

The Influence of Blended Learning to Understanding Concept

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Abstract: This study aims to explain blended learning and learning styles towards students' conceptual understanding. This study was designed as a quasi-experiment involving 84 students of the Islamic Education Department, Faculty of Education of Islamic Institute of Al-KhairatPamekasan, Indonesia. The research data were collected using a test. Before the study, tests were carried out for the experimental and control groups. Data were analyzed using descriptive statistics and ANOVA test with pre-test scores as covariates. The level of significance was determined at $\alpha = 0.05$. The results showed that (1) there were differences in learning outcomes between those taught with the blended learning model and those taught with the conventional learning model. (2) The difference in learning outcomes between groups of students who had to learn styles and groups of students with low learning discipline. Student learning discipline had an essential role in the learning process. These findings indicated that blended learning could dominate the learning outcomes of students' conceptual mastery. Future research might be able to discuss the results of tests conducted to determine the effectiveness of mastery of learning concepts with other learning models.

Keywords: blended learning, understanding the concept of online and offline, face to face

1. Introduction

The existence of the Coronavirus Disease 2019 (COVID-19) Pandemic has dramatically changed the higher education system with a striking change that initially implemented face-to-face learning switching to online learning. Many universities implemented online learning at the beginning of the outbreak of the 2019 Coronavirus Disease Pandemic (COVID-19), but after there was a policy from the government, namely, a new routine, did much face-to-face and online learning or what is called Blended learning (Sukendro et al., 2020). The use of mobile technology has many innovations in the learning approach with various models developed by educational experts or practitioners. According to Bonk & Graham, Mac Donald & McAteer, learning combines online learning with face-to-face learning or what is known as blended learning (Miyazoe & Anderson, 2010).

The use of technology in learning has been developed in education to make it easier for students to interact with teachers. Many internet features are used as instructional media to provide material for assignments provided in these features as other web features. The learning system is combined with conventional learning in face-to-face learning and minimizes face-to-face activities (Krasnova & Demeshko, 2015).

Blended learning is a learning system that is renewed by the use of online-based digital technology. Blended learning also changes the learning system, which is a Lecturer has mastered the learning or is centered on Lecturer, so in this blended learning, learning innovation provides opportunities for students to be more active in the learning process. Blended learning is learning that is more effective, structured, and more flexible in its use. The use of blended learning can effectively make students think critically and creatively (Atia & Elsaid, 2000).

According to Osguthorpe and Graham, they explained that considering implementing blended learning to compensate for the weaknesses of both face-to-face learning or E-learning so that there can be mutual communication/interaction between lecturers and students and online learning is not found in face-to-face learning. It is also known that face-to-face learning still requires online learning with various applications developed by reference education (Cohen, 1998).

In this study, blended learning was tested using the LMS (Learning Management System) design. The Lecturer designed learning effortlessly with the classroom's help—all materials are placed in the same application and a video explaining the application's material. The final assignments and exams are carried out online. In this learning, 50% face-to-face learning and 50% online learning with different learning strengths are applied. It is hoped that learning will be more exciting and more effective during the Covid-19 period.

2. Theoretical Review

Blended learning models

Various definitions of blended learning have developed along with the development of information and communication technology. The definition of blended learning refers to how teachers maximize the use of face-to-face learning and online learning. Blended learning in research is a fun learning design and makes students active in learning both in the class and outside the class; it is necessary to design a learning model that combines online, offline, and face-to-face (Schober et al., 2012). Obukhov said that blended learning combines various elements of face-to-face teaching, including personalized learning, social interaction and direct interaction, and the use of e-learning to make learning more flexible than conventional learning. The application of blended learning in class is online and integrates content into learning (Buran & Evseeva, 2015).

Blended Learning has the potential to create an independent, interactive, meaningful learning atmosphere and can be used as a medium for discussion, asking questions, providing feedback, sharing information, and evaluating. Blended Learning provides flexible free time for students to make it easier to understand learning material. The Blended Learning application can be used as a medium for discussion, sharing information, evaluating online. Torrisi-Steele's (2011) opinion regarding blended learning is learning enriched with student-centered learning experiences made possible by harmonious integration, which combines face-to-face learning with technology-assisted online learning (Prasad et al., 2018).

