

Learning Mathematics Using the Google Meet Application: an Effort to Improve Student Learning Outcomes

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Abstract

This research was conducted to improve student learning outcomes in flat-sided building materials taught using the Google Meet application. Classroom Action Research (PTK) was born on class VIII A students of SMP Negeri 2 Tomohon on flat-sided building material. The subjects in this research were 25 students in class VIII A. The implementation of the Google Meet application in PTK activities is carried out in 2 cycles, where each cycle consists of 2 meetings and 1 test, with one meeting lasting 2 x 40 minutes. The results of research in cycle I using the Google Meet application obtained a percentage of student completion of 48%. In cycle II, using the Google Meet application, student completion was 76%. These results show that the Google Meet application can improve learning outcomes.

Keywords: Mathematics Learning, Google Meet Application, Learning Results, Build a Flat Side Room.

Abstrak

Penelitian ini dilakukan untuk meningkatkan hasil belajar peserta didik pada materi bangun ruang sisi datar yang diajarkan dengan menggunakan aplikasi *Google Meet*. Penelitian ini merupakan Penelitian Tindakan Kelas (PTK) dilakukan pada peserta didik kelas VIII A SMP Negeri 2 Tomohon pada materi bangun ruang sisi datar. Subjek dalam penelitian ini adalah peserta didik kelas VIII A sebanyak 25 peserta didik. Penerapan aplikasi *Google Meet* dalam kegiatan PTK ini dilakukan dalam 2 siklus dimana tiap siklus terdiri dari 2 pertemuan dan 1 tes secara dengan 1 pertemuan berdurasi 2 x 40 menit. Hasil penelitian pada siklus I dengan menggunakan aplikasi *Google Meet* diperoleh persentase ketuntasan peserta didik sebesar 48%. Pada siklus II dengan menggunakan aplikasi *Google Meet* diperoleh ketuntasan peserta didik sebesar 76%. Hasil ini menunjukkan aplikasi *Google Meet* dapat meningkatkan hasil belajar.

Kata kunci: Pembelajaran Matematika, Aplikasi Google Meet, Hasil Belajar, Bangun Ruang Sisi Datar.

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INTRODUCTION

During the Covid-19 pandemic, all main activities were at home. This situation is a new reality experienced by the world of education, especially students. All parties, starting from teachers, parents, and students, must be ready to live a new life (new normal) through a learning approach using information technology and electronic media so that the teaching process can run well so that when the government implements regulations that schools are prohibited from holding face-to-face learning then there will be solutions to overcome these problems (Domu & Mangelep, 2023; Judijanto et al., 2024).

Learning from home takes work. When you are used to learning directly in class, but now learning is done indirectly or through distance learning, you need your own strategy. The role of a teacher is needed so that learning continues well in the era of the COVID-19 pandemic (Arifin, 2020; Sarwa, 2021; Fitriani & Dewi, 2021; Kumesan, 2023). Advances in technology and information in the era of the Covid-19 pandemic have developed extraordinarily so that they can answer problems during distance learning activities that occur (Gunawan, 2020; Thohir et al., 2021; Watini, 2022; Lohonauman et al., 2023). Teachers implement many solutions to be able to convey material well to students, including through WhatsApp groups, YouTube, and video conferences (Mangelep, 2013; Atsani, 2020; Alfaini, 2021; Riadi et al., 2022)

In the era of the COVID-19 pandemic, the Tomohon City Government issued several policies to address this problem, such as learning in small groups. This program emphasizes that learning is not carried out at school but that students in the same grade level in small groups of around 5 – 6 people gather in one place, for example, at the village hall, places of worship, etc., and the teacher will come to that place to conduct learning during 2 hours. However, after evaluation, it turned out that this program was challenging to implement because the teacher had to move from one place to another learning location, and this ultimately caused the teacher to feel tired. Apart from that, learning is also carried out by allowing students to come to school with a maximum capacity of 50 percent. The duration of learning activities is only 2 hours, so mathematics learning in 1 month can only be done in one face-to-face meeting. It is felt that it is not practical to deliver mathematics material, so the research is trying to use video conferencing to deliver the material.

Video conferencing is a technology that allows users in different locations to hold face-to-face meetings without having to go to a shared location (Silitonga et al., 2012; Mangelep, 2015; Yulistiyanti et al., 2021). This technology is very comfortable and practical for users both personally and as a community from various cities and countries (Faiqah & Amir, 2016; Darmawan et al., Mangelep, 2017; 2019; Pakpahan & Fitriani, 2020; Wiryany et al., 2022). This saves time, costs, and difficulties associated with traveling where safe conditions from COVID-19 are by adhering to health protocols.

