

The Effectiveness Of Google Classroom and Dojo Class Using the Discovery Learning Model on The Learning Outcomes of Vocational School Students

Hary Suswanto ^{a,1,*}, Dila Umnia Soraya ^{a,2}, Nanda Resta Ramadiani ^{a,3}, Wahyu Mulyo Utomo ^{b,4},

^aFaculty of Engineering, Universitas Negeri Malang, Malang, Indonesia

^bFakulti Kejuruteraan Elektrik dan Elektronik, Universiti Tun Hussein Onn Malaysia

^{1*}hary.suswanto.ft@um.ac.id, ²dila.umnia.ft@um.ac.id, ³nandaresta.1805336@students.um.ac.id, ⁴wahyu@uthm.edu.my

*Corresponding author

Article Info

Article history:

Received: Jun 17, 2022

Revised: Aug 19, 2022

Accepted: Oct 12, 2022

Keyword:

Google Classroom,

Class Dojo,

Discovery learning,

Learning outcomes

ABSTRACT

The aims of this study were to determine: (1) student learning outcomes through the use of Google Classroom and Class Dojo with the discovery learning model and (2) the effectiveness and efficiency of using Google Classroom and Class Dojo with the discovery learning model for class X. Multimedia students at SMKN 7 Poor. This research is a quasi-experimental research with quantitative and qualitative methods with the design of "Pre-test Post-test Nonequivalent Control Group". Data collection techniques by conducting interviews, giving treatment during learning, and student response questionnaires. The hypothesis is obtained from efficiency test data and effectiveness test. The results obtained from this study are: (1) the implementation of learning using Google Classroom and Class Dojo with the discovery learning model has increased learning outcomes and (2) the use of Google Classroom and Class Dojo with the discovery learning model provides efficient and effective results. In terms of efficiency and effectiveness, learning using Class Dojo with the discovery learning model is more efficient and effective compared to Google Classroom.

I. INTRODUCTION

People are worried because of the corona virus [1]. Corona virus or commonly referred to as Covid-19 is a new type of disease where transmission can be through animals or humans [2]. Based on scientific evidence, transmission of Covid-19 occurs when exposed to splashes of coughing or sneezing, but the risk of transmission is highest when handling Covid-19 sufferers directly [2]. At the beginning of March 2020, Indonesia announced the transmission of COVID-19 infection in two Indonesian citizens reported by President Joko Widodo [3]. After that, in mid-March 2020 Covid-19 was announced as a pandemic by WHO on March 12, 2020.

The impact of the pandemic affects learning activities. Learning activities that were initially carried out offline were changed to online. So the government enforces the policy of SE No. 4 of 2020 concerning the Implementation of Education Policies in the Emergency Period for the Spread of Covid-19. This policy is to minimize the spread of Covid-19 cases by carrying out learning activities at their respective homes.

In the 21st century, teachers have increasingly difficult challenges and the role of the teacher is not as easy as in the past, but more complicated [4]. Like-minded with research which emphasizes that teachers need to have expertise in technology to create creative learning media [5]. This causes teachers to adjust the use of technology to assist teaching and learning activities through the use of e-learning.

The existence of e-learning technology is able to answer the challenges of teachers during a pandemic when providing material flexibly, not depending on space and duration, as a result, learning activities can be carried out anywhere and anytime [6]. E-learning describes a device that utilizes the internet network that facilitates teaching and learning activities so that learning is more effective and efficient [7]. Online learning activities have potential, such as learning to be meaningful, easy access to learning and being able to optimize learning outcomes. Online learning, student interactions connect faster through text, images, sound, and video conferences with teachers [8].

The use of e-learning is considered quite effective when used during a pandemic because teachers and students are still connected during learning. The effectiveness of e-learning in learning activities is able to solve problems so that learning at

school continues. E-learning can be accessed through free applications such as Google Classroom, Class Dojo, Edmodo, Schoology, and other applications. The application can be accessed using a smartphone with an internet connection.

Google Classroom is an application created by Google to support teachers and students in conducting distance learning, organizing classes and as a flexible means of communication [9]. This application is a medium for delivering material, distributing, collecting and assessing assignments collected by students [10]. This application requires a device such as a smartphone, laptop/PC with the help of an internet connection.

