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# TRIGING STUDENT LEARNING RESULTS WITH UTILIZING GOOGLE CLASSROOM AND ZOOM PLATFORM

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## ARTICLE INFO

**Article history:**  
25 December 2019  
Received in revised form  
01 January 2020  
Accepted 25 January 2020  
Available online 28  
February 2020

**Kata Kunci:**  
hasil belajar, google  
classroom, zoom

**Keywords:**  
achievement, google  
classroom, zoom

## ABSTRAK

Penelitian ini dilakukan karena belum optimalnya hasil belajar IPA siswa selama pembelajaran daring menggunakan WA group. Dengan demikian diperlukan pelaksanaan pembelajaran daring dengan menggunakan berbagai platform yang ada, salah satunya dengan kombinasi google classroom dan virtual meet dengan zoom. Penelitian ini dilakukan di kelas VI SD negeri di Gugus 6 Batubulan, Sukawati Gianyar dengan melibatkan sampel sebanyak 92 orang siswa yang diambil dengan teknik simple random sampling. Data hasil belajar IPA siswa dikumpulkan dengan tes yang sebelumnya telah diuji validitas isi, validitas empirik, dan koefisien reliabilitasnya. Data yang terkumpul dianalisis menggunakan analisis covarian satu jalur, dengan terlebih dahulu diuji normalitas sebaran data, linieritas garis regresi, dan homogenitas varian. Hasil penelitian ini menunjukkan bahwa terdapat perbedaan hasil belajar IPA antara siswa yang mengikuti pembelajaran daring kombinasi google classroom dan zoom dengan siswa yang mengikuti pembelajaran daring dengan WA group setelah dilakukannya pengendalian variabel pengetahuan awal.

## ABSTRACT

*This research was conducted because the students' science learning outcomes were not optimal during online learning using the WA group. Google classroom and virtual meetings using zoom are indispensable as a combination for implementing online learning using various platforms. This research was conducted at SD Negeri Gugus 6 Batubulan, Sukawati Gianyar, involving a sample of 92 class VI students using simple random sampling technique. Student learning outcomes data in science were collected by tests that had been tested for content validity, empirical validity, and reliability coefficient. The analysis technique used in this study is the one-way ANACOVA, that had been tested the normality of data distribution, linearity regression, and the homogeneity of variants. The results of this study indicate that there are differences in science learning outcomes between students who take online learning using a combination of google classroom and zoom, with students who take online learning using WA group after controlling the prior knowledge variable.*

## 1. Introduction

Since first appearing in the city of Wuhan at the end of 2019 (Roosa et. al., 2020), Covid-19 is responsible for a deadly pandemic worldwide (Stoecklin, et. al., 2020). Less than six months since it was discovered, this virus has been reported to infect 190 countries (Rachna, et. al., 2021) including Indonesia. Some policies were carried out by the Indonesian government to prevent the spread of Covid-19, such as: social distancing, physical distancing, large-scale social restrictions (PSBB) based on Government Regulation number 4 of 2020, effective from 1 April 2020. The consequences of this decision also have an impact on the education sector, such as the policy of the Ministry of Education and Culture in implementing distance learning/learning from home/online learning by issuing Circular Letter Number 4 of 2020. The circular letter regarding government policies in education sector while emergency period of the corona virus disease (Covid-19), one of which includes online or distance education. This learning changes the paradigm from knowledge transfer in the classroom to the virtual classroom (Chen & Li, 2011; Liang, Zheng, & Wang, 2011). During pandemic situation, online learning has been carried out

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**Commented [P2]:** Tidak perlu mencantumkan lokasi penelitian

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1. Explain the expected ideal conditions, which are related to the variables to be studied.
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4. solutions (pouring independent variables) development (developing something new)
5. previous relevant research studies related to the proposed solution.
6. The novelty of the research offered, and the urgency of the research need to be sharpened
7. The research objectives are made in 1 paragraph which is developed more specifically than the objectives stated in the abstract

almost all over the world (Goldschmidt, 2020). In Indonesia, online learning implements with some application such as ruang guru, class rooms, zoom, google classrooms, google forms, or via WhatsApp groups. This situation indirectly forces and demands teachers to be able to use technological sophistication in learning.

Mulyasa (2007) explains, teachers are required to have competence in utilizing learning technology, especially the internet (e-learning) in order to be able to take advantage of knowledge, technology, and information to do their duties as a teacher and build the competence of students. The focus of using technology in the e-learning process for focused on making learning easier and more effective so that students will be competent to access learning material via computer networks. The World Economic Forum in 2017 also states that teachers must be able to understand three key points of educational progress, namely competence, character and literacy (WEF, 2017). Indirect online learning also requires teachers to increase their digital literacy. Digital literacy is defined as the knowledge and skills to use digital media, communication tools or networks in finding, evaluating, using, making information, and take advantage of healthy, wise, intelligent, accurate, correct, and law-abiding manner in order to foster communication and interaction in daily life (Kemendikbud, 2017). With good digital literacy, teachers will be competent to teach online learning by using various learning management systems (LMS), such as: Moodle, schoology, google classroom, google meet, zoom and others. Not only take advantage of WhatsApp groups with student's parent. Of course, this is a certain task for the teacher, because they have to manually organize the student assignments in the WA group, and this definitely makes work more difficult (Rosidah, 2020). The same thing also happened in class VI SD Gugus 6 Batubulan, especially in science learning. Most of the teachers make use of the WA group for online learning. Starting with sending a weekly schedule, then followed by a learning video, and ending with the work of assignments that must be sent privately to the WA teacher.

Discussions via WA group really help users to communicate online (Ricu, 2016), but are limited to chat. Of course, this learning is not effective and has many weaknesses. This is according to the opinion of Kusuma and Hamidah (2020) that using WA for learning system has been complained by some students, because of the short interaction and teachers tend to give more assignments, it's make the reason for students feel overwhelmed to do tasks. For this reason, it is important to find other solutions for online learning can run effectively and can improve the outcomes learning. One of the platforms that can be used is google classroom and zoom. Google classroom is a kind of mixed learning method that began in 2014 which considers the achievement of certain functions such as simplifying student-teacher communication, as well as the ease of distributing and assessing assignments (Al-Marouf & Al-Emran, 2018), which can increase classroom productivity (Azhar & Iqbal, 2018), and can make it easier for teachers to manage learning and deliver information appropriately and accurately to students (Hakim, 2016). Meanwhile, zoom is also believed by stakeholders to be an effective platform in online learning, however, need awareness of this online learning can lead to fatigue (Mpungose, 2020). With the combination of these two features, it is hoped that it will be able to facilitate online learning until it will lead to increasing student science learning outcomes.

## 2. Method

This research was conducted on grade VI student in SD Negeri Gugus 6 Batubulan which aims to compare student's science learning outcomes in the online learning period using a combination of google classroom and zoom using the WA group after controlling for student's prior knowledge. Researchers cannot exclusively control other variables that have affect student's science learning outcomes, accordingly this research is classified as a quasi-experimental design with a non-equivalent control group design.

