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The Influence of the Learning Cycle Blended Learning Model on Student Learning Outcomes

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ABSTRACT

Learning in the 21st century requires students to be literate about the existence of technology. Technology users in Indonesia are increasing, but the quality of Indonesian education internationally, based on UNESCO records, is still far behind other ASEAN countries. COVID-19, once endemic in Indonesia, directly impacted education, which had to be carried out online. However, after Covid-19 subsided, learning was resumed face-to-face as usual. The Blended Learning learning model, suitable for the 21st century, should not be discontinued but should be improved and improved to make it more optimal. This research aims to determine the effect of the Learning Cycle Blended Learning model on student learning outcomes with the help of Moodle. This research uses quantitative methods with a quasi-experimental research design. This research involved 71 students in two classes: the experimental class with the Learning Cycle Blended Learning model and the control class with the Problem-Based Learning learning model. The instrument used is a learning outcomes test consisting of a pretest and a posttest. The t-test results show (1) differences in student learning outcomes between applying Problem-Based Learning and the 8E-Blended Learning cycle with a Sig value. (2-tailed) is 0.003. The n gain test results show (1) The 8E-Blended Learning cycle learning model is more effective in improving student learning outcomes with a gain score of 49.46 in the good category.

Keywords: Learning cycle, blended learning, moodle, learning outcome

1. INTRODUCTION

Indonesia is starting to enter the 21st century learning era which indirectly urges the integration of technology as a learning tool to foster learning skills (Rahayu et al., 2022). Surely this is in line with society 5.0. Learning in the 21st century already uses Information and Communication Technology and gathers psychomotor, affective and cognitive abilities (Meilani & Aiman, 2020). Pada artikel yang ditulis oleh Rahayu et al., (2022), Internet users are currently increasing to 196.7 million and constitute 73.7% of the population.

Technology users in Indonesia are increasing, but the quality of Indonesian education on an international scale based on UNESCO records is far behind Singapore, even though they are both ASEAN countries, Indonesia is ranked 64th out of 120 countries while Singapore managed to rank 11th. (Safitri et al., 2022). Indonesia is ranked 108th in the world in the field of education, the quality of education in Indonesia in Southeast Asia is still below Singapore, Brunei Darussalam, Malaysia and Thailand (Putra, 2022). In line with the PISA report in 2018, in the last 10 to 15 years, the quality of education in Indonesia has been stagnant, ranking 72 out of 78 countries and is in the low category (Nurfatimah et al., 2022). So that education in Indonesia is still at the bottom level, an effort is needed to improve learning outcomes and the quality of education in Indonesia.

The existence of technology can help learning activities where students can look for reference sources, and technology can be used to increase effectiveness in learning (Unik et al., 2020). This should have a positive impact on the learning outcomes to be obtained. Learning outcomes are skills acquired by students after the

learning process, which consists of affective, cognitive and psychomotor skills (Nurita, 2018). In practice, to get good learning results, many factors influence it. According to Palittin, this can come from the environment and oneself. The learning media in schools can motivate students to study actively (Palittin, 2019). It is not only infrastructure that can affect student learning outcomes. One of the factors that can be controlled by oneself is motivation. Motivation plays an important role in determining student success; more precisely, learning motivation makes learning outcomes optimal (Andriani & Rasto, 2019).

In Indonesia, the implementation of 21st-century learning is still not optimal, so more thorough preparation is needed for all elements of education (Chairunnisak, 2020). In providing lessons, many teachers only convey theory using less innovative methods (Fernando et al., 2018). Conventional learning makes the teacher play a very important role in the learning process, which includes delivering material face to face, question and answer activities, and giving assignments (Andrianto Pangondian et al., 2019).

