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Effectiveness of Microsoft Kaizala and Google Classroom towards students' mathematical communication skill and self-efficacy in learning statistics

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ABSTRACT

This study aims to describe the effectiveness and differences in the effectiveness of the learning platform with Google Classroom and Microsoft Kaizala in terms of self-efficacy and students' mathematical communication skills. The population of this research is the XII grade students of SMK Negeri 1 Giritronto Wonogiri which consists of sevent classes. From the existing population, two classes were taken randomly, namely twelfth grade of TKJ-I and twelfth grade of TKJ-II as research samples. Twelfth grade of TKJ-I was given treatment by learning using the Microsoft Kaizala platform, while twelfth grade of TKJ-II was given treatment using the Google Classroom platform. The research data were analyzed by statistical one sample t-test, MANOVA test with Hotelling's T^2 at a significant level of 0.05 and univariate test to determine which platform is more effective. The results showed that: (1) statistical learning using the Microsoft Kaizala platform was effective in terms of mathematical communication and self-efficacy, while the Google Classroom platform was effective in terms of mathematical communication but not effective in terms of self-efficacy; (2) there is a difference in effectiveness between the Microsoft Kaizala platform and Google Classroom. The Microsot Kaizala platform is more effective than Google Classroom in terms of the mathematical communication skills of class twelfth grade students of SMK Negeri 1 Giritronto Wonogiri.

Introduction

The development of science and technology facilitates communication and the acquisition of various information more quickly. To learn information about science and technology, reliable human resources are needed who have adequate capabilities and are globally competitive. Therefore, high order thinking skills (HOTS) are an important component that our human resources must have and this way of thinking can be developed through learning mathematics. The interrelated mathematical structure and consistent deductive mindset equip students who study it to be able to think logically, analytically, critically, creatively, reason effectively, efficiently, be scientific, work together, be confident, and be responsible (Ansari, 2018; Putri & Santosa, 2015).

With the unique characteristics of the mathematical structure, the objectives of learning mathematics according to the Regulation of the Minister of National Education of the Republic of Indonesia Number 22 of 2006 include: (1) understanding mathematical concepts, explaining the relationship between concepts and applying concepts or algorithms, flexibly, accurately, efficiently, and precise, in problem solving; (2) using reasoning on patterns and traits, performing mathematical manipulations in making generalizations, compiling evidence, or explaining mathematical ideas and statements; (3) solving problems which include the ability to understand problems, design mathematical models, complete models and interpret the solutions obtained; (4) communicating ideas with symbols, tables, diagrams, or other media to clarify the situation or problem; (5) having an attitude of appreciating the usefulness of mathematics in life, namely having curiosity, attention, and interest in learning mathematics, as well as a tenacious and confident attitude in problem solving (Juhrani, et. al, 2017). As one of the goals of mathematics, according to NCTM, mathematical communication is an essential part that has an important role and requires attention because mathematics has its own language in communication (Juhrani, et. al, 2017; Capraro, et. al, 2012).

All learning activities always communicated, so that the success of the learning program is influenced by the form of communication used by teachers and students when interacting. According to Guerreiro and Serrazina (2009), mathematical communication is a tool in transmitting mathematical knowledge or as a constituent material in constructing mathematical knowledge. In this case, mathematical communication is useful for making students' ideas an object of thought so that students can convey their thoughts to others, both orally and in writing. In line with this, Wichelt & Kearney (2009) stated that mathematical communication encourages students to express their ideas to their peers and gives students the opportunity to show what they have learned. Through mathematical communication, students can argue so that this provides opportunities for students to understand various mathematical concepts and supports the development of students' mathematical language (Nartani, et. al, 2015). Once students can understand how to speak the language of mathematics, they will find it easier to communicate their ideas. Thus, students' mathematical communication skills are abilities that play an important role in the main process of increasing students' mathematical thinking abilities. However, the reality found in the field is that mathematics learning so far has not paid attention to the development of mathematical communication skills so that mastery of these competencies is still low (Ibrahim, 2011; Aguspinal, 2011; Hodiyanto, 2017).

The thing that is no less important in influencing student achievement is learning conditions. Learning conditions that make students feel uncomfortable, bored, and tense can cause anxiety in students. Learning can run well and achieve the desired goals if students feel comfortable and are not pressured and have high self-efficacy. Bandura (1982) explains that self-efficacy focuses on beliefs about task performance related to situational perspective. Self-efficacy is a person's belief about his ability to carry out tasks successfully (Juhrani, et. al, 2017).