The purpose of video conferencing in long-distance face-to-face activities in this learning is that teachers and students can still interact to provide explanations, understanding, and discussions related to the lesson material. Teachers and students can carry out learning interactions from their respective homes. The function of this strategy for using video conferencing is to replace face-to-face activities by teachers and students, which are usually carried out in class, with virtual face-to-face activities with the help of existing applications with an internet connection (Mangelep et al., 2020; Lubis & Yusri, 2020; Permana et al., 2021; Wahyuningsih, 2022).

The benefit of using video conferencing in distance learning is that it helps students and teachers interact so that it becomes effective and efficient. In addition to the government's call for

social distancing and physical distancing, teachers can carry out face-to-face learning interactions even though they are not close to each other (Putra & Kasmiarno, 2020; Windayani & Putra, 2021; Niam et al., 2022; Mangelep et al., 2023). With this learning strategy, it is hoped that it can break the chain of spread of the coronavirus in Indonesia.

Currently, several applications provide facilities for virtual face-to-face interaction between teachers and students via video conference. This video conferencing application can be done via PC/laptop or smartphone (Prodi, 2020; Walilu et al., 2021; Zakaria et al., 2023; Mangelep et al., 2023). The types of video conference applications include Cisco Webex, Zoom, Microsoft Teams, and Google Meet (Nalurita, 2020; Turrahmah et al., 2022; Simaryanti, 2023; Mangelep et al., 2023).

Based on the background of the problem above, with the above problems, a classroom action assessment was carried out, namely increasing the learning outcomes of class VIII B students at SMP Negeri 2 Tomohon regarding building flat-sided rooms in the era of the Covid-19 pandemic with the Google Meet application. There are two problem formulations in this research: (1) How is the application of the Google Meet application for class VIII A students at SMP Negeri 2 Tomohon on the material of building flat-sided rooms in the era of the COVID-19 pandemic? (2) Can using the Google Meet application improve the learning outcomes of class VIII A students at SMP Negeri 2 Tomohon on building flat-sided space material in the era of the COVID-19 pandemic?

METHOD

This research was carried out at SMP Negeri 2 Tomohon with 2 class VIII study groups (groups), namely class VIII A and class VIII B. Meanwhile, the research subjects were students in class VIIIA, with 25 students as subjects. This subject was chosen because of the 25 students in the class; 22 students had cell phones, and three students did not join their friends who had cell phones.

Using the Google Meet application will be the best solution to overcome this problem because students can get a study account and use it to access Google Meet. The Google Meet application is also easy to use because students need to install the Google Meet application on their cellphones by downloading it online via the Play Store. The research schedule will start on March 3, 2021, and continue until completion. A schedule of activity implementation will be obtained as in the table below.

Table 1. Research Schedule

Cycle	Date	Activity
I	3 – 3 - 2021	Meeting I (2 @30 minutes + 10 minutes Q&A + 10 minutes quiz)
	4 – 3 – 2021	Meeting II (2 @30 minutes + 10 minutes Q&A + 10 minutes quiz)
	10 – 3 - 2021	Test I (40 minutes)
II	17 – 3 – 2021	Meeting I (2 @30 minutes + 10 minutes Q&A + 10 minutes quiz)
	18 – 3 – 2021	Meeting II (2 @30 minutes + 10 minutes Q&A + 10 minutes quiz)
	24 – 3 - 2021	Test II (40 minutes)

This research was carried out in 2 cycles, each consisting of planning, implementation, observation, and reflection stages. Data collection techniques were only carried out using tests because students studied at home when carrying out research activities.

Cycle I

Learning in cycle I was carried out in two meetings per cycle using the Google Meet application (link: <https://meet.google.com/upp-feji-utm>) provided by the teacher. One online test will be held at the end of the cycle. The material taught in cycle I was cubes at the first meeting and blocks at the second meeting. At this stage, the researcher presents material guided by the RPP that has been prepared previously by the researcher, with the duration of each meeting being 2 x 40 minutes. RPP (attached) The implementation of this research uses the Google Meet application as the primary application for virtual learning. The teacher creates a room first on Google Meet and then invites students to enter the room using the link provided by the teacher. Virtual face-to-face learning can be carried out when students have entered the room.

