The use of Google Classroom in improving Learning Achievement on Apprenticeship Program in Vocational Schools

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Abstract: Google classroom has various functions and abilities in preparing online learning that is useful in helping teachers when teaching, distributing teaching materials and assessing student's assignments without using paper. This study aims to analyze the effectiveness of using the google classroom for students who are doing an apprenticeship program in the world of work. The cluster random sampling method is used for two groups that are used as research subjects. The experimental group (n = 20) learned to use google classroom, while the control group (n = 41) learned to use the conventional method. The results of this study found that the google classroom group tended to score higher than the conventional learning group, both on the initial ability score and learning achievement score. The google classroom group got an initial ability score of 74.05 and a learning achievement score of 79.95. Meanwhile, the conventional method group got an initial ability score of 68.51 and a learning achievement score of 73.10. Thus, the use of google classroom plays a role in improving student's achievement in automotive electrical system competencies.
Keywords: Google classroom, student's achievement, apprenticeship program, vocational high school

Introduction

The apprenticeship program is a modern training system (Ridzwan & Yasin, 2015), that is applied to systematically combine knowledge learned at school to work to be done in the world of work. Through this program, both companies and students will benefit from each other, where, on one side, the company will benefit because students assist workers in terms of completing work. While on the other hand, students will benefit because, through a series of experiences gained, they can add a lot of insight and knowledge related to the world of work. In short, the apprenticeship program provides benefits for students including knowing and understanding the work culture in the industry directly, doing work like other workers, and showing good commitment, so that the industry gives appreciation and even provides opportunities to be able to join the company.

In Indonesia, apprenticeship program is a mandatory program that must be followed by all vocational high school students (Curry, 2018). This is following the mandate of the government in Presidential Instruction No. 9 of 2016 concerning the Revitalization of Vocational High Schools in the Framework for Improving the Quality and Competitiveness of Human Resources. In the instruction, it was explained that schools were required to increase cooperation with the business world to provide broader access so that vocational students could conduct the apprenticeship program (Ali et al., 2020). The purpose of this concept is nothing but to prepare workers who are ready to meet future demands, especially the 21st century skills.

Seeing the breadth of access given by the world of work, of course, vocational students are much helped in terms of increasing competencies following their respective fields of expertise (Arifin et al., 2020; Nurtanto, Arifin, et al., 2020). Generally, students will undergo an apprenticeship program in the world of work for approximately 3 to 6 months. In such a long time, students, certainly, get a lot of real experience about the world of work and get easier in achieving the expected competencies. Unfortunately, of the many advantages, the implementation of an apprenticeship program in Indonesia still has some shortcomings (Suharno et al., 2019). One drawback is that school learning activities continue even though students are doing an apprenticeship program.

As the problems that have been mentioned, of course, there must be an appropriate solution to overcome them. The solution offered is the implementation using google classroom. Google classroom is a free platform developed by google for schools. Google classroom has various functions and abilities in preparing for online learning (Fonseca & Peralta, 2019; Kholifah et al., 2020). The aim is to assist teachers when teaching, distributing teaching materials and assessing student's assignments without using paper.

Google classroom is very suitable to be applied to students who are doing apprenticeship program (Shaharanee et al., 2016). This platform has several features that support the needs of teachers in teaching, such as classwork and streams. In the classwork feature, the teacher can make test questions, pre-tests, and quizzes, upload teaching materials, and do a reflection. Then in the stream feature, the teacher can make announcements, discuss ideas, assignments, and learning material that is being discussed. Thus, students can learn school material

and conduct apprenticeship program in a balanced manner so that when students take the school exams, they have no difficulty in working (Izenstark & Leahy, 2015).