Self-efficacy can affect the choice of action to be taken and the amount of effort students make when they encounter difficulties and obstacles. Self-Efficacy in mathematics is the belief of students or individuals in their ability to organize and carry out mathematics learning activities to achieve a certain goal by predicting how much effort is needed to achieve that goal which is contained in the dimensions of Magnitude, Level, and Strengh (Putri & Santosa, 2015). The importance of student self-efficacy in learning mathematics does not necessarily make self-efficacy as one of the factors considered in learning mathematics. The fact is that in the field there

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are still many students whose self-efficacy is still quite low. Based on the observations of researchers in class XI at SMK Negeri 1 Giritronto Wonogiri, some students in that class experienced a crisis of confidence and were always pessimistic/lack of confidence in solving math problems/problems given by the teacher. In the process of learning mathematics, it is still often found that there is a tendency of students who do not want to ask the teacher about how to solve mathematical problems even though students do not actually understand the material being studied. When the teacher asked which part they did not understand, the student's response was only silence, after the students finished the task, the teacher found out that there were still many students who did not know how to solve it. In addition, students' self-confidence and confidence level are still lacking when asked by teachers to solve math problems. This condition becomes increasingly critical when learning is carried out online and asynchronously. When the teacher asks students to solve problems and communicate problem solving individually in discussion forums, it turns out that students do not want to communicate the results of their solutions for fear of making mistakes and being less confident in themselves. The results of student work seem hesitant in writing the completion steps or expressing in the presentation of a mathematical symbol, even though the initial concept of completion is correct. This raises the assumption that students' self-efficacy is still low.

Some other facts that researchers found during classroom observations were that the learning platform used by teachers was still limited to Whatsapp media only. The process of learning mathematics is still dominated by the teacher through giving teachers PDF files to students. Students are only objects of learning where in practice students only receive materials sent by the teacher through the Whatsapp Group created by the teacher. Teachers have not created situations and conditions so that students can play an active role in learning activities through platforms that can support the implementation of conducive learning situations and activate students. Google Classroom is one of the best platforms that provides a set of advanced features, ideal tools for students to use and improve teacher performance in saving time, keeping classes organized, and improving communication with students (Iftakhar, 2016). In addition to this platform, Microsoft Kaizala can also be used as an alternative application with various features that can make it easier for students and teachers to complete their learning needs like Whatsapp (Sari, et. al, 2021).

Based on this description, the researchers hope that the Google Classroom and Microsot Kaizala learning platforms have the opportunity to be a more effective learning platform in improving students' mathematical communication and self-efficacy compared to conventional learning in mathematics learning, especially statistical material at SMK Negeri 1 Giritronto Wonogiri. Related to this, this study aims to describe the effectiveness and differences in the effectiveness of the learning platform with Google Classroom and Microsoft Kaizala in terms of self-efficacy and students' mathematical communication skills.

Method

This research is classified as semi-experiment research (quasi-experiment) using two equivalent experiment classes. The research design used was a non-equivalent pretest-posttest group design. This research was conducted at SMK Negeri 1 Giritronto Wonogiri, from April to September 2021. The population of this study was all students of class XI at SMK Negeri 1 Giritronto Wonogiri who were spread out in five parallel classes whose relative abilities did not differ significantly. Thus, two classes were taken randomly from five existing classes, so that class XI-A was obtained as the first experiment group and XI-B as the second experiment group. Furthermore, class XI-A was given treatment with the Google Classroom interactive learning platform and XI-B was given treatment with the Microsoft Kaizala learning platform.

This research involves two variables, namely the independent variable and the dependent variable. The independent variable is the learning platform which consists of the Google Classroom and Microsoft Kaizala learning platforms. Meanwhile, the dependent variable is self-efficacy and mathematical communication skills.

The data collection technique in this research was carried out by giving tests and questionnaires both before and after the researchers gave treatment to the two experimental classes. The procedures used in this study are as follows: (a) making research instruments in the form of lesson plans, grid of pretest and posttest questions related to mathematical communication skills, scoring rubrics according to the variables to be studied, and self-questionnaires. efficacy; (b) validate the research instruments made to several expert lecturers; (c) testing the instrument that has been validated on 60 students of class XI SMK Negeri 1 Giritronto Wonogiri; (d) provide self-efficacy questionnaires to students to be filled out before the pretest is carried out; (e) perform a mathematical communication ability pretest before treatment; (f) giving self-efficacy questionnaires to students to be filled out before the posttest; (g) provide a posttest of mathematical communication skills after treatment.

