Blended Learning's Effect Toward Learning Achievement Post Covid 19 Pandemic

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ABSTRACT: Blended learning is one of the learning models used after the COVID-19 pandemic at Nahdlatul Ulama Al Ghazali University. Blended learning integrates technology that combines or mixes face-to-face and computer-based (online) learning. During the stages of the learning process, the lecturer prepares teaching materials in the form of PowerPoints or videos that can be accessed through learning media including EdLink, Zoom Meeting, Google Meet, and other electronic media. The purpose of this study was to determine the effect of blended learning on learning achievement. The research method used is a quantitative method because the research data is in the form of numbers and analysis using statistics. The analysis used is a linear regression analysis with a population of mechanical engineering students. The number of samples used amounted to 34 students. Data collection techniques in the form of tests and questionnaires with a Likert scale from the results of the normality and linearity tests, it shows a sig value of 0.200 and 0.177, which states that the data is normally distributed and linear. Based on the linear regression test, it was determined that the t count was 3.296 > t_{table} 2.037 with a regression coefficient value of 0.331. It can be concluded that there is an influence between the x variable (blended learning) and the y variable (learning achievement).

INTRODUCTION

The covid-19 virus's presence in 2020 will have an impact on all fields, including education. Because of this impact, the educational system is not functioning normally. The policy to learn from home, commonly known as "online-based learning," was issued in Circular Letter Number 4 of 2020 [4]. Online learning is one way of implementing one of the 14 learning principles stipulated in the Ministry of Education and Culture's 2016 report, Number 22, namely that learning can take place anywhere by utilizing technology and communication. With the online or distance learning that has been implemented during the covid-19 pandemic, there is still a lack of understanding and activeness of students towards the learning process. To face the present and the future after the covid-19 pandemic, teacher innovation is needed in implementing learning that integrates technology so that students remain motivated to learn and get good learning outcomes.

To foster student motivation, an interesting learning environment is needed that is able to utilize existing technological developments. One of them is by using a technology-based learning model, namely blended learning. Blended learning utilizes the development of technology that is currently developing, namely information and communication technology (ICT) [1]. Blended learning is learning that combines or mixes face-to-face and computer-based learning [2]. In addition to blended learning, there are other commonly used terms including blended learning and blended learning. These terms have the same meaning: hybrid or a combination of online and offline learning.

Blended learning is a combination of traditional learning features and an e-learning environment. Blended learning combines aspects of blended learning (in electronic format) such as web-based learning, video streaming, and synchronous and asynchronous audio communication with traditional "face-to-face" learning [12]. Platforms that can be used in online learning include the use of

edlink, zoom meeting, google meet, youtube or other social media that can support blended learning. Blended learning has advantages in terms of accessibility of learning, so it affects how easily students can access learning content, allowing students to improve learning outcomes [2].

In chemistry learning, the application of technology-enhanced learning and blended learning is expected to support classroom and online learning processes, thereby positively impacting the improvement of learning outcomes. Given the importance of learning chemistry, learning chemistry should be well packaged in a fun way to increase student motivation and learning success. During the covid-19 pandemic at Nahdlatul Ulama Al Ghazali University Cilacap implemented online learning where in chemistry learning there were still some students who were less active in the learning process, especially when explaining chemical formulas. According to Sari's research, blended learning has advantages including students becoming more independent in learning, having learning motivation, learning becomes fun and students interested, can improving learning outcomes and critical thinking skills, but there are also disadvantages when learning online there are some students who are still less active [11]. With blended learning and teaching materials delivered by lecturers in an interesting way, one of which is by displaying informative videos and PPTs, it is hoped that this will provide innovation and enthusiasm for learning for students participating in chemistry lessons so that they can foster activeness and motivation in the learning process. Based on this description, this study aimed to determine whether blended learning approaches had an impact on learning outcomes after the Covid-19 pandemic.

METHODS

This study is quantitative as the research data is in numerical form and analyzed using statistical methods. Quantitative research methods can be understood as research methods based on the philosophy of positivism, which is used to study a specific population or sample, collect data using research tools, and perform quantitative or statistical data analysis with the purpose of testing a given hypothesis [11]. Analysis is used to determine whether there is an effect between the independent and dependent variables. Testing the Impact of Blended Learning (X) on Academic Performance (Y).