The successful use of the google classroom platform can be known from many relevant studies. Concluded that most students felt the ease and improvement in the quality of learning when using google classroom (Hidayat et al., 2019). In this case, though, there are some records that indicate the need for further development and evaluation. Found that the use of the google classroom platform provides some convenience both for teachers and students, especially when studying writing material (Fonseca & Peralta, 2019). Students also state that they can practice their writing skills, both for academic and non-academic purposes in an enjoyable learning environment. Besides, that students think that the use of google classroom is more satisfying compared to other platforms.

Their research stated that the average mathematics learning outcomes of students taught using the google classroom LMS-based flipped-problem based learning model experienced a significant increase compared to conventional learning (R. Rabiman et al., 2020; Ramadhani et al., 2019). The results of the questionnaire showed that second-year high school students felt enthusiastic, motivated, and eager to follow the learning process. Explained that google classroom was able to create an enjoyable learning atmosphere because the media was developed with information in the form of audio, video that was following aspects of pedagogical technology (Fitriningtiyas' et al., 2019; Majid et al., 2020). Thus, the quality of learning history is getting better.

Referring to the results of previous studies, it is known that the application of the google classroom is very effective when done for learning in online classes. Therefore, in this study, the use of google classroom will be applied to vocational high school students who are doing apprenticeship program. Thus, the purpose of this study was to analyze the differences in student's achievement between those who learned to use google classroom and those who learned using conventional learning on automotive electrical system competencies in vocational high schools.

Methodology

This research is a quasi-experimental research design with a Pre-Test, Post-Test Control Group. The design can later be used to assist in examining the level of similarity between the two groups that became the study sample (Creswell, 2012). That is because the initial ability score is closely related to the dependent variable, namely the student learning achievement. The research population consisted of all XI grade students at Vocational High Schools (VHS), Light Duty Vehicle Engineering (LDVE) Study Program in Surabaya City, Indonesia who were competing in automotive electrical system competencies in the academic year 2019/2020 and were doing an apprenticeship program in the world of work. Samples were selected through a cluster random sampling technique, where the results were students of class XI LDVE Study Program at VHS in Wijaya Putra Surabaya and VHS in Dharma Bahari Surabaya. LDVE class XI from VHS in Wijaya Putra Surabaya, totaling 20 students, became the experimental group, while LDVE class XI from VHS in Dharma Bahari Surabaya, amounting to 41

students, became the control group. The experimental group applied google classroom, and the control group applied the conventional learning during the apprenticeship program period.

The variables in this study consisted of independent variables. In this case, the learning method using google classroom and conventional methods. The dependent variable, in this case, is a student's achievement. Another variable that functions as a covariate is the student's initial ability score (Creswell, 2009). The instruments used in this study include test instruments, which consist of initial ability tests and student achievement tests. Data analysis techniques used were descriptive statistical tests, normality tests, homogeneity tests, and hypothesis testing with the help of SPSS 24 software. Descriptive statistical tests were performed to describe the average student's scores and standard deviation both in initial ability and learning achievement (Schneider et al., 2015). The data distribution normality test uses the Kolmogorov-Smirnov statistical test (Guetterman, 2019). Homogeneity tests of variance using Levene's test (Ghasemi & Zahediasl, 2012). Hypothesis testing uses analysis of covariance (ANCOVA) one factor with a significance of 0.05.

Results

The data obtained during the research process are data analyzed to answer the research hypotheses. In this study, groups using google classroom were proven to get different learning achievements from groups using conventional methods. This finding is known based on a descriptive statistical test analysis of initial ability scores and student's achievement, where the google classroom group got an average score of initial abilities of 74.05 with a standard deviation of 3.395, and it was categorized as incomplete. While the conventional method group gained an average score of the initial ability of 68.51 with a standard deviation of 9.290 and entered the unfinished category. More clearly, the average score and standard deviation can be seen in Table 1.

