



# Analysis of Youtube Utilization in Learning Mathematics in The Covid-19 Pandemic Time

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**Abstract-** The Covid-19 pandemic is sweeping the entire world, including Indonesia, which has resulted in changes to the education system. Face-to-face learning system turns into online learning. Teachers are asked to be creative in using online learning media to achieve learning objectives, one of which is YouTube. This study aimed to analyze the use of YouTube as a medium for learning mathematics during the Covid-19 period. This research is a descriptive study through observation and interviews with teachers and students. The research instrument used student observation sheets, teacher observation sheets, and interview guides. The study results were obtained through descriptive analysis and show that YouTube has significant benefits as a medium for learning mathematics and as the best information seeker during the Covid-19 pandemic.

## 1. Introduction

At the end of 2019, the Chinese city of Wuhan was attacked by the coronavirus known as Covid-19. Early 2020, Covid-19 began to spread to other countries, including Indonesia. In March 2020, the number of victims infected with the virus is increasing. To reduce the number of positive Covid-19, the Government issued a Large-Scale Social Restriction (PSBB) regulation. Studying, working, and worshipping at home and gathering in crowds are limited. PSBB has changed the entire existing system structure, including education. Students and teachers no longer come to school to learn face-to-face as usual. All learning processes are carried out at home using an online learning system.

Based on the research results (Delen et al., 2014), (Lu'luilmaknun & Wutska, 2018) and (Vahlia, 2017), it can be seen that online learning can optimize learning outcomes and make students more independent.

Although there are several weaknesses, online learning is quite effective in overcoming Indonesia's education problems (Waryanto, 2006). Online and home learning must be effective. Effective learning can be defined as learning that succeeds in achieving the learning goals of students. As expected by the teacher (Setyosari, 2017). Also, effective learning must use technology (Rizki & Wildaniati, 2015).

Mathematics is a subject that has an essential role in technological advancement, and students must be actively involved in learning (Fedistia et al., 2019). Therefore, learning is needed that can make students actively involved and accustomed to using technology. During the Covid-19 Pandemic, technology played a significant role in supporting education. Many learning applications are made and can be used by teachers such as Zoom, Whatsapp, Youtube, Jitsi, and so on.

Vernon A. Megnesen in (Munir, 2012) states that we learn 10% of what is read, 20% of what is heard, 30% of what is seen, 50% of what is seen and heard, 70% of what That said, 90% of what has been done. For this reason, teachers are required to be able to develop learning media by utilizing existing technology, such as videos. Based on the results of research (Rifandi et al., 2020) and (Armianti et al., 2019), information was obtained that the use of video as a learning medium can help students achieve learning goals even though it is done outside the classroom. (Ario, 2019) also stated that the use of video videos could help students who often forget the previous material.

To help students access learning videos during the Covid-19 pandemic, you can use the Youtube application. Based on research (Suwarno, 2017), (Lasabuda, 2017), and (Mujianto, 2019), Youtube is suitable for use as a media and learning resource outside the classroom and in potential in class and has a positive role in student interest in learning. Also, by using youtube as a learning medium, students can make a substantial contribution to using technology in a positive direction (Unruh et al., 2016). In this study, the researcher intends to analyze the benefits of YouTube as a medium for learning mathematics during the Covid-19 pandemic.

## 2. Research Methods

This type of research is descriptive research. Descriptive research aims to explain or describe a situation, event, object, whether people or everything related to variables that can be explained either with numbers or words (Setyosari, 2016). The research subject is a mathematics teacher. And students of class X IPA 2 SMA N 1 Lintau Buo even semester of the 2019/2020 academic year. Twenty-six students consist of 11 boys and 15 girls—this research data collection technique through interviews, observation, and documents or archives. The research instrument used teacher observation sheets, student observation sheets, and interview guides. The research started from late March to mid-May and was continued with data analysis. Data analysis techniques used in this study include:

1. Data collection, in this process, the researcher collects all existing data in the field. The data collected was obtained from interviews, observation, and documentation.
2. Data reduction, researchers filter the required data based on the objectives expected by researchers.
3. Presentation of data using narrative text in the form of a brief description that is easy to understand.
4. Drawing conclusions.

