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THE EFFECT OF THE USE OF GOOGLE CLASSROOM ON LEARNING INDEPENDENCE AND MATHEMATICS LEARNING OUTCOMES OF STUDENTS OF SMK NEGERI 3 KUPANG DURING PANDEMIC

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ABSTRACT: The rapid and massive spread of COVID-19 in the world, including Indonesia, has greatly affected various fields of life, including education. Therefore, in order for the learning process to continue during this pandemic, a strategy is needed to meet educational needs during the pandemic. The online learning process or online (on the network) uses an application that can support distance learning namely *google classroom*. This of course requires students to be active and critical independently in studying the topics studied in learning activities. The research was conducted at SMK Negeri 3 Kupang with a population of all students of class XI majoring in Computer and Network Engineering. Samples were taken as many as 60 students. From the results of the analysis, there is an effect of using google classroom on learning independence as shown in the results of the statistical test, the value of F_{count} = 5.74 > F_{table} = 2.76 and the value of Sig. 0.002 < 0.05 so that H_0 is rejected. There is no significant effect of using google classroom on student mathematics learning outcomes, as shown in the results of the statistical test, the value of F_{count} = 2.59 < F_{table} = 2.76 and sig. 0.61 > 0.05 so that H_0 is accepted. There is an effect of using google classroom on independent learning and student mathematics learning outcomes as shown by the results of MANOVA statistical analysis, it is known that the statistical value of the Pillai's Trace test is 0.618 and the value of F_{count} = 8.341 > F_{table} = 2.18 and the value of Sig. 0.000 < 0.05 so H_0 is rejected. And there is an influence between learning independence on students' mathematics learning outcomes, as shown in the results of a simple linear regression statistical test, it is known that the value of t_{table} = 2.00172 > t_{count} = 22.138 so that H_0 is rejected.

Keywords: *google classroom, student mathematics learning outcomes, independent learning, Manova, Pillai,s Trace.*

INTRODUCTION

The first Covid-19 epidemic in Wuhan, China, spread rapidly worldwide, including in Indonesia. This pandemic dramatically affects all aspects of life, including primary education to higher education. Therefore, the Ministry of Education and Culture (Kemdikbud) issued Circular Letter No. 4 of 2020 regarding the implementation of education policies in the emergency period of the spread of *coronavirus disease (Covid-19)*. One of the regulations is to regulate the learning process from home as a strategy to meet the educational needs of children during the pandemic. The learning process from home is carried out online.

Online learning is a learning system that is not done face-to-face but uses a platform that can help the distance learning process. It can be *zoom*, *google meet*, or other online media applications such as *google classroom*, *WhatsApp* group, et cetera. One of the applications used in running the distance learning process is *Google Classroom*. Herman (in Hammi, 2017) said that Google Classroom is an application that allows the creation of classrooms in cyberspace. In addition, Google Classroom can be a means of distributing assignments, submitting assignments, and even assessing submitted assignments. Thus, this application can help make it easier for teachers and students to carry out the learning process from home during the pandemic. Teachers can distribute learning materials, create discussion forums, distribute assignments, collect assignments, and assess student assignments from home. On the other hand, students can also access learning materials, provide feedback and submit assignments from home or anywhere without being bound by time limits or lesson hours.

The application of online learning activities is certainly very impactful, especially for students. The learning process previously carried out in face-to-face classrooms has now been replaced with learning that can access from their respective homes. This learning process requires students to be more active and independent in studying the learning materials provided by the teacher. Without a face-to-face process with teachers who teach a subject, students must be more active independently in seeking and obtaining various relevant sources of knowledge. One of the things that have an important role in learning from home so that students can optimally develop their abilities is the aspect of

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student learning independence. Independence refers to the individual's willingness to learn on their own without encouragement or help from others in determining learning goals, learning methods, and evaluating learning outcomes. According to Knowles (in Sari, 2013), independence is a need where an individual takes the initiative to diagnose his learning needs, set learning goals, find learning resources, select and implement suitable learning strategies and evaluate learning outcomes. Thus, independent learning is an activity that comes from one's own will, learns independently based on motivation, does not depend on others, and is responsible for achieving the desired learning goals. It means that students are required to be independent in learning all subjects, including mathematics, in the online learning process.