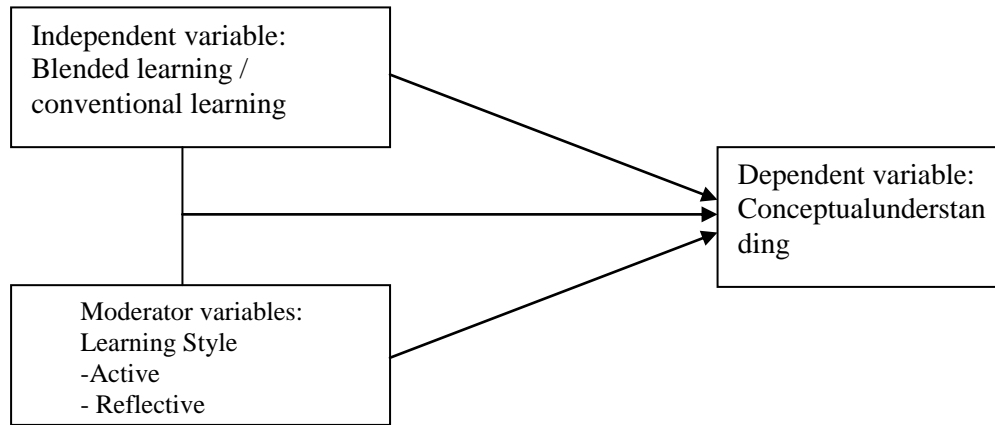
Blended learning is a learning approach with various techniques and technologies in learning that aims to provide a more effective and efficient learning experience. Blended learning usually contains two or more learning techniques with different approaches. However, currently, most designs are online learning. This blended learning design allows teachers to combine face-to-face learning with online learning to interact directly with the teacher or learners with unlimited space and time (Köse, 2010). has described three features of blended learning which include: Face-to-face learning: In a face-to-face educational environment, teachers and students are in the same condition and at the same time (Sriarunrasmee et al., 2015).

Blended learning enables students who are involved in lesson planning to develop creative and critical thinking successfully. Besides, blended learning allows students to be independent while studying outside the classroom to learn the material. Self-learning provides constant feedback without teacher assistance. Students can easily find their results and see their progress. So the teaching role changes from being a facilitator who helps monitor and assesses learners' progress, allowing them to learn independently (Berga et al., 2021). Blended learning is a pedagogical approach that combines the effectiveness and opportunities of classroom socialization with active learning that is technologically enhanced by the online environment's potential; it does not always correspond to the ratio of the delivery modality.

3. Research Method

The research design was designed using a quasi-pretest post-test equivalent control group design experiment with a 2X2 factorial version. This study's design considers the focus of attention on the independent variable (independent), namely blended learning and conventional learning, while the dependent variable understands the concept. The conceptual understanding variable as the dependent variable (Y), the learning model variable as an independent variable which consists of two categories, namely blended learning (X1) and conventional learning variables (X2), as the moderator variable consists of two categories, namely active learning styles (B1) and reflective learning styles (B2).

Based on the three variables studied, a 2x2 factorial design was prepared. The relationship between variables in the study refers to the opinion of Miles and Huberman's [22], which is shown in Figure 1 below



Testing the requirements of this analysis will be used. The requirements analysis test is carried out to detect whether the data obtained meets the analysis techniques' requirements using analysis techniques planned following the research objectives. The basic assumptions that must be met before the data are analyzed using ANOVA analysis techniques are; 1) normal data distribution and 2) homogeneous data. The Kolmogorov Smirnov normality test's basic concept is to compare the distribution of data (to which normality will be approved) with the standard normal distribution. The distribution of standard norms is data that has been converted into Z-scores and is considered normal. The Kolmogorov Smirnov test application happens if the significance is 0.05, which means that the data to be tested has a significant difference with standard average data, meaning that the data is not normal. The homogeneity assumption test is a test of the difference between the two groups, with the difference is not the mean value but the group variance.

4. Research Result

The prerequisite test is used to detect whether the data obtained meets the analysis techniques' requirements using analysis techniques that are planned following the research objectives. The basic assumptions that must be met before the data are analyzed using the ANOVA analysis technique are as follows

Normality test

Normality Test

	Class	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	Df	Sig.
Understanding Concept	Pre-test Experiment	,142	22	,200*	,935	22	,159
	post-test Control	,112	22	,200*	,953	22	,361
	Pre-test control	,111	22	,200*	,954	22	,373
	post-test control	,174	22	,080	,956	22	,419

*. This is a lower bound of true significance.

a. Lilliefors Significance Correction

After having the normality test on the results of this research, it shows the output results with a significance value (sig) for all data, either Kolmogorav-Smirnov or Shapiro-Wilk > 0.05, with the data can be interpreted that the research data is normally distributed. We can use parametric statistics (paired-sample t test and independent sample T test) to conduct research data because the data is normally distributed. Simultaneously, the results of the paired sample t-test can be seen in the following table.