Class Dojo is a free classroom application that teachers use to manage individual or group behavior and provide instant feedback in class. This application is used via smartphones, laptops/PCs where the teacher focuses on keeping the class motivated and providing positive learning directions. Class Dojo has advantages, namely the display of award badges, avatars, and special characteristics in each student activity display [11]. Teachers can give reward points or warnings for each student's behavior in learning activities [12].

Based on the results of interview observations in a number of schools in Malang City and Regency, the average learning activity uses Google Classroom during a pandemic. Teachers have no difficulty adapting to Google Classroom because the features provided are easy to understand and user friendly. The use of Google Classroom during the pandemic was considered quite effective with a percentage of 60-90% because it really helped the distance learning process even though the learning outcomes of students decreased slightly compared to face-to-face learning.

The application of the learning model in Simulation and Digital Communication subjects is only project based learning and problem based learning. This model is used when a hybrid learning system. Student learning outcomes during the hybrid learning system decreased with an average KKM score of 75. The decline in learning outcomes was influenced by students' interest and study habits. So it needs to be investigated with other learning models, such as discovery learning in order to know its effectiveness. Discovery learning will be applied to Basic Competence 3.12 Designing Pre-production Stage Documents. The application of discovery learning in Basic Competencies is because the material discussed can involve students' skills in solving and investigating in a structured and thorough manner so that they are able to create attitudes, knowledge, and skills. behavior.

Based on observations during the Teaching Assistance activity, it was found that students felt that the use of Google Classroom was less interesting and not varied so that interest in participating in learning decreased. Interest in learning affects student learning outcomes [13]. So that interesting and varied learning activities are needed in order to increase students' learning outcomes.

Class Dojo is an online-based learning tool such as Google Classroom. However, during learning, Class Dojo is rarely used because it is not well known among teachers and students. Based on previous research, the use of Class Dojo has been used in the State of Kuwait but has not been found in Malang City

[14]. Based on the research, the dojo class has advantages, namely the display of award badges, avatars, and special characteristics in each student activity display [11]. In addition, the research states that the Class Dojo learning media is interesting to use when learning [12]. The use of interesting learning media can increase students' learning outcomes [15].

Based on the background that has been described, researchers want to examine the use of e-learning to determine the effectiveness of using Google Classroom and Class Dojo with discovery learning models and their impact on student learning outcomes in SMK.

II. METHOD

Study it uses quantitative and qualitative methods. This research is classified as a quasi-experimental research. The design used is "Pre-test Post-test Nonequivalent Control Group Design". The treatment will be carried out in two experimental classes. The research design is presented in Table 1.

Population The research is a natural class at X Multimedia at SMKN 7 Malang with a total of 67 students. This study uses purposive sampling which selects the various necessary estimates. The necessary considerations include students participating in learning from the beginning to the end of the research, supporting facilities during learning activities, and sample classes with the same teacher implementation so as to facilitate the research process.

This study uses data collection techniques by conducting classroom learning. The class will be given treatment. The experimental class 1 was treated with Google Classroom with a discovery learning model, while the experimental class 2 Class Dojo with a discovery learning model. The treatment can be seen in Figure 1.

The research trial took the subject of class XI Multimedia students at SMKN 10 Malang with a total of 57 students. The collected data will be tested using validity and reliability tests to determine the feasibility level of the instrument. The data analysis used (1) analysis prerequisite test including normality test; (2), hypothesis testing; and (3) implementation test includes efficiency test and effectiveness test.

TABLE I. RESEARCH DESIGN NONEQUIVALENT CONTROL GROUP DESIGN

Class	Pre-test	Treatment	Post-test
Experiment 1 (X MM 1)	Q1	X1	Q2
Experiment 2 (X MM 2)	Q3	X2	Q4

O ₁	X ₁	O ₂
O ₃	X ₂	O ₄

Fig 1. Experimental Design Nonequivalent Control Group Design

TABLE II. STUDENT PRE-TEST DATA

Class	N	Min	Max	Flat	Std. Deviation
E1	34	28	72	55.88	12,744
E2	33	40	76	62.55	8,934

III. RESULT AND DISCUSSION

A. Description of Research Data

The results of the study for learning outcomes variables in the form of pre-test data are shown in Table 2.

