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The Influence of the Learning Cycle Blended Learning Model on the Creativity of Vocational School Students

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ABSTRACT

In education, it is very important to develop human resources with an understanding of how to use technology to create innovations. Creativity is one of the 21st-century abilities that must be possessed, according to the Partnership for 21st Century Learning. The method used in this research uses a quantitative approach. Meanwhile, the design used is quasi-experimental. The research results show differences in student creativity in the Informatics subject using the Learning Cycle Blended Learning model. The n gain value in the experimental class is 0.58 in the medium category, and in the control class, the n gain value is 0.37 in the medium category. When compared using the n gain score, using the Learning Cycle Blended Learning learning model is more effective. So, there is an increase in student creativity using the Learning Cycle Blended Learning learning model assisted by Moodle. Learning can be student-oriented because students can answer questions given by the teacher. Students are more active and creative in discussions and independently.

Keywords: Kreatvitas, Learning Cycle, Blended Learning

1. INTRODUCTION

The world of education is very important for developing human resources with strong communication and teamwork skills, an understanding of how to use technology, the ability to create innovations, and the capacity for critical thinking to solve problems (Andrian & Rusman, 2019). This is a 21st-century development concept that maximizes the use of information technology to develop potential and produce superior human resources so that countries can compete with each other in the global arena (Hasibuan & Prastowo, 2019). The Partnership for 21st Century Learning emphasizes four skills: critical thinking, creativity, communication, and collaboration (Learning, 2017). In line with the Minister of Education and Culture's statement, which highlighted the importance of these 4C skills in the 21st century to create superior human resources to help Indonesia progress (Kemendikbud, 2017).

Integration of the 21st century into the independent curriculum, namely the ability to solve problems creatively, critically and collaboratively through developing skills related to attitudes and knowledge in using technology (Hadi & Khojir, 2021). In this curriculum, students will be more involved in discussion activities, pay attention to explanations, and be more motivated to be more independent, sociable and competent (Arviansyah & Shagena, 2022). So, students' creativity is needed to keep up with the times and solve the problems they face (Monawati., 2018). The benefits of having imagination in a person are being able to grasp teaching material easily, having a strong memory, having strong analytical and logical abilities, having the ability to think abstractly, and having the core ability to solve problems or answer questions quickly. With creativity, you can estimate student achievement at school (Amrullah, Tae, Irawan, Ramdani, & Prakoso, 2018).

It's just that students' creative abilities still tend to be low. This is evidenced by the decline in the Global Innovation Index (GII) level released by the World Intellectual Property Organization (WIPO) in 2021. GII is a ranking of Asian countries based on their innovation capabilities. This research shows that Indonesia is ranked 87th out of 132 countries; in 2019 - 2020, it was ranked 85th. This means that Indonesia experienced a decrease in ranking from the previous two years. (Organization, 2021). In addition, the research findings of Tahmidaten and Krismanto show that the cause of low student creativity is the lack of teachers in determining appropriate methods and strategies for learning (Tahmidaten, 2020).

So, there is a need for a teacher to apply innovative teaching techniques. Every teacher who uses the independent learning curriculum must adapt to the latest developments, including using information technology to improve learning strategies (Arviansyah & Shagena, 2022). Various learning models used by teachers must be developed to improve this (Afandi, Akhyar, & Suryani, 2019). One learning model that utilizes technology is blended learning, which holds face-to-face meetings and uses technology as a learning medium (Sagita, 2019). Meanwhile, one of the student-centered learning models is the learning cycle, where students are asked to understand concepts and explain how to solve problems. According to Sari's research, to design teaching and learning activities more optimally, teachers can combine blended learning models with other learning models (Sari, 2019).

Therefore, modifications to the learning cycle and blended learning are carried out to make it easier for teachers to provide learning models and materials based on 21st-century developments (Dalu & Rohman, 2019). Modifying the learning cycle uses phase 9e: elicit, engage, explore, explain, echo, elaborate, evaluate, emend, and e-search. The final stage is that e-search is integrated into a blended learning model so that it becomes an 8e-blended Learning learning model.

