The Implementation of
Team Assisted Individualization Learning Model
by Blended Learning in Vocational High School

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Abstract:

The emergence of the Covid-19 virus in Indonesia has caused the learning process in schools to be changed into learning at home. The learning process is conducted by distance learning that makes use of technological developments. This study aims to determine the effect of the team assisted individualization learning model by blended learning using Schoology on student learning results. This study uses a quantitative approach with a method of quasi-experimental design. Class X of Multimedia students was selected as the research sample. The experimental class was given a blended learning model using Schoology and team assisted individualization, and the control class was given a blended learning model using Schoology. The collected data in the form of learning test outcomes were used to find out the student's cognitive ability, and observations were used to define the affective and psychomotor ability. The hypothesis t-test used an independent-sample assessment with a 0.05 error level, showing the posttest learning results for both classes with a score of 0.002<0.05, which means that there are differences in learning outcomes between the two classes. Moreover, there was an improvement in student learning outcomes with the experiment class, gaining a total score of 0.3125, higher than 0.1354 of the control class.

Keywords: Blended Learning, Team Assisted Individualization, Schoology, Learning outcomes

Introduction

The current digital era makes society grow into a more modern one. This development is marked by the use of information and communication technology (ICT) in various fields of human activity, one of which is the field of education (Matukhin and Zhitkova, 2015). The development of information and communication technology (ICT), according to Riyana (2009: 3), is used as a tool in the learning process such as using learning videos, multimedia presentations, and e-learning that are part of information and communication technology (ICT) which can simplify the learning process (Wakhidah and Maftuh, 2018).

The curriculum plays a crucial role in the development of education. The current curriculum applied is Curriculum 2013, wherein the learning process focuses on students (student-centered). Students are required to be active in class during the learning process hence the students become independent (Darmawan, et al., 2018).

Simulation and Digital Communication is one of the subjects in the Multimedia expertise program. Based on observations made during the learning process in Simulation and Digital Communication subject, several problems were found, including students not wanting to learn independently hence they always asked the teacher, the lack of material owned by the students, and the applying of the inappropriate learning model. These problems resulted in poor student learning outcomes - where only 11 students (31.43%) of the total 35 students were able to achieve a score of 75, the minimum completeness criteria set by the school. Learning outcomes are a crucial part of learning, resulting in changes in student behavior in the cognitive, affective, and psychomotor fields which are the result of the learning process (Saputra, Ismet, and Andrizal, 2018). To overcome these problems, a learning model is needed that can improve student learning results by current technological developments. One of the learning models that can be applied is blended learning by using Schoology and team assisted individualization.

Blended learning according to Heinze et al (2007: 118) is a learning innovation that can be used following the development of information and communication technology (ICT), where the learning process is carried out in the classroom through face-to-face and outside of online learning activities (Pitaloka and Suyanto, 2019). Schoology is one of the learning management system (LMS) platforms. Research conducted by Ernida (2016) resulted in an analysis that the quality of Schoology was easy to use, interesting, useful, and effective to use in the learning process because 93.33% of students could surpass the completeness criteria set the score for cognitive aspects (Wakhidah and Maftuh, 2018).

Learning that can improve student learning outcomes is cooperative learning. Slavin (2008: 4) argues that cooperative learning where students work together in small groups to study certain materials (Nuroh and Mandarani, 2018). The team assisted individualization is one of the cooperative learning models that can be applied. Apostates (2005: 4) define team-assisted individualization as a learning model in which students help and depend on each other positively, work together to achieve learning goals, and are independent in learning. Previous research has been conducted and proven that the higher the student learning outcomes are achieved by using the target team of individualized learning models (Achdiyat and Andriyani, 2016). Team-assisted individualization learning has an advantage where students are allowed to build their abilities independently, besides students also get an even opportunity to be able to play an active role in learning (Ariestika, Sedanayasa, and Pudjawan, 2015). Achdiyat and Andriyani (2016) research resulted in higher student learning outcomes using team assisted individualization learning models.

Candra (2016) said that some teachers refuse in the learning process to be carried out by using existing technology because teachers are afraid that there will be a negative effect on children with the use of this technology. However, things have changed since the emergence of the Covid-19 virus in Indonesia. The learning process, which was initially performed in schools on a face-to-face basis, has been transformed into online learning or distance learning utilizing information technology (Fauzi and Sastra Khusuma, 2020).

This study was conducted to determine the differences and improvement in student learning outcomes between experimental classes using blended learning models with Schoology and team assisted individualization and control classes that use blended learning with Schoology. Also, observations will be made as supporting data on learning outcomes to determine the attitude (affective area) and skills (psychomotor area) of students in the learning process.