The education system in 21st-century learning requires students to be technologically literate and be able to search for their references using the internet (Syahputra, 2018). The state of the education system after COVID-19 is a great opportunity to improve and implement learning models by the 21st-century following the era of Society 5.0. COVID-19 has indirectly had a good impact on the process of digitizing education in Indonesia (Pondaag et al., 2021). It can be concluded that the Blended Learning learning model is suitable for the 21st century and should not be stopped but should be improved and improved to be more optimal. The solution that can be taken so that the quality of education in Indonesia can be better after the pandemic is to implement the right learning model. The precise learning model used will enable students to achieve learning objectives (Ningsih et al., 2020). One thing that can be done is to apply the Learning-Cycle 8E Blended Learning learning model. The learning cycle is a learning cycle that can be implemented by involving active participation from students through several phases (Sulastri et al., 2018). Blended Learning is learning by combining conventional or face-to-face methods with online learning (Wardani et al., 2018).

The use of the Learning Cycle has several advantages, including (1) students can build knowledge, (2) learning can be developed in a positive atmosphere, (3) increase students' motivation to learn (Sulastri et al., 2018). Researchers are interested in implementing the learning cycle by integrating Learning Cycle and Blended Learning into a simpler one, namely Learning Cycle 8E Blended Learning. This 8E learning cycle phase consists of elicit, engage, explore, explain, echo, elaborate, evaluate, and emend. This learning model will combine the 8E learning cycle with the help of technology in the form of Moodle, which can facilitate student learning activities and provide new enthusiasm for students in learning..

2. RESEARCH METHOD

Research conducted using quantitative analysis. The design used in this study uses a quasi-experimental method. The population used in this study are students of SMK N 1 Sawit in Sawit District, Boyolali Regency. The sample consisted of 35 students of class X TJKT 1 and 36 students of class X TJKT 2, which would become the experimental and control classes. The sampling technique in this study used a stratified random sampling technique. Stratified random sampling is a data collection technique that pays attention to the existing levels in the population as a factor that will be given attention to the characteristics of one class having the same features and the other class being heterogeneous. (Arieska & Herdiani, 2018).

The experimental class will use the Learning Cycle 8E Blended Learning learning model, and the control class will apply the Problem-Based Learning learning model by the Informatics teacher's application. In cyclical learning in the experimental category, moodle is used as a learning medium. The following shows the Moodle used:

