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# THE EFFECTIVENESS OF USING GOOGLE MEET IN ONLINE LEARNING TO IMPROVE MATHEMATICAL COMMUNICATION SKILLS

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## ARTICLE INFO

### *Article history:*

Received Mar 20, 2022  
Revised Mar 23, 2022  
Accepted Mar 31, 2022

### *Keywords:*

Communication Skills  
Google Meet  
Online Learning

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## ABSTRACT

This research is motivated by the many problems that arise as a result of the corona 19 pandemic which requires learning to be done online. One of the problems that arise from online learning is the lack of effective use of online learning so that it can affect student learning outcomes including mathematical communication skills. The aims of this research are to find out and examine: 1) the implementation of online learning by using Google Meet to improve mathematical communication skills for Mathematics Education Students at IKIP Siliwangi. 2) the effectiveness of using Google Meet in online learning to improve mathematical communication skills for Education Students IKIP Siliwangi Mathematics. The methodology used in this research is descriptive quantitative. The data collection used in this research is by means of observation, pretest and posttest mathematical communication skills, and documentation. The result of this research is that the implementation of the use of Google Meet in online learning can improve students' mathematical communication skills. In addition, the effectiveness of using Google Meet to improve students' mathematical communication skills is very effective.

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### *How to Cite:*

Hutajulu, M. (2022). The Effectiveness of Using GoogleMeet in Online Learning to Improve Mathematical Communication Skills. *JIML*, 5(1), 53-61.

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## INTRODUCTION

At the end of 2019 the world was shocked by the presence of a new virus thought to have originated in Wuhan, China. The virus is known as COVID-19 or what is known as Corona virus Diseases-19 (Nugraha et al., 2020). This virus attacks the respiratory system in humans with symptoms of acute respiratory distress, fever, cough and shortness of breath. This virus has greatly impacted various areas of life, without exception in the field of education which

requires the learning process to be carried out online (in a network) or learning to be carried out remotely.

Online learning can be used flexibly during the current Covid-19 pandemic. Online learning allows students to have the flexibility because they can study anytime and anywhere (Hartanti, 2021). However, online learning is not fully effective.

The problems that are often encountered during online learning are signal limitations and the absence of media availability that supports online learning. Not all lecturers have an understanding of using mobile digital. Online learning also requires collaboration between students and lecturers. Not all students have facilities for online learning.

The preparation of learning materials, learning media, strategies, approaches and learning methods are also indicators of determining the achievement of the expected learning objectives (A. Wahyuni et al., 2013). Based on this statement in the online learning process, lecturers should pay attention to indicators of achieving a learning goal. The selection of learning media is also a determinant of the success of online learning.

Effective or not a lesson is very influential on the Grade Point Average (GPA) of students. GPA is the result obtained by students after carrying out the learning process as indicated by the results of tests conducted by lecturers. In this study, the ability that is measured is the students' mathematical communication skills as part of the results of the GPA.

In online learning, currently students can interact with lecturers and friends through various online media such as Google Classroom, Video Conference, Zoom, Edmodo, Google Meet and Whatsapp Group. One of the online media that is widely used during online learning is Google Meet. Google Meet is one of the product designs from Google Apps. There are so many advantages of this application that can be used during online learning. This application does not require high internet access so it is easy to use anywhere and anytime. In addition, Google Meet also provides a Video Call feature that can be made up to 250 active people and 100,000 people in the domain. Many people have used Google Meet as a learning platform during Coronavirus pandemic. These include research by (Al-Marroof et al., 2020), the study has made use of Google Meet as an educational social platform in private higher education institutes. Research (Fakhruddin, 2018) found that the use of google meet as the teaching media combined with the use of speaking activities and classroom English was proven to be effective in improving the students' speaking skills.

From the experience of researchers during the online learning process, they have not used online media optimally. The media used is only a zoom meeting combined with Google Classroom. This makes researchers use other applications, namely Google Meet in online learning for more varied online learning media innovations.

Based on the description above, the researcher uses various features in Google Meet during online learning with the research title "Effectiveness of Using Google Meet in Online Learning to improve students' mathematical communication skills.