2. RESEARCH METHOD

The method used in this research uses a quantitative approach. Meanwhile, the design used is quasi-experimental. So, this study uses two classes: a control class and a practical class. The practical class is taken from the TJKT 2 class, which consists of 35 students and will use the Learning Cycle Blended Learning model. The control class is taken from class X TJKT 1, which consists of 36 students, and will use the learning model that has been applied previously, namely Project Learning. The form of quasi-experimental research design uses a non-equivalent group's pretest-posttest design. Both classes will be given the same pretest and posttest but with different treatment.

Class	Pretest	Treatment	Posttest
Experiment	O_1 ⟶	X_1 ⟶	O_2
Control	O_1 ⟶	X_2 ⟶	O_2

Figure 1. Research Design

O_1 = Pretest
O_2 = Posttest
X_1 = *Learning* Model *Cycle Bl*ended Learning
X_2 = *Learning* Model Project-Based *Learning*

The data in the study included quantitative data in the form of students' creative abilities obtained from pretest, posttest, independent sample t-test, and N Gain scores by conducting prerequisite tests in the form of normality tests and homogeneity tests first.

The normality test used the Kolmogorov-Smirnov method with the help of the SPSS 24 application. The significance level of the normality test was 0.05. Decision-making using the Kolmogorov-Smirnov test on SPSS is [20]:

- Significance value < 0,05 means the data is not normally distributed.
- Significance value > 0,05 means the data is normally distributed

The data homogeneity test is used to determine whether the sample group studied has the same variance or not (Hafidzah, 2020). The homogeneity test uses the Harley test formula with a significance level 0.05.

Data is declared homogeneous if the significance value is > significance level (0.05). The homogeneity test formula is as follows [21]:

$$F = \frac{largest\ variance}{smallest\ variance}$$

After carrying out the prerequisite tests, an analysis was carried out using the independent sample t-test and calculating the n-gain score. The formula for the n-gain score test is:

$$Normalized\ gain\ (g) = \frac{posttest\ score - pretest\ score}{max\ score - pretest\ score}$$

Determination of the index criteria for the normalized gain score as follows [22]:

Table 1. N-Gain Score Criteria

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

If the calculated gain score in the experimental class exceeds the control class, then H0 is rejected. H1 is accepted

3. RESULT AND ANALYSIS

3.1. RESULT

A pretest and posttest were held in both classes to determine whether there is an influence on the level of student creativity using the Learning Cycle Blended Learning learning model. The pretest was conducted to determine students' initial knowledge before the learning model treatment,, and the posttest was the student's final test after the learning model treatment. The pretest and posttest data are in Table 2.

Table 2. Student Pretest and Posttest Data

Parameter	Experiment Class		Control Class	
	Pretest	Posttest	Pretest	Posttest
The number of student	35	35	36	36
Average	41,14	81,60	39,44	74,83
Highest score	60	98	70	86
Lowest score	20	70	20	64