Research Method

This research uses quantitative research. Quantitative research is a research method used to examine a population or sample, where the collected data is obtained using research instruments, statistical data analysis, to test a predetermined hypothesis (Sugiyono, 2016: 8).s

The research method used in this study is a quasi-experimental design with a nonequivalent control group research design. In the nonequivalent control group design, the control group cannot be chosen randomly (Sugiyono, 2016: 79). In this research, the control group and the experimental group earlier was given a test, namely the pretest. A pretest is used to determine the initial condition of the group before being given treatment.

After the pretest, the experimental group was treated with a blended learning model using Schoology and team assisted individualization, while the control group was treated with a blended learning model using Schoology. The following is the syntax of the learning model that will be applied in research:

Table 2. Learning Model Syntax

Learning Model Syntax		
Blended Learning	Team Assisted Individualization	Steps
Online learning		Students will be given the task to study the material provided by the teacher through Schoology before the learning process takes place
Face-to-face learning (conducted online through Schoology)	Group formation	Students will be divided into several heterogeneous groups
	Teaching group	Students will be described in outline materials, learning activities, and assignments presented by the teacher
	Creative students	Students will be motivated by the teacher so the learning objectives can be achieved
	Team study	Students hold discussions and do assignments given by the teacher. Students work together in groups, where students who do not understand the material will be assisted by students who understand better
	Fact test	Students will do quizzes given by the teacher
	Team score	The group that gets the highest grades will get an award from the teacher
	The whole class unit	Teachers and students make conclusions about the learning material

After treatment, the control group and the experimental group were given a posttest to determine the effect of the treatment in its cognitive aspects. This study was conducted with X multimedia class as a sample of 69 students, where class X Multimedia 1 totaled 35 students and class X Multimedia 2 total of 34 students. Sampling was done using the cluster random sampling technique.

Data collection techniques in this study were conducted by learning test outcomes to determine the cognitive area and observations to determine the effective and psychomotor area of students. Validity and reliability tests are used to test the learning outcomes test instrument. Then for the data analysis technique, the

independent-sample t-test and the normalized gain test were performed previously with carried out the normality test, homogeneity test, and balance test with an error level of 0.05.

Result and Analysis

Based on the results of the instrument test, the number of questions that passed the validity test was 49 questions (24 pretest questions and 25 posttest questions) of the 60 questions tested. Then, the questions that passed the validity test were subjected to a reliability test, where each reliability test result was 0.815 for the pretest questions and 0.824 for the posttest questions. The test results of the question instruments which are declared valid and reliable can be used in this study.

Table 1. Results of the Learning Outcomes Instrument Test

	Used:	
Conclusion	Pretest	1, 2, 3 4, 5, 6, 7, 9, 10, 11, 13, 14, 16, 17, 18, 19, 21, 22, 23, 25, 27, 28, 29, 30
	Posttest	1, 3, 4, 5, 6, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30
	Not used:	
	Pretest	8, 12, 15, 20, 24, 26
	Posttest	2, 7, 8, 14, 21

After instrument testing, the next step is to collect and analyze the data. The following is the data that has been obtained and analyzed:

The difference in student learning results between the use of the blended learning model using Schoology and team assisted individualization with the blended learning model using Schoology

Based on the average student learning results in the control class, the score was 66 for the pretest and 72 for the posttest, where the average increase in learning outcomes was 9.1%. Meanwhile, in the experimental class, the score was 68 for pretest and 78 for the posttest, with an average increase in study results of 14.71%. Thus, the increase in average learning outcomes of experimental classes is higher than that of the control class. The difference in the average learning outcomes of the two classes can be seen in the following figure:

Figure 1. The Difference in Average Learning Outcomes of the Control Class and the Experiment Class
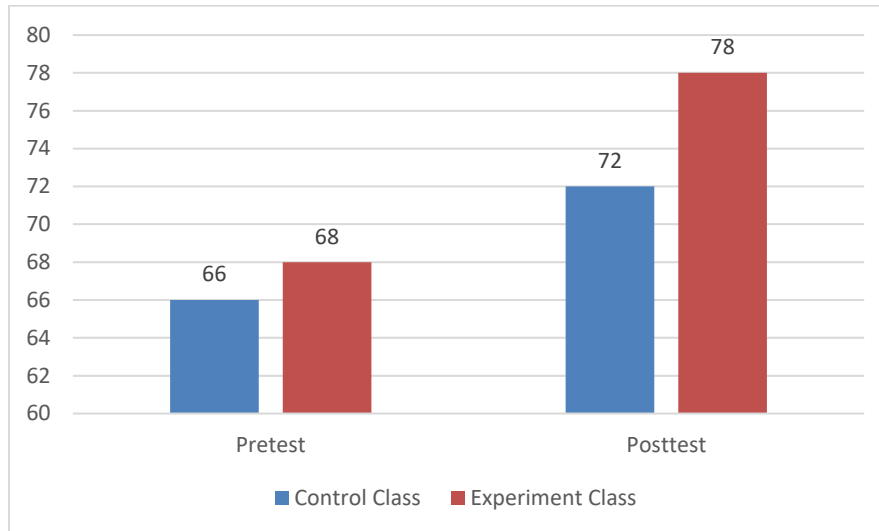
A balance test is performed to determine whether the initial ability of both classes is the same or not. Assessment of the independent-sample t-test was performed for balance test with experimental pretest and control class results. The outcomes of the balance test on the pretest of the experimental class and the control class were 0.826. Sig value.>0.05 in the pretest of the experiment class and the control class indicates that the two classes have the same initial ability. The results of the balance test can be seen in the table below:

Table 2. Result of Homogeneity Test of Learning Outcomes

Data	Sig.	α = 5%	Information
Pretest	0.826	0.05	Homogeneous
Posstest	0.734	0.05	Homogeneous

After known that if the two classes have a balanced initial ability, then the next step is conducted a hypothesis test. The hypothesis in this study is as follows:

Ho: There is no difference in student learning results between class X Multimedia 1 which uses the blended learning model using Schoology and team assisted individualization with class X of Multimedia 2 which uses the blended learning model using Schoology on Simulation and Communication Digital subjects

Ha: There are differences in student learning results between class X Multimedia 1 which uses the blended learning model by Schoology and team assisted individualization with class X Multimedia 2 which uses the blended learning model using Schoology on Simulation and Digital Communication subjects

The hypothesis test is done by using the independent-sample t-test. Ho is not denied if Sig. (2-tailed)> 0.05, while Ha will be accepted if Sig. (2-tailed)<0.05. The results of the hypothesis test can be seen in the following table:

Table 3. Hypothesis Test Results

Equation of Variation	Levene's test		T test	
	F	Sig.	t	Sig. (2-tailed)
Assumed	0.116	0.734	3,192	0.002
Not Assumed			3,192	0.002

Based on the table above, the F value is 0.116 with Sig. 0.734>0.05, so there is no variance in both classes. Thus the Sig. (2-tailed) on the assumed line, which is 0.002. Ha is accepted because of the Sig. (2-tailed) 0.002<0.05. It can be concluded that there are differences in student learning outcomes between class X Multimedia 1 -which uses the blended learning model by Schoology and team assisted individualization, with class X Multimedia 2 -which uses the blended learning model using Schoology on Simulation and Digital Communication subjects.

The results of this study are also supported by the statement of M. Nuh, Thahir, and Marzuqo (2016), if the combination of active knowledge sharing cooperative learning and team assisted individualization through information technology can improve student learning results better.

The improvement of student learning outcomes between the use of the blended learning model by Schoology and team assisted individualization, with the blended learning model using Schoology

The gain test was carried out to determine the increase in student learning results in the experimental class and the control class. The gain test obtained a value of 0.3249 in the experiment class with the moderate category. Meanwhile, for the control class, the score was 0.1354 in the low category. Thus from these results, it can be concluded that the effectiveness of the blended learning model with team assisted individualization on student learning results is higher than the blended learning model alone. The results of the gain test can be seen in the following table:

Table 4. Gain Test Outcomes on Learning Results

Class	Pretest Average	Posttest Average	Gain Score	Information
Experiment	68	79	0.3125	Moderate
Control	66	72	0.1354	Low

The results of observations of the effective area and the psychomotor area of students

All in all, in this study, the experimental class that uses the blended learning model by Schoology and team assisted individualization has a more mature learning readiness than the control class. It is because the material in the experiment class has been given online in the Schoology application before the learning process took place so that students could learn independently first by using this material. Whereas, in the control class, the material would be given if the learning process is ongoing so that it can affect students' readiness in the learning process.

Observations regarding students' attitudes and skills were carried out in the experiment class and the control class during the learning process. This observation is performed to support the success of the implementation of the learning model apart from the increase in the test scores of student learning outcomes. The data obtained show that students in the experiment class tend to be more active than the control class. During the discussion in the experiment class, students pay attention to the material and perform question-answer related to the material being studied. Besides that, each discussion group has a group leader who is responsible during the discussion process so that the discussion is more focused. Meanwhile, control classes tend to be unfocused and students are not active in performing question-answer to related material. They also learn more individually by reading material that has been given and provides extra material from the internet.

Assessment for skills is conducted by giving the task of making a video. Assessment cannot be done directly because the learning process is performed online, so there are obstacles if practical activities are implemented. From the videos that have been done by students, both the experiment class and the control class, it can be seen that students can make videos even though they are simple.

Conclusion

Based on the research outcomes, it can be inferred that there are differences and improvements in student learning results between the use of the blended learning model by Schoology and the team assisted individualization, with the blended learning model by Schoology. From all appearance, the learning outcomes of the experiment class has increased from an initial average of 68 to 78, and the control class from an initial average of 66 to 72. Then the percentage increase in the experiment class was 14.71%, and the control class was 9.1% so that both have differences in learning outcomes with an increase of 5.61%. It means that the blended learning model by Schoology and team assisted individualization is considered better than the blended learning model by Schoology.

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