Based on Table 2, the pre-test data for the experimental class 1 got a minimum score of 28 and a maximum value of 72 with a mean of 55.88 and a standard deviation of 12.744 while the experimental class 2 had the lowest score of 40 and the highest score of 76 with a mean of 62.55 and a standard deviation of 8.934. A total of 67 students took the pre-test.

The results of the study for learning outcomes in the form of post-test data are shown in Table 3. Based on Table 3, the post-test results for experimental class 1 yielded a minimum score of 72 and a maximum value of 100 with a mean of 89.76 and a standard deviation of 10,569 while the experimental class 2 had the lowest score of 80 and the highest score of 100 with a mean of 96.61 and a standard deviation of 5.303. A total of 67 students took the post-test.

B. Analysis Prerequisite Test

Normality test using skewness and kurtosis. The data used are pre-test data in experimental class 1 and experimental class 2 with a total of 67 students. The test results are presented in Table 4.

From Table 4 the experimental class 1 found the skewness value = -1.62 and the kurtosis value = -0.99. While the experimental class 2 found the value of skewness = -1.21 and the value of kurtosis = 0.05. The conclusion obtained from the normality test data using skewness and kurtosis is that the data is normally distributed. This is in accordance with the guidelines if the data is between -2 and 2 the data distribution is declared normal.

TABLE III. TABLE 3. STUDENT POST-TEST DATA

Class	N	Min	Max	Flat	Std. Deviation
E1	34	72	100	89.76	10,569
E2	33	80	100	96.61	5.303

TABLE IV. SKEWNESS AND KURTOSIS NORMALITY TEST RESULTS DATA

		E1	E2
N		34	33
	mean	55.88	62.55
	Std. Deviation	12,744	8,934
Skew		-0.653	-.496
	SE	0.403	.409
Kurt	Zskewness	-1.62	-1.21
		-.781	.040
SE		0.788	.798
	Zkurtosis	-0.99	0.05

TABLE V. HYPOTHESIS TEST RESULTS DATA

Class	N	Paired t-test Sig. (2-tailed)	Independent t-test Sig. (2-tailed)
E1	34	0.000	0.001
E2	33	0.000	0.002

TABLE VI. DATA EFFICIENCY TEST RESULTS

class	Score	Std. Error	Correlation	Sig.(2-tailed)
E1	Pre	2.186	0.923	0.000
	Post	1,812		
E2	Pre	1.555	0.747	0.000
	Post	0.923		

C. Hypothesis testing

Hypothesis testing was measured using Paired t-test and Independent t-test. The data used is post-test data. The results of hypothesis testing are presented in Table 5.

Based on Table 5, it can be explained that the results of the experimental class 1 (H1) hypothesis test using the paired t-test get a sig value. (2-tailed) = 0.000 and the experimental class 2 (H2) got a sig. (2-tailed) = 0.000. Hypothesis testing using independent t-test in the experimental class 1 (H3) got a sig value. (2-tailed) = 0.001 and experimental class 2 (H4) resulted in sig. (2-tailed) = 0.002. This is in accordance with the criteria for hypothesis testing, if the value of sig. (2-tailed) < 0.05 means that there is an increase in the average student learning outcomes. The conclusion is the effectiveness and efficiency of the application of learning using Google Classroom and Class Dojo with the discovery learning model on student learning outcomes.

D. Implementation Test

1) Efficiency Test (Paired t-test)

To find out whether or not the implementation of learning is efficient using Google Classroom and Class Dojo with the discovery learning model. Efficiency test using pre-test and post-test data. The results of the efficiency test are presented in Table 6.

Based on Table 6, the experimental class 1 efficiency test data which amounted to 34 students resulted in a pre-test mean score of 55.88 and post-test 89.76, which means that there was an increase in the average value. Experimental Class 1 obtained the results of the std value. deviation in the pre-test was 12,744 and std. the mean error is 2.186. while the value of std. deviation in the post-test is 10,569 and std. the mean error is 1,812. The smaller the standard deviation and std values. mean error and correlation value if more than 0.5 and sig. (2-tailed) < 0.05, the more efficient the implementation of learning using Google Classroom with the discovery learning model.