### ***Communication Skills***

Mathematical communication can be interpreted as a student's ability to convey something he knows through dialogue events or mutual relationships that occur in the classroom environment, where there is a transfer of messages. The message that is transferred contains the mathematical material that students learn, for example in the form of concepts, formulas,

or strategies for solving a problem. Parties involved in the event of communication in the classroom are teachers and students. How to transfer the message can be orally or in writing.

Mathematical communication is a special form of communication, namely all forms of communication carried out in order to express mathematical ideas. That's actually my personal opinion, or, we will be able to express the meaning of mathematical communication by looking at what aspects should be fulfilled in the mathematical communication. Research by (Mintarsih & Pertiwi, 2020), said that the mathematical communication skills of MTs students were still low. Supported by research (Mumtaha & Aripin, 2021) stated that the communication skills of junior high school students are still low, based on gender, male junior high school students' communication skills are slightly better than female junior high school students' communication skills.

### ***Google Meet***

Google Meet is a video conferencing/video conferencing application. The function of Google Meet is to run meetings, seminars, to online teaching and learning activities. This application you can use for free, with some limitations. Google Meet is also a part of Google Workspace. If you use Google Workspace's premium services, you'll be able to access advanced features of Google Meet and other supporting apps.

Online learning using Google meet can be applied during the corona virus pandemic. Of course, as a new learning platform, learning to use Google Meet requires a lot of adaptation from various parties. Teachers as facilitators must make online learning conditions fun and not burdensome for students in learning and students can enjoy learning, so that effective learning can be obtained. Parents also have an important role to play in helping students learn from home. Therefore, all components must work hand in hand to create effective and enjoyable learning (Nasution & Nandiyanto, 2021).

Furthermore, the readiness of teachers or lecturers consists of two words, namely readiness and teachers or lecturers. According to (Erviana, 2016), readiness is the overall condition of a person who makes him ready to respond or answer in a certain way to a situation. A person will be able to answer and respond under certain conditions if he is ready. (Slameto, 2011) revealed the principles of readiness, namely: a. All aspects of development interact and influence each other. Physical and spiritual maturity are necessary to benefit from experience. c. Experiences have a positive influence on readiness. d. Basic readiness for certain activities is formed in a certain period during the formation period in the developmental period. According to (Gustiana, 2019), readiness is a meaningful competence so that someone who has competence means that someone has sufficient readiness to do something. According to (Perbowosari et al., 2020) readiness is a sufficient ability both physically and mentally. Physical readiness means sufficient energy and good health, while mental readiness means having sufficient interest and motivation to carry out an activity. Meanwhile, according to (Hamalik, 2008) readiness is the level or condition that must be achieved in the process of individual development at the level of mental, physical, social and emotional growth. The definition of a teacher is formally is defined as a professional educator with the main task of educating, teaching, guiding, directing, training, assessing, and evaluating students in early childhood education through formal education, basic education, and secondary education. According to (V. N. Wahyuni, 2021) teacher readiness is a state of knowledge and skills possessed by the teacher in relation to the next situation to be achieved by the teacher. So teacher readiness can be interpreted as the condition of a teacher who has sufficient competence or ability both physically, socially and emotionally.

Furthermore, (Slameto, 2011) states that the state of readiness includes at least three aspects, namely: 1) physical, mental and emotional conditions, 2) needs, motives and goals, 3) other skills, knowledge and understanding that have been learned. These three aspects are owned by a person and influence him in doing something. The concept of teacher readiness can be borrowed from the theory of worker maturity and the theory of worker productivity in an organization. The concept of teacher readiness uses the theory of worker maturity and the theory of worker productivity because teacher readiness and worker readiness both measure ability and motivation at work. The readiness of teachers in the field will be a determining factor in the implementation of the new curriculum. No matter how comprehensive the government's planning (curriculum) is, in the end it will all depend on the quality and quality of teachers or lecturers in the field. The concept of teacher or lecturer readiness as the ability and willingness of teachers or to assume responsibility for directing their own behavior in accordance with the demands of the curriculum.