The research was conducted in September–December at Nahdlatul Ulama Al Ghazali University with a population of mechanical engineering students who received basic chemistry courses a sample of 34 students.

The data collection techniques in this study were tests and questionnaires. The test was given to students who participated in blended learning. A test is a set of question sheets or a series of tasks (measuring instruments) containing statements or questions that must be done by students or a group and that must be answered properly, honestly, and correctly so as to produce a value in accordance with the objectives [6]. A questionnaire is a list of statements given to others, and the author is willing to respond according to the user's request [8]. Questionnaires are used to find out how blended learning is done in the classroom. The questionnaire used uses a Likert scale with four alternative answers. The data used is quantitative, with each answer given a score. The percentage of response can be calculated using the following formula:

$$\text{Percentage} = \frac{Total\ Score}{Maksimum\ Score} x100$$

[7]

The collected data will be used to predict further data using the regression analysis method. Regression analysis procedures measure the relationship or influence between a dependent variable and one or more independent variables. The regression analysis method used is simple linear regression. Simple regression can be analyzed because it is based on a causal relationship between the independent variable (X) and the dependent variable (Y).

RESULT AND DISCUSSION

Results of the research that has been carried out are analyzed using the linear regression analysis method, which aims to determine the effect of blended learning on learning achievement. After completing the learning process, data on learning achievement were obtained from student final test scores. as well as the value of the questionnaire obtained by sharing statements through the Google form to find out how the blended learning process is carried out. From the data that has been collected, it is used for the prerequisite tests, namely the normality and linearity tests, as well as the linear regression test.

TABLE 1. Normality Test

One- Sample Kolmogorov-Smirnov Test

			Unstandardized Residual
N			34
Normal Parameter [a,b]	Mean		0.0000000
	Std. Deviation		5.47731110
Most Extreme Differences	Absolute		0.124
	Positive		0.077
	Negative		-0.124
Test Statistic			0.124
Asymp. Sig. (2-tailed)[c]			0.200[d]
Monte Carlo Sig. (2-tailed)[d]	Sig.	Lower Bound	0.189
	99% Confidence Interval	Upper Bound	0.209
a. Test distribution is normal			

Based on the normality test in **TABLE 1**, It may be inferred that the data is regularly distributed because the significance value of 0.200 indicates that it is bigger than 0.005.

TABLE 2. Linearity Test Results

Anova Tabel

			Sum of Squares	df	Mean Square	F	Sig.
Hasil belajar*blended learning	Between Group	(Combined)	850.521	14	60.752	2.426	0.037
		Linearity	336.204	1	336.204	13.428	0.002
		Deviation from Linearity	514.317	13	39.563	1.580	0.177
	Within Groups		475.714	19	25.038		
	Total		1326.235	33			

From **TABLE 2**, the linearity test shows a significance value of 0.177, indicating its significance value is greater than 0.05, which means that the relationship between the two variables of blended learning and learning achivement is linear.

TABLE 1 and **TABLE 2** show that the data used is normally distributed and linear, so it can be continued with the simple linear regression test.

TABLE 3. Model Summary

Model Summary

Model	R	R Square	Adjusted R square	Std. Error of the Estimate
1	0.503[a]	0.254	0.230	5.56224
a. Predictors: (Constant), Blended learning				

TABLE 3 explains that the value the correlation or relationship (R) is 0.503 and the outcome of the decision (R squared) is 0.254, **indicating the** influence of the independent variable (blended learning) the dependent variable (learning outcomes) of 25.4%.

TABLE 4. Anova

Anova[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	336.204	1	336.204	10.867	0.002[b]
	Residual	990.031	33	30.938		
	Total	1326.235	33			
	a. Dependent variable: learning achievement					
	b. Prediction: (Constant), blended learning					

According to **TABLE 4**, the F_{count} value is 10.867, and the significance level is 0.002 < 0.05. It can be concluded that variable x (mixed learning) has an impact on the variable y (learning outcome).