Data collection for non-test instrument regarding students' self-efficacy towards mathematics was obtained by using a questionnaire in the form of a checklist with a Likert scale within a time limit of 90 minutes. After obtaining self-efficacy measurement data, the total self-efficacy score is categorized based on predetermined criteria. For each statement, the respondent will be given a score according to the scale value of the answer category given based on the category of self-efficacy level that has been adjusted to the specified scale. The classification of student self-efficacy criteria according to Azwar's (2011) classification guidelines is shown in Table 1.

Table 1. Student Self-Efficacy Criteria

Interval	Criteria
$Mi + 1{,}5Si < X \leq Mi + 3Si$	Very High (VH)
$Mi + 0{,}5Si < X \leq Mi + 1{,}5Si$	Height (H)
$Mi - 0{,}5Si < X \leq Mi + 0{,}5Si$	Medium (M)
$Mi - 1{,}5Si < X \leq Mi - 0{,}5Si$	Low (L)
$Mi - 3Si \leq X \leq Mi - 1{,}5Si$	Very Low (VL)

Description:
$Mi = Ideal\ mean$
$Si = Ideal\ Standard\ Deviation$
$X = Gain\ Score$

The test instrument regarding mathematical communication skills in this study consisted of pretest and posttest questions in the form of descriptions used to measure mathematical communication skills before and after treatment.

Descriptive analysis is used to describe the characteristics of the research data and answer descriptive problems. The descriptive analysis used in the study for data on mathematical communication skills and self-efficacy were the mean, variance, standard deviation, maximum score and minimum score. The research data analyzed were the data from the pretest and posttest on the aspect of mathematical communication skills and the results of filling out a self-efficacy questionnaire.

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To determine the effectiveness of the two learning models applied in terms of each aspect, namely aspects of self-efficacy and students' mathematical communication skills, one sample t-test was used statistical test. The data analyzed for the one sample t-test is posttest data. The assumption test that must be met is the normality test of the self-efficacy questionnaire data and posttest data of students' mathematical communication skills after treatment in both groups, using the Kolmogorov-Smirnov. The data criteria are normally distributed if the significance is greater than 0.05.

In general, the statistical hypotheses tested are:

$$H_0: \mu < \mu_0$$
$$H_0: \mu > \mu_0$$

With a significance level of = 0.05. One sample t-test test statistic is formulated

$$t = \frac{\bar{X} - \mu_0}{\frac{S}{\sqrt{n}}}$$

Description:
$\bar{X}\ = Mean\ score$
$\mu_0 = Hypothesized\ value$
$s = Sample\ standard\ deviation$
$n = Sample\ size$
The decision criterion is to reject H_0 if $t_{\text{count}} > t_{\alpha;n-1}$

To find out the difference in conditions before and after treatment from the two experimental groups in terms of self-efficacy and mathematical communication skills, the Multivariate of Variance (MANOVA) test was used with the help of SPSS 16 software for windows. The data analyzed by the MANOVA test were pretest data and posttest data from each variable.

The assumption test that must be met is the normality test and homogeneity test on the data from the pretest and posttest results of mathematical communication skills and self-efficacy questionnaire data before and after treatment in both groups. Multivariate normality test was carried out using the mahalanobis distance d_i^2. If the sum of d_i^2 which is less than χ_p^2(0,5is about 50%, then the data comes from a multivariate normal population.

The statistical calculation of the MANOVA test according to Stevens is formulated as follows (2002):

$$T^2 = \frac{n_1 n_2}{n_1 + n_2}(\overline{y_1} - \overline{y_2})S^{-1}(\overline{y_1} - \overline{y_2})$$

Description:
$T^2 = Hottelling'strace$
$n_1 = Number\ of\ samples\ in\ group\ I\ I$
$n_2 = Number\ of\ samples\ in\ group\ I\ II$
$\overline{y_1} = Vector\ mean\ score\ of\ experimental\ class\ I$
$\overline{y_2} = Vector\ mean\ score\ of\ experimental\ class\ II$
$S^{-1} = Inverse\ of\ covariance\ matrix$

After obtaining the Hottelling's trace value, then it is transformed to obtain the F distribution value using the formula:

$$F = \frac{(n_1 + n_2 - p - 1)}{(n_1 + n_2 - 2)p}T^2$$

Using p=3 is the number of dependent variables. The test criteria is that H_0 is rejected if $F_{count} > F_{(0,05;p,n_1+n_2-p-1)}$ or the resulting significance number is less than 0.05. If in the MANOVA test the results of the similarity test of the mean scores in each group are significantly different, then the next hypothesis test is the univariate test with independent sample t-test.