Figure 1. Pretest Menu

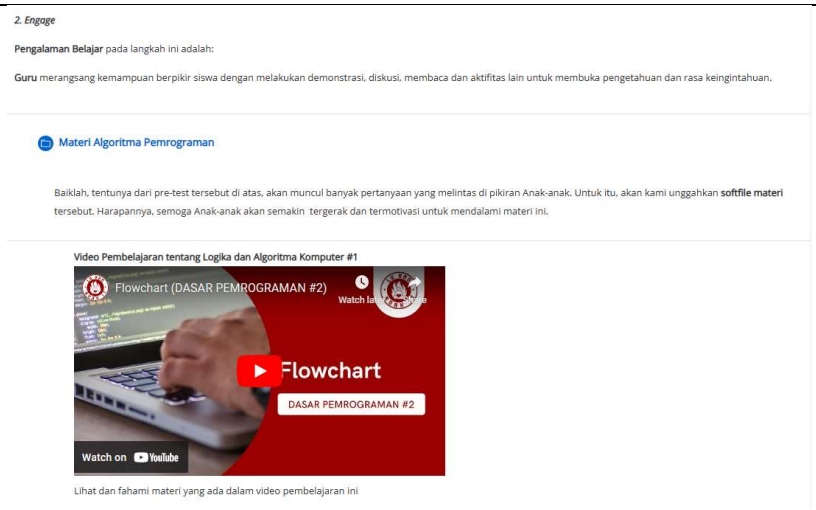

Figure 2. Learning Video Menu

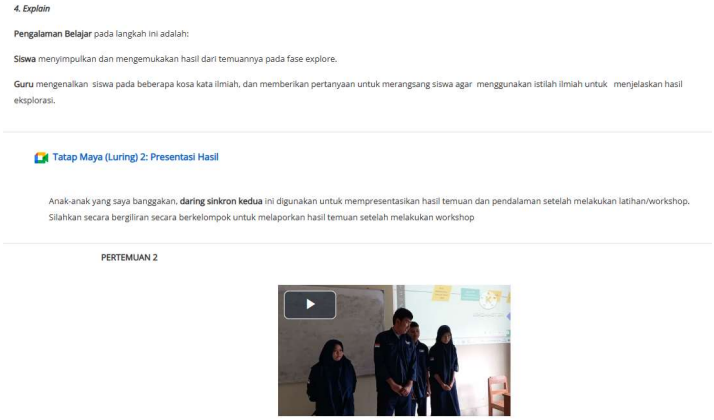

Figure 3. Learning Record Menu

The 8E cycle consists of several phases that students must carry out, and all are integrated into Moodle so that it is more effective and interesting for students to use. The following is a further explanation for implementing the 8E cycle in Moodle:

Data collection in this research used Quasi-Experimental with the Nonequivalent Control Group Design type, because this research is experimental. The research instrument that will be used in this research is in the form of test questions consisting of a pretest and posttest to determine student learning outcomes.

Before analyzing the data, testing the prerequisites for normality, homogeneity, and balance is necessary. The normality test has the aim of knowing whether the subjects in the study are normally distributed

or not (Susanto et al., 2021). The homogeneity test will convince researchers that the research data comes from a population that is similar or does not differ in diversity (Matondang dalam Matondang et al., 2021). Meanwhile, the balance test is to find out whether the two classes have balanced abilities or not before carrying out the research (Setiawan *et al*., 2020). Quantitative data analysis uses the t-test, to determine the effect of the independent variable on the dependent variable (Sur, Hasanah, dan Mustofa, 2020). And to see how much influence the application of the learning model used by researchers using the n-gain test.

3. RESULT AND ANALYSIS

3.1. RESULT

a. Instrument Test Result

After passing the distractor test, 2 questions must be rejected because one of the options in the multiple-choice questions is less than 5%. However, because the researcher's needs of 10 questions for the pretest and 20 questions for the posttest have been fulfilled, there is no need to revise the questions.

b. Prerequisite Test Result

1) Normality Test

Table 1. Normality Test Result

Variable	Class	Data	Significant Level	Sig	Normality
Learning Outcome	Experiment	*Pretest*	0,05	0,070	Normal
		Posttest	0,05	0,200	Normal
	Control	*Pretest*	0,05	0,083	Normal
		Posttest	0,05	0,087	Normal

The test results on learning outcomes, the pretest questions have a significance of 0.070 and the posttest questions 0.200, which means they are normally distributed because they are more than 0.05. For the control class, the significance value of the pretest item is 0.083, and the posttest item is 0.087, which is also normally distributed.

2) Homogenity Test

Table 2. Homogenity Test Result

Variable	Class	Data	Significant Level	Sig	Homogenity
Learning Outcome	Experiment and Control	*Pretest*	0,05	0,491	Homogen
		Posttest	0,05	0,301	Homogen

It is said to be homogeneous if the significance results are > 0.05. The significance value for the pretest data for the experimental class and control class learning outcomes is 0.491; for the posttest data, it has a significance value of 0.301. So, it can be concluded that the experimental class and the control class are homogeneous variants.

3) Stability Test

Table 3. Stability Test Result

Variable	Class	Data	Significant Level	Sig	Stability
Learning Outcome	Experiment and Control	*Pretest*	0,05	0,491	Stable

The balance test was calculated using the t-test with a significance level of 0.05. The results of calculating the significance of the experimental class and control class for the pretest learning outcomes with a value of 0.491 > 0.05 so that the practical class and control class have balanced learning outcomes and initial abilities.

c. Hypothesis Test Results

1) T-Test

Table 4. T-Test Result

Variable	Variance Equation	Levenes's Test		T-Test	
		F	Sig.	T	Sig. (2-tailed)
Learning Outcome	Assumed	1,085	0,301	3,041	0,003
	Unassumed			3,047	0,003

Based on the test results table, student learning outcomes are assumed to be Sig. (2 tailed) is 0.003 < 0.05, in the t table test table for df 36 is 1.68830, t result > t table, then H0 is rejected and Ha is accepted. So there are differences in student learning outcomes between the application of Problem-Based Learning and the 8E-Blended Learning cycle.