Learning activities are carried out as if learning were being carried out in class, even though they are carried out virtually. The teacher makes attendance of students and also delivers learning activities. The material was delivered using the share screen feature on Google Meet, and the material presented was made using PowerPoint.

After the presentation of the material, a discussion process is carried out with students regarding the level of understanding of the material that has just been presented. The second meeting in cycle I was also held similarly to the first meeting, and students were better conditioned because, at the first meeting, students were carrying out learning activities using video conferencing for the first time, so the room atmosphere was still not very conducive. After the first and second lessons have been carried out, test I is carried out where the test is carried out online via the form with ten essay questions.

Cycle II

Learning in cycle II was carried out in two meetings using the Google Meet application and one online test at the end of the cycle. The material taught in cycle II was prisms at the first meeting and pyramids at the second meeting. The implementation of activities in cycle II is similar to the implementation of cycle I; even students in cycle II tend to be more serious about participating in virtual learning. After conducting virtual learning activities, test II was conducted online using Google Forms.

Data analysis is the most decisive way to compile and manage data to produce a conclusion. In this research, data analysis was carried out on student learning outcomes. The criteria for successful learning outcomes are determined by an increase in the percentage of students who complete their studies, namely, the percentage of students who complete cycle I and the percentage of students who complete cycle II. Students are said to have completed their studies if they score ≥ 75 according to the minimum completeness criteria (KKM) set by SMP Negeri 2 Tomohon.

The calculation of the percentage of students who have completed their studies is as follows:

$$P = \frac{n}{N} \times 100 \%$$

Information:

P = percentage of students who complete.

n = number of students who completed.

N = total number of students.

The results of calculating student percentages can be expressed using assessment categories as written by Arikunto (2015: 245) in the table below:

Table 2. Criteria for assessing learning outcomes

Score	Assessment Category
80 – 100	Very good
66 – 79	Good
40 – 65	Enough
≤ 39	Fail

The formula for calculating the increase in learning outcomes can be written as below

$$P_{2-1} = P_2 - P_1$$

Information:

P_{2-1} : Improved learning outcomes

P_2 : Percentage of students who complete learning outcomes in cycle II

P_1 : Percentage of students who complete learning outcomes in cycle I.

RESULT AND DISCUSSION

Based on cycle I, there were several obstacles at the first meeting, namely that students needed to be more focused on learning, such as forgetting to turn off the microphone and being busy chatting with friends nearby. This might happen because it is your first time using the Google Meet application. Problems that arose at the first meeting were resolved at the second meeting, and learning went well.

The test I was carried out after carrying out the first and second meeting activities in cycle I. Test I was done online using a Google form to measure students' understanding. The results of test I can be presented in the table below.

Table 3. Student Learning Results in Cycle 1

Number	Name	Total	Completeness	
		Score	Yes	No
1	AI	40		No
2	AS	30		No
3	AR	90	Yes	
4	ARP	20		No
5	CH	50		No
6	DS	80	Yes	
7	DNK	100	Yes	
8	DH	80	Yes	
9	HS	40		No

10	MMD	90	Yes	
11	MAF	90	Yes	
12	MA	70		No
13	MAL	30		No
14	MEG	50		No
15	MF	80	Yes	
16	MM	60		No
17	NJS	80	Yes	
18	NH	40		No
19	RM	80	Yes	
20	RDLP	90	Yes	
21	SR	40		No
22	S	70		No
23	UTSM	90	Yes	
24	VN	90	Yes	
25	WYT	50		No
	Total Score	1630		
	Maximum Score	2500		
	Absorption Percentage	65.2		
	Total Completeness		12	13
	Classic Complete Percentage		48	
	Category		Enough	

Based on the results obtained in cycle I, starting from planning, implementation, and observation, several things needed improvement. The implementation of cycle II could run smoothly, and the results obtained were as expected. In the results of test I, the classical completion percentage was 48%. Based on the completeness category table, completeness in test I is included in the sufficient category. Still, because classical completeness has yet to be met, 75% of students were declared to have passed. Cycle I learning completeness data can be depicted in the diagram below.