SMK Negeri 3 Kupang is one of the schools that implemented distance learning system or learning from home as a preventive measure to protect all students, teachers, and employees from the transmission of the coronavirus. This change in the learning system provides a different atmosphere than usual, where schools' teaching and learning process is carried out from home online. Teachers must present learning process in a network (online) that students from their homes can access. One of the applications used is Google Classroom during the online learning period. This application is used to help students and teachers interact in sending learning materials and student assignments. It is not an easy thing to manage students to learn from home. In addition to creativity and online learning innovation from teachers and applications used to carry out the learning process, one of the crucial things that must be considered so that learning from home goes well is the need for student independence. Based on the results of an interview with one of the SMK Negeri 3 Kupang teachers, obtained information that students lacked independence in learning, which affected student learning outcomes. The lack of student independence in learning is caused because the teacher is still the center of the learning process and dominates teaching activities, forcing students to feel dependent and less active in the learning process.

Based on the results of research conducted by Najihah (2020) regarding the effect of learning motivation and learning independence during the *Covid-19* pandemic on the learning outcomes of class XII students on trigonometric function derivative materials at Madrasah Aliyah Negeri (MAN) 2 Banjar for the 2020/2021 academic year, the results obtained F test (F_{count} = 104.948 > F_{table} = 3.47) at a significance level of 5% with multiple regression models;

$$\hat{Y} = 13{,}557 + 0{,}453X_1 + 0{,}395X_2 + \varepsilon .$$

The conclusion is that students' learning motivation and independence influenced during the Covid-19 pandemic on the learning outcomes of class XII students on trigonometric function derivative materials in MAN 2 Banjar by 90.9%. The research conducted by Ernawati (2018) on the effect of using the google classroom application on the quality of learning and student learning outcomes in Economics subjects in class XI at MAN 1 Tangerang Selatan City concluded had a positive effect on student learning outcomes. The result showed using ordinal logistic regression to obtain R^2 of 0.746 and an estimated value of 0.892, which is exponential to 2.44 with a significance of 0.016 < 0.05.

Based on the description above, the researcher is interested in conducting research to determine the effect of using Google Classroom on learning independence, mathematics learning outcomes, learning independence and mathematics learning outcomes, and mathematics learning outcomes for SMK Negeri 3 Kupang students during a pandemic.

METHOD

The research method used in this research is a survey. According to Sugiyono (2017), the survey research method is a quantitative research method used to obtain data that occurred in the past or present about beliefs, opinions, characteristics, behavior, and variable relationships. Moreover, to test several hypotheses about sociological and psychological variables from the sample taken from a specific population, data collection techniques with observations (interviews or questionnaires) are not in-depth, and research results tend to be generalized. The population in this study were all students of class XI of the Computer and Network Technology expertise program at SMK Negeri 3 Kupang for the 2021/2022 academic year, totaling 152 students spread over four classes. Sampling in this study used a *simple random sampling* technique. The sample in this study amounted to 60 students. The design model in this research is two dependent variables and one independent variable. The research design can be described as follows:

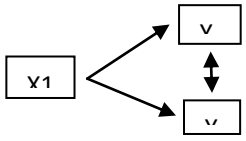

Figure 1. The variable model with two dependent variables (Sugiyono, 2017)

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Description:
X1 : Use of *google classroom*
Y1 : Independent Learning
Y2 : Learning Outcomes

The instrument used in this research is a non-test instrument in the form of a questionnaire. In this research, the type of questionnaire used was a closed questionnaire filled out online. The data collection technique used in this research is a questionnaire. The data is the result of the filled-out questionnaire, which is distributed to respondents in the form of *google forms* and documentation. Furthermore, documentation data results from the documentation needed in this research.