Experiment Group	→	X <sub>1</sub>	→	O <sub>1</sub>
Control Group	→	X <sub>2</sub>	→	O <sub>2</sub>

**Figure 1. Non Equivalen Control Group Design**

Involving a sample of 92 people who were taken by simple random sampling technique. The data was collected from student's score on science learning outcomes using tests that were compiled by the researcher. This learning outcome test has previously been tested for validity through content validity using Gregory (Mahendra, 2019) and empirical validity using moment product correlation (Field, 2009). While the reliability coefficient is calculated using the Alpha Cronbach formula because it is in the form of an essay test (Mahendra, 2019). The collected data were analyzed using one-way analysis of covariant

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(ANCOVA) parametric statistics which had previously been tested for the normality of the data distribution, the regression direction linearity test, and the variance homogeneity test. All research data analysis uses the help of the IBM SPSS statistics 26 program.

### 3. Results and Discussion

The difference in student's science learning outcomes as a result of online learning interventions using the various LMS available becomes object of this study. Specifically using LMS is separated into two, namely application combination of google classroom and zoom which is called the experimental group and the use of the WA group which is called the control group. With the research design nonequivalent control group design and parametric statistics in the form of one-way ANCOVA test as a data analysis tool. The data in this study are grouped into science learning outcomes of students who take learning with a combination of google classroom and zoom, science learning outcomes of students who take lessons with the WA group, and data on student's prior knowledge. The results of the analysis center data measurement (mean, mode, median) and data distribution measurement (variance and standard deviation) on the science learning outcomes score and student's prior knowledge can be seen in the following table.

**Table 1.** Statistic Deskriptif

	Y <sub>1</sub>	Y <sub>2</sub>	X <sub>1</sub>	X <sub>2</sub>
N	Valid	46	46	46
	Missing	46	46	46
Mean	73.1739	58.7609	19.5870	20.4130
Median	74.0000	58.0000	20.0000	21.0000
Mode	75.00	57.00	18.00	21.00
Std. Deviation	6.68432	7.25162	4.78691	4.19299
Variance	44.680	52.586	22.914	17.581
Range	32.00	41.00	19.00	20.00
Minimum	53.00	35.00	9.00	10.00
Maximum	85.00	76.00	28.00	30.00
Sum	3366.00	2703.00	901.00	939.00

The normality test is carried out to ensure that the statistical test used in testing the hypothesis can actually be done. This is important, because if the data is not normally distributed, then the t-test which is a parametric statistic cannot be done (Field, 2009). The normality test in this study used the Kolmogorov-Smirnov module at the output of IBM SPSS statistics 26 on the two groups of data on student's science learning outcomes.

**Table 2.** Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Y <sub>1</sub>	.120	46	.094	.965	46	.182
Y <sub>2</sub>	.089	46	.200*	.961	46	.131

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The Kolmogorov-Smirnov test analysis represent that sig. > 0.05 for two data groups, such as data on student's science learning outcomes in the experimental group (Y<sub>1</sub>) and the control group (Y<sub>2</sub>) as in the table above. That means H<sub>0</sub> is accepted (failed to be rejected), both sample groups are normally distributed.

The prerequisites for covariance analysis include: (1) the independent variable or covariate X has a linear effect on the dependent variable Y, (2) the covariate X has a linear effect on the dependent variable which is same in all cells formed by the factor (one multifactor) that is reviewed, and (3) the factor or multi-factor that is reviewed or used as the independent variable has no effect on covariate X. At the same with criteria or prerequisites, the X covariate is measured or observed before the measurement of the factors or multi-factors is carried out (Agung, 2006).

**Commented [P8]:** The results that need to be considered are answering the research objectives.  
 In the discussion: 1. how to interpret the research results. 2. Comparing research results with previous theories/research (add credible sources). 3. The contribution of research results and research implications need to be sharpened  
 4. There are no research limitations and recommendations for further researchers (suggestions)

**Table 3.** Test of Linearity Between  $Y_1 * X_1$ 

		Sum of Squares	df	Mean Square	F	Sig.	
$Y_1 * X_1$	Between Groups	(Combined)	648.159	16	40.510	.862	.613
		Linearity	222.792	1	222.792	4.742	.038
		Deviation from Linearity	425.366	15	28.358	.604	.848
Within Groups		1362.450	29	46.981			
Total		2010.609	45				

From the linearity test table ( $Y_1 * X_1$ ) between the experimental group's science learning outcomes data ( $Y_1$ ) and the experimental group's prior knowledge data ( $X_1$ ), it can be seen that the Deviation from Linearity module has a sig value.  $> 0.05$  or  $0.848 > 0.05$ . It's means that the learning outcome data and the experimental group's prior knowledge have a linear relation. Besides that, the Linearity module represent sig value.  $< 0.05$  or  $0.038 < 0.05$ ; which means having a meaningful connection. This it can be concluded that the learning outcome data and the experimental group's prior knowledge have a linear and useful connection.

**Table 4.** Test of Linearity Between  $Y_2 * X_2$ 

		Sum of Squares	df	Mean Square	F	Sig.	
$Y_2 * X_2$	Between Groups	(Combined)	1346.920	15	89.795	2.642	.011
		Linearity	750.472	1	750.472	22.085	.0001
		Deviation from Linearity	596.448	14	42.603	1.254	.291
Within Groups		1019.450	30	33.982			
Total		2366.370	45				

From the linearity test table ( $Y_2 * X_2$ ) between the science learning outcomes data of control group ( $Y_2$ ) and the control group's prior knowledge data ( $X_2$ ), it can be seen that the Deviation from Linearity module has a sig value  $> 0.05$  or  $0.291 > 0.05$ . That means the learning outcome data and the control group's beginning knowledge have a linear connection. Meanwhile, the Linearity module shows the sig value.  $< 0.05$  or  $0.001 < 0.05$ ; that has a meaningful relation. Thus, it can be concluded that the learning outcome data and the experimental group's prior knowledge have a linear and meaningful connection.

Homogeneity variance test that has been done to ensure that the differences obtained from one-way ANCOVA test really came from differences between groups, not due to differences within groups (Field, 2009). From the results of the analysis of the variance homogeneity test using IBM SPSS statistics 26, the following output is obtained.

**Table 5.** Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Y	Based on Mean	.190	1	90	.664
	Based on Median	.182	1	90	.670
	Based on Median and with adjusted df	.182	1	89.441	.670
	Based on trimmed mean	.214	1	90	.645
X	Based on Mean	.771	1	90	.382
	Based on Median	.709	1	90	.402
	Based on Median and with adjusted df	.709	1	89.303	.402
	Based on trimmed mean	.736	1	90	.393

The base on mean module explains that a good analysis result must obtain sig. > 0.05 for science learning outcomes data and students' preliminary knowledge data, each of them has a value  $0.664 > 0.05$ ; and  $0.382 > 0.05$ . It can be concluded that the two groups of science learning outcomes and student's prior knowledge come from populations that have the same or homogeneous variance. Based on the results of the prerequisite test, specifically the data distribution normality test, the linearity test and the meaning of the regression direction, and the homogeneity test of variance, it can be concluded that the student learning outcomes data comes from a population that is normally distributed, linear and meaningful, and also has the same or homogeneous variance. Therefore, it is possible to test the hypothesis with one-way ANCOVA.

Recapitulation of the data analysis result is using parametric statistics by one-way Anacova test can be seen in the table below.