To find out whether learning using the Google Classroom learning platform is more effective than the Microsoft Kaizala learning platform in terms of students' self-efficacy and mathematical communication skills, univariate test statistics (independent samples t-test) were used. The assumption test that must be met is the homogeneity test and the normality test on the students' self-efficacy and mathematical communication skills after treatment in both groups. Homogeneity test using Levene test with homogeneous data criteria is if the significance value is greater than 0.05. Meanwhile, the normality test uses the Kolmogorov-Smirnov with the criteria that the data is normally distributed if the significance value is greater than 0.05.

The criterion used is the Benferroni criterion where the significance level is α/p with p being the number of dependent variables (Stevens 2002). The test criteria are $t_{count} < t_{table}$, then H_0 is rejected. The univariate test formula used according to Stevens (2002).

$$t = \frac{\overline{y_1} - \overline{y_2}}{\sqrt{\frac{(n_1-1)s_1^2 + (n_2-1)s_2^2}{n_1+n_2-2}\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}}$$

Information:
$y_1 = group\ mean\ I$
$y_2 = group\ mean\ II$
$s_1^2 = group\ variance\ I$
$s_2^2 = group\ variance\ II$
$n_1 = sample\ size\ from\ group\ I$
$n_2 = sample\ size\ from\ group\ II$

Results and Discussion

All teaching and learning activities in this study took place in seven meetings, then students were given tests and questionnaires in both experimental classes. To describe the conditions before and after the treatment of the questionnaire and test results from each aspect, namely the aspects of self-efficacy and students' mathematical communication skills, the data on the results of the self-efficacy questionnaire are presented in Table 2.

Table 2. Data Description of Student Self-Efficacy Questionnaire Results

Model	Microsoft Kaizala (MK)		Google Classroom (GC)	
Condition	*pre*	*post*	*pre*	*post*
Mean	49,5	89,6	19,4	67,9
Variance	13,1	10,6	12,9	11,8
Std. Deviation	100	100	100	100
Ideal Std. Deviation	70	95	70	80
Maximum Score	27	70	23	50
Minimum Score	49,5	89,6	19,4	67,9

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Based on the results of the descriptive statistical data analysis in Table 2, it shows that in the Microsoft Kaizala platform group, there was an increase in student self-efficacy score before and after treatment. This shows that the mean self-efficacy of students who take part in the learning process using the Microsoft Kaizala platform is better than the Google Classroom platform. The frequency distribution of student self-efficacy questionnaire data for the two experimental groups is shown in Table 3.

Table 3. Frequency distribution of students' self-efficacy on the Microsoft Kaizala and Google Classroom platforms

Pretest				Posttest				
MK		GC		MK		GC		Criteria
F	%	F	%	F	%	F	%	
0	0	0	0	13	43,3	6	20	(VH)
2	6,7	3	10	11	36,7	11	36,7	(H)
5	16,6	5	16,7	4	13,3	9	30	(M)
17	56,7	15	50	2	6,7	3	10	(L)
6	20	7	23,3	0	0	1	3,3	(VL)

Based on Table 3, it can be seen that in the Microsoft Kaizala platform group after treatment cumulatively 80% of students have very high and high self-efficacy categories, while in the Google Classroom platform group 56,7% of students who have high self-efficacy criteria and very high, so it can be said that there is an increase in student self-efficacy after treatment.

The test results of students' mathematical communication skills on the Google Classroom platform group and the Microsoft Kaizala platform are presented in Table 4.