The data analysis technique used the Manova test. Before carrying out the Manova test, the normality of the data distribution first tested using the Mahalanobis distance test. Otherwise, by testing the correlation between the *Mahalanobis distance*, linearity, and multicollinearity between the dependent variables, homogeneity of the covariance variance matrix using the Box's M test.

RESULTS AND DISCUSSION

This research conducted at SMK Negeri 3 Kupang. The data collected in this study are data about learning independence and students' mathematics learning outcomes. The data is then analyzed further to be generalized. The results of the analysis are as follows:

Normality test

Table 1. Multivariate normality test

		Mahalanobis Distance	Qi
Mahalanobis Distance	Pearson Correlation	1	.991**
	Sig. (2-tailed)		0,000
	N	60	60
Qi	Pearson Correlation	.991**	1
	Sig. (2-tailed)	0,000	
	N	60	60

The normality test was conducted to determine whether the data were normally distributed or not. Based on table 1, it is shown that the *Pearson Correlation Mahalanobis Distance* value is 0.991 with a significance of 0.000, which is smaller than the specified significance value of 0.05, so it can be concluded that the data is multivariate normally distributed.

Linearity Test

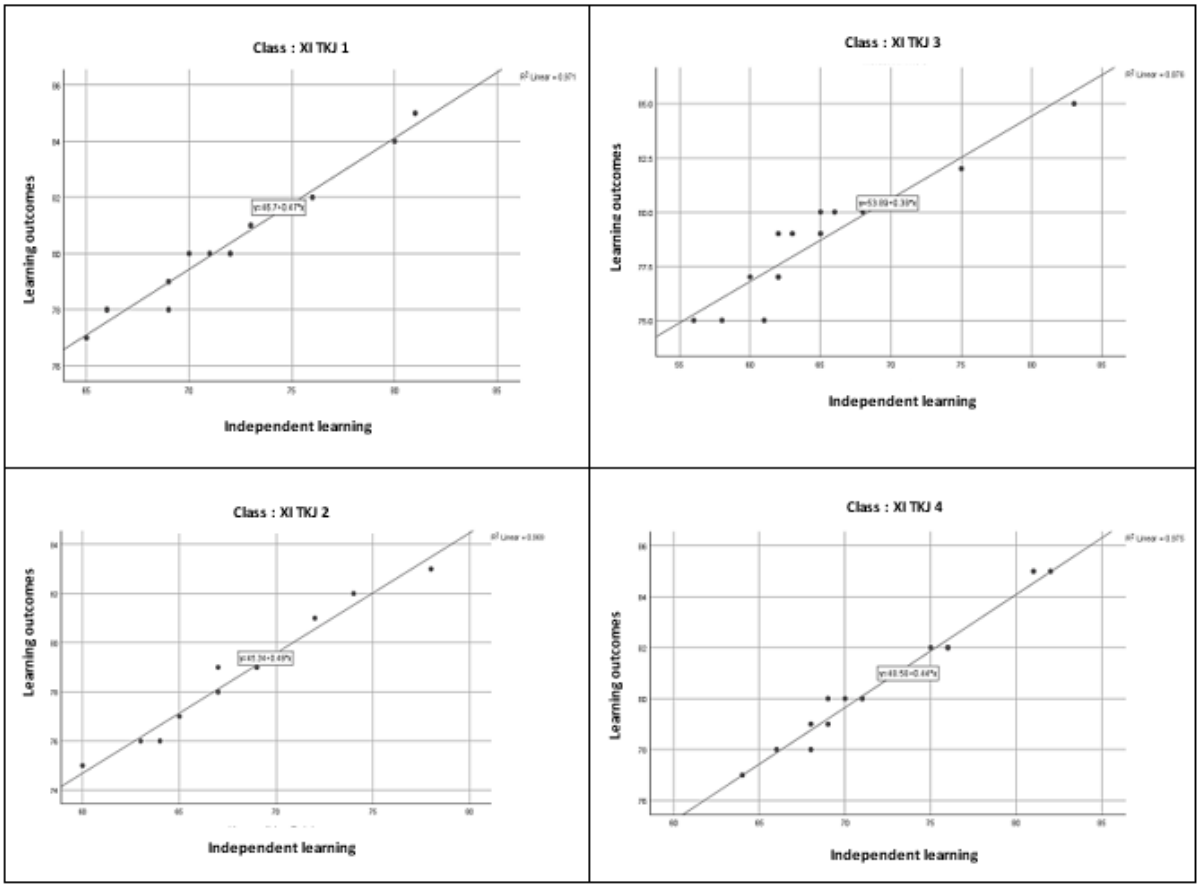

Figure 2. Linearity test

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Based on Figure 1 above, *the scatter plot* graph shows that the data plot points tend to form a straight line pattern. This pattern shows that there is a linear relationship between the dependent variables.

Multicollinearity Test

Table 2. Multicollinearity test

		Independent Learning	Learning Outcomes
Independent Learning	Pearson Correlation	1	.946**
	Sig. (2-tailed)		0,000
	N	60	60
Learning Outcomes	Pearson Correlation	.946**	1
	Sig. (2-tailed)	0,000	
	N	60	60

Table 2 shows that the independent variable and student learning outcomes have a significant relationship strength with the correlation value of 0.946 and the value of sig. 0.000 <0.05, so it can be concluded that there is multicollinearity between the dependent variables.

Homogeneity Test

Table 3. Test of homogeneity of variance

Levene's Test of Equality of Error Variances[a]					
		Levene Statistic	df1	df2	Sig.
KB	Based on Mean	0,464	3	56	0,709
HB	Based on Mean	0,291	3	56	0,832

Based on table 3, it is shown that the Levene value is 0.464 < $F_{(table)}$ = 2.769431, and the Sig. > 0.05 for learning independence of 0.709 then accept H_0, so it can be concluded that the data of learning independence has the same variance and the Levene value of 0.269 < $F_{(table)}$ = 2.769431. Moreover, the value of Sig. > 0.05 for mathematics learning outcomes of 0.848 then accept H_0, so the conclusion is the data on mathematics learning outcomes have the same variance.

Table 4. The Homogeneity of the Variance Matrix Covariance Test