**Table 6.** Tests of Between-Subjects Effects

Dependent Variable: Y

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5635.146 <sup>a</sup>	2	2817.573	71.245	.0001
Intercept	11850.753	1	11850.753	299.656	.0001
X	857.222	1	857.222	21.676	.0001
B	5116.878	1	5116.878	129.385	.0001
Error	3519.756	89	39.548		
Total	409511.000	92			
Corrected Total	9154.902	91			

a. R Squared = .616 (Adjusted R Squared = .607)

From the output above, it can be seen that the significance value for the covariable of student's beginning knowledge is obtained by sig value of 0.001 and this sig value less than 0.05 ( $0.01 < 0.05$ ), that means, it has linear connection between prior knowledge and student science learning outcomes. This implies that Ancova's one-way assumption has been accepted. First, this test is carried out by eliminating the effect of using the platform in learning. From the results of data analysis, it can be seen that the sig. to change the platform in learning is 0.001 which is less than 0.05; so that  $H_0$  is rejected and  $H_1$  is accepted. So, it can be concluded that there are differences in science learning outcomes between students who take online learning combined with google classroom and zoom and students who take online learning with the WA group after controlling the prior knowledge variable. To determine the effect of prior knowledge and different learning platforms used on student learning outcomes in science simultaneously using the corrected model module. It can be seen that the significance value is 0.001 which is far below the 0.05 value. So, it can be concluded that simultaneously the student's prior knowledge and the learning platform used have an effect on students' science learning outcomes.

Data analysis represent the group of students who took online learning using a combination of LMS google classroom and zoom had an average science learning result score of 73.173; while the group of students who took part in online learning using the WA group had an average score of 58.760 science learning outcomes. That means, the average science learning outcomes of the group of students who took online learning using a combination of LMS google classroom and zoom were higher than the average science learning outcomes of the group of students who took online learning with the WA group.

The results of data analysis indicate the advantages of online learning using a combination of LMS google classroom and zoom compared with using WA group on science learning outcomes. With a more innovative learning process, students are more motivated to learn. Beginning with a meeting using zoom, students can come face to face virtually about the learning process that will be practiced. The teacher creates a class in google classroom, then invites students via email from each student or through the class code from the google classroom that has been created. Learning materials are uploaded by using the option in "about", then the materials are uploaded through "add materials". To notify students when material has been uploaded, use the "stream" option, then select "announcement" on the "+" sign. Add tasks by selecting "assignments" on the "+" sign. Adding questions to google classroom can select "question" on the "+" sign.

Learning begins by providing a link to the learning video on google classroom, students are given the opportunity to study with video and then work on assignments which will be shown during the presentation using zoom. Students are very enthusiastic when they are invited to learn by zooming (Figure 1), answering questions, asking questions, or explaining what they are doing to do assignments at home. When using zoom, it's important to have limit for virtual meet, so the students don't get bored

looking at laptops or computer screens, especially cellphones with very small screens. That's need intelligence teacher to manage zoom time management.

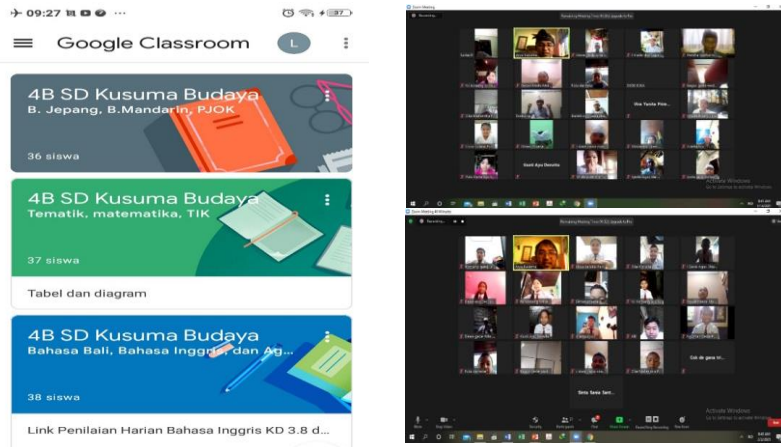


Figure 1. Online Learning Using Google Classroom and Zoom

This does not happen when learning uses the WA group. The teacher uploads learning videos and assignments that must be done and collected by personal WA to the teacher. That isn't effective, because students only learn with under controlling of their parents. Students rarely or never meet face-to-face virtually with their teachers. Teachers also cannot monitor the students' activities while studying at home. Even though several studies have suggested learning by WA group is most favored by students in online learning (Zhafira, 2020).

Mustakim (2020) found that online learning using some online platforms have results: very effective (23.3%), effective (46.7%), moderate (20%), and ineffective (10%). Besides that, to increase the effectiveness of other learning, it is better to do virtual face-to-face learning. The results of this study are similar with research was conducted by Mustakim (2020) which combines an online learning platform without a virtual meet and a platform with a virtual meet. So, it is not wrong if the students' science learning outcomes in the experimental group are better than the science learning outcomes of students in the control group. Some studies also explain about using google classroom platform in online learning can improve student learning outcomes (Pradana, 2017), problem solving skills (Gunarman and Sunarman, 2018), mathematical reasoning (Santosa, Negara, and Bahri, 2020), learning motivation (Nirfayanti & Nurbaiti, 2019).

#### 4. Conclusion and suggestions

Based on the results of data analysis with parametric statistics using ANCOVA, it can be concluded that there are differences in science learning outcomes between students who take online learning using a combination of LMS google classroom and zoom and learning only using WA group after controlling the prior knowledge variable. It is recommended that teachers use the google classroom platform in implementing online learning with a virtual meet combination in order to get better learning outcomes.

#### References

- Agung, I. G. A. 2006. Statistika Penerapan Model Rerata-Sel Multivariate dan Model Ekonometri dengan SPSS. Jakarta: Yayasan Sad Satia Bhakti.
- Al-Marroof, R. A. S., & Al-Emran, M. (2018). *Students Acceptance of Google Classroom: An Exploratory Study using PLS-SEM Approach*. International Journal of Emerging Technologies in Learning, 13(6). <https://online-journals.org/index.php/i-jet/article/view/8275/4996>
- Azhar, K. A., & Iqbal, N. (2018). *Effectiveness of Google classroom: Teachers' perceptions*. Prizren Social Science Journal, 2(2), 52-66. <https://core.ac.uk/download/pdf/229345703.pdf>

**Commented [P9]:** No need

If you have conveyed suggestions/recommendations in the discussion, in the conclusion there is no need to load them anymore. suggestions/recommendations are made in general.

**Commented [P10]:** for bibliography:

1. 30 references, 90% (27) journal articles with the Sinta and Scopus index, published in the last 5 years maximum of the last 10 years.
2. Writing references using the "APA" format of the American Psychological Association.
3. references in the form of articles complete with URL and DOI.
4. use Mendeley
5. avoid laws, pp. candy, theses, theses, dissertations, internet sources that are not credible (exceptions, sources from associations, or associations of international organizations (who, pbb))



