

IMPLEMENTATION OF ONLINE MATHEMATICS LEARNING IN VOCATIONAL STUDENTS DURING COVID-19

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ABSTRACT

Education is a learning process with the aim of educating to develop self-potential. The Covid-19 pandemic has an impact on the education sector where face-to-face learning becomes online learning. The purpose of this study is to find out the implementation of online math learning in vocational students during the Covid-19 pandemic, in addition to looking at inhibiting factors in the implementation of online learning carried out during the Covid-19 pandemic. The research method used is a qualitative descriptive method. The research was conducted at SMKN 1 Maniis in Purwakarta Regency, the subject of this study was a class XI vocational student with a total of 96 students. The instruments used in the study are non-tests in the form of open questionnaires and interviews. The research procedure is carried out in three stages. (1) the preparatory stage, (2) the implementation stage, (3) the evaluation stage. The results of the study came to several conclusions, that the implementation of online mathematics learning at the time of Covid-19 was carried out in accordance with the curriculum on Covid-19 conditions, and based on the circular of the Minister of Education and Culture number 4 of 2020 on the implementation of education policy. The online math learning process is carried out using interactive applications such as zoom and google meet in addition to also using google classroom and WhatsApp, in the process of implementation teachers provide the next stage of interaction in the form of Q&A and finally the assignment from the teacher. The inhibiting factor in the implementation of online mathematical learning is inadequate internet network that causes the learning process to be hampered which then has an impact on the lack of understanding of the material that has been delivered.

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INTRODUCTION

The Covid-19 pandemic has an impact on all aspects of life, especially in the field of education, Siahaan (2020) said that the coronavirus is an infectious disease caused by the acute respiratory syndrome. Putri (2021) said that the number of coronavirus cases is still quite a lot, so it has an impact on education, namely learning is done online. In addition, Putra, Maula, and Uswatun (2020) stated that as a result of the pandemic all schools in Indonesia were closed this was aimed at preventing the spread of Covid-19. Learning that is

often done so far is direct learning but in the Covid-19 pandemic, the government provides policies to do distance learning or online learning this becomes a solution to problems in the pandemic period.

According to Sadikin and Hamidah (2020) online learning is a learning process where the learning process uses the internet network with connectivity, accessibility, flexibility, and the ability to bring up several types of interactions in learning. Meanwhile, according to Hanum Anugrahana (2020) online learning is one of the learning models that has supporting facilities for the use of information and communication technology. We can also say that online learning is learning bridged by internet technology. Meanwhile, according to Ningsih and Erdisna (2021) online learning is a learning process to achieve the expected understanding or knowledge, where technology and the internet are the media for narrowing of learning.

In online learning, a supporting facility is needed be it a laptop or smartphone to be able to access learning. There are several learning applications that can be used by students and teachers to carry out online learning. Online learning provides a new situation wherein the learning process students play an active role so that a teacher is required to be able to create a good teaching method, approach, or technique, to adjust direct learning patterns into online learning because this learning does not require students to be able to be present in the classroom. According to Novyanti, Rahmayanti, and Ichsan (2021) at Vocational High School studied many productive subjects where accounting is more than theory. But when the Covid-19 pandemic learning with silverware on the ground becomes not maximal even eliminated. While Sandre et al. (2021) stated that online learning is the only learning model that is a solution to be used during the Covid 19 pandemic where online learning is applied at all levels of education including vocational schools.

In direct mathematics learning, there are still many problems experienced by students. According to Hasratudin (Sholihatunnisa et al, 2018) learning school mathematics from elementary school to college is a problem that is still unresolved. In other words, there are still many problems in learning mathematics in school. Moreover, with the Covid-19 pandemic, direct learning patterns must be replaced with online learning, in its design, there will be various obstacles experienced by students and teachers, especially in the process of vocational mathematics learning that focuses on proving a truth with the absurdity of concepts in mathematics itself, so to understand mathematical concepts requires in-depth analysis, this often gives difficulties to students.