Box's M	**32,009**
F	3,326
df1	9
df2	35937,955
Sig.	0,000

Based on table 4 it showed the significance value is 0.000 < 0.001. To sum up, the covariance matrix of the dependent variable is not the same, or there are differences in the covariance matrix of the dependent variable matrix.

Hypothesis Testing

Table 5. Hypothesis Testing I and II

Tests of Between-Subjects Effects						
Source		Type III Sum of Squares	Df	Mean Square	F	Sig.
Corrected Model	KB	507.917[a]	3	169,306	5,749	0,002
	HB	115.650[b]	3	38,550	6,147	0,001
Intercept	KB	285798,017	1	285798,017	9705,301	0,000
	HB	374934,150	1	374934,150	59784,489	0,000
Kelas	KB	507,917	3	169,306	5,749	0,002
	HB	115,650	3	38,550	6,147	0,001
Error	KB	1649,067	56	29,448		
	HB	351,200	56	6,271		
Total	KB	287955,000	60			
	HB	375401,000	60			
Corrected Total	KB	2156,983	59			
	HB	466,850	59			

Based on table 5, the univariate results for the effect of using *google classroom* on learning independence show that the value of F_{count} = 5.749 > F_{table} = 2.769431 and the value of Sig. of 0.002 < 0.05, so H_0 is rejected. Thus, using *google classroom* in different classes significantly affects learning independence. In line with the results of research that previous researchers have carried out, Yuhandi (2021), entitled the influence of online learning media *google classroom* on students' learning independence (a survey of students in cross-interest class X Mipa 2 SMA Pasundan 2 Bandung) which shows that the value of t_{count} is 9.698 > t_{table} 0.3291 with a significant level of 0.05. Then H_a is accepted, and H_0 is rejected. From that, it explained that the google classroom learning media variable has a significant effect on the learning independence of students. In addition, the coefficient of determination test shows the influence of google classroom learning media on the learning independence of participants students amounted to 74.6%, which means that it has a powerful influence based on the criteria of interpretation. Based on table 5, the research results show the influence of the use of *google classroom* on independent learning. Students are indirectly demanded through the distance learning process or online learning using the *google classroom* application. They must become accustomed to learning independently through materials and assignments given by the teacher by uploading them to *google classroom.* Nevertheless, not only there but also students must

independently find relevant learning resources if, during the distance learning process, there are things that are not understood to increase their knowledge and understanding of the student. Thus the use of *google classroom* can influence student learning independence. In this case, it can foster the character of student learning independence during distance learning during a pandemic.