Table 1. Descriptive Statistical Test Results

Groups	*N*	*Initial Ability*		*Learning Achievement*	
		Mean	*Std. Deviation*	*Mean*	*Std. Deviation*
Google Classroom	20	74.05	3.395	79.95	5.995
Conventional Method	41	68.51	9.290	73.10	6.748
Valid N (listwise)	20				

Table 1 also shows the average score of a student's achievement both in the google classroom group and the conventional method group. The google classroom group received an average score of 79.95 with a standard deviation 5.995 and was categorized as complete. The conventional method group got an

average score of 73.10 with a standard deviation of 6.748, and it was categorized as incomplete. There is a difference in the average score of a student's achievement in the google classroom group and the conventional method group. The difference is because google classroom has proven to be effective when applied to students who are doing apprenticeship program (Quesada-Pallarès et al., 2019; Rahmad et al., 2019), so students find it easier to learn the material and do the assignments given by the teacher.

On the other hand, in the conventional method group, students find it challenging to learn. Access to discussions, distributing teaching materials, and doing assignments is very limited because adequate facilities do not support it. This causes students to be less motivated in learning. After the descriptive statistical test has been completed, it is continued on the prerequisite test stage, namely the normality test of data distribution and the homogeneity of variance test. The data distribution normality test is performed on all student achievement in both the google classroom group and the conventional method group. The recapitulation of the normality test results can be seen in Table 2.

Table 2. Data distribution normality test results

Groups	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Google Classroom	0.147	20	0.200	0.933	20	0.173
Conventional Method	0.123	41	0.121	0.951	41	0.075

a. Lilliefors Significance Correction

The data in Table 2 show that the google classroom group obtained a significance value of 0.200. This value indicates a significance level higher than 0.05 (0.200 > 0.05). While the conventional method group gets a significance value of 0.121, where the value is also higher than 0.05 (0.121 > 0.05). Overall, both the google classroom group learning achievement data and the conventional method group both obtained significance values greater than 0.05, so that it can be stated that the learning achievement data of the two groups entered in the normally distributed category.

Table 3. Variance homogeneity test results

Levene's Test of Equality of Error Variances[a]			
Dependent Variable: Learning Achievement			
F	df1	df2	Sig.
1.488	1	59	0.227

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + Initial_Ability + Learning_Methods

Based on Table 3, the results of the variance homogeneity test using the Levene's Test obtained a significance value of 0.227 for learning achieved in the google classroom group and conventional methods. The significance value is higher than 0.05 (0.227 > 0.05), so it is accepted to accept H_0 or reject H_1, which means that the variance of student achievement data between groups is homogeneous.

After the normality and homogeneity tests are completed, the data linearity test is continued. The linearity test was performed using the Test of Linearity statistic at a significance value of 0.05. The purpose of the linearity test is to determine the relationship between initial abilities and student's achievement (Rabiman Rabiman et al., 2021; Wardana & Hakim, 2019). Criteria that are used as a reference are the variables of initial ability, and student's achievement is stated to have a linear relationship if the significance is higher than 0.05. The results of the linearity test between initial abilities and student's achievement can be seen in Table 4.

Table 4. Data linearity test results

Groups	*Criteria*		*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
*Learning Achievement * Initial Ability*	*Between Groups*	*(Combined)*	1264.078	17	74.358	1.708	0.079
		Linearity	112.943	1	112.943	2.595	0.115
		Deviation from Linearity	1151.134	16	71.946	1.653	0.096
	Within Groups		1871.693	43	43.528		
	Total		3135.770	60			

From the results of the linearity test in Table 4, it is known that the significant value in the Deviation from the Linearity column is 0.096. The significance value is greater than 0.05 (0.096 > 0.05). Therefore, it can be accepted H_0 or reject H_1, which means that between the initial ability and student's achievement, there is a linear relationship.