2) Gain Test

Table 5. Gain Test Criteria

Gain Score	Criteria
0,70 < g < 1,00	Excellent
0,30 < g < 0,70	Good
0,00 < g < 0,30	Fair
g = 0,00	Poor
-1,00 < g < 0,00	Very Poor

(Hake dalam Wahab et al., 2021)

Table 6. Gain Test Result

Variable	Class	Data	Average	Gain Score	Category
Learning Outcome	Eksperiment	*Pretest*	62	49.4694	Good
		Posttest	80,14		
	Control	*Pretest*	63,61	11.0086	Fair
		Posttest	69,86		

The acquisition of the value of the experimental class learning outcomes is 49.4694, including the good category. Meanwhile, for the control class, the gain score was 11.0086 in the sufficient category.

3.2. ANALYSIS

Activities in the 8E cycle require students to be active through the process of discussion, materials, working on questions, and presentations. These activities can increase student understanding. Through the pretest in the elicit phase, students can discover their initial abilities and gain an overview of the material to be studied. The assignments given during echo can strengthen the findings obtained during exploration to increase student understanding. To evaluate the learning that has been done, students do the posttest to find out the learning outcomes. Often, practicing questions can improve student scores because the intensity of problem practice positively affects student learning outcomes (Yuliana & Listiadi, 2021).

Students who cannot attend school while studying can still take part in learning from home because the Learning Cycle 8E-Blended Learning learning model can be run synchronously and asynchronously, so that students who do not attend school do not miss out on lessons.

Based on testing data on student learning outcomes obtained from posttest answers by students in the control class and experimental class using the t-test, it is assumed that the value of Sig. (2 tailed) namely 0.003 < 0.05. Sig value. (2 tailed) is smaller than the significance level (0.05), resulting in differences in student learning outcomes who apply the Problem-Based Learning learning model with the 8E-Blended Learning cycle. Students in the experimental class showed high scores obtained from their understanding of the material that had been taught. Students can explain again the material that the expected learning outcomes have taught. The way the teacher delivers material during class influences students' good grades and understanding. Students prefer learning that involves pleasant interactions with the teacher. Students do not feel bored because learning activities involve a lot of discussion with friends, but the teacher is still able to create a conducive atmosphere. In addition, the learning model and learning media used to support learning activities significantly influence student learning outcomes. The steps applied in learning involve a long process but can provide a clear understanding for students. Meanwhile, the factors that cause Moodle to improve student learning outcomes are also revealed in the research Sari & Zulmaulida (2021), These factors include the ease students feel when reviewing material, the flexibility of Moodle, which can be accessed anywhere, and the learning resources provided.

Previous research Liana (2020) which use Learning Cycle 5E are also able to improve learning outcomes in science subjects. The application of the Learning Cycle in similar research is also able to improve student learning outcomes, namely in research (Ahmadurifai, 2020; Bambulu et al., 2022; Busrial, 2022; Hayati et al., 2020). Because the research of Andriani & Rasto (2019), also revealed that student learning motivation can create a positive atmosphere and is important for student learning outcomes.

4. CONCLUSION

Based on the results of data analysis from the research stages that have been carried out, the following conclusions are obtained: (1) there are differences in student learning outcomes that apply the Problem-Based Learning learning model with 8E-Blended Learning Cycle Learning, (2) 8E-Blended Learning Cycle learning model more effectively increase learning motivation and student learning outcomes. Factors that influence learning outcomes in the experimental class are higher, among others, because the understanding obtained is better, the learning models and media that are applied, and the motivation that is formed during the learning process.

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