While the analysis results for the use of google classroom on mathematics learning outcomes show that the value of F_{count} = 2.599 < $F_{(table)}$ = 2.769431 and sig. 0.61 > 0.05 so accept H_0. Thus, the use of google classroom in different classes does not significantly affect students' mathematics learning outcomes. In contrast to the results of research conducted by previous researchers, Lestari (2021) in her research entitled The effect of using google classroom learning media on learning outcomes during the COVID-19 pandemic, students of SMK Muhammadiyah 6 Medan stated that the results of hypothesis testing t_{count} 13,902 > t_{table} 1,173 with thus in conclusion there is an effect of using *google classroom* learning media on student learning outcomes at SMK Muhammadiyah 6 Medan. Similar results were also found by Sari (2021) in her research entitled the effect of using google classroom on students' mathematics learning outcomes at State Vocational High School 2 Jambi City. To summarize, there is a significant effect between the use of *google classroom* and mathematics learning outcomes. Based on table 5, the research results show no influence between the use of *google classroom* on mathematics learning outcomes. It is because during the online learning period *google classroom* as an online learning medium that helps teachers distribute lesson materials, whether it's uploading material from teachers such as learning videos from *YouTube*, *pdf worksheets*, pictures, etc., in its implementation, there is also face-to-face platform assistance such as *zoom meet* or *google meet*. These platforms help students gain further understanding of the material uploaded by the teacher in *google classroom* because not all students can directly understand the material uploaded by the teacher without any explanation from the teacher.

	Roy's Largest Root	8941,333	245886.670[b]	2,000	55,000	0,000
Class	Pillai's Trace	0,260	2,792	6,000	112,000	0,014
	Wilks' Lambda	0,743	2.940[b]	6,000	110,000	0,011
	Hotelling's Trace	0,342	3,081	6,000	108,000	0,008
	Roy's Largest Root	0,330	6.165[c]	3,000	56,000	0,001

Based on table 6, it can be seen that on the independent variables categorized into classes, the significance value tested in the *Pillai's Trace* procedure shows the statistical value of the *Pillai's Trace* test of 0.618 and the value of F_{count} = 8.341 > F_{table} = 2.180564. In addition, the value of Sig. 0.000 < 0.05 so reject H_0. The variable using *google classrom* has a simultaneous effect on learning independence and mathematics learning outcomes. In line with the results of research conducted by previous researchers, Ma'arif & Murdiono (2021), in their research entitled the effect of the use of *google classroom* on the character of independence and learning outcomes of students in junior high school, showed that there was a significant effect of the use of the *google classroom* application on the character of independence students of class VIII junior high school. There is a significant influence of the use of the *google classroom* application on the learning outcomes of class VIII junior high school students. Based on the MANOVA test results, there was an effect of using *google classroom* on independent learning and learning outcomes simultaneously. It means that the use of *google classroom* makes a positive contribution during distance learning or studying from home, which is the impact of the Covid-19 pandemic. Because *google classroom* is a means to distribute learning materials for students still to meet their learning needs during the distance learning period does not stop there, Google Classroom also encourages students to study independently from home. Thus the use of Google Classroom as an online media platform helps launch the distance learning process or online learning process so that students can achieve their learning goals.