- Chen, E., & Li, Z. (2011, July 26–28). *On the application of multimedia technology in foreign language teaching and learning in China's colleges: Challenges, problems and implications*. In 2011 International Conference on Multimedia technology (pp. 595–597). IEEE. DOI: 10.1109/ICMT.2011.6001903
- Filed, A. 2009. *Discovering Statistics Using SPSS, second edition*. London: SAGE Publications Ltd.
- Goldschmidt, K. (2020). *The Covid-19 Pandemic: Technology use to support the wellbeing of children*. Journal of Pediatric Nursing, 88–90. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7161478/pdf/main.pdf>.
- Gunawan, F. I., & Sunarman, S. G. (2018). Pengembangan kelas virtual dengan google classroom dalam keterampilan pemecahan masalah (problem solving) topik vektor pada siswa SMK untuk mendukung pembelajaran. In Prosiding Seminar Nasional Pendidikan Matematika Etnomatnesia (pp. 340–348). <https://jurnal.ustjogja.ac.id/index.php/etnomatnesia/article/view/2334/1296>.
- Hakim, A. B. (2016). Efektifitas Penggunaan E-Learning Moodle, Google Classroom dan Edmodo. I-STATEMENT: Information System and Technology Management, 2(1). <https://docplayer.info/31584756-Efektifitas-penggunaan-e-learning-moodle-google-classroom-dan-edmodo.html>
- Kemendikbud. 2017. Panduan Penilaian oleh Pendidik dan Satuan Pendidikan untuk Sekolah Menengah Atas. Jakarta: Direktorat Jenderal Pendidikan Dasar dan Menengah.
- Kusuma, J. W., dan Hamidah. (2020). Perbandingan Hasil Belajar Matematika dengan Penggunaan Platform Whatsapp Group dan Webinar Zoom Dalam Pembelajaran Jarak Jauh Pada Masa Pandemi Covid 19. Jurnal Pendidikan Matematika, 5(1). DOI: <https://doi.org/10.26877/jipmat.v5i1.5942>
- Liang, Y., Zheng, T., & Wang, M. (2011, July 26–28). *English audio-visual teaching mode and its teaching environment construction – Henan institute of science and technology as the example*. In 2011 International Conference on Multimedia technology (pp. 3050–3053). IEEE. DOI: 10.1109/ICMT.2011.6001924
- Mahendra, I., Parmithi, N. N., Suana, I. W., & Sumandya, I. W. (2019). *Developing Hots Through Performance*. International Journal of Scientific & Technology Research, 8(11), 3004–3007. <http://www.ijstr.org/final-print/dec2019/-Developing-Hots-Through-Performance-Assessment-.pdf>
- Marikar, F., & Jayarathne, N. (2016). *Effectiveness of MOODLE in Education System in Sri Lankan University*. IJ. Modern Modern Education and Computer Science, 2(2), 54–58. Tersedia online <https://doi.org/10.5815/ijmecs.2016.02.07>
- Mpungose, Cedric. (2021). *Lecturers' reflections on use of Zoom video conferencing technology for e-learning at a South African university in the context of coronavirus*. African Identities. 1–17.10.1080/14725843.2021.1902268.
- Mulyasa, E. (2007). Standar Kompetensi dan Sertifikasi Guru. Bandung: PT. Remaja Rosdakarya
- Mustakim. (2020). Efektivitas pembelajaran daring menggunakan media online selama pandemi covid-19 pada mata pelajaran matematika. Journal of Islamic Education, 2(1). DOI: <https://doi.org/10.24252/asma.v2i1.13646>
- Nirfayanti, N., & Nurbaeti, N. (2019). Pengaruh Media Pembelajaran Google Classroom Dalam Pembelajaran Analisis Real Terhadap Motivasi Belajar Mahasiswa. Proximal: Jurnal Penelitian Matematika dan Pendidikan Matematika, 2(1), 50–59. DOI: <https://doi.org/10.30605/2615-7667.211>
- Pradana, D. B. P. (2017). Pengaruh penerapan tools *google classroom* pada model pembelajaran project-based learning terhadap hasil belajar siswa. IT-Edu: Jurnal Information Technology and Education, 2(01). <https://jurnalmahasiswa.unesa.ac.id/index.php/it-edu/article/view/20527/18815>
- Purwanto, A., Pramono, R., Asbari, M., Hyun, C., Wijayanti, L., Putri, R., & santoso, priyono. (2020). Studi Eksploratif Dampak Pandemi COVID-19 Terhadap Proses Pembelajaran Online di Sekolah Dasar. EduPsyCouns: Journal of Education, Psychology and Counseling, 2(1), 1–12. Retrieved from <https://ummaspu.e-journal.id/Edupsycouns/article/view/397>.
- Rachna, J., Meenu, G., Kunal, J., & Sandeep, K. (2021). *Deep learning-based prediction of COVID-19 virus using chest X-Ray*. Journal of Interdisciplinary Mathematics, 24:1, 155–173, DOI: 10.1080/09720502.2020.1833460.
- Ricu, S. (2016). Pemanfaatan Whatsapp Group Dalam Pengimplementasian Nilai-Nilai Karakter Pancasila Pada Era Disrupsi. 5(1), 145–154. DOI: <https://doi.org/10.24114/ph.v4i2.16304>

- Roosa, K., Lee, Y., Luo, R., Kirpich, A., Rothenberg, R., Hyman, J. M., & Chowell, G. (2020). *Real-time forecasts of the COVID-19 epidemic in China from February 5 to February 24, 2020*. *Infectious Disease Modelling*, 5, 256-263. <https://doi.org/10.1016/j.idm.2020.02.002>.
- Rosidah, A. (2020). *Pemanfaatan Google Classroom Untuk Pembelajaran Online*. <https://pmpdki.kemdikbud.go.id/pemanfaatan-google-classroom-untuk-pembelajaran-online>. Diakses 12 Maret 2021.
- Saavedra, A. R. & Opfer, V. D. (2012). *Teaching and Learning 21st Century Skills: Lessons from the Learning Sciences, A Global Cities Education Network Report*. Tersedia online <http://asiasociety.org/files/rand-1012report.pdf>.
- Santosa, F. H., Negara, H. R. P., & Bahri, S. (2020). Efektivitas pembelajaran google classroom terhadap kemampuan penalaran matematis siswa. *Jurnal Pemikiran Dan Penelitian Pendidikan Matematika (JP3M)*, 3(1), 62-70. [https://www.researchgate.net/profile/Habibi-Negara/publication/341978810\\_Efektivitas\\_Pembelajaran\\_Google\\_Classroom\\_Terhadap\\_Kemampuan\\_Penalaran\\_Matematis\\_Siswa/links/5f3d06d292851cd302039743/Efektivitas-Pembelajaran-Google-Classroom-Terhadap-Kemampuan-Penalaran-Matematis-Siswa.pdf](https://www.researchgate.net/profile/Habibi-Negara/publication/341978810_Efektivitas_Pembelajaran_Google_Classroom_Terhadap_Kemampuan_Penalaran_Matematis_Siswa/links/5f3d06d292851cd302039743/Efektivitas-Pembelajaran-Google-Classroom-Terhadap-Kemampuan-Penalaran-Matematis-Siswa.pdf)
- Stoecklin, S. B., Rolland, P., Silue, Y., Mailles, A., Campese, C., Simondon, A., & Yamani, E. (2020). *First cases of coronavirus disease 2019 (COVID-19) in France: surveillance, investigations and control measures, January 2020*. *Eurosurveillance*, 25(6). <https://www.eurosurveillance.org/docserver/fulltext/eurosurveillance/25/6/eurosurv-25-6-4.pdf?expires=1622442873&id=id&accname=guest&checksum=F0321E76AA5368C4B315B2B7AAD368AA>
- World Economic Forum. (2017). *"The Global Competitiveness Report 2017-2018"*. <https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018>.
- Zhafira, N. H. (2020). Persepsi Mahasiswa Terhadap Perkuliahan Daring Sebagai Sarana Pembelajaran. *Jurnal Bisnis Dan Kajian Strategi Manajemen*, 4(1). DOI: <https://doi.org/10.26618/equilibrium.v8i2.3443>



# TRIGING STUDENT LEARNING RESULTS WITH UTILIZING GOOGLE CLASSROOM AND ZOOM PLATFORM

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## ARTICLE INFO

**Article history:**  
25 December 2019  
Received in revised form  
01 January 2020  
Accepted 25 January 2020  
Available online 28  
February 2020