Table 4. Description of student mathematical communication ability test data using Google Classroom and Microsoft Kaizala Platforms

		Statistics			
		Pretest Math Communication GC	Posttest Math Communication GC	Pretest Math Communication MK	Posttest Math Communication MK
N	Valid	30	30	30	30
Mean		76.33	82.60	74.94	89.50
Std. Deviation		7.078	7.659	7.038	6.914
Variance		50.092	58.662	49.540	47.800
Minimum		65	70	65	75
Maximum		90	95	95	100

Based on the results of the descriptive statistical data analysis in Table 4, it can be seen that the mean results of the mathematical communication ability test (posttest) in the two groups after treatment resulted in an increase in mathematical communication skills both in the Google Classroom platform group and the Microsoft Kaizala platform with different increase ranges. In the Google Classroom platform group, the mean score increased by 6.27, from an initial score of

76.33 to 82.60. Meanwhile, in the Microsoft Kaizala platform group, the increase in score was 14.56, from the initial score of 74.94 to 89.50. Thus, it can be concluded that there is an increase in students' mathematical communication skills in both groups of models, and shows that the mean mathematical communication ability of students who take part in the learning process using the Microsoft Kaizala platform is better than the Google Classroom platform.

The research data was then analyzed to determine the effectiveness of each group of learning models, so a one sample t-test was tested. Hypothesis testing using the one sample t-test can be done if the assumption of normality is met. Based on the results of the normality test using the Kolmogorov-Smirnov test, the results are shown in Table 5.

Table 5. Normality Test Results with Kolmogorov-Smirnov Test

Variabel terikat	Platform Pembelajaran	Kolmogorov-Smirnov (Sig.)
Kemampuan komunikasi matematis	Google Classroom	0.186
	Microsoft Kaizala	0.072
Self-Efficacy	Google Classroom	0.200
	Microsoft Kaizala	0.200

Table 5 shows that all significance values are greater than 0.05. This shows that all data are normally distributed. Because the data is normally distributed, the one sample t-test can be done. There are six hypothesis tests tested in this section, namely:

$H_{01}: \mu_{11} \leq 75$ (Learning mathematics with the Microsoft Kaizala platform is not effective in terms of students' self-efficacy).

$H_{01}: \mu_{11} \leq 75$ (Learning mathematics with the Microsoft Kaizala platform is effective in terms of students' self-efficacy).

$H_{02}: \mu_{21} \leq 70$ (Learning mathematics with Microsoft Kaizala platform is not effective in terms of students' mathematical communication skills).

$H_{02}: \mu_{21} \leq 70$ (Learning mathematics with Microsoft Kaizala platform is effective in terms of students' mathematical communication skills).

$H_{03}: \mu_{12} \leq 75$ (Learning mathematics with the Google Classroom platform is not effective in terms of student self-efficacy).

$H_{03}: \mu_{12} \leq 75$ (Learning mathematics with the Google Classroom platform is effective in terms of student self-efficacy).

$H_{04}: \mu_{22} \leq 70$ (Learning mathematics with the Google Classroom platform is not effective in terms of students' mathematical communication skills).

$H_{04}: \mu_{22} \leq 70$ (Learning mathematics with the Google Classroom platform is effective in terms of students' mathematical communication skills).

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Table 6. Test Results One sample t-test Self-Efficacy and Mathematical Communication Ability Google Classroom and Microsoft Kaizala Platforms

MK	t_{count}	t_{table}	df	Significance
Self-Efficacy	5,786		29	0,000
Mathematical Communication Skills	8,328		29	0,000
GC	t_{count}	2,045	Df	Signifikan
Self-Efficacy	1,998		29	0,053
Mathematical Communication Skills	4,978		29	0,003

Based on Table 6, the test results show that the t_{count} value obtained for the Microsoft Kaizala platform group on the self-efficacy variable is 5,786 and the student's mathematical communication skills variable is 8,328, more than t_{table} namely $\text{t}(0{,}05; 29) = 2.045$ so it can be concluded that H_{01}, H_{02} is rejected, which means that learning mathematics with the Microsoft Kaizala platform is effective in terms of self-efficacy and students' mathematical communication skills and is significant because the acquisition of a significant value of $0{,}000 < 0{,}05$.

Meanwhile, for the Google Classroom platform, the t_{count} value for the self-efficacy variable is 1,998 where the value is less than t_{table} =2,045, it is concluded that H_{03} is accepted, meaning that learning mathematics with the Google Classroom platform is not effective in terms of self-efficacy. This can also be seen from the significance value, which is 0.0053 > 0.05. Furthermore, the acquisition of the t_{count} value on the student's mathematical communication ability variable is 4.978> t_{table} = 2.045, it is concluded that H_{04} is rejected, which means that learning mathematics with the Google Classroom platform is effective in terms of students' mathematical communication skills. This can also be seen from the significance value of 0.003 <0.05.