This study aims to find out the implementation of online math learning in vocational students during the Covid-19 pandemic, in addition to looking at inhibiting factors in the implementation of online learning carried out during the Covid-19 pandemic. The benefit of this research is to enrich the treasures of science and literacy in the field of education, especially during the Covid-19 pandemic. And also as an extension of advice to academics and education agencies who are still trying to improve the education system in Indonesia in particular. Therefore, the author is interested in following up the problem with the subject of vocational students to find out the implementation and obstacles during the math learning process amid the Covid-19 pandemic situation.

METHOD

The research method used is a qualitative descriptive research method using survey methods conducted online. Data collection is done by disseminating open questionnaires and interviews to teachers and students who do math learning online, the research was conducted at SMKN 1 Maniis in Purwakarta Regency, the subject of this study is the students of SMK class XI with a total of 96 students. The instruments used in the study are non-tests in the form of open questionnaires and interviews. The research procedure is carried out in 3 stages.

Namely: (1) the preparation stage, (2) the implementation stage, (3) the evaluation stage. In the preparatory stage, the researcher prepares permission to the school SMKN 1 Maniis and makes non-test instruments, in the implementation stage the researchers provide open questionnaires of class XI students and interviews to teachers and students, at the evaluation stage, after the data is collected, then reduce the data, after which play the data and draw conclusions.

RESULTS AND DISCUSSION

RESULT

The results of the study in the form of questionnaires are distributed through a google form. Presented in the following image:

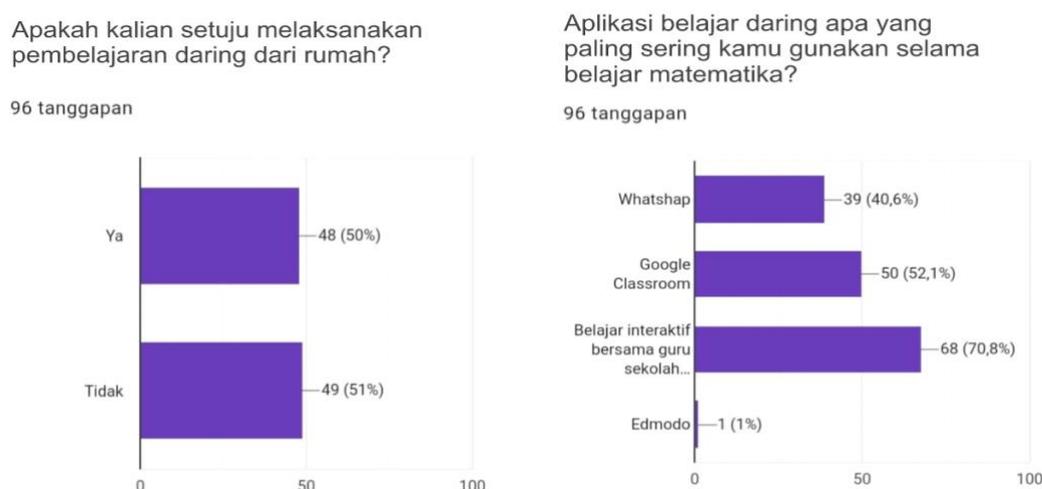


Figure.1 Learning Response

It appears that the student's response to the Figure. 1 provides an idea that students who agree and students who do not agree to do online learning have almost the same number and online learning applications that are often used when learning mathematics mostly use interactive learning applications such as Zoom, and google meets, as many as 68 students out of 96 in addition to the second application that is often used by students, namely Google Classroom as many as 50 out of 96 students then WhatsApp application as many as 39 out of 98 students and only 1 student using Edmodo.