Experimental class 2 with 33 students resulted in a pre-test mean score of 62.55 and post-test 96.61, so it was concluded that there was an increase in the mean score. In the Experiment 2 class, the results of the std value were obtained. deviation in the pre-test was 8,934 and std. the mean error is 1,555. while the value of std. deviation in the post-test is 5.303 and std. the mean error is 0.923. The smaller the standard deviation and std values. mean error and correlation value if more than 0.5 and

sig. (2-tailed) < 0.05, the more efficient the application of learning using Class Dojo with the discovery learning model.

2) Effectiveness Test (Independent t-test)

To find out whether or not the implementation of learning is effective using Google Classroom and Class Dojo with the discovery learning model. Test the effectiveness using post-test data. The results of the effectiveness test are presented in Table 7.

Based on Table 7, the effectiveness test data using the independent t-test in the experimental class 1 resulted in the std value. deviation of 10. 56885 and std. the mean error is 1.81254. While the experimental class 2 produces std values. deviation of 5.30294 and std. the mean error is 0.92312.

sig value. in the f-test the result is 0.000 so that it shows the same variance. Next is the value of sig. (2-tailed) on the t-test experienced a difference with the results of 0.001 and 0.002. The result of the value of sig. (2-tailed) according to the criteria if the value of sig. (2-tailed) < 0.05 means that there is an increase in the average learning outcomes of experimental class 1 and experiment 2 so that it can be said to be effective. The conclusion of the effectiveness test that has been carried out is that the application of learning using Google Classroom and Class Dojo with the discovery learning model can be declared effective.

E. Test Results

1) Efficiency of Using Google Classroom with Discovery Learning Model to Improve Student Learning Outcomes

Based on the results of the experimental class 1 efficiency test that implements Google Classroom-based learning activities with the discovery learning model, efficient results are obtained for use during learning. This is proven by using a paired t-test which produces standard deviation and std values. the mean error is getting smaller. In addition, the resulting correlation value is more than 0.5 and the value of sig. (2-tailed) < 0.05 and supported by an increase in the mean pre-test and post-test scores.

The results of this study agree with the research of Iliyasa that the use of Google Classroom can improve the learning process, efficiently in growing attention to learning [16]. Learning activities carried out in Google Classroom turn passive students into active ones.

2) The Efficiency of Using the Dojo Class with the Discovery Learning Model to Improve Student Learning Outcomes

Based on the results of the experimental class 2 (X MM 2) efficiency test that applies Class Dojo-based learning with the discovery learning model, the results are efficient for use during learning. This is proven by using a paired t-test which produces standard deviation and std values. the mean error is getting smaller. In addition, the resulting correlation value is more than 0.5 and sig. (2-tailed) < 0.05 and supported by an increase in the mean pre-test and post-test scores.

The results of this study agree with the research of that there is an increase in changes in student behavior when using Class Dojo [14]. Changes in students' positive behavior can be seen

TABLE VII. EFFECTIVENESS TEST RESULTS DATA

F	Sig.	Sig.(2-tailed)	mean	Std. Error
44,309	.000	.001	-6.84135	2.05259
		.002	-6.84135	2.03408

from the frequency of students visiting online classes and collecting assignments.

3) The Effectiveness of Using Google Classroom with the Discovery Learning Model to Improve Student Learning Outcomes

Based on the results of the effectiveness test of the experimental class 1 (X MM 1) which applies learning using Google Classroom with the discovery learning model, the results are effective for use during learning. This is proven by using an independent t-test which produces a std value. deviation and std. the smaller the mean error, the value of sig. of 0.000, and sig. (2-tailed) of 0.001. In addition, it can also be seen in the increase in the average value of the pre-test and post-test.

The results of this study agree with the research that there is an increase in student achievement after being given a Google Classroom-assisted discovery learning model with a KKM achievement of 70 exceeding 80% [17]. In addition, this behavior makes students active during learning and is more effective than conventional learning models.

F. The Effectiveness of Using the Dojo Class with the Discovery Learning Model to Improve Student Learning Outcomes

Based on the results of the effectiveness test of the experimental class 2 (X MM 2) which applies learning using the Dojo Class with the discovery learning model, the results are effective for use during learning. This is proven by using an independent t-test which produces a std value. deviation and std. the smaller the mean error, the value of sig. of 0.000, and sig. (2-tailed) of 0.002. In addition, it can also be seen in the increase in the mean value of the pre-test and post-test.