## 3. Research Results and Discussion

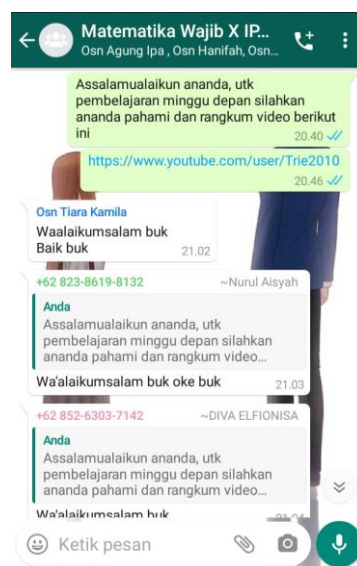
The research was conducted in class X IPA 2 SMA Negeri 1 Lintau Buo for nine meetings and started in mid-March 2020. Based on the observations at SMA Negeri 1 Lintau Buo, information was obtained that teachers used Youtube as a medium for learning mathematics during the Covid-19 pandemic on material trigonometry. Before carrying out learning, the teacher prepares several things. Preparation for learning mathematics during the Covid-19 Pandemic using Youtube was carried out in the following steps:

1. The teacher chooses the "Learning Mathematics High School" youtube channel as a medium for learning mathematics.
2. Teacher saves the selected youtube video link.

**Table 1.** Materials and sources of mathematics learning videos

Meeting to-	Youtube material and resources
1	Angle measure (Learning High School Mathematics, 2017a) <a href="https://youtu.be/q62wDZUbuAk">https://youtu.be/q62wDZUbuAk</a> Degrees and Radians (Learning High School Mathematics, 2017b) <a href="https://youtu.be/zmHRbIUfmVY">https://youtu.be/zmHRbIUfmVY</a>
2	Comparison of trigonometry in right triangles (Learning Mathematics High School, 2018i) <a href="https://youtu.be/cnJHDkMhDDY">https://youtu.be/cnJHDkMhDDY</a> (Learning High School Mathematics, 2018j) <a href="https://youtu.be/---LLRH3pbk">https://youtu.be/---LLRH3pbk</a>
3	Trigonometric comparison at Special angle (Learning High School Mathematics, 2018k) <a href="https://youtu.be/ZtRyLKgN36Y">https://youtu.be/ZtRyLKgN36Y</a>
4	Comparison of trigonometry on related angles (Learning Mathematics High School, 2018c) <a href="https://youtu.be/3MCfpDngL2w">https://youtu.be/3MCfpDngL2w</a> (Learning High School Mathematics, 2018d) <a href="https://youtu.be/SOCMyGgaq-k">https://youtu.be/SOCMyGgaq-k</a>
5	Comparison of trigonometry on related angles (Learning Mathematics High School, 2018e) <a href="https://youtu.be/6zdZGP6iBpA">https://youtu.be/6zdZGP6iBpA</a> (Learning High School Mathematics, 2018f) <a href="https://youtu.be/d3XzDDsLww">https://youtu.be/d3XzDDsLww</a>
6	Comparison of trigonometry on related angles (Learning Mathematics High School, 2018h) <a href="https://youtu.be/r-VexcXEaao">https://youtu.be/r-VexcXEaao</a> (Learning High School Mathematics, 2018g) <a href="https://youtu.be/JbnvkaSn6Y">https://youtu.be/JbnvkaSn6Y</a>
7	Trigonometric identity (Learning High School Mathematics, 2018b) <a href="https://youtu.be/ImGCNI5SHEI">https://youtu.be/ImGCNI5SHEI</a> (Learning High School Mathematics, 2018a) <a href="https://youtu.be/NjSL3yFgExo">https://youtu.be/NjSL3yFgExo</a>

The day before the learning process was carried out; the teacher distributed a link via the WhatsApp group. The teacher asks the students to understand and study the video.

**Figure 1.** The teacher distributes a youtube link to students

The teacher carries out the online learning process with WhatsApp. The steps for implementing the learning are as follows:

1. The teacher prepares students to learn, such as: asking students to find the most comfortable position to study. The teacher then takes the absence by asking students to send a summary of the material from the previously watched YouTube video. Students send proof of notes in the form of photos to the WhatsApp group. Of the 26 students, three students did not send their photo notes because they did not watch the video. Then two students sent a summary in the same language. One of them copied his friend's letters and did not watch the instructional video that the teacher had given.