## **METHOD**

The type of research used by the researcher in this research is quantitative. The design used in this research is a quasi-experimental research. The design of this study was used because this study used a control group, there were two different treatments. The data collection used in this research is by means of observation, pretest and posttest mathematical communication skills, and documentation. This research was conducted at IKIP Siliwangi, Mathematics Education Study Program. This research was conducted in the odd semester 2020/2021 academic year. The subjects in this study were grouped into 2 classes, one class being the experimental class or the experimental group. While the other 1 class was used as a control class or control group.

## **RESULTS AND DISCUSSION**

### ***Results***

A prerequisite test was conducted on the mathematical communication skills test instrument before testing hypothesis. After fulfilling these prerequisite tests, the next step is to test the hypothesis. Formally, the statistical hypothesis  $H_0$  and the research hypothesis  $H_1$  are as follows:

$H_0$  : There is no difference in effectiveness use of Google Meet in online learning to improve students' mathematical communication skills for mathematics education students at IKIP Siliwangi.

$H_1$  : There is difference in effectiveness of Google Meet in online learning to improve students' mathematical communication skills for mathematics education students at IKIP Siliwangi.

Hypothesis testing was carried out using the paired t-test using SPSS 26. The results of the paired t-test can be seen in Figure 1. The result of the test is the value of sig. (2-tailed)  $0.000 < 0.05$  so it can be concluded that  $H_0$  is rejected and  $H_1$  is accepted, which means that there is an effective use of Google Meet in online learning to improve students' mathematical communication skills for mathematics education students at IKIP Siliwangi.

**Table 1.** Output of SPSS Paired T-test

		Paired Differences		95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)	
Mean	Std. Deviation	Std. Error Mean	Lower	Upper					
Pair 1	Pre-Test - Post-Test	-21,867	10,432	2,459	-26,854	-16,479	-8,812	17	.000

Students' mathematical communication skills are also improved by using Google Meet as an online learning medium. The difference can be seen from the pretest value, namely the value before being given treatment with an average of 62.7 with the posttest value, namely the value after being given treatment with an average of 84.4. Statistically, the average difference test aims to determine whether there is an average difference between classes that use Google Meet as an online learning medium and classes that receive ordinary learning. The average difference test was carried out using SPSS 24.0 Statistics software with a significant level of 0.05. Based on the assumption that the data is normally distributed (Bartlett, 2013), then the hypothesis testing is carried out with a t-test.

Formally, the statistical hypothesis  $H_0$  and the research hypothesis  $H_1$  are as follows:

$H_0 : \mu_1 = \mu_2$  (There is no difference in the average increase in mathematical communication skills between the student population using Google Meet as an online learning medium and classes receiving ordinary learning).

$H_1 : \mu_1 \neq \mu_2$  (There is a difference in the average increase in mathematical communication skills between the student population who use Google Meet as an online learning medium and classes that receive ordinary learning).

Where  $\mu_1$  and  $\mu_2$  are the average improvement in communication skills of the student population who use Google Meet as an online learning medium and classes that receive ordinary learning.

By using a significance level of 0.05, the t-test decision-making criteria are as follows:

- 1) If the significant value  $> 0.05$  then  $H_0$  is accepted.
- 2) If the significant value is 0.05, then  $H_0$  is rejected.

The data from the test results of the difference between the two averages are presented in the following table 2:

**Table 2.** Test Results Differences in Average N-Gain Score Communication Skills

F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
1.478	0,229	-3.954	60	0,000	-0,247465	0,0625884

## *Discussion*

Based on Figure 1, The effectiveness of using Google Meet in online learning can also be seen during the implementation process in the field. The use of Google Meet is very effective in online learning today. This finding was in line with the results of the study (Mazda & Fikria, 2021), (Fatkhurrozi et al., 2021), (Arum et al., 2022). Lecturers can take advantage of various features available in Google Meet such as share screens to share material on the screen, chat fields for students to take attendance or convey ideas, thoughts, and questions related to material that has not been understood.

