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The Effect of Google Classroom and WhatsApp Group on The Interests and Students' Learning Outcomes of Natural Science in Class 4

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Abstract: The purpose of this study was to find out the significant influence of learning by using Google Classroom and WA Group on student outcomes in the Natural Science subject of grade four elementary school in Gajah Mada Cluster Bonang. This research is a type of quantitative. Instrument tests use validity tests and reliability. The final analysis test uses regression, F, t, and coefficient of determination. The results showed there was a significant difference between learning using Google Classroom and WhatsApp Group for students' learning interests. Based on the output table independent samples test in the section equal variances assumed known Sig. value (2-tailed) of 0.006 <0.05, then as the basis of decision making in the independent sample t-test can be concluded that Ho was rejected, and Ha accepted. Thus, it can be concluded that there is a significant (noticeable) difference between the average student's learning interest in the experimental class and the control class. It means the same as between learning using Google Classroom and WhatsApp Group effect the learning outcomes of elementary school students in the Natural Science subject in Bonang. Based on the output table independent samples test in the section equal variances assumed known Sig. value (2-tailed) of 0.016 <0.05, then as the basis of decision making in the independent sample t-test can be concluded that Ho was rejected, and Ha accepted. Thus, it can be concluded that there is a significant (real) difference between the average learning outcome of students in the experimental class and the control class.

Keywords: Google classroom, WA group, interests, and learning outcomes

1. Introduction

Now, many people are in deep sorrow about the outbreak of coronavirus desease (Covid-19) that hit all over the world because it originated in Wuhan. Therefore, various countries implement large-scale social distancing to reduce the spread of the virus. According to Wajdi et al. (2022), Indonesia implements a policy of learning and workship from home. Currently, students experience a different learning that is learning online.

Online learning and working from home to prevent the spread of Covid-19 is in accordance with the Circular Letter of the Minister of Education No. 36961/MPK.A/HK/2020 on online learning and working from home in order to prevent the spread of Covid-19. This is reinforced by previous research by Pratama et al. (2020) that the influence of online learning on the natural science learning outcomes of elementary school students can be concluded that there is a significant difference between online learning and conventional learning.

Based on the results of observations in grade IV elementary school students in Gajah Mada Cluster found in learning theme 2, sub-theme 1 energy source there are still students who do not understand the material. Study outcome data showed a low of 61 and a top score of 86, with a grade average of 70.8. Students who achieve the minimal completion criteria as many as 10 students or 50% of the 20 students who achieve complete learning. This is because students do not understand when doing online quizzes because of students' lack of understanding with parents about the use of information technology using the internet network and students feel less guided by teachers due to a lack of teacher mentoring or face-to-face guidance directly (Nojen, 2021).

Teachers choose the right learning media to improve students' learning outcomes. In increasing interest and learning outcomes, there is an application of learning media that is in accordance with current technology (Dita et al., 2021). As for the application of information and communication technology that has the potential to be used as a learning medium is the internet, there are enough schools that have computers. This internet-based learning method is called *e-learning.*

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E-learning or electronic learning was first introduced by the University of Illionis in Urbana-Champaign using a computer-based instruction system (Kumar Basak, Wotto, & Belanger, 2018). Google is a product made to assist teachers and students in carrying out teaching and learning activities. As written on its official website, Google for Education has several services that are very helpful in the teaching and learning process in schools, such as Google Classroom, Google Mail, Google Calendar, Google Drive, and Google Docs. Google Classroom is a service that is worth applying in Indonesia because Google Classroom has the same structure as learning that exists today.

From the background review above, researchers reviewed through research with the title The effect of using Google Class Room and WA Group on interests and learning outcomes of elementary school students natural science subject Class 4 in Gajah Mada Cluster Bonang Subdistrict.

2. Literature Review

Google Classroom is one of the features or services provided by Google to facilitate teachers and students in interacting and doing online teaching and learning activities (Hussaini et al., 2020). The use of Google Classroom makes it easier for teachers to manage to learn and convey information appropriately and accurately to students (Sudarsana et al., 2019).

Whatsaap is a messaging-based application that makes it easy for us to exchange messages without being charged short message services (SMS) because WhatsApp utilizes internet access (Shodiq & Zainiyati, 2020).