Paired sample t-test

Paired Samples Test

	Paired Differences	T	Df	Sig. (2-tailed)						
					Mean		Std. Error		95% Confidence Interval of the Difference	
					Mean	Std. Deviation	Mean	Interval	Lower	Upper
Pair 1	pre-test experiment - post-test experiment	-17,773	7,764	1,655	-21,215	-14,330	-10,737	21	,000	
Pair 2	pre-test control - post-test control	-10,000	5,855	1,248	-12,596	-7,404	-8,010	21	,000	

Based on the output results above can be interpreted that pair 1 obtained a significant value of $0.000 < 0.05$, it can be concluded that there is a difference in the average student learning outcomes for the pre-test experimental class and the control class post-test. The par 2 obtained a significant value of $0.000 < 0.005$, it can also be concluded that there is a difference in the average student learning outcomes for the control class pre-test class and the control class post-test. Based on these results, it can be concluded that blended learning is an effect on students' conceptual understanding. To find out how much influence blended learning has on students' conceptual understanding, it can be seen in the descriptive data below.

Homogeneity Test

Homogeneity Test of Variance					
		Levene Statistic	df1	df2	Sig.
Understanding concept	Based on Mean	,674	1	42	,416
	Based on Median	,672	1	42	,417
	Based on Median and with adjusted df	,672	1	33,081	,418
	Based on trimmed mean	,673	1	42	,416

Based on the output results above, it shows a significance value (sig) based on the mean of $0.416 > 0.05$; it can be concluded that the variance of the post-test data for the experimental class and the post-test control class is the same or homogeneous; therefore the sampler test requirements of the T-Test have been fulfilled.

Independent Test

Independent Samples Test										
Levene's Test for Equality of Variances										
t-Test for Equality of Means										
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Understanding concept	Equal variances assumed	,674	,416	5,798	42	,000	8,000	1,380	5,216	10,784
	Equal variances not assumed			5,798	37,675	,000	8,000	1,380	5,206	10,794

The independent test shown in the output above shows the sig (2-tailed) value of $0.000 < 0.05$, so there is a difference in the average student learning outcomes between using blended learning and using conventional learning, as for finding out how big the difference is between the learning outcomes of blended learning and conventional learning, namely as the following descriptive data.

Group Statistics

	Class	N	Mean	Std. Deviation	Std. Mean Error
Understanding concept	Post-test Experiment	22	85,68	3,721	,793
	Post-test Control	22	77,68	5,295	1,129

These data show the average result of learning outcomes in the experimental class is 85.68 while the control class is 77.68. So it can be concluded that blended learning is more effective and efficient than conventional learning.

5. Discussion

In the research results mentioned above, there are differences in blended learning results with conventional learning. While learning is more effective than conventional learning, as is also done at Moscow State University, the implementation of blended learning shows students' ability and professionalism (Nazarenko, 2015). Through the learning design that has been developed by the researcher combining sharing media and learning resources through links or learning resources designed by the researcher then applying it to the learning device, namely in Google Classroom, as well as distributing questions or quizzes that make it easier for lecturers and students to evaluate learning media subjects

Blended learning has the advantage that students can prepare learning because online learning material is provided in the learning application that has been provided. Therefore, it can make it easier for students to carry out learning and easily accept lecturers' learning materials. Besides, students can discuss with friends either online or face-to-face in the learning room (Kashefi et al., 2012).

Through the design of learning media by providing various learning resources in it, it provides facilities as a tool to find out the material that will be and is being delivered by the Lecturer. The use of instructional media with attractive designs is expected to be more enthusiastic and attractive to access learning materials. The Lecturer prepares instructional videos with tutorials to make learning media and publishes them in learning applications(Chafiq et al., 2014).It is hoped that it will make it easier for students to access even remote situations and increase student potential and easily understand learning material.

The presentation of blended learning is designed to activate students in the learning process, that they are not learning objects but learning subjects for productivity, which in the end, students understand in detail and in-depth regarding the making of learning media. Lecturers only act as facilitators, mediators provide learning resources, provide features for communication with fellow students as well as with lecturers

6. Conclusion

Through the development of information and communication technology used in the world of education, one of them is blended learning, which combines online and face-to-face learning. The research-based on the results that students who learn using blended learning has higher results than conventional learning. It makes students receive lessons faster and make learning more attractive, effective, and efficient in reconciling material

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