To find out which learning model is more effective between the Microsoft Kaizala platform and the Google Classroom platform, a univariate test (independent samples t-test) was conducted. Before being analyzed using the independent samples t-test, the mean difference test was first tested for the score data before treatment using the MANOVA test with T^2Hotelling′s criteria. If the results conclude that the two classes are not different, then the score data analyzed to compare the effectiveness of learning with each learning model is the score data after treatment. Furthermore, the MANOVA test with T^2Hotelling′s criteria can be performed if the assumption test is met. The assumption test that must be met is the normality test and the home genetics test.

The normality test of the data before and after the treatment used was multivariate normality. Based on the results calculations done manually with the help of office excel software. It is obtained that the mahalanobis path between each observation of the mean sector density after being sorted as shown in Table 7.

Table 7. Mahalanobis distance

Condition	Platform	Dependent Variable	*Value* $d_i^2 < \chi^2_{0,5(2)}$
Before *Treatment*	GC	Self-Efficacy Mathematical Communication Skills	48,37%
	MK	Self-Efficacy Mathematical Communication Skills	45,51%
After *Treatment*	GC	Self-Efficacy Mathematical Communication Skills	46,61%
	MK	Self-Efficacy Mathematical Communication Skills	51,22%

Table 7 shows the mahalanobis distance between each observation and the mean vector after being sorted has a range that is not far from 50%, it can be concluded that the data before and after treatment on the Microsoft Kaizala platform group and the Google Classroom platform have a multivariate normal distribution.

Furthermore, the homogeneity test was carried out using the Box's M test, the results obtained as shown in Table 8.

Table 8. Homogeneity Test Results

Condition	Dependent Variable	*Box's M*
Before *Treatment*	Self-Efficacy Mathematical Communication Skills	0,621
After *Treatment*	Self-Efficacy Mathematical Communication Skills	0,164

Based on Table 8, the significant value is greater than 0,05, it can be concluded that the covariance variance matrix of the two populations is homogeneous. The assumption test of score data before and after treatment is fulfilled, then the MANOVA test is continued.

The hypotheses that will be tested in this section are:

H_0: There is no difference in the mean score between the Microsoft Kaizala platform and the Google Classroom platform in terms of self-efficacy and mathematical communication skills

H_a: There is difference in the mean score between the Microsoft Kaizala platform and the Google Classroom platform in terms of self-efficacy and mathematical communication skills

Statistically, the hypothesis can be symbolized:

$$H_0: \begin{pmatrix} \mu_{11} \\ \mu_{21} \end{pmatrix} = \begin{pmatrix} \mu_{12} \\ \mu_{22} \end{pmatrix} \ opposite$$
$$H_a: \begin{pmatrix} \mu_{11} \\ \mu_{21} \end{pmatrix} \neq \begin{pmatrix} \mu_{12} \\ \mu_{22} \end{pmatrix}$$

The results of the multivariate test of pretest and posttest data can be presented in Table 9.

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Table 9. Multivariate Test Results Data Pretest and Posttest Microsoft Kaizala platform and Google Classroom platform

Condition	Value	F	Sig.
Pretest	0,004	$0{,}065^{a}$	0,886
Posttest	0,330	$7{,}320^{a}$	0,003

Based on the results of the multivariate test in Table 9, it was obtained that the significance for Hotelling's Trace > 0,05, which was 0.886, indicating that H_0 accepted so that it is concluded that the initial conditions before treatment there is no difference in the mean self-efficacy and mathematical communication skills of students between the Microsoft Kaizala platform and the Google Classroom platform. Furthermore, because there is no difference in the mean in the pretest data, it is not necessary to carry out further tests on the pretest data. While the results of the multivariate test on the posttest data show the F-value in Hotelling's Trace is $7{,}320^{a}$ with a significance of 0,003 <0.05, so that at the 0,05 level of significance H_0 is rejected, meaning that in the final condition after treatment there is a difference in the mean self-efficacy and students' mathematical communication skills in the two experimental groups or it can be concluded that there is a difference in effectiveness between the Microsoft Kaizala platform group and the Google Classroom platform in terms of self-efficacy and students' mathematical communication skills.