TABLE 5. Coefficients

Model		Unstandardized B	Coefficients Std. Error	Standardized coefficients Beta	t	Sig.
1	(Constant)	62.62.650	8.830		7.095	<0.001
	Blended learning	0.331	0.101	0.503	3.296	0.002
a.	Dependent variable: learning achivement					

TABLE 5 shows the results of the constant value (a) of 62.650 and the value of blended learning (b/regression coefficient) of 0.331. so that the regression equation can be written as follows:

Y = a + bX

Y = 62.650 + 0.331X

This equation can be interpreted as follows:

- The consensus value for the learning outcomes variable was 62,650.
- The regression coefficient X is 0.331, which means that for every 1% increase in the value of online learning, the value of learning interest will increase by 0.331. The regression coefficient is positive, so it can be said that the direction of influence of variable x on y is positive.

Make a decision with a simple linear regression test

- Based on the significance value: From the coefficient table, the significance value is 0.002 < 0.05, so it can be concluded that variable x (mixed learning) has an impact on variable y (learning outcome).
- Based on the t-count of 3.296 > t-table 2.037, it can be concluded that variable x (mixed learning) has an impact on variable y (learning outcomes).

The learning process is carried out online and face-to-face, or through blended learning. For the learning schedule, blended learning reduces offline learning because it adapts to the current conditions after the covid-19 pandemic. During the online learning process, the media used include edlink, zoom meetings, Google Meet, or other electronic media. Lecturers create learning materials in the form of ppts or videos, which are delivered and explained by lecturers via learning media. And lecturers guide students when they are looking for additional information about the material being studied. Students can also access the material by downloading it from the learning media used by the lecturer. Following the completion of the learning process, Instructors assess learning outcomes in the form of tests and assignments to determine students' level of knowledge of the material studied.

There are four concepts in blended learning: 1) blended learning combines various technologies to achieve educational goals; 2) blended learning combines learning approaches such as behaviorism, constructivism, and cognitivism; 3) blended learning combines various learning technologies such as web, video, film, and so on; and 4) blended learning combines technology and tasks to create a positive influence on learning [10]. Blended learning has three key elements: 1) online learning; 2) face-to-face learning; and 3) self-learning. Blended learning can create a positive learning environment for peer-to-peer, student-teacher interaction, without time and space limitations [13].

The blended learning model provides good results or a good influence on student learning outcomes, as evidenced by the calculation of t = 3.296. In the learning process, students are quite active in participating in lectures, one of which is doing the assignments given by the lecturer. The activeness and motivation of students in the learning process are two of the factors that affect learning achivement. The blended learning model in the post-pandemic period makes students more motivated to learn and understand the subject matter presented. Students learn well because they are actively involved in learning activities and have the opportunity to discover for themselves about the material being studied. These learning achivment are additionally impacted by the interactions that students have with the real world and their surroundings through the use of instructional materials

created by the teacher [9]. In addition, blended learning can form independent learning behaviors in students that are formed gradually when independent learning is a component of blended learning [3].

In her research, Hima stated that the application of blended learning was proven to increase students' learning motivation in learning mathematics. This can be seen in the emergence of learning motivation indicators, such as students who appear enthusiastic, attentive, and serious about learning and who actively discuss and seek additional material from the internet [1]. According to Istiningsih, a blended learning strategy is appropriate for future learning considering the development of information and communication technology in Indonesia is very adequate. Blended learning is one of the alternatives to traditional learning because it can combine conventional learning activities in the classroom with online learning to promote independence in learning [3]. With the current covid-19 pandemic conditions, blended learning can be used and is an alternative by integrating technology so that students can study wherever and whenever they want. In her research, Afifah revealed that blended learning assisted by guided inquiry learning model can improve students' metacognitive skills. It can be seen that during the learning process, students are trained to do problem exercises and are able to understand and answer questions [4].

CONCLUSION

This study aims to determine whether there is an effect of blended learning on learning achievement. Based on the analysis and research results, it can be seen from the calculation results that the t-count is 3,296 and that there is an effect of the blended learning model on student learning outcomes in the post-covid-19 pandemic. In this learning process, students are quite actively involved and motivated to learn. One of them is with the questions and answers that students do while carrying out the learning process and working on assignments assigned by lecturers within the time constraints.

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