**Kata Kunci:**  
hasil belajar, google  
classroom, zoom

**Keywords:**  
achievement, google  
classroom, zoom

## ABSTRAK

Penelitian ini dilakukan karena belum optimalnya hasil belajar IPA siswa selama pembelajaran daring menggunakan WA group. Dengan demikian diperlukan pelaksanaan pembelajaran daring dengan menggunakan berbagai platform yang ada, salah satunya dengan kombinasi google classroom dan virtual meet dengan zoom. Penelitian ini dilakukan di kelas VI SD negeri di Gugus 6 Batubulan, Sukawati Gianyar dengan melibatkan sampel sebanyak 92 orang siswa yang diambil dengan teknik simple random sampling. Data hasil belajar IPA siswa dikumpulkan dengan tes yang sebelumnya telah diuji validitas isi, validitas empirik, dan koefisien reliabilitasnya. Data yang terkumpul dianalisis menggunakan analisis covarian satu jalur, dengan terlebih dahulu diuji normalitas sebaran data, linieritas garis regresi, dan homogenitas varian. Hasil penelitian ini menunjukkan bahwa terdapat perbedaan hasil belajar IPA antara siswa yang mengikuti pembelajaran daring kombinasi google classroom dan zoom dengan siswa yang mengikuti pembelajaran daring dengan WA group setelah dilakukannya pengendalian variabel pengetahuan awal.

## ABSTRACT

*This research was conducted because the students' science learning outcomes were not optimal during online learning using the WA group. Google classroom and virtual meetings using zoom are indispensable as a combination for implementing online learning using various platforms. This research was conducted at SD Negeri Gugus 6 Batubulan, Sukawati Gianyar, involving a sample of 92 class VI students using simple random sampling technique. Student learning outcomes data in science were collected by tests that had been tested for content validity, empirical validity, and reliability coefficient. The analysis technique used in this study is the one-way ANACOVA, that had been tested the normality of data distribution, linearity regression, and the homogeneity of variants. The results of this study indicate that there are differences in science learning outcomes between students who take online learning using a combination of google classroom and zoom, with students who take online learning using WA group after controlling the prior knowledge variable.*

## 1. Introduction

Since first appearing in the city of Wuhan at the end of 2019 (Roosa et al., 2020), Covid-19 is responsible for a deadly pandemic worldwide (Stoecklin, et al., 2020). Less than six months since it was discovered, this virus has been reported to infect 190 countries (Rachna, et al., 2021) including Indonesia. Some policies were carried out by the Indonesian government to prevent the spread of Covid-19, such as: social distancing, physical distancing, large-scale social restrictions (PSBB) based on Government Regulation number 4 of 2020, effective from 1 April 2020. The consequences of this decision also have an impact on the education sector, such as the policy of the Ministry of Education and Culture in implementing distance learning/learning from home/online learning by issuing Circular Letter Number 4 of 2020. The circular letter regarding government policies in education sector while emergency period of the corona virus disease (Covid-19), one of which includes online or distance education. This learning changes the paradigm from knowledge transfer in the classroom to the virtual classroom (Chen & Li, 2011; Liang, Zheng, & Wang, 2011). During pandemic situation, online learning has been carried out

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**Commented [P2]:** Tidak perlu mencantumkan lokasi penelitian

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**Commented [P4]:** Hasil utama dengan tujuan penelitian

**Commented [P5]:** Belum ada simpulan yang sifatnya general dan menjawab permasalahan

**Commented [P6]:** n the introduction, other things that need to be considered in addition to theoretical studies are:

1. Explain the expected ideal conditions, which are related to the variables to be studied.
2. The fact that is happening, the object of observation, and supported by previous research. You must add references from credible articles (syntax and scopus indexed journals)
3. the existence of a "gap" gap analysis (the gap between expectations and reality). related to this you need to sharpen again
4. solutions (pouring independent variables) development (developing something new)
5. previous relevant research studies related to the proposed solution.
6. The novelty of the research offered, and the urgency of the research need to be sharpened
7. The research objectives are made in 1 paragraph which is developed more specifically than the objectives stated in the abstract

almost all over the world (Goldschmidt, 2020). In Indonesia, online learning implements with some application such as ruang guru, class rooms, zoom, google classrooms, google forms, or via WhatsApp groups. This situation indirectly forces and demands teachers to be able to use technological sophistication in learning.

Mulyasa (2007) explains, teachers are required to have competence in utilizing learning technology, especially the internet (e-learning) in order to be able to take advantage of knowledge, technology, and information to do their duties as a teacher and build the competence of students. The focus of using technology in the e-learning process for focused on making learning easier and more effective so that students will be competent to access learning material via computer networks. The World Economic Forum in 2017 also states that teachers must be able to understand three key points of educational progress, namely competence, character and literacy (WEF, 2017). Indirect online learning also requires teachers to increase their digital literacy. Digital literacy is defined as the knowledge and skills to use digital media, communication tools or networks in finding, evaluating, using, making information, and take advantage of healthy, wise, intelligent, accurate, correct, and law-abiding manner in order to foster communication and interaction in daily life (Kemendikbud, 2017). With good digital literacy, teachers will be competent to teach online learning by using various learning management systems (LMS), such as: Moodle, schoology, google classroom, google meet, zoom and others. Not only take advantage of WhatsApp groups with student's parent. Of course, this is a certain task for the teacher, because they have to manually organize the student assignments in the WA group, and this definitely makes work more difficult (Rosidah, 2020). The same thing also happened in class VI SD Gugus 6 Batubulan, especially in science learning. Most of the teachers make use of the WA group for online learning. Starting with sending a weekly schedule, then followed by a learning video, and ending with the work of assignments that must be sent privately to the WA teacher.

Discussions via WA group really help users to communicate online (Ricu, 2016), but are limited to chat. Of course, this learning is not effective and has many weaknesses. This is according to the opinion of Kusuma and Hamidah (2020) that using WA for learning system has been complained by some students, because of the short interaction and teachers tend to give more assignments, it's make the reason for students feel overwhelmed to do tasks. For this reason, it is important to find other solutions for online learning can run effectively and can improve the outcomes learning. One of the platforms that can be used is google classroom and zoom. Google classroom is a kind of mixed learning method that began in 2014 which considers the achievement of certain functions such as simplifying student-teacher communication, as well as the ease of distributing and assessing assignments (Al-Marouf & Al-Emran, 2018), which can increase classroom productivity (Azhar & Iqbal, 2018), and can make it easier for teachers to manage learning and deliver information appropriately and accurately to students (Hakim, 2016). Meanwhile, zoom is also believed by stakeholders to be an effective platform in online learning, however, need awareness of this online learning can lead to fatigue (Mpungose, 2020). With the combination of these two features, it is hoped that it will be able to facilitate online learning until it will lead to increasing student science learning outcomes.

## 2. Method

This research was conducted on grade VI student in SD Negeri Gugus 6 Batubulan which aims to compare student's science learning outcomes in the online learning period using a combination of google classroom and zoom using the WA group after controlling for student's prior knowledge. Researchers cannot exclusively control other variables that have affect student's science learning outcomes, accordingly this research is classified as a quasi-experimental design with a non-equivalent control group design.