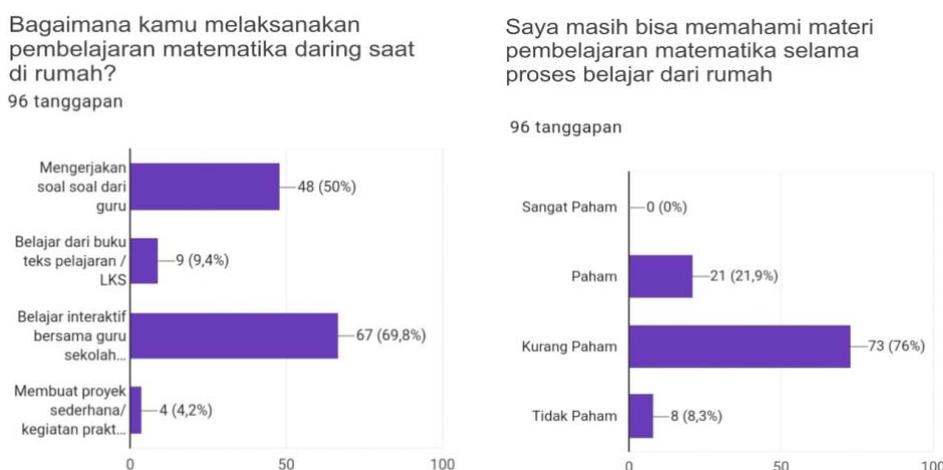
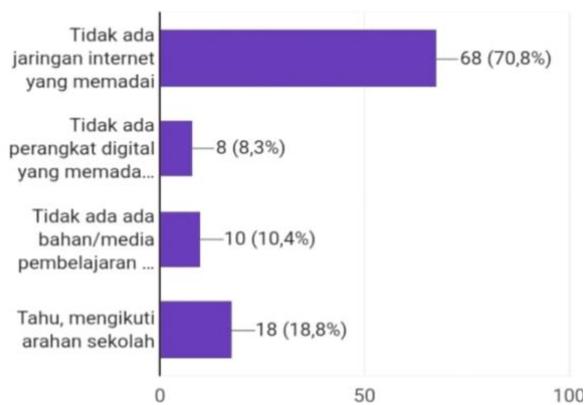


Figure. 2 Demonstrate the Activeness and Effectiveness of Students in Online Learning

Based on Figure. 2 online learning conducted while at home are students learning interactively with teachers with the most answers, namely 67 out of 94 students who answer and work on questions from teachers, the level of understanding of students when doing online learning, most of the students do not understand the material delivered, which is as many as 73 respondents from 96, only 21 students from 96 can understand the material, However, some students do not understand math materials at all when learning is done online there are 8 students out of 97 students.

Kendala teknis apa yang kalian hadapi selama pembelajaran matematika daring

96 tanggapan



Kesulitan dan hambatan apa yang kamu alami saat proses belajar matematika daring dari rumah?

96 tanggapan

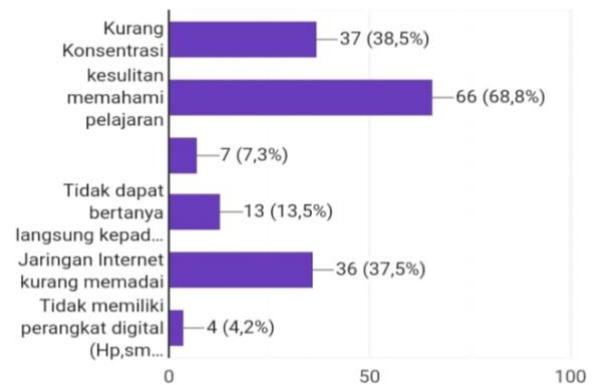


Figure. 3 Obstacles or Difficulties Experienced by Students

Deri Figure. 3 it is seen that students experience the constraints of the absence of adequate internet network with the number of 68 students out of 96 which is the answer to the most students about the technical constraints experienced when studying online, some students do not have a digital device that meets, in addition to the difficulties and problems experienced by students when doing online learning most students answer the difficulty of understanding the lesson, namely 66 out of 96 students, That answered less concentration 37 out of 96 students.

Orangtua atau keluarga mendukung saya dengan baik sekama belajar matematika dari rumah

96 tanggapan

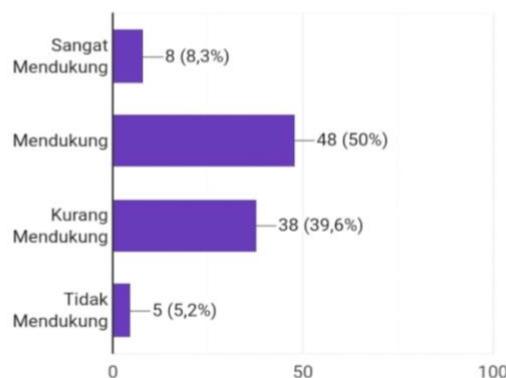


Figure. 4 Parental Responses in Online Learning

Figure. 4 is the response of parents of students to online learning, from the response obtained there are 48 out of 96 people who say that supporting learning is done online, but the difference is slight with parents who are less supportive of online learning as many as 38 out of 96 parents of students are less supportive, there are also parents who do not support learning at all done online, which is as much as 5 out of 96 parents of students. There are also parents of students who strongly support learning done at home or online.