In addition, the use of Google Meet can also be equipped with audio-visual so that it can make it easier for lecturers and students to interact during the current covid-19 pandemic. Lecturers can evaluate directly by observing students during learning. By using Google Meet, lecturers can evaluate students' spiritual attitudes and students' social attitudes during the online learning process. Evaluation of students' spiritual attitudes that can be observed by lecturers is when students make habituation, namely when reading prayers. Not only that, lecturers can evaluate students' social attitudes when students with lecturers and students with students interact during questions and answers and convey ideas related to the material being studied. Another advantage of learning using Google Meet is that students who were previously less active become more active, the time and place used are more flexible, and provide a greater learning experience regarding the use of online applications. (Juniartini & Rasna, 2020).

However, in its application the use of Google Meet there are still shortcomings such as signal limitations experienced by students so that the explanation from the lecturer cannot be conveyed properly, the quality of the image when using the share screen feature is less clear when enlarged (Hasanah & Setiawati, 2021). In addition, there are some students who experience problems when operating Google Meet.

In addition, the use of Google Meet can also be used for the process of evaluating student attitudes, such as when students convey ideas, thoughts, opinions or questions related to the material presented by the lecturer. Thus the enthusiasm of students can be seen. Lecturers can also easily assess student activity during the online learning process.

Based on Table 1, it can be seen that the table Sig (2-tailed) is 0.000. This value does not meet the test criteria, namely  $\text{sig.} > 0.05$ , then  $H_0$  is rejected. This shows that there are differences in mathematical communication skills between students who use Google Meet as an online learning medium and classes that receive ordinary learning. Google meet-assisted learning during the covid-19 pandemic is very effective and more meaningful for students' mathematical communication skills because students take an active role in learning (Astuti & Purwanto, 2021). Thus, it can be said that the use of Google Meet is effective in improving mathematical communication skills for mathematics education students at IKIP Siliwangi.

Based on research that has been done by researchers using quantitative descriptive research. The implementation of using Google Meet on mathematical communication skills for mathematics education students at IKIP Siliwangi can be seen during the learning process. The use of various features in Google Meet can help lecturers in delivering learning materials. The features used are a sharescreen to share material on the screen, a white board that can be used to clarify when the lecturer gives an explanation in the form of writing, and a chat column that can be used by students to write down questions or ideas that have not been understood regarding the material presented.

In addition, the use of Google Meet can also be used for the process of evaluating student attitudes, such as when students convey ideas, thoughts, opinions or questions related to the material presented by the lecturer. Thus the enthusiasm of students can be seen. Lecturers can also easily assess student activity during the online learning process.

The effectiveness can also be seen from the hypothesis test with the paired t-test, the result of the test is the sig value. (2-tailed)  $0.000 < 0.05$  so it can be concluded that  $H_0$  is rejected and  $H_a$  is accepted, which means that there is an effective use of Google Meet in online learning to improve mathematical communication skills for mathematics education students at IKIP Siliwangi. In addition, the effectiveness of using Google Meet can also be seen from student learning outcomes after using Google Meet, namely 83% of students can achieve a minimum grade of C.

## CONCLUSION

Based on the results and conclusions in this study, there are several implications obtained. The following are the implications of the research entitled "The Effectiveness of Using Google Meet in Online Learning to Improve Mathematical Communication Skills for Mathematics Education Students of IKIP Siliwangi, namely:

1. There is an effectiveness use of Google Meet with student learning outcomes. This can provide information to students, lecturers, and the campus as an effort to improve student learning outcomes. The increase in student learning outcomes can be seen from the difference in student pretest and posttest scores.
2. In this study, it shows the effectiveness of using Google Meet in online learning to improve student learning outcomes, then Google Meet can be used as an interactive learning medium in online learning. The media can be utilized optimally to improve student learning outcomes.

## ACKNOWLEDGMENTS

The researchers thank to Rector of IKIP Siliwangi who provide moral support and materials and fellow study program lecturers Mathematics of IKIP Siliwangi which has been give a lot of input and contributed to the writing of this article.

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