Experiment Group	→	X <sub>1</sub>	→	O <sub>1</sub>
Control Group	→	X <sub>2</sub>	→	O <sub>2</sub>

**Figure 1. Non Equivalen Control Group Design**

Involving a sample of 92 people who were taken by simple random sampling technique. The data was collected from student's score on science learning outcomes using tests that were compiled by the researcher. This learning outcome test has previously been tested for validity through content validity using Gregory (Mahendra, 2019) and empirical validity using moment product correlation (Field, 2009). While the reliability coefficient is calculated using the Alpha Cronbach formula because it is in the form of an essay test (Mahendra, 2019). The collected data were analyzed using one-way analysis of covariant

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(ANCOVA) parametric statistics which had previously been tested for the normality of the data distribution, the regression direction linearity test, and the variance homogeneity test. All research data analysis uses the help of the IBM SPSS statistics 26 program.

### 3. Results and Discussion

The difference in student's science learning outcomes as a result of online learning interventions using the various LMS available becomes object of this study. Specifically using LMS is separated into two, namely application combination of google classroom and zoom which is called the experimental group and the use of the WA group which is called the control group. With the research design nonequivalent control group design and parametric statistics in the form of one-way ANCOVA test as a data analysis tool. The data in this study are grouped into science learning outcomes of students who take learning with a combination of google classroom and zoom, science learning outcomes of students who take lessons with the WA group, and data on student's prior knowledge. The results of the analysis center data measurement (mean, mode, median) and data distribution measurement (variance and standard deviation) on the science learning outcomes score and student's prior knowledge can be seen in the following table.

**Table 1.** Statistic Deskriptif

	Y <sub>1</sub>	Y <sub>2</sub>	X <sub>1</sub>	X <sub>2</sub>	
N	Valid	46	46	46	46
	Missing	46	46	46	46
Mean	73.1739	58.7609	19.5870	20.4130	
Median	74.0000	58.0000	20.0000	21.0000	
Mode	75.00	57.00	18.00	21.00	
Std. Deviation	6.68432	7.25162	4.78691	4.19299	
Variance	44.680	52.586	22.914	17.581	
Range	32.00	41.00	19.00	20.00	
Minimum	53.00	35.00	9.00	10.00	
Maximum	85.00	76.00	28.00	30.00	
Sum	3366.00	2703.00	901.00	939.00	

The normality test is carried out to ensure that the statistical test used in testing the hypothesis can actually be done. This is important, because if the data is not normally distributed, then the t-test which is a parametric statistic cannot be done (Field, 2009). The normality test in this study used the Kolmogorov-Smirnov module at the output of IBM SPSS statistics 26 on the two groups of data on student's science learning outcomes.

**Table 2.** Tests of Normality

	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Y <sub>1</sub>	.120	46	.094	.965	46	.182
Y <sub>2</sub>	.089	46	.200*	.961	46	.131

\*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The Kolmogorov-Smirnov test analysis represent that sig. > 0.05 for two data groups, such as data on student's science learning outcomes in the experimental group (Y<sub>1</sub>) and the control group (Y<sub>2</sub>) as in the table above. That means H<sub>0</sub> is accepted (failed to be rejected), both sample groups are normally distributed.

The prerequisites for covariance analysis include: (1) the independent variable or covariate X has a linear effect on the dependent variable Y, (2) the covariate X has a linear effect on the dependent variable which is same in all cells formed by the factor (one multifactor) that is reviewed, and (3) the factor or multi-factor that is reviewed or used as the independent variable has no effect on covariate X. At the same with criteria or prerequisites, the X covariate is measured or observed before the measurement of the factors or multi-factors is carried out (Agung, 2006).

**Commented [P8]:** The results that need to be considered are answering the research objectives.  
In the discussion: 1. how to interpret the research results. 2. Comparing research results with previous theories/research (add credible sources). 3. The contribution of research results and research implications need to be sharpened  
4. There are no research limitations and recommendations for further researchers (suggestions)

**Table 3.** Test of Linearity Between  $Y_1 * X_1$ 

		Sum of Squares	df	Mean Square	F	Sig.
$Y_1 * X_1$	Between Groups	(Combined) 648.159	16	40.510	.862	.613
		Linearity 222.792	1	222.792	4.742	.038
		Deviation from Linearity 425.366	15	28.358	.604	.848
Within Groups		1362.450	29	46.981		
Total		2010.609	45			

From the linearity test table ( $Y_1 * X_1$ ) between the experimental group's science learning outcomes data ( $Y_1$ ) and the experimental group's prior knowledge data ( $X_1$ ), it can be seen that the Deviation from Linearity module has a sig value.  $> 0.05$  or  $0.848 > 0.05$ . It's means that the learning outcome data and the experimental group's prior knowledge have a linear relation. Besides that, the Linearity module represent sig value.  $< 0.05$  or  $0.038 < 0.05$ ; which means having a meaningful connection. This it can be concluded that the learning outcome data and the experimental group's prior knowledge have a linear and useful connection.

**Table 4.** Test of Linearity Between  $Y_2 * X_2$ 

		Sum of Squares	df	Mean Square	F	Sig.
$Y_2 * X_2$	Between Groups	(Combined) 1346.920	15	89.795	2.642	.011
		Linearity 750.472	1	750.472	22.085	.0001
		Deviation from Linearity 596.448	14	42.603	1.254	.291
Within Groups		1019.450	30	33.982		
Total		2366.370	45			

From the linearity test table ( $Y_2 * X_2$ ) between the science learning outcomes data of control group ( $Y_2$ ) and the control group's prior knowledge data ( $X_2$ ), it can be seen that the Deviation from Linearity module has a sig value  $> 0.05$  or  $0.291 > 0.05$ . That means the learning outcome data and the control group's beginning knowledge have a linear connection. Meanwhile, the Linearity module shows the sig value.  $< 0.05$  or  $0.001 < 0.05$ ; that has a meaningful relation. Thus, it can be concluded that the learning outcome data and the experimental group's prior knowledge have a linear and meaningful connection.

Homogeneity variance test that has been done to ensure that the differences obtained from one-way ANCOVA test really came from differences between groups, not due to differences within groups (Field, 2009). From the results of the analysis of the variance homogeneity test using IBM SPSS statistics 26, the following output is obtained.

**Table 5.** Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Y	Based on Mean	.190	1	90	.664
	Based on Median	.182	1	90	.670
	Based on Median and with adjusted df	.182	1	89.441	.670
	Based on trimmed mean	.214	1	90	.645
X	Based on Mean	.771	1	90	.382
	Based on Median	.709	1	90	.402
	Based on Median and with adjusted df	.709	1	89.303	.402
	Based on trimmed mean	.736	1	90	.393

The base on mean module explains that a good analysis result must obtain sig. > 0.05 for science learning outcomes data and students' preliminary knowledge data, each of them has a value  $0.664 > 0.05$ ; and  $0.382 > 0.05$ . It can be concluded that the two groups of science learning outcomes and student's prior knowledge come from populations that have the same or homogeneous variance. Based on the results of the prerequisite test, specifically the data distribution normality test, the linearity test and the meaning of the regression direction, and the homogeneity test of variance, it can be concluded that the student learning outcomes data comes from a population that is normally distributed, linear and meaningful, and also has the same or homogeneous variance. Therefore, it is possible to test the hypothesis with one-way ANCOVA.

Recapitulation of the data analysis result is using parametric statistics by one-way Anacova test can be seen in the table below.