The results of the interview conducted are to find out how the implementation of online math learning is implemented and the obstacles that hinder the course of the learning process, the sources of this interview are two teachers of mathematics subjects who learned in SMKN 1 Maniis and students of class XI. The interview results were only taken from a few representatives who represented many of the same responses presented in Table 1. As follows.

Tabel 1. Student Response

Initials	Employment	Response
Respondent 1	Teacher	The process of learning online mathematics in accordance with the curriculum in the conditions of Covid-19, as well as in accordance with the circular letter of the Minister of Education and Culture number 4 of 2020 on the implementation of education policy.
Respondent 2	Teacher	Online math learning in the process is still not maximal so I think it is still less productive because we find many obstacles when doing the learning process.
Respondent 3	Student	The process of learning mathematics online with zoom media or google meet is the first delivery of material from the teacher then interacting through Q&A and the teacher gives the task.
Respondent 3	Student	The application of online learning, especially our mathematical materials, does a lot of tasks while the explanation is only as close and only partly understood.
Respondent 4	Student	Online learning is considered less effective because of the many obstacles that must be faced, inadequate internet networks so that the delivery of material is less maximal.

From the results of the interview conducted, the outline of the implementation of online mathematics learning in students of SMKN 1 Maniis in accordance with the curriculum in the condition of Covid-19, as well as in accordance with the circular letter of the Minister of Education and Culture number 4 of 2020 about the implementation of Education policy, but that in the process of application students experience obstacles and obstacles when doing online learning and students have difficulty understanding the subject matter, Obstacles experienced by students include inadequate internet networks that later result in hampering the course of the process of treatment, many students who do not follow the learning because of this, online learning that often puts a burden on students in the form of tasks where the task is complained by students related to understanding the material that has been delivered but

they do not understand it which impacts the difficulty of students to doing the task given, Students argue that learning is immediately done directly because the various obstacles experienced by students while learning makes students uncomfortable or not conducive to doing learning at home.

DISCUSSION

This research was conducted at SMKN 1 Maniis Purwakarta Regency in class XI on the impact of Covid-19 on the implementation of online learning in the mathematics subjects of vocational students, this research instrument was given in the form of non-tests, namely open questionnaires to 96 students of class XI, and interviews to two teachers and some XI students. An open box is used to find out the implementation of online mathematical development and see the obstacles that occur during the learning process, the questionnaire is spread through google form. The interview was conducted with the help of the WhatsApp app with mixed responses from respondents.

As for the results of the questionnaire given to students regarding the response of online math learning, students argue that there are those who agree and disagree to do math learning online, mathematics learning applications that are often used are interactive learning applications such as zoom and google meet in addition to the second application that students often use is google classroom and Whatshap, interactive learning has been used when learning online math materials because mathematics learning must learn directly or use interactive videos so that the delivery of mathematical concepts can be absorbed properly by students this In line with the opinions of Riayah and Fakhriyana (2021) math learning using interactive video media is more optimal and more effective in improving mathematical understanding when compared to learning without the use of interactive video media, but learning through Whatshap is not recommended for math learning because math learning must be interactive instead of just providing tasks without students understanding the material.

The online learning process conducted by students is interactive learning where students answer 67 out of 96 students this gives us an idea that online learning in mathematics material has fulfilled good and active learning rules, but 48 students out of 96 students answered doing questions or exercises given by teachers if students are only asked to do problems only without being given an explanation by the teacher then learning will not be active, Few answered to make a simple project and learn from books and LKS suggested by teachers, but students do not understand the material presented 73 out of 96 students answered less understanding in understanding math lessons based on research then this shows that learning online is less effective because many students do not understand or can not achieve learning goals, 21 out of 96 students said they understood online math materials, compared to those who understood more who did not understand, there were also some students who did not understand the material that had been delivered at all. It is clear that online learning is less effective at achieving expected learning goals. In line with the opinion of Tasdik and Amelia (2021)during the online learning process of mathematics, there are still many students who feel that online learning is difficult and ineffective plus math lessons that are considered difficult.