Figure 2. The teacher prepares students to learn

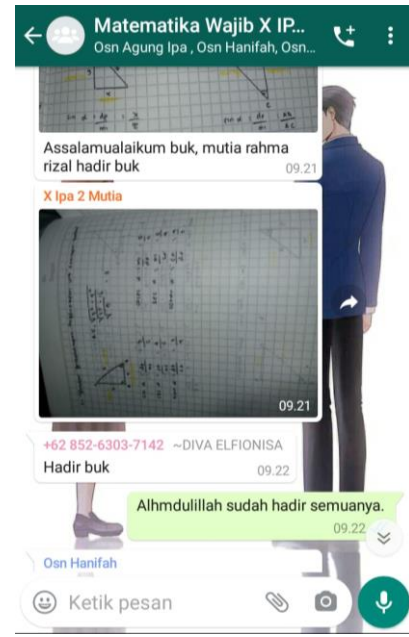


Figure 3. Students fill in the absences by sending a summary of the learning video sent by the teacher

2. The teacher reviews a little about trigonometry based on the youtube video that students have watched. Then the teacher informs the trigonometric material that will be discussed at the meeting.

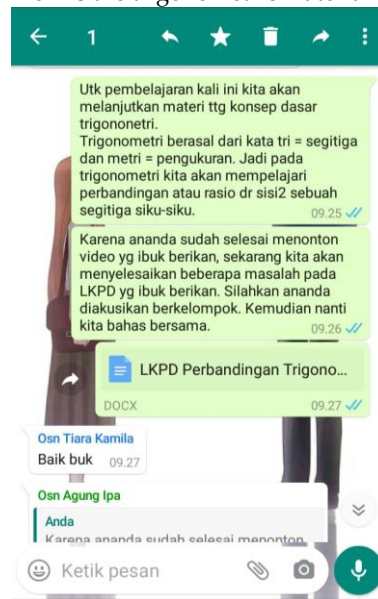
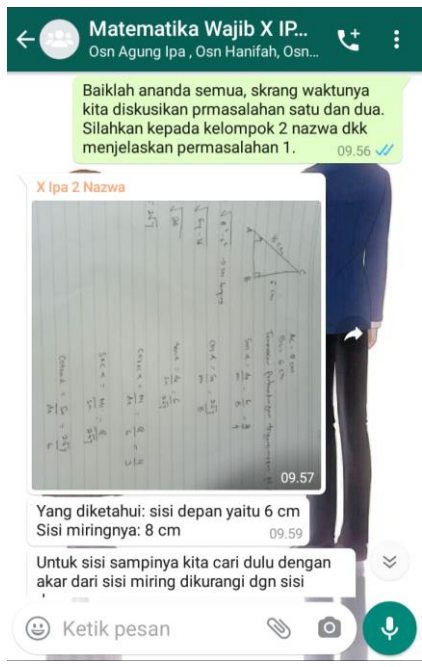


Figure 4. The teacher explains the material and asks students to discuss the problems that exist in the LKPD

- 3. The teacher asks students to work on the LKPD in groups. Previously, students were divided into several groups. The teacher gives 25 minutes for each group to discuss. Students are given the freedom to differ in their way.
- 4. The teacher greets the students in the WhatsApp group again and asks the group at random to present the results of their group members' discussion. The designated groups send photos of the products of their meeting by explaining.



**Gambar 5.** Groups are randomly assigned to present the results of their group members' discussions.

- 5. The teacher asks other groups to respond to the presentation results from the presenter group. Several group members add and complete the presenter group's answers.



**Figure 6.** Other groups respond to the results of the group discussion that appears



- 6. The teacher gives a question that leads students to the conclusion of the day's material. There are various answers given by students in their language. The teacher then offers general decisions based on the student's statements.



Figure 7. Teachers and students make learning conclusions

- 7. Students do the exercises and send them to the teacher's WhatsApp for review. The teacher checks the students' activities; if they have answered correctly, they send star emoticons to students as appreciation. For students who are still wrong in answering the questions, the teacher asks the students to return to work by explaining to the students where the error lies.