**Table 6.** Tests of Between-Subjects Effects

Dependent Variable: Y

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	5635.146 <sup>a</sup>	2	2817.573	71.245	.0001
Intercept	11850.753	1	11850.753	299.656	.0001
X	857.222	1	857.222	21.676	.0001
B	5116.878	1	5116.878	129.385	.0001
Error	3519.756	89	39.548		
Total	409511.000	92			
Corrected Total	9154.902	91			

a. R Squared = .616 (Adjusted R Squared = .607)

From the output above, it can be seen that the significance value for the covariable of student's beginning knowledge is obtained by sig value of 0.001 and this sig value less than 0.05 ( $0.01 < 0.05$ ), that means, it has linear connection between prior knowledge and student science learning outcomes. This implies that Ancova's one-way assumption has been accepted. First, this test is carried out by eliminating the effect of using the platform in learning. From the results of data analysis, it can be seen that the sig. to change the platform in learning is 0.001 which is less than 0.05; so that  $H_0$  is rejected and  $H_1$  is accepted. So, it can be concluded that there are differences in science learning outcomes between students who take online learning combined with google classroom and zoom and students who take online learning with the WA group after controlling the prior knowledge variable. To determine the effect of prior knowledge and different learning platforms used on student learning outcomes in science simultaneously using the corrected model module. It can be seen that the significance value is 0.001 which is far below the 0.05 value. So, it can be concluded that simultaneously the student's prior knowledge and the learning platform used have an effect on students' science learning outcomes.

Data analysis represent the group of students who took online learning using a combination of LMS google classroom and zoom had an average science learning result score of 73.173; while the group of students who took part in online learning using the WA group had an average score of 58.760 science learning outcomes. That means, the average science learning outcomes of the group of students who took online learning using a combination of LMS google classroom and zoom were higher than the average science learning outcomes of the group of students who took online learning with the WA group.

The results of data analysis indicate the advantages of online learning using a combination of LMS google classroom and zoom compared with using WA group on science learning outcomes. With a more innovative learning process, students are more motivated to learn. Beginning with a meeting using zoom, students can come face to face virtually about the learning process that will be practiced. The teacher creates a class in google classroom, then invites students via email from each student or through the class code from the google classroom that has been created. Learning materials are uploaded by using the option in "about", then the materials are uploaded through "add materials". To notify students when material has been uploaded, use the "stream" option, then select "announcement" on the "+" sign. Add tasks by selecting "assignments" on the "+" sign. Adding questions to google classroom can select "question" on the "+" sign.

Learning begins by providing a link to the learning video on google classroom, students are given the opportunity to study with video and then work on assignments which will be shown during the presentation using zoom. Students are very enthusiastic when they are invited to learn by zooming (Figure 1), answering questions, asking questions, or explaining what they are doing to do assignments at home. When using zoom, it's important to have limit for virtual meet, so the students don't get bored

looking at laptops or computer screens, especially cellphones with very small screens. That's need intelligence teacher to manage zoom time management.

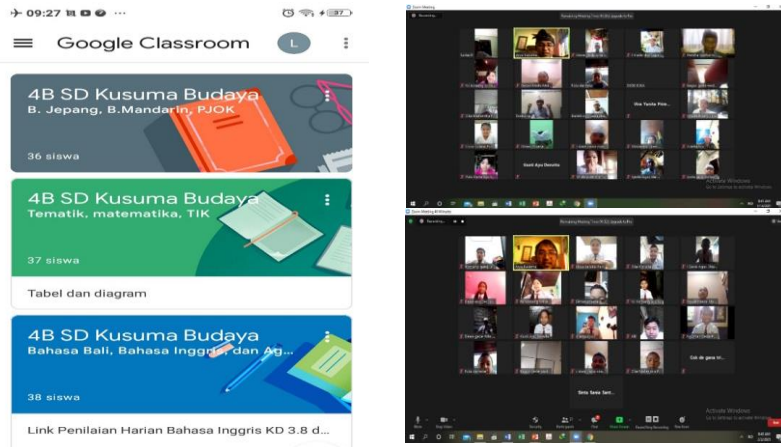


Figure 1. Online Learning Using Google Classroom and Zoom

This does not happen when learning uses the WA group. The teacher uploads learning videos and assignments that must be done and collected by personal WA to the teacher. That isn't effective, because students only learn with under controlling of their parents. Students rarely or never meet face-to-face virtually with their teachers. Teachers also cannot monitor the students' activities while studying at home. Even though several studies have suggested learning by WA group is most favored by students in online learning (Zhafira, 2020).

Mustakim (2020) found that online learning using some online platforms have results: very effective (23.3%), effective (46.7%), moderate (20%), and ineffective (10%). Besides that, to increase the effectiveness of other learning, it is better to do virtual face-to-face learning. The results of this study are similar with research was conducted by Mustakim (2020) which combines an online learning platform without a virtual meet and a platform with a virtual meet. So, it is not wrong if the students' science learning outcomes in the experimental group are better than the science learning outcomes of students in the control group. Some studies also explain about using google classroom platform in online learning can improve student learning outcomes (Pradana, 2017), problem solving skills (Gunarman and Sunarman, 2018), mathematical reasoning (Santosa, Negara, and Bahri, 2020), learning motivation (Nirfayanti & Nurbaiti, 2019).

#### 4. Conclusion and suggestions

Based on the results of data analysis with parametric statistics using ANCOVA, it can be concluded that there are differences in science learning outcomes between students who take online learning using a combination of LMS google classroom and zoom and learning only using WA group after controlling the prior knowledge variable. It is recommended that teachers use the google classroom platform in implementing online learning with a virtual meet combination in order to get better learning outcomes.

#### References

- Agung, I. G. A. 2006. Statistika Penerapan Model Rerata-Sel Multivariate dan Model Ekonometri dengan SPSS. Jakarta: Yayasan Sad Satia Bhakti.
- Al-Marroof, R. A. S., & Al-Emran, M. (2018). *Students Acceptance of Google Classroom: An Exploratory Study using PLS-SEM Approach*. International Journal of Emerging Technologies in Learning, 13(6). <https://online-journals.org/index.php/i-jet/article/view/8275/4996>
- Azhar, K. A., & Iqbal, N. (2018). *Effectiveness of Google classroom: Teachers' perceptions*. Prizren Social Science Journal, 2(2), 52-66. <https://core.ac.uk/download/pdf/229345703.pdf>

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If you have conveyed suggestions/recommendations in the discussion, in the conclusion there is no need to load them anymore. suggestions/recommendations are made in general.

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1. 30 references, 90% (27) journal articles with the Sinta and Scopus index, published in the last 5 years maximum of the last 10 years.
2. Writing references using the "APA" format of the American Psychological Association.
3. references in the form of articles complete with URL and DOI.
4. use Mendeley
5. avoid laws, pp. candy, theses, theses, dissertations, internet sources that are not credible (exceptions, sources from associations, or associations of international organizations (who, pbb))