The results of this study agree with the research of that learning using Class Dojo is able to increase students' positive activities and learning interactions tend to be more effective [18]. The increase in this activity is due to the stimulus during the learning process by paying attention to the student's submodalities.

G. Comparison of the Efficiency and Effectiveness of Using Google Classroom and Class Dojo with the Discovery Learning Model to Improve Student Learning Outcomes

Based on the results of the efficiency test, the results show that the use of Class Dojo is more efficient than Google Classroom. This is evidenced by the value of std. deviation and std. the smaller the mean error. In addition, the resulting correlation value is above 0.5 and the value of sig. (2-tailed) < 0.05 and supported by an increase in the mean pre-test and post-test scores.

Efficiency results can also be observed through the calculation of the results of student response questionnaires regarding the use of Class Dojo with the discovery learning

model. It was found that during the covid-19 pandemic the use of Class Dojo was very helpful during learning because it made it easier to access materials or collect assignments. Learning can be done flexibly without being constrained by space and time so that students can repeat the material given. Students can easily access Class Dojo for online learning. Learning using Class Dojo with a discovery learning model makes students understand the material independently. In addition, the attractive and easy-to-understand appearance of Class Dojo makes students enjoy learning to use Class Dojo. Besides that,

Compared to Google Classroom which requires a lot of quota to access it and the feedback that is submitted is slower. Based on the results of the effectiveness test, the results show that the use of Class Dojo is more effective than Google Classroom. This is evidenced by the value of std. deviation and std. The mean error in Class Dojo is getting smaller, the value of sig. of 0.000, and sig. (2-tailed) of 0.002.

The results of the effectiveness can also be observed through the calculation of the results of the student response questionnaire which shows that students are not easily bored and quickly understand the material, learning using Class Dojo with the discovery learning model trains students to learn independently to solve solutions to each problem in order to get the information needed and can improve productivity in learning. Class Dojo can connect between teachers and students during learning and students can have a pleasant experience when using Class Dojo. In addition, students tend to be more active when learning using Class Dojo.

Compared to the use of Google Classroom with the discovery learning model which makes it difficult for students to accept the material given. In addition, there is a lack of interest in learning Google Classroom with the discovery learning model.

IV. CONCLUSIONS

Based on the results of the analysis and discussion, it can be concluded that: (1) The application of learning using Google Classroom and Class Dojo with discovery learning models has increased learning outcomes, (2) The use of Google Classroom and Class Dojo with discovery learning models provides efficient and effective results if used for learning. In terms of efficiency and effectiveness, learning using Class Dojo with a discovery learning model is more efficient and effective than Google Classroom. Based on the results of the research that has been carried out, the following suggestions are obtained: in the online learning process, teachers should choose interesting e-learning to foster enthusiasm for learning supported by appropriate learning models. It is hoped that further researchers will be able to carry out similar research with other variables and different subjects so that it can be seen that the use of e-learning is efficient and effective to be applied to any material that demands high learning outcomes