The results of the multivariate test on the posttest data concluded that there was a mean difference between the Microsoft Kaizala platform groups and the Google Classroom platform in terms of students' self-efficacy and mathematical communication skills, so further tests were conducted to see which variables contributed to these differences. Next, a further independent sample t-test will be conducted with the Bonferroni kriteria criteria

The hypotheses tested for the t-test are:

$H_0: \mu_{11} \leq \mu_{12}$ (Microsoft Kaizala platform is no more effective than Google Classroom platform in terms of student self-efficacy).

$H_a: \mu_{11} > \mu_{12}$ (Microsoft Kaizala platform is more effective than Google Classroom platform in terms of student self-efficacy).

$H_0: \mu_{21} \leq \mu_{22}$ (Microsoft Kaizala platform is no more effective than Google Classroom platform in terms of students' mathematical communication skills).

$H_a: \mu_{21} > \mu_{22}$ (Microsoft Kaizala platform is more effective than Google Classroom platform in terms of students' mathematical communication skills).

Univariate test results with Bonferroni criteria can be briefly presented in Table 10.

Table 10. Unvariate Union Results Using Independent Samples t-test

Variable	t_{count}	t_{table}	*Sig.*
Self-Efficacy	3,213	3,182	.003
Mathematical Communication Skills	4,181		.002

Based on the results of the calculations in Table 10, it is obtained that the t_{count} for the student's self-efficacy variable is $3,213 > t_{table} = 3{,}182$ so that H_0 is rejected. Therefore, it can be concluded that the Microsoft Kaizala platform is more effective than the Google Classroom platform in terms of student self-efficacy. Furthermore, the acquisition of t_{count} for the variable of mathematical communication ability is $4{,}181 > t_{table} = 3{,}182$ so it can be concluded that H_0 is rejected, meaning that the Microsoft Kaizala platform is more effective than the Google Classroom platform in terms of students' mathematical communication skills.

The results of the analysis which show that the Microsoft Kaizala platform is more effective than the Google Classroom platform are influenced by the activities of students and teachers which are supported by the features on each of these platforms, where on the Google Classroom platform student activities are more dominated by the activity of listening to teacher explanations, taking notes and do the assignments given by the teacher. This is in line with the results of research by Khovivah, et. al (2021) which showed almost 98% of students who answered the questionnaire stated that Google Classroom was not very effective because this platform could not replace face-to-face meetings and many things could not be done through Google Classroom. Meanwhile, learning on the Microsoft Kaizala platform allows for more active student activities. The Microsoft Kaizala platform allows learning to happen anywhere and anytime, even if students and teachers don't meet at school. In Microsoft Kaizala, teachers and students can build good communication and interaction with many features facilitated to share ideas, give opinions, state claims and investigate the credibility of learning resources (Ansori, et. al, 2019). During learning, students are not only listeners but are also actively involved such as solving problems, asking questions, expressing opinions, helping explain to their friends, and thinking activities. The involvement of students in these various activities allow students' mastery of teaching materials to be better, as well as their self-efficacy and mathematical communication skills.

The different situations on the two learning platforms have implications for students' self-efficacy and mathematical communication skills. So that the self-efficacy and mathematical communication skills of students who are taught using the Microsoft Kaizala platform are better than the self-efficacy and mathematical communication skills of students who are taught using the Google Classroom platform. The positive implication of using Microsoft Kaizala on increasing students' ability in learning mathematics is in line with the results of research by Parlina, et. al (2021) which showed that students' understanding and problem-solving skills were better by using the group chat feature on Microsoft Kaizala where students could discuss and collaborate. virtually. Another impact of using Microsoft Kaizala is the high level of student satisfaction because some students who ask questions will get responses directly through certain features, so that student access and communication processes become easier (Mohmmed, et. al, 2020). Mohammed further said that the efficiency of Microsoft Kaizala in asynchronous learning is closely related to the better facilitation of students' communication activities in various matters that require a complete explanation.

Conclusion

Statistical learning using the Microsoft Kaizala platform was effective in terms of mathematical communication and self-efficacy, while the Google Classroom platform was effective in terms of mathematical communication but not effective in terms of self-efficacy. So, from this result there is a difference in effectiveness between the Microsoft Kaizala platform and Google Classroom. The Microsot Kaizala platform is more effective than Google Classroom in terms of the mathematical communication skills of class twelfth grade students of SMK Negeri 1 Giritronto Wonogiri.

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