Effectiveness of LMS Assisted by Schoology on Parabolic Motion on Learning Outcomes of Health Vocational Students

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Abstrak: Penelitian ini bertujuan untuk mengetahui efektifitas Learning Management System (LMS) berbantuan Schoology pada materi parabola terhadap hasil belajar siswa di SMK Bhakti Indonesia Medika Pacitan. Jenis penelitian yang digunakan adalah pre-eksperimental design dengan one group pre-test post-test design. Sampel penelitian ini adalah siswa kelas X SMK Kesehatan Bhakti Indonesia Medika Pacitan. Analisis data dalam penelitian ini menggunakan One-Sample T-Test dengan SPSS 23. Berdasarkan hasil penelitian didapatkan rata-rata persentase peningkatan hasil belajar siswa yang menggunakan skoologi berbantuan LMS pada materi parabola adalah 25%. Dengan menggunakan One Sample T-Test, sig. (2-tailed) Nilai $0,000 < 0,05$, secara statistik ada perbedaan antara sebelum dan sesudah menggunakan Schoology berbantuan LMS. Hasil angket usability menunjukkan bahwa rata-rata untuk setiap aspek adalah 79% (kemanfaatan), 67,2% (kemudahan penggunaan), 67,50% (kemudahan belajar), dan 64% siswa puas (kepuasan).

Kata kunci: Manajemen system pembelajaran, Schoology, Gerak parabolik, hasil belajar, blended learning, kognitif siswa

Abstract: This study proposed to determine the effectiveness of the Learning Management System (LMS) assisted Schoology on parabolic material in student learning outcomes at the SMK Bhakti Indonesia Medika Pacitan. The study was a pre-experimental design with one group pre-test post-test design. The sample of this research was students of X SMK Kesehatan Bhakti Indonesia Medika Pacitan. The data analysis in this study used the One-Sample T-Test with SPSS 23. Based on the result, the average percentage of increase in student learning outcomes using LMS assisted schoology on parabolic material was 25%. By using the One Sample T-Test the sig. (2-tailed) Value of $0,000 < 0,05$, statistically, there was a difference between before and after using the LMS-assisted Schoology. The usability questionnaire showed that the average for each aspect is 79% (usefulness), 67.2% (ease of use), 67.50% (ease of learning), and 64% of students are satisfied (satisfaction).

Keywords: Learning management system, Schoology, Learning aoutcomes, Blended learning, Cognitive student, Parabolic motion

INTRODUCTION

Education is a necessity for every human being in life and will continue to develop, along with the advancement of science and technology (Fayanto et al. 2019). Education is a conscious and planned effort to realize learning and learning processes so that active students develop the potential associated with improving religious, spiritual, self-control, motivation, noble character, and skills that needed society, nation and country. Learning is an activity that cannot do from human life; by learning, humans can develop the potential, they carry from birth. Learning are activities that take place from birth or last a lifetime.

The technologies are growing so fast. The development of information technology in the world of

education is an important component to be developed in the learning process (Muler, 2014). The development of technology is an innovation that can offer effectiveness and creativity in teaching and learning (henriksen et al. 2016). However, the learning process in SMK Kesehatan Pacitan, teachers still use conventional models and have not maximized technology as a medium for delivering the material.

In the teaching and learning process, an evaluation material needed as a measure of the success of students in understanding the material delivered by the teacher. Evaluation materials can be written tests, oral tests, practices, and quizzes. Technology can be applied for teaching materials and evaluation materials in the learning process.

One of the uses of online learning technology is the learning management system (Fathema et al. 2015). Through online learning technology teachers and students can interact without having to face to face at school, even with learning like this teachers and students do not need to worry about the limitations of space and time.

Learning management system is a prevalent learning management system, where the system can create a virtual learning environment between teachers and students. Virtual environment based learning can be used in an abstract or unrealistic learning model (Piccoli et al. 2001). A teacher can use virtual classes as a solution by utilizing the learning management system. In physics learning, there are still many students who do not fully understand the physics material; one of the causes of student learning interest is still declining (Argaw et al. 2016). One of the factors decreasing students interest in learning is because of the availability of media and teaching materials that are still less interesting in learning. So that there is no desire of students to learn and understand physics, one of them is the parabolic motion material. By using the learning management system in the form of Schoology with several features contained in it, students can explore more about the

material to be learned and make learning more enjoyable. In addition, students can discuss and exchange opinions with other students.

The purpose of the implementation of the learning management system through schoology in SMK Kesehatan Pacitan is to support active and independent student learning as measured by student learning outcomes. In this learning, the teacher acts as a facilitator, and the teacher is not the only source of learning. Learners can interact and exchange information and look for references from other sources. Schoology serves as a media sharing, discussion, and learning together by utilizing the features and facilities that are in it (Kaufman & Kumar, 2018). By applying this learning involves the activeness of the teacher and students, which are expected to increase student learning interest, which then has a positive effect on their learning outcomes.

