. Whereas in the control class the average student learning outcomes was 70.23, while for the posttest score was 70.27 [1].

Table 1. T-test analysis (one-sample test)

| | Test Value = 0 | | | | | |
| | | | | | 95% Confidence Interval of the Difference | |
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
control	14.096	31	.000	17.90625	15.3155	20.4970
experiment	18.351	31	.000	23.93750	21.2771	26.5979

The results of the SPSS output show that the t value in the experimental class is 18.35 while the t value in the control class is 14.096. Based on these results the t value of the experimental class is greater than the control class. From these data, the experimental student's condition is better than the control class, where the experimental class of students is given learning using LMS (learning management system) while the control class applies conventional learning. Judging from the process of submitting assignments, students are more punctual and complete the given questions well. By using LMS, students can also ask questions to lecturers more flexibly and without knowing space and time. Lecturers in responding to student questions can be done under any circumstances [2].

However, there are several obstacles that arise from this LMS-assisted learning, namely constrained by the signal which sometimes goes up or down, especially in rural areas that have less signal coverage. Students complain and ask for consideration for submitting assignments, the consideration in question is only asking for policies for submission time. However, by utilizing this LMS, students are helped so that the knowledge transfer process can still be carried out by lecturers. All lecture activities are carried out using the LMS. Activities carried out by students are uploading assignments, downloading materials, collecting assignments and asking questions in the comment's column related to the material provided by the lecturer [3].

4. Conclusion
Based on the results of data processing, the conclusions in this study are as follows:
1. The learning outcomes of the experimental class were better than the control class in terms of the t test results and the mean value obtained by students [1].
2. The application of learning uses a learning management system, namely students upload assignments, download material, collect assignments, and ask questions in the comments column related to the material provided by the lecturer [2]

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