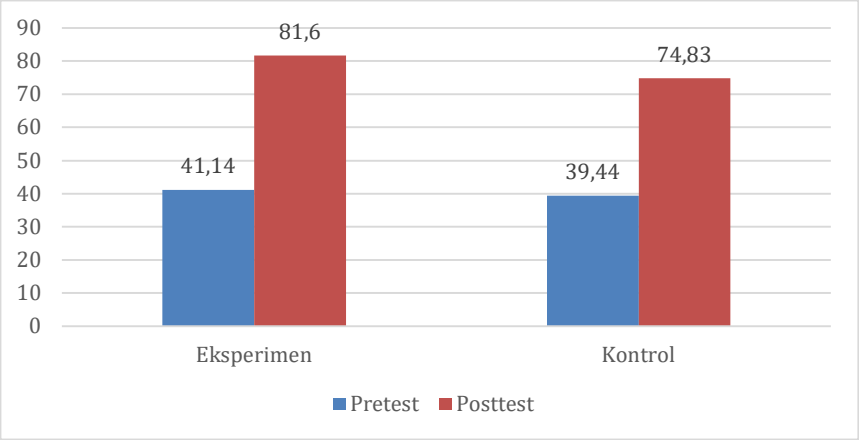

Figure 2. Average Pretest and Posttest Scores

After knowing students' pretest and posttest data in the experimental and control classes, prerequisite analysis tests were carried out, namely normality and homogeneity tests. The results of the normality test are in the following table:

Table 3. Normality Test Result

Class	Pretest	Posttest	Description
Experiment	0,089	0,112	Normal
Control	0,117	0,200	Normal

Table 4. Homogenity Test Result

Data	Posttest	Description
Pretest	0,610	Homogen
Posttest	0,141	Homogen

Based on the normality and homogeneity tests, the significance value for the experimental class in the pretest data was 0.089 > 0.05 and the posttest 0.112 > 0.05, so the data was normally distributed. Meanwhile, in the control class, the pretest significance value was 0.117 > 0.05, and the posttest was 0.200 > 0.05, so the data was normally distributed. Furthermore, the pretest homogeneity test has a significance value of 0.610, and the posttest is 0.141. Both data have a significance value > 0.05, so the data is declared homogeneous.

To determine the effect of the Learning Cycle Blended Learning learning model on students' critical thinking, an independent sample t-test was calculated. There are 2 hypotheses, namely:
H_0 = There is no effect on the level of student creativity using the Learning Cycle Blended Learning model
H_1 = There is an influence on the level of student creativity using the Learning Cycle Blended Learning learning model

Decision-making uses a significance level of 0.05. If the sig. (2-tailed) < 0.05, then H0 is rejected, conversely, if the value is sig. (2-tailed) > 0.05 then H0 is accepted. The results of the independent sample t-test are in Table 5.

Table 5. Independent Sample T-Test

Variance Equation	Levene's Test		T-Test	
	F	Sig.	t	Sig. (2-tailed)
Assumed	1,508	0,224	4,566	0,000
Unassumed			4,550	0,000

Next, to determine the level of creativity of students in the experimental and control classes, the n-gain score was calculated. The results of the n-gain score calculation are in the Table 6.

Table 6. N-Gain Score Calculation Results

Class	N Gain Score	Category
Experiment	0,58	Moderate
Control	0,37	Moderate

In Table 6, the calculated n-gain score in the experimental class is 0.58 in the medium category, and in the control class, the n-gain score is 0.37 in the medium category. When compared using the n gain score, the use of the Learning Cycle Blended Learning model is more effective than the previous learning model

3.2. PEMBAHASAN ANALYSIS

Based on the independent sample t-test, the significance value in the Lavene's test is 0.224 > 0.05, so there is no variance between the two classes. The t-count value is 4.566 > table 2.030 with sig. (2-tailed) has a value of 0.000 < 0.05, then H0 is rejected and H1 is accepted. So, there are differences in students' critical thinking in Informatics subjects using the Learning Cycle Blended Learning model. Apart from that, the n gain value in the experimental class is 0.58 in the medium category, and in the control class, the n gain value is 0.37 in the medium category. When compared using the n gain score, the Learning Cycle Blended Learning learning model is more effective than the previous learning model.

The implementation of research in the experimental class was carried out with the help of the Moodle website. In the elicit phase, the teacher checks students' initial understanding through the quiz feature. In the engage phase, the teacher stimulates students' creative abilities by discussing forum features. In the explore phase, the teacher provides facilities for students to ask questions and answers through chat and forum features. In the explain phase, students present their findings in the explore phase. The echo phase of students strengthens learning outcomes by working on questions through the assignment feature. The teacher provokes students' understanding and skills using the workshop feature in the elaborate phase. Finally, teachers and students assess learning outcomes in the evaluate and emend phase by providing final exercises through the assignment or quiz feature. The learning syntax for the Learning Cycle Blended Learning model is as follows.