Previous research by Pratama et al. (2020) that the influence of online learning on the learning outcomes of elementary school students can be concluded that there is a significant difference between online learning and conventional learning.

3. Methodology

This research is experimental research. In this study, sampling techniques used purposive sampling techniques (Campbell et al., 2020) with a population of 6 Public Elementary Schools in the Gajah Mada Cluster and a sample of 2 schools namely Public Elementary School No. 2 Purworejo and Public Elementary School No. 4 Purworejo, Bonang. The data collection methods are questionnaires and tests. Instrument tests use validity tests and reliability tests. The final analysis test uses regression, f-test, t-test, and coefficient of determination.

4. Result and Discussion

4.1 Normality Test

The normality test is useful to find out whether a study's data is normal or not. In parametric statistical analysis, normally distributed data is both a must and an absolute requirement that must be met (Biu, Nwakuya, & Wonu, 2020). If the data is found to be not normally distributed, then the testing of the research hypothesis is done using a non-parametric statistical analysis approach using Shapiro Wilk because the sample count is less than 50.

Table 1 - Normality test of learning outcomes.

Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Experiment	.181	20	.086	.941	20	.252
Control	.236	20	.005	.937	20	.208
a. Lilliefors Significance Correction						

Based on the normality test in Table 1, significant values for the experimental class were .252, and significant values for the control group of .208. Since the significant value for both groups is >0.05, as the decision-making basis in Shapiro Wilk's normality test above, it can be concluded that student learning outcome data for experimental classes and control classes are normal distribution.

4.2 Homogeneity

In statistical analysis, the homogeneity test aims to find out whether the variation of some data from the population has the same variance or not. According to Kang & Yusof (2012) homogeneity test is used as reference material to determine the decision of the next statistical test. Test homogeneity with descriptive statistic SPSS.

Table 2 - Homogeneity test of learning outcomes.

		Levene Statistic	df1	df2	Sig.
Results	Based on Mean	1.293	1	38	.263
	Based on Median	1.079	1	38	.306
	Based on Median and with adjusted df	1.079	1	37.446	.306

	Based on trimmed mean	1.312	1	38	.259

Based on Table 2, the sig value. Based on the mean for variable learning outcomes in natural science being .263 >0.05, it can be concluded that the experimental class variance and control class are the same or homogeneous.

4.3 Independent Sample t-Test

4.3.1 Hypothesis 1

Test t is used to determine the effect of free variables partially or alone on variables bound to the constant 0.05 then the results of the t-test for each variable are testing hypothesis 1 is known that:
Ho: ß = 0: There is no influence of Google Classroom
Ha: ß = 0: There is the influence of Google Classroom

Based on Table 3 shows the section equal variances assumed known Sig. value (2-tailed) is .000. This means that there is an influence of Google Classroom on the interest of learning students.

Table 3 - Independent sample t-test hypothesis 1.

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
Student interest	Equal variances assumed	.850	.362	5.173	38	.000
	Equal variances not assumed			5.173	34.994	.000

4.3.2 Hypothesis 2

Testing hypothesis 2 is known that:
Ho: ß = 0: There is no influence of Whatsapp Group on students' learning interests
Ha: ß = 0: There is an influence of Whatsapp Group on students' learning interests

Based on Table 4 in the section, equal variances assumed known Sig value. (2-tailed) of 0.026 <0.05, then as the basis of decision making in the independent sample t-test can be concluded that Ho was rejected, and Ha accepted. Thus, it can be concluded that there is a significant difference between the average student's learning interest before and after learning with WhatsApp group media. This means that there is an influence of WhatsApp Group on students' learning interest in the Natural Science subject class 4 elementary school in Gajah Mada Cluster Bonang Subdistrict.

Table 4 - Independent sample t-test hypothesis 2.