After the normality test, the homogeneity test, and linearity test have been completed, and the next step is to test the hypothesis. Hypothesis testing is done using the F test through analysis of covariance (ANCOVA) one factor with a significance value of 0.05. In general, ANCOVA one factor is the same as anava one factor, the thing that distinguishes from anava is that there are additional variables commonly referred to as covariate variables. This variable serves to reduce the variance that might appear in the learning method (Leppink, 2018; Nurtanto, Sudira, et al., 2020). The hypothesis tested in this study were stated, accepted H_0 if the significance value obtained was smaller than 0.05. In contrast, it was agreed to accept H_1 if the significance value received was more significant than 0.05 (Greenland et al., 2016).

Accept H_0 shows that there is no difference in student's achievement between those who learn to use google classroom and those who learn using

conventional methods on automotive electrical system competencies. Meanwhile, if it is accepted H_1, it shows that there are differences in student's achievement between those who learn to use google classroom and those who learn using conventional methods on automotive electrical system competencies. The one factor Ancova test results can be seen in Table 5.

Table 5. ANCOVA one factor test results

Source	*Type III Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
Corrected Model	638.991[a]	2	319.495	7.422	0.001
Intercept	3824.606	1	3824.606	88.845	0.000
Initial_Ability	7.780	1	7.780	.181	0.672
Learning_Methods	526.047	1	526.047	12.220	0.001
Error	2496.780	58	43.048		
Total	349418.000	61			
Corrected Total	3135.770	60			

a. R Squared = 0.204 (Adjusted R Squared = 0.176)

Based on the results of the ANCOVA one factor test in Table 5, it is obtained that the student's achievement who study using google classroom and conventional methods get a significance value of 0.001. This value is smaller than 0.05 (0.001 < 0.05), so it can be accepted H_1 or reject H_0. Therefore, it can be stated that there are differences in student's achievement between those who learn to use google classroom and those who learn using conventional methods on automotive electrical system competencies.

Discussion

The results of this study indicate that there are differences in student's achievement between those who learn to use google classroom and those who learn using conventional methods on automotive electrical system competencies. The results of this study are following the results of previous studies. Found that teachers found it helpful to have google classroom as a supporter of the learning process (Iftakhar, 2016). Besides that, during the learning process, students give a positive response to the platform. Meanwhile, (Alqahtani, 2019) through his research, recommends that the use of google classroom should be immediately integrated into the educational system. This study also encourages teachers to start using a google applications in their daily activities.

Prove that most students are satisfied when using google classroom, which is introduced in class. Satisfaction is shown by all value ratios that are above average (Shaharanee et al., 2016). Comparative performance is in the excellent category. The comparative performance includes ease of access, perceived benefits, communication, and interaction, sending instructions, and student's satisfaction with google classroom learning activities. This research also supports

the analysis (Heggart & Yoo, 2018), where the use of google classroom can increase participation, interest in learning, and improve classroom dynamics. Google classroom plays a significant role in making the learning process more comfortable (Ventayen et al., 2017). This platform has a traction and ease of use. Besides, when used, students find it helpful to understand the learning material.

The use of google classroom has several advantages. Through his research findings, explain that the use of google classroom can help in building collaborative learning environments because they support teacher-to-student and student-to-student interactions (Khalil, 2018). Besides, other advantages that google classroom has been the availability of feedback features, uploading teaching materials, and providing homework (Hidayat et al., 2019). Another study conducted, which shows that students get satisfaction in using google classroom. This platform can support students to become independent learners. These results are supported by research (Al-Maroof & Al-Emran, 2018), which revealed that in developing effective student learning activities, teachers need to pay attention to factors of interest and direct use of google classroom platforms.

Conclusion

Based on the results of research and discussion, it can be concluded that there are differences in student's achievement between those who study using google classroom and those who learn using conventional methods on automotive electrical system competencies. The google classroom group tends to get a higher score than the conventional method group, both on the initial ability score and learning achievement score. The google classroom group got an initial ability score of 74.05 and a learning achievement score of 79.95. Meanwhile, the conventional method group got an initial ability score of 68.51 and a learning achievement score of 73.10. Thus, the use of google classroom plays a role in improving student's achievement in automotive electrical system competencies.

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