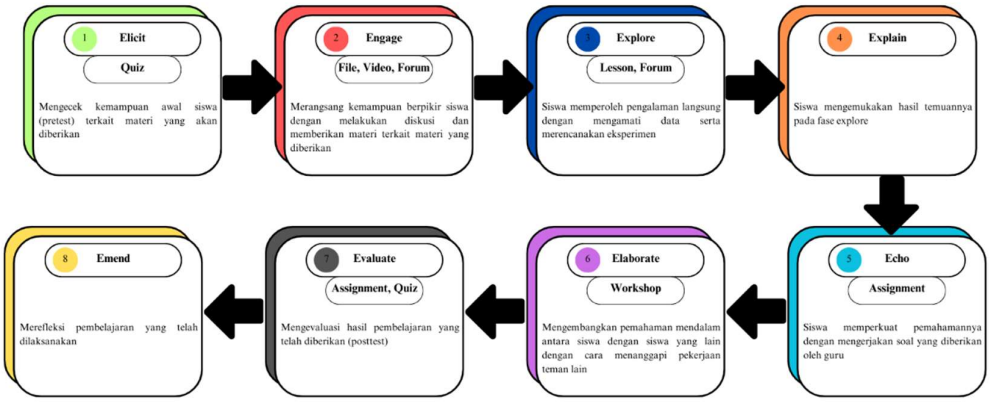

Figure 3. Syntax of the Learning Cycle Blended Learning Model

The initial appearance of the Moodle website used as learning media in the Learning Cycle Blended Learning model is as follows:

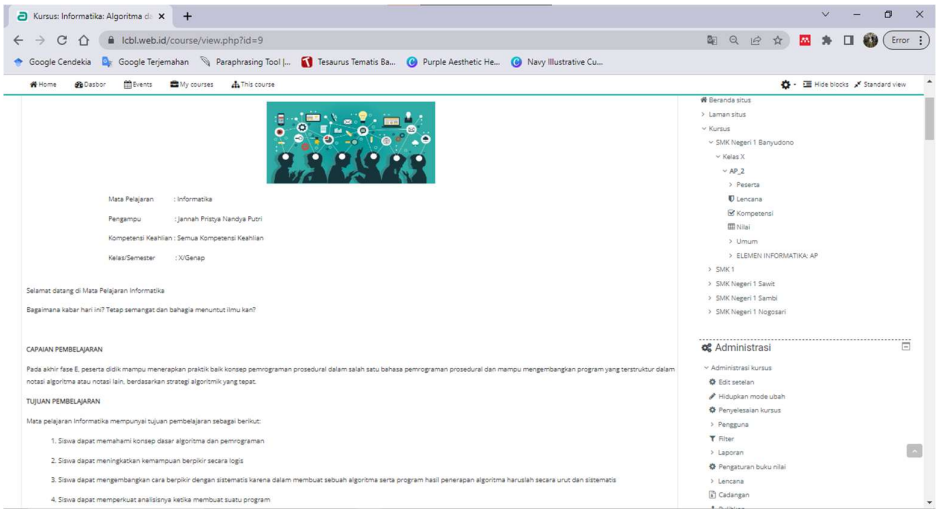

Figure 4. Moodle Website Appearance

4. CONCLUSION

Based on the results of the research and discussion, it can be concluded that there is an increase in students' creative abilities using the Learning Cycle Blended Learning learning model assisted by Moodle. With the implemented phase, learning can be student-oriented because students can answer questions given by the teacher. This model is also more effective in increasing students' creative abilities in informatics subjects. Students are more active and creative in discussions and independently. The use of the Moodle website is considered more flexible as a learning medium in implementing the Learning Cycle Blended Learning model.

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