METHOD

The technique used in this research was pre-experimental design with group pre-test post-test design. This design can be represented as follows:

Table 1. Experiment Design

O_1	X	O_2
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With O_1 is Pre-test, O_2 is Post-test, and X is Treatment in the form of learning using LMS (Schoology). The population in this study were students of class X in SMK kesehatan pacitan with ten students. data collection technique used measurement techniques from pre-test and post-test. The test is a multiple choice test with three choices. The questions given were ten questions and adopted from the research (Wiranata,

2017). Each question in the pre-test and post-test represents the same concept

To measure the learning model carried out by utilizing information and communication technology can be well received by students and according to the expectations of learning, the usability questionnaire known as the USE questionnaire is used (Lund, 2001). The scale used is the Likert scale.

Table 2. Likert Scale

No	Statement	Score
1	Strongly Agree	4
2	Agree	3
3	Disagree	2
4	Strongly Disagree	1

RESULTS AND DISCUSSION

A. Enhancement Learning Outcomes

To find out the percentage of improvement in student learning outcomes using a learning management system assisted by schoology on parabolic motion

material, the pre-test and post-test data were analyzed first. The pre-test was carried out using a printout problem while the post-test was carried out using the Quiz feature found in schoology, as shown in Figure 1.

Figure 1. Post-test parabolic motion

Furthermore, the percentage of learning outcomes calculated as in Table 3.

Table 3. Result of Pre-test and Post-test

Student Code	pre-test		post-test		ΔX
	Xt	%	Xt	%	
MRA	4	40	7	70	30
CN	3	30	6	60	30
RAR	4	40	7	70	30
SS	1	10	3	30	20
WRER	3	30	5	50	20
ABI	3	30	4	40	10
YL	2	20	6	60	40
LFS	3	30	6	60	30
IP	2	20	4	40	20
SR	3	30	5	50	20
Avarage		28%		53%	25%

Based on the data analysis above, the average increase in student learning outcomes is 25%. When viewed from ΔX , each student experiences a change that is almost the same, which ranges between 20-30 percent. The smallest change occurs at 10% as much as one person, and the highest is 40% and as many as one people. This increase in learning outcomes can be caused by the ease of students in understanding the concept of parabolic motion by being given a video and practice assisted by youtube and PhET media, which linked through schoology. The use of schoology which is

supported by various forms of media such as video, audio, and images that can attract students' interest, and interest is one indicator of learning motivation that can improve learning outcomes (Ulfa et al. 2017).

B. Effectiveness of LMS Learning is assisted by schoology on learning outcomes

To find out the Effectiveness of LMS Learning, which assisted by schoology, it is calculated using a test sample t-test, and the results obtained, as shown in Figure 2.

One-Sample Test

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
pretest	9,635	9	,000	2,80000	2,1426	3,4574
posttest	12,531	9	,000	5,30000	4,3432	6,2568

Figure 2. Data analysis used the one sample t-test on SPSS

The significance level used in the one sample t-test analysis test is 0.05. If the Sig value is <0.05 , LMS learning assisted by schoology on parabolic motion material is effectively used to improve student learning outcomes, conversely if the $\text{Sig} > 0.05$ then LMS learning assisted by schoology on parabolic motion material is not effectively used to improve student learning outcomes. From the results of the test data analysis of one sample t-test obtained a significance level of 0,000 which means that the value of sig <0.05 , this indicates that learning

LMS assisted by schoology on parabolic motion material is effectively used to improve student learning outcomes

C. The usability of the LMS model assisted by schoology for learning

Aspects measured by questionnaires include usability (usefulness), ease of use (ease of use), ease of learning (ease of learning), and satisfaction (satisfaction). The results of the questionnaire can be seen in table 4 and figure 3.

Table 4. The results of the use questionnaire by students

Usefulness		Easy to Use		Easy to Learn		Satisfaction	
STS	0%	STS	0%	STS	0%	STS	0%
TS	1%	TS	16.36%	TS	10%	TS	3%
S	79%	S	67.27%	S	67.50%	S	64%
SS	20%	SS	16.36%	SS	22.50%	SS	33%

Figure 3. Graph of user response

It can be seen in the tables and graphs, that there are still students who consider the LMS learning Model to use schoology still high. However, the dominant student

states that good and very good are relatively high for all aspects. From the calculations can be obtained, 79% of students agree that the LMS learning model is a useful

schoolology to help students in learning. Then 67.2% of students agreed that learning using the LMS model assisted schoolology was easy to use (ease of use). Whereas, learning using LMS assisted by schoolology is 67.50% of students agree with ease of learning in learning the material and use of the LMS itself, and 64% of students are satisfied in using the LMS learning model assisted by schoolology to help them in the material circular motion. Based on the four aspects of assessment obtained, the level of student satisfaction gets the lowest score. In this because schoolology cannot be used in all situations if there is no internet signal in a school or learning environment.

CONCLUSION AND SUGGESTION

The average percentage of increase in student learning outcomes using a learning management system (LMS) assisted by schoolology on parabolic material was 25%. LMS is learning with schoolology on parabolic motion material practical used to improve student learning outcomes. The usability questionnaire showed that the average for each aspect is 79% (usefulness), 67.2% (ease of use), 67.50% (ease of learning), and 64% of students are satisfied (satisfaction).

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