The biggest technical obstacle for students is the lack of adequate internet network so that learning cannot be done properly because it is constrained by a network of mathematical materials that should be well understood or not good delivery to students, this is in accordance with the opinion of Andriyansah et al. (2021)the biggest obstacles or obstacles when doing online learning, namely the absence of internet networks. Students also have obstacles and difficulties when understanding mathematical materials delivered online, in addition, students are less able to concentrate in the learning process this gives the impression that online math

learning does not provide meaningful learning. Regarding the student's response related to supporting or not learning is done at home where 48 out of 96 students said they support students to do learning at home because parents are worried about their child's safety from the Covid-19 virus, but not a few parents of students who are less supportive of learning are done at home 38 out of 96 think less supportive there are also parents of students who do not support at all learning done at home or online.

Regarding the results of interviews that have been given to students, namely online mathematics learning in accordance with the curriculum in Covid-19 conditions, as well as in accordance with the circular letter of the Minister of Education and Culture number 4 of 2020 on the implementation of education policy, the learning process is the same stage as ordinary learning, the first teacher provides material, after which interact with Q&A and assignment, But in the application of teachers only explaining at a glance that then assigns the burden of assignments to students, most students think negatively about online learning this is due to the limited space to interact, Fauzy and Nurfauziah (2021) argue that the limited space of interaction with teachers is the highest factor that results in low levels of students' understanding of math learning conducted online.

It is seen that from the results of learning research conducted online, especially mathematical materials, find many obstacles or obstacles for students because the online learning process must meet several components where these components include communication tools in the form of laptop or handphone, in addition, there must also be a good internet network so that the material delivered can be clearly accepted by students without other technical interference besides that which needs to be considered. Again the availability of the internet for students to learn, teachers and students must adapt to information technology because learning must be carried out online wherein opinion Zulfritria, Ansharullah, and Fadhillah (2020) information technology is the key to a better future school model. A teacher must have the ability to operate a computer so that the teaching and learning process can be done optimally, in addition, the teacher must also be able to choose the right learning method for students because the online learning situation that is carried out at home makes students saturated if learning is not meaningful besides that the teacher is too much to give the burden of tasks that must be done by these students is also something that must be immediately handled by the educators so that students Still have an interest in learning.

There are complaints from students about online learning and many students have difficulty accessing online learning using interactive learning media using the zoom or google meet application because learning done using the google meet or zoom application is very burdensome for learners because of the high quota that students must buy to access learning, the teaching and learning process becomes not conducive because of the adjustments that are needed. Must be done both in terms of quality, teacher skills provide learning and also from student awareness to immediately adjust in this online learning, so there are many complaints from students to immediately do direct learning. Obstacles and obstacles experienced by students make the goal of mathematics learning not achieve because the results of research show students do not understand the mathematical materials that have been delivered by the teacher. In line with the opinion of Bramastia and Purnama (2021)the learning process will not be realized if the field constraints have not been resolved, obstacles on the ground must be resolved first so that the implementation of online learning can be carried out properly.

CONCLUSION

Based on the analysis of data and research results conducted at SMKN 1 Maniis in class XI, several conclusions were obtained, that the implementation of online mathematics learning at the time of Covid-19 was carried out in accordance with the curriculum on Covid-19

conditions, and based on the Circular Letter of the Minister of Education and Culture number 4 of 2020 on the implementation of education policy. Online math learning for students of SMKN 1 Maniis is carried out using interactive applications such as zoom and google meet in addition to also using google classroom and WhatsApp, in the process of implementation of teachers providing material then interaction with Q&A and assignments from teachers. The inhibiting factor in the implementation of online mathematical learning is inadequate internet network that causes the learning process to be hampered which then has an impact on the lack of understanding of the material that has been delivered.

From this study, there are several things that will be submitted as advice from researchers.