Table 6. Hypothesis Test III

Multivariate Tests[a]

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	1,000	245886.670[b]	2,000	55,000	0,000
	Wilks' Lambda	0,000	245886.670[b]	2,000	55,000	0,000
	Hotelling's Trace	8941,333	245886.670[b]	2,000	55,000	0,000

Table 7. Simple Regression Coefficient

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	52,171	1,237		42,180	0,000
	Kemandirian Belajar	0,395	0,018	0,946	22,138	0,000

a. Dependent Variable: Learning Outcomes

Based on table 7, the results of the simple regression coefficient calculation above show that the value of the constant-coefficient is 52.171, and the coefficient of the variable X is 0.395. So the regression equation formed is as follows: $Y = 52,171 + 0,395x$.. From the calculation $t_{count} = 22,138 > t_{table} = 2,00172$ so that H_1 is accepted and H_0 is rejected. From the results of testing the hypothesis, it is evident that there is an influence between learning independence on mathematics learning outcomes for students at SMK Negeri 3 Kupang during the pandemic.

Table 8. Coefficient of Determination

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.946[a]	0,894	0,892	0,82919

a. Predictors: (Constant), Independent Learning

Based on table 8, the value of the coefficient of determination obtained is 0.894, so it can be interpreted that learning independence influences 89.4% of contribution to mathematics learning outcomes, and other factors influence the remaining 10.6%.

The results of this study are in line with the results of studies that previous researchers have carried out. Bey & Narfin (2013), in their research entitled the effect of independent learning in mathematics on mathematics learning outcomes for students in class XI Science at SMA Negeri 6 Kendari, showed that independent learning in mathematics had a significant effect on mathematics learning outcomes for students. This is based on the value of t_{count} = 2.346 > t_{table} = 2.0172. Similar results were also found by (Dewi, et al, 2020) in their research entitled the effect of learning independence on mathematics learning outcomes, the conclusion is a significant positive effect of learning independence on mathematics learning outcomes with a large contribution of learning independence to mathematics learning outcomes by 42%, and other variables contributed the remaining 58%. Based on the results of SPSS calculations, this research established a significant positive effect between learning independence and mathematics learning outcomes. It is explained as student learning independence can improve student mathematics learning outcomes. Syah (in Bey & Anwar, 2013) argues that students who have good learning independence will have a relatively large opportunity to obtain satisfactory learning outcomes compared to students who have poor learning independence, affecting students' mathematics learning outcomes. Thus, if students have good learning independence, these students will have good learning outcomes. On the other hand, if students have poor learning independence, they will have poor learning outcomes.

CONCLUSIONS AND SUGGESTIONS

Based on the results of research and discussion on the effect of using *google classroom* on independent learning and mathematics learning outcomes of SMK Negeri 3 Kupang students during the pandemic, obtained: (1) the results of the statistical test value F_{count} = 5.749 > F_{table} = 2.769431 and the value of Sig. of 0.002 < 0.05, there is an effect of using google classroom on the learning independence of students at SMK Negeri 3 Kupang. (2) the results of the statistical test F_{count} = 2,599 < F_{table} = 2,769431 and sig. 0.61 > 0.05, there is no significant effect of using google classroom on learning outcomes at SMK Negeri 3 Kupang. (3) the results of the MANOVA statistical test, it is known that the statistical value of the Pillai's Trace test is 0.618 and the value of F_{count} = 8.341 > F_{table} = 2.180564, and the value of Sig. 0.000 <0.05 so that there is an effect of using google classroom on independent learning and mathematics learning outcomes for students at SMK Negeri 3 Kupang. (4) the simple linear regression statistical test results show that the value of t_{table} = 2.00172 > t_{count} = 22,138 22.138 so that there is an influence between learning independence on mathematics learning outcomes for students at SMK Negeri 3 Kupang.

The researcher's suggestions are knowing and realizing the importance of learning independence in supporting distance learning in improving student competence during a pandemic and using Google Classroom as a platform to support the online learning process during a pandemic. Teachers can adjust strategies for the teaching and learning process created to help students develop their independent character and for students to take the initiative to study independently to achieve good learning outcomes. Besides that, it can also be a reference for further research. Further research is expected to compare online learning media applications, pay attention to other factors affecting mathematics learning outcomes, and add more research variables. In this case, the application of the two-way MANOVA technique in further research.

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