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	T	Df	Sig. (2-tailed)
Student interest	Equal variances assumed	2.771	.104	2.324	38	.026
	Equal variances not assumed			2.324	32.276	.027

4.3.3 Hypothesis 3

Hypothesis 3 testing is known that:
Ho: ß = 0: There is no influence of Google Classroom on student learning results
Ha: ß = 0: There is the influence of Google Classroom on student learning results

Based on Table 5 in the section, equal variances assumed known Sig. value (2-tailed) of 0.005 <0.05, then as the basis of decision making in the independent sample t-test can be concluded that Ho was rejected, and Ha accepted. Thus, it can be concluded that there is a significant difference between the average student learning outcome before and after learning with Google classroom media. This means that there is an influence of Google Classroom on elementary school student learning results in the natural science subject class 4 in Gajah Mada Cluster Bonang.

Table 5 - Independent sample t-test hypothesis 3.

Results		t-test for Equality of Means			
	Equal variances assumed	**T**	**df**	**Sig. (2-tailed)**	**Mean Difference**
	Equal variances assumed	2.967	38	.005	7.250
	Equal variances not assumed	2.967	35.954	.005	7.250

4.3.4 Hypothesis 4

Hypothesis 4 testing is known that:
Ho: ß = 0: There is no influence of Whatsapp group on student learning results
Ha: ß = 0: There is the influence of Whatsapp group on student learning results

Based on Table 6 in the section, equal variances assumed known Sig value. (2-tailed) of .034 <0.05, then as the basis of decision making in the independent sample t-test can be concluded that Ho was rejected, and Ha accepted. Thus, it can be concluded that there is a significant difference between the average student learning outcome before and after learning with WhatsApp group media. This means that there is an influence of the WhatsApp group on student learning results in the Natural Science subject class 4 elementary school in Gajah Mada Cluster Bonang.

Table 6 - Independent sample t-test hypothesis 4.

		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
Results	Equal variances assumed	2.469	.124	2.195	38	.034	5.250	2.392	.408	10.092
	Equal variances not assumed			2.195	37.163	.034	5.250	2.392	.405	10.095

4.3.5 Hypothesis 5

Hypothesis 5 testing is known that:
Ho: ß = 0: There was no significant difference between Google Classroom and WA Group for students' learning and interests
Ha: ß = 0: There is a significant difference between Google Classroom and WA Group for students' learning and interests

Based on Table 7, the amount of learning data for the experimental group is as many as 20 students, while for the control group is as many as 20 students. The average value of student learning interest or mean for the exclusion group was 31.50, while the control group was 26.85. Thus, descriptive statistics can be concluded there is a difference in the average interest in learning students between the experimental group and the control group. Furthermore, to prove whether the difference means significant (real) or not then we need to interpret the following independent samples test.

Furthermore, the value of the mean difference is 4.650. This score showed a difference between the average student's learning interest in the experimental group and the average student's learning interest in the control group or 31.50-26.85 and the difference was 1.396 (95% confidence interval of the lower upper difference).

Table 7- Independent sample t-test hypothesis 5.

Group Statistics					
	Class	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Student interest	Experiment	20	31.50	5.135	1.148
	Control	20	26.85	5.029	1.125

Based on Table 8, sig value. Levene's test for equality of variances is .711 >0.05, meaning that the variance of data between the experimental group and the control group is homogeneous or the same. So that the interpretation of the independent samples test is guided by the values contained in the table equal variances assumed.

Independent samples test in the section equal variances assumed known Sig. value (2-tailed) of .006 <0.05, then as the basis of decision making in the independent sample t-test can be concluded that Ho was rejected, and Ha accepted. Thus, it can be concluded that there is a significant (noticeable) difference between the average student's learning interest in the experimental class and the control class.

Table 8 - Independent sample test.

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	**Sig.**	**T**	**Df**	**Sig. (2-tailed)**
Student interest	Equal variances assumed	.140	.711	2.893	38	.006
	Equal variances not assumed			2.893	37.984	.006

4.3.6 Hypothesis 6

Hypothesis 6 testing is known that:

Ho: ß = 0: There is no significant difference between Google Classroom and WA Group learning to students' learning outcomes

Ha: ß = 0: There is a significant difference between Google Classroom and WA Group learning to student learning outcomes

Based on Table 9, the amount of learning data for the experimental group is as many as 20 students, while for the control group is as many as 20 students. The average grade of student learning outcomes or mean for the exclusion group was 81.50, while the control group was 75.25. Thus, desktriptif statistics can be concluded there is a difference in the average student learning outcome between the experimental group and the control group. Furthermore, to prove whether the difference means significant or not then we need to interpret the following independent samples test output.