1. When doing online learning should be prepared to advance the supporting components to do online learning so as to minimize the obstacles faced by students and by teachers
2. Online learning, especially mathematics materials as teachers must be able to innovate and develop how to deliver mathematical materials meaningfully so that students do not experience saturation when doing learning at home
3. Students must be able to adapt to situations that require learning to be done at home or done online

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REFERENCES

- Andriyansah, Roby et al. 2021. "Kesulitan Pembelajaran Daring Matematika Saat Pandemi COVID-19 Pada Siswa SMP Kelas VIII." *Jurnal Pendidikan dan Konseling (JPDK)* 3(2): 67–71.
- Anugrahana, Andri. 2020. "Pembelajaran Elektronik Daring Atau Dalam Ja." *Scholaria: Jurnal Pendidikan dan Kebudayaan* 10(3): 282–89.
- Bramastia, and Eka Khristiyanta Purnama. 2021. "Penggunaan Bantuan Kuota Belajar Kemendikbud Di Masa Pandemi." *Epistema* 2(1): 11–22.
- Fauzy, Alwan, and Puji Nurfauziah. 2021. "Kesulitan Pembelajaran Daring Matematika Pada Masa Pandemi COVID-19 Di SMP Muslimin Cililin." *Jurnal Cendekia: Jurnal Pendidikan Matematika* 5(1): 551–61.
- Ningsih, Sri Restu, and Erdisna. 2021. "Implementasi E-Learning Sebagai Media Pembelajaran Online Bagi Siswa Sekolah Menengah Kejuruan (Smk)." *JOISIE Journal Of Information System And Informatics Engineering* 5(1): 20–28.
- Novyanti, Yuwita, Henita Rahmayanti, and Ilmi Zajuli Ichsan. 2021. "Pengaruh Motivasi Dan Berpikir Kritis Pada Pembelajaran Online Dalam Perspektif Siswa Smk." *Jurnal PenSil* 10(2): 96–105.
- Putri, Vany Dwi. 2021. "Jurnal Bimbingan Konseling Pendidikan Islam Pengaruh Pembelajaran Daring Pada Siswa SMK." *Jurnal Bimbingan Konseling Pendidikan Islam Coution Journal* 2(02): 1–9.
- Putria, H., L. H. Maula, and D. A. Uswatun. 2020. "Analisis Proses Pembelajaran Dalam Jaringan (DARING) Masa Pandemi COVID-19 Pada Guru Sekolah Dasar." *Jurnal basicedu* 4(4): 861–72.

- Riayah, Salma, and Dina Fakhriyana. 2021. "Optimalisasi Pembelajaran Dalam Jaringan (Daring) Dengan Media Pembelajaran Video Interaktif Terhadap Pemahaman Matematis Siswa." *Jurnal Pendidikan Matematika (Kudus)* 4(1): 19.
- Sadikin, Ali, and Afreni Hamidah. 2020. "Pembelajaran Daring Di Tengah Wabah Covid-19." *BIODIK: Jurnal Ilmiah Pendidikan Biologi* 6: 214–24. <https://doi.org/10.22437/bio.v6i2.9759>.
- Sandre, Heri Irawan et al. 2021. "ANALISIS PEMBELAJARAN DARING PADA SMK Heri." *EduTIK: Jurnal Pendidikan Teknologi Informasi dan Komunikasi Volume 1*(Juni): 39–45.
- Sholihatunnisa, Leili, M Imam Darmawansyah, Noviani Sa'adah, and Wati Susilawati. 2018. "Problematika Pendidik Dan Peserta Didik Terhadap Pelajaran Matematika." *Prisma* 7(2): 145.
- Siahaan, Matdio. 2020. "Dampak Pandemi Covid-19 Terhadap Dunia Pendidikan." *Jurnal Kajian Ilmiah* 1(1): 73–80.
- Tasdik, Rinrin Nur, and Risma Amelia. 2021. "Kendala Siswa SMK Dalam Pembelajaran Daring Matematika Di Situasi Pandemi COVID-19." *Jurnal Cendekia: Jurnal Pendidikan Matematika* 5(1): 510–21.
- Zulfitria, Ansharullah, and Rastia Fadhillah. 2020. "Penggunaan Teknologi Dan Internet Sebagai Media." *Prosiding Seminar Nasional Penelitian LPPM UMJ*.