- Chen, E., & Li, Z. (2011, July 26–28). *On the application of multimedia technology in foreign language teaching and learning in China's colleges: Challenges, problems and implications*. In 2011 International Conference on Multimedia technology (pp. 595–597). IEEE. DOI: 10.1109/ICMT.2011.6001903
- Filed, A. 2009. *Discovering Statistics Using SPSS, second edition*. London: SAGE Publications Ltd.
- Goldschmidt, K. (2020). *The Covid-19 Pandemic: Technology use to support the wellbeing of children*. Journal of Pediatric Nursing, 88–90. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7161478/pdf/main.pdf>.
- Gunawan, F. I., & Sunarman, S. G. (2018). Pengembangan kelas virtual dengan google classroom dalam keterampilan pemecahan masalah (problem solving) topik vektor pada siswa SMK untuk mendukung pembelajaran. In Prosiding Seminar Nasional Pendidikan Matematika Etnomatnesia (pp. 340–348). <https://jurnal.ustjogja.ac.id/index.php/etnomatnesia/article/view/2334/1296>.
- Hakim, A. B. (2016). Efektifitas Penggunaan E-Learning Moodle, Google Classroom dan Edmodo. I-STATEMENT: Information System and Technology Management, 2(1). <https://docplayer.info/31584756-Efektifitas-penggunaan-e-learning-moodle-google-classroom-dan-edmodo.html>
- Kemendikbud. 2017. Panduan Penilaian oleh Pendidik dan Satuan Pendidikan untuk Sekolah Menengah Atas. Jakarta: Direktorat Jenderal Pendidikan Dasar dan Menengah.
- Kusuma, J. W., dan Hamidah. (2020). Perbandingan Hasil Belajar Matematika dengan Penggunaan Platform Whatsapp Group dan Webinar Zoom Dalam Pembelajaran Jarak Jauh Pada Masa Pandemi Covid 19. Jurnal Pendidikan Matematika, 5(1). DOI: <https://doi.org/10.26877/jipmat.v5i1.5942>
- Liang, Y., Zheng, T., & Wang, M. (2011, July 26–28). *English audio-visual teaching mode and its teaching environment construction – Henan institute of science and technology as the example*. In 2011 International Conference on Multimedia technology (pp. 3050–3053). IEEE. DOI: 10.1109/ICMT.2011.6001924
- Mahendra, I., Parmithi, N. N., Suana, I. W., & Sumandya, I. W. (2019). *Developing Hots Through Performance*. International Journal of Scientific & Technology Research, 8(11), 3004–3007. <http://www.ijstr.org/final-print/dec2019/-Developing-Hots-Through-Performance-Assessment-.pdf>
- Marikar, F., & Jayarathne, N. (2016). *Effectiveness of MOODLE in Education System in Sri Lankan University*. IJ. Modern Modern Education and Computer Science, 2(2), 54–58. Tersedia online <https://doi.org/10.5815/ijmecs.2016.02.07>
- Mpungose, Cedric. (2021). *Lecturers' reflections on use of Zoom video conferencing technology for e-learning at a South African university in the context of coronavirus*. African Identities. 1–17.10.1080/14725843.2021.1902268.
- Mulyasa, E. (2007). Standar Kompetensi dan Sertifikasi Guru. Bandung: PT. Remaja Rosdakarya
- Mustakim. (2020). Efektivitas pembelajaran daring menggunakan media online selama pandemi covid-19 pada mata pelajaran matematika. Journal of Islamic Education, 2(1). DOI: <https://doi.org/10.24252/asma.v2i1.13646>
- Nirfayanti, N., & Nurbaeti, N. (2019). Pengaruh Media Pembelajaran Google Classroom Dalam Pembelajaran Analisis Real Terhadap Motivasi Belajar Mahasiswa. Proximal: Jurnal Penelitian Matematika dan Pendidikan Matematika, 2(1), 50–59. DOI: <https://doi.org/10.30605/2615-7667.211>
- Pradana, D. B. P. (2017). Pengaruh penerapan tools *google classroom* pada model pembelajaran project-based learning terhadap hasil belajar siswa. IT-Edu: Jurnal Information Technology and Education, 2(01). <https://jurnalmahasiswa.unesa.ac.id/index.php/it-edu/article/view/20527/18815>
- Purwanto, A., Pramono, R., Asbari, M., Hyun, C., Wijayanti, L., Putri, R., & santoso, priyono. (2020). Studi Eksploratif Dampak Pandemi COVID-19 Terhadap Proses Pembelajaran Online di Sekolah Dasar. EduPsyCouns: Journal of Education, Psychology and Counseling, 2(1), 1–12. Retrieved from <https://ummaspu.e-journal.id/Edupsycouns/article/view/397>.
- Rachna, J., Meenu, G., Kunal, J., & Sandeep, K. (2021). *Deep learning-based prediction of COVID-19 virus using chest X-Ray*. Journal of Interdisciplinary Mathematics, 24:1, 155–173, DOI: 10.1080/09720502.2020.1833460.
- Ricu, S. (2016). Pemanfaatan Whatsapp Group Dalam Pengimplementasian Nilai-Nilai Karakter Pancasila Pada Era Disrupsi. 5(1), 145–154. DOI: <https://doi.org/10.24114/ph.v4i2.16304>

- Roosa, K., Lee, Y., Luo, R., Kirpich, A., Rothenberg, R., Hyman, J. M., & Chowell, G. (2020). *Real-time forecasts of the COVID-19 epidemic in China from February 5 to February 24, 2020*. *Infectious Disease Modelling*, 5, 256-263. <https://doi.org/10.1016/j.idm.2020.02.002>.
- Rosidah, A. (2020). *Pemanfaatan Google Classroom Untuk Pembelajaran Online*. <https://pmpdki.kemdikbud.go.id/pemanfaatan-google-classroom-untuk-pembelajaran-online>. Diakses 12 Maret 2021.
- Saavedra, A. R. & Opfer, V. D. (2012). *Teaching and Learning 21st Century Skills: Lessons from the Learning Sciences, A Global Cities Education Network Report*. Tersedia online <http://asiasociety.org/files/rand-1012report.pdf>.
- Santosa, F. H., Negara, H. R. P., & Bahri, S. (2020). Efektivitas pembelajaran google classroom terhadap kemampuan penalaran matematis siswa. *Jurnal Pemikiran Dan Penelitian Pendidikan Matematika (JP3M)*, 3(1), 62-70. [https://www.researchgate.net/profile/Habibi-Negara/publication/341978810\\_Efektivitas\\_Pembelajaran\\_Google\\_Classroom\\_Terhadap\\_Kemampuan\\_Penalaran\\_Matematis\\_Siswa/links/5f3d06d292851cd302039743/Efektivitas-Pembelajaran-Google-Classroom-Terhadap-Kemampuan-Penalaran-Matematis-Siswa.pdf](https://www.researchgate.net/profile/Habibi-Negara/publication/341978810_Efektivitas_Pembelajaran_Google_Classroom_Terhadap_Kemampuan_Penalaran_Matematis_Siswa/links/5f3d06d292851cd302039743/Efektivitas-Pembelajaran-Google-Classroom-Terhadap-Kemampuan-Penalaran-Matematis-Siswa.pdf)
- Stoecklin, S. B., Rolland, P., Silue, Y., Mailles, A., Campese, C., Simondon, A., & Yamani, E. (2020). *First cases of coronavirus disease 2019 (COVID-19) in France: surveillance, investigations and control measures*, January 2020. *Eurosurveillance*, 25(6). <https://www.eurosurveillance.org/docserver/fulltext/eurosurveillance/25/6/eurosurv-25-6-4.pdf?expires=1622442873&id=id&accname=guest&checksum=F0321E76AA5368C4B315B2B7AAD368AA>
- World Economic Forum. (2017). *"The Global Competitiveness Report 2017-2018"*. <https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018>.
- Zhafira, N. H. (2020). Persepsi Mahasiswa Terhadap Perkuliahan Daring Sebagai Sarana Pembelajaran. *Jurnal Bisnis Dan Kajian Strategi Manajemen*, 4(1). DOI: <https://doi.org/10.26618/equilibrium.v8i2.3443>