Furthermore, the value of the mean difference is 6.250. This score showed a difference between the average student's learning interest in the experimental group and the average student's learning interest in the control group or 81.50-75.25 and the difference was 1.239 (95% confidence interval of the lower upper difference).

Table 9 - Independent sample t-test hypothesis 6.

Group Statistics					
	Class	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Results	Experiment	20	81.50	8.599	1.923
	Control	20	75.25	6.973	1.559

Based on Table 10, sig. value Levene's test for equality of variances is .263 >0.05, meaning that the variance of data between the experimental group and the control group is homogeneous or the same. So that the interpretation of the independent samples test is guided by the values contained in the table equal variances assumed.

In the section, equal variances are assumed known as Sig. values (2-tailed) of .016 <0.05, then as the basis of decision making in the independent sample t-test can be concluded that Ho was rejected, and Ha accepted. Thus, it can be concluded that there is a significant (real) difference between the average learning outcome of students in the experimental class and the control class.

Table 10 - Independent sampel test.

		Levene's Test for Equality of Variances		**t-test for Equality of Means**		
		F	**Sig.**	**T**	**Df**	**Sig. (2-tailed)**
Student interest	Equal variances assumed	1.293	.263	2.525	38	.016
	Equal variances not assumed			2.525	36.444	.016

4.4 ANOVA Test

One-way ANOVA analysis or one-factor ANOVA test basically aims to compare the average values contained in bound variables in all groups compared. The values of each group are viewed based on category-scale free variables. The function of free variables here is actually to represent the groups to be studied. Free variables in ANOVA analysis of one factor are also referred to as factor variables, while the groups being compared are referred to as factor-level variables. Anova's one-way analysis compares the average grades of experimental and control classes.

Based on Table 11, it is known sig value of .016 <0.05 so it can be concluded that the average student learning outcome differs significantly. This means that there is a difference in the average student learning outcome between the experimental class using google classroom and the WhatsApp group control class. Basic decision-making in Anova analysis:

1. If the significance value (Sig) >0.05 then the average is the same
2. If the significance value (Sig) <0.05 then the average is different

Table 11 - ANOVA test.

	Sum of Squares	**Df**	**Mean Square**	**F**	**Sig.**
Between Groups	390.625	1	390.625	6.374	.016
Within Groups	2328.750	38	61.283		
Total	2719.375	39			

The use of Whatsapp as a learning medium is very instrumental and spreads information to students. The use of Whatsapp is also a means of communication with students. The ease of communication is very helpful in learning due to a lack of understanding of the material students. This is reinforced by previous research by Pamungkas & Sartika (2021) that the use of Whatsapp as proper and positive information and learning media as the use and utilization of technology. Another study by Kamil (2018) research showed that learning using the Investigation Group (GI) assisted by WA Group media can have a positive influence on learners' learning outcomes when compared to the learning process using the GI model only.

Research related by Ningrum (2020) that the learning process uses Google Classroom media, the perception of students and teachers towards the implementation of Google Classroom learning in the era of pandemic Covid-19 solar system material. Ningrum's research using qualitative methods with the results of research shows that learning using Google Classroom media in the era of the Covid-19 pandemic has not reached minimum completeness criteria classically, students' perception of the implementation of learning is considered interesting, easy to understand, then the teacher's perception of the implementation of learning considers video as the most effective medium even though student learning outcomes are still low.

5. Conclusions

WhatsApp Group and Google Classroom-based learning materials in Natural Science learning designed for the development of learning skills in this study have met the acceptance criteria, and this was proven by the results of students' excellent perceptions. Much recommended use in learning in Social Science learning in general. This study shows that WhatsApp Group and Google Classroom can significantly increase students' interest in learning, especially in the application of online learning.

Teachers should be able to apply more creative learning by utilizing Google Classroom and WAG media combined with interesting materials so that it can increase students' interest and learning outcomes. Principals encourage teachers to utilize Google Classroom and WAG for learning because they can increase students' interest and learning outcomes.

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Conflict of Interest

The authors declare no conflicts of interest.

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