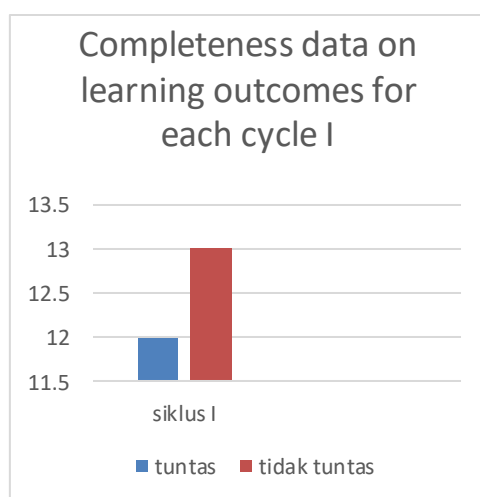


Figure 1. Completeness data on cycle I learning outcomes

The implementation of cycle II went smoothly and without significant obstacles because students understood that the implementation of learning in cycle II was almost the same as in cycle I. After meeting II in cycle II, an online test was conducted with ten questions. The test results data II can be presented in the table below.

Table 4. Student Learning Results in Cycle II

Number	Name	Total	Completeness	
		Score	Yes	No
1	AI	60		No
2	AS	50		No
3	AR	90	Yes	
4	ARP	40		No
5	CH	80	Yes	
6	DS	90	Yes	
7	DNK	100	Yes	
8	DH	80	Yes	
9	HS	50		No
10	MMD	90	Yes	
11	MAF	90	Yes	
12	MA	80	Yes	
13	MAL	50		No
14	MEG	80	Yes	
15	MF	80	Yes	
16	MM	80	Yes	
17	NJS	90	Yes	
18	NH	60		No
19	RM	80	Yes	
20	RDLP	90	Yes	
21	SR	80	Yes	
22	S	80	Yes	
23	UTSM	100	Yes	
24	VN	100	Yes	
25	WYT	80	Yes	
	Total Score	1950		
	Maximum Score	2500		
	Absorption Percentage	78		
	Total Completeness		19	6
	Classic Complete Percentage		76	
	Category		Good	

Based on the results obtained in cycle II, starting from planning, implementation, and observation, it was found that the implementation of cycle II could run smoothly, and the results obtained were as expected. In the results of test II, data was obtained that 19 students completed it, and six students still need to complete it. This completeness and learning are more significant than the results of test I in cycle I. The percentage of classical completeness in test II results is 76% and shows an increase in classical completeness compared to cycle I. Based on the table of completeness categories, completeness in test II is in the excellent category. Cycle II learning completeness data can be depicted in the diagram below.

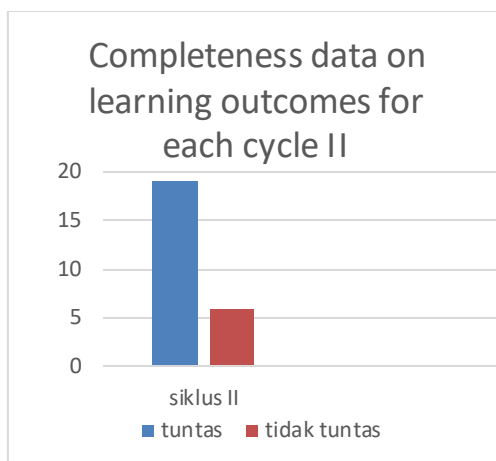


Figure 2. Completeness data on cycle II learning outcomes

Comparing cycle I and cycle II based on the completeness of learning outcomes, data is obtained as in the table below:

Table 5. Comparison of Student Learning Outcomes in Cycles I and II

Comparative analysis	Cycle I	Cycle II
Number of students who did not complete	12	19
Number of students who completed	13	6
Percentage of students who complete	48 %	76 %
Percentage increase in classical completeness	28	

Based on data on the percentage of completeness of learning outcomes in cycle I of 48% and cycle II of 76%, there was an increase in learning completeness of 28%. This increase is because students have begun to understand Google Meet video conferencing. The material delivery is also carried out systematically, and students can interact directly with the teacher in question-and-answer sessions. Problems in learning can be resolved when teachers and students do video conference activities together.

CONCLUSION

Classroom action research (PTK) carried out in class VIII A of SMP Negeri 2 Tomohon gave the following conclusions: (1) Application of learning using the Google Meet application to students in class VIII A of SMP Negeri 2 Tomohon on the material of building flat-sided rooms in the era of the Covid pandemic –19 turns out to be a solution in implementing alternative learning and it can also be concluded that implementing this learning is also easy to do. (2) Applying learning using the Google Meet application to students in class VIII B of SMP Negeri 2 Tomohon on flat-sided building materials in the era of the COVID-19 pandemic can improve learning outcomes. In cycle I, the classical completeness obtained was 48%. In contrast, in cycle II, the classical completeness obtained was 76%, so there was an increase in classical completeness by 28%, which allowed the implementation of this learning to be successful.

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