Figure 8. The teacher asks the students to do the exercises

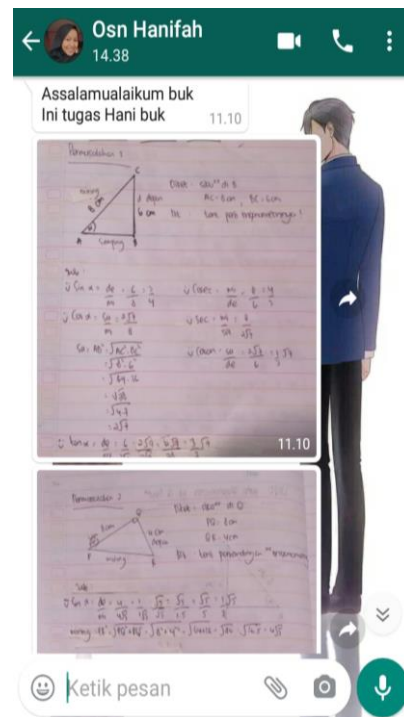


Figure 9. Students send exercises to the WhatsApp teacher

Based on the student training results, it was seen that of the 26 students who worked on the questions, on average, 18 students had correctly answered the questions given or about 72%. For students who are

still mistaken, the teacher again reminds the material in more detail through messages or personal WhatsApp voice notes.

The teacher uses Youtube as a medium for learning mathematics because the teacher feels helped by the many mathematics learning videos on the Youtube application. The teacher admitted that he could not prepare the instructional video by himself due to a lack of time and preparation because the rules for studying at home came out suddenly. The teacher believes that Youtube is the right medium to help online learning during the Covid-19 pandemic.

The teacher chose the "SMA Math Learning" youtube channel because the video lesson is divided into sections with a maximum duration of 16 minutes. This is very important to make students not get bored quickly when watching videos. The material presented in the video is based on the 2013 curriculum so that it fits the curriculum used in schools. Besides, the presenters also explain the basis of the formulas given to understand where the procedure came from. It is the right medium to help online learning during the Covid-19 pandemic.

Before learning, students are asked to watch learning videos through the YouTube application. This is very necessary to make students learn independently at home. To check whether students watched the video, the teacher asked the students to summarize the video at the beginning of the lesson. The video summary is considered student attendance. However, after several meetings, several students were seen copying the outlines of their friends. The teacher can overcome this by pretest following the learning video at the beginning of the lesson.

After learning mathematics using Youtube media, the researcher conducted interviews with students in the class. Of the 26 students in the study, 21 students stated that Youtube learning media was beneficial for learning. Five students said that Youtube made it difficult for these students in the learning process. Students who do not feel the benefits of Youtube videos in learning mathematics are because students do not have an internet network around their house, so they find it challenging to watch Youtube's learning videos.

Students who feel the benefits of using Youtube as a learning medium give the following reasons:

1. Youtube helps students learn material virtually even though they are not facing to face with the teacher.
2. Youtube helps students who often forget the material because videos on YouTube can be watched many times.
3. Youtube provides many interesting learning videos so that students become motivated to learn mathematics.
4. Students can study independently because before the learning process begins, students must watch and learn the material from the YouTube video provided by the teacher;

Based on the explanation above, it can be concluded that Youtube, as a medium for learning mathematics, provides significant benefits during the Covid-19 Pandemic. Youtube answers teachers' and students' needs to assist effective and independent learning, even without face to face. However, YouTube inevitably has its drawbacks. one of which is that it must be operated with an internet network. This will make it difficult for students who live in areas with no internet network. The participation of parents, teachers, and schools is needed to overcome this.

Youtube is a useful information search application for students. Students can search for whatever information they want. Based on interviews with several students, they felt that the sample questions given were few. The teacher could overcome this by providing several instructional videos with many sample questions. Teachers can also make their learning videos; because teachers already know their students' characteristics, they can adjust the appearance on the video with the appropriate method so that it can make online learning more effective.

#### 4. Conclusion

Based on the results of data analysis, with a percentage of 72% learning via Youtube with the WhatsApp application's help can help students understand the material. Also, 81% of students stated that Youtube learning media was beneficial for learning, so it was concluded that Youtube had essential benefits as a medium for learning mathematics and as the best information seeker during the Covid19 pandemic. By using Youtube, learning becomes more exciting and increases students' positive motivation to learn mathematics. Students can also study independently, even at home. Teachers are expected to help

students who cannot access Youtube due to internet network problems. Teachers are also likely to create videos that are following the learning methods in the classroom so that they can make effective learning.

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