REFERENCES

- [1] R. N. Putri, "Indonesia dalam menghadapi pandemi Covid-19," *J. Ilm. Univ. Batanghari Jambi*, vol. 20, no. 2, pp. 705–709, 2020, doi: <https://doi.org/10.33087/Jiubj.V20i2.1010>.
- [2] R. I. Kemenkes, "Pedoman pencegahan dan pengendalian coronavirus disease (covid-19)," 2020
- [3] A. Fauzi, Z. Zainuddin, and R. Atok, "Penguatan karakter rasa ingin tahu dan peduli sosial melalui discovery learning," *J. Teor. Dan Praksis Pembelajaran IPS*, vol. 2, no. 2, pp. 83–93, 2018.
- [4] S. Sudirman and A. Bokingo, "Teachers Of The Year: Kinerja Guru Dalam Bingkai Perkembangan Pendidikan Abad 21," 2017.
- [5] H. Hobri, S. Suharto, and N. A. Rifqi, "Analysis of students' creative thinking level in problem solving based on national council of teachers of mathematics," *J. Phys. Conf. Ser.*, vol. 1008, p. 012065, Apr. 2018, doi: [10.1088/1742-6596/1008/1/012065](https://doi.org/10.1088/1742-6596/1008/1/012065).
- [6] H. S. Su'uga, E. Ismayati, A. I. Agung, and T. Rijanto, "Media E-learning Berbasis Google Classroom Untuk Meningkatkan Hasil Belajar Siswa SMK," *J. Pendidik. Tek. Elektro*, vol. 9, no. 3, pp. 605–6010, 2020.
- [7] M. A. P. Burac, J. M. Fernandez, M. M. A. Cruz, and J. D. Cruz, "Assessing the impact of e-learning system of higher education institution's instructors and students," in *IOP Conference Series: Materials Science and Engineering*, 2019, vol. 482, no. 1, p. 12009.
- [8] D. R. A. U. Khasanah, H. Pramudibyanto, and B. Widuroyeki, "Pendidikan dalam masa pandemi covid-19," *J. Sinestesia*, vol. 10, no. 1, pp. 41–48, 2020.
- [9] R. Thahir, "Pengaruh pembelajaran daring berbasis Google Classroom terhadap hasil belajar mahasiswa pendidikan Biologi," *Edukatif J. Ilmu Pendidik.*, vol. 3, no. 4, pp. 1936–1944, 2021.
- [10] [G. K. Putri and Y. A. S. Dewi, "Effect of google classroom-based distance learning model," *Al-Fikrah*, vol. 2, no. 1, pp. 60–79, 2019.
- [11] H. Cetin and I. Cetin, "Views of Middle School Students about Class Dojo Education Technology.," *Acta Didact. Napocensia*, vol. 11, pp. 89–96, 2018.
- [12] J. W. Kusuma, U. Jefri, E. Surnani, I. Pratiwi, and E. Kurniawan, "Pelatihan Penggunaan Aplikasi Classdojo Sebagai Upaya Peningkatan Pembelajaran Jarak Jauh Bagi Guru SD IT Bina Bangsa di Era Kenormalan Baru," *J. Pengabd. Kpd. Masy. - Aphelion*, vol. 1, no. 01, p. 57, Sep. 2020, doi: [10.32493/jpka.v1i01.6906](https://doi.org/10.32493/jpka.v1i01.6906).
- [13] M. H. A. Berutu and M. I. H. Tambunan, "Pengaruh minat dan kebiasaan belajar terhadap hasil belajar biologi siswa SMA se-kota Stabat," *J. Biolokus J. Penelit. Pendidik. Biol. dan Biol.*, vol. 1, no. 2, pp. 109–116, 2018.
- [14] B. Charles, "Class Do O And S Uden Self-Regula Ion: An Examination of Behaviour Patterns And Academic Outcomes," *Int. ournal eaching Educ.*, vol. 7, no. 1, pp. 14–40, 2019.
- [15] R. Haryadi and H. N. Al Kansaa, "Pengaruh media pembelajaran e-learning terhadap hasil belajar siswa," *At-Ta'lim J. Pendidik.*, vol. 7, no. 1, pp. 68–73, 2021.
- [16] I. Hussaini, S. Ibrahim, B. Wali, I. Libata, and U. Musa, "Effectiveness of Google classroom as a digital tool in teaching and learning: Students' perceptions," *Int. J. Res. Innov. Soc. Sci.*, vol. 4, no. 4, pp. 51–54, 2020.
- [17] W. N. Hidayat, A. T. Oktaviani, T. A. Sutikno, R. K. Sari, H. Elmunsyah, and T. A. Sandy, "Camlearn as Photography Mobile Learning Application and its Effects on Academic Achievement," in *2019 International Conference on Electrical, Electronics and Information Engineering (ICEEIE)*, 2019, vol. 6, pp. 168–171.
- [18] H. Hamdani, H. Hidayat, A. Mulyanto, and Y. Hermawati, "Class Dojo As Indonesian Language Learning Media At Senior High School," in *Proceedings of the 2nd International Conference of Science and Technology for the Internet of Things, ICSTI 2019, September 3rd 2019, Yogyakarta, Indonesia*, 2020.