PARADIKMA JURNAL PENDIDIKAN MATEMATIKA
ISSN: 1978-8002 (Print)
ISSN: 2502-7204 (Online)

Phenomenological Exploration in Mathematics Education

Rotua Simbolon[1], **Lukman El Hakim**[2], **Tian Abdul Aziz**[3]

[1,2,3]Departement of Mathematics Education, State University of Jakarta, Indonesia
*Corresponding Author: Rotuasimbolon74@gmail.com

Article History:
Received : 15-05-2023
Revised : 13-06-2023
Accepted : 01-07-2023
Online : 01-07-2023

Keyword :
Covid-19; Math Learning; Daring; Exploration; Phenomenological

ABSTRACT

We don't know what will happen tomorrow. Yesterday is a memory, today is a reality and tomorrow is a hope. Who would have thought that the corona virus would become one of the elements forming a new life cycle not only for Indonesia but for the whole world. During the Covid-19 pandemic, Large-Scale Social Restrictions (PSBB) were implemented, this had an impact on the implementation of face-to-face (online) learning. Educational institutions must also change direction. Work from home. Going online is one way to stay afloat. Learners at all levels, learn online. Some are still not familiar with this method, especially those in regions or villages, so that in its implementation there are obstacles that result in the implementation of the learning process not being optimal. Those who live in cities experience different obstacles again. Learning that should be carried out face-to-face has changed to online. One of the differences that exist is seen from progress, namely those who live in cities and in villages have different difficulties. Not to mention the other variants. This article aims to find out the obstacles experienced by students during the implementation of online learning in Mathematics lessons. The approach used is a phenomenological approach. How does the exploration of phenomenology play a role in the mathematical approach. The hope is that with this approach you can get information regarding the implementation of the online learning process for learning Mathematics during the Covid-19 pandemic. Exploration of Mathematics Education is seen from a phenomenological attitude, which means that it starts with entering phenomena through practice. The exercises provided are designed so that participants are able to illustrate, mention, give directions and are able to associate meanings and differences. Actually someone gets something in learning more than one's intentions, it doesn't even matter whether a teacher teaches well. For this reason, a creative teaching method is needed in learning mathematics so that there is good interaction between students and teachers. Conclusion: The process of learning mathematics online was not optimal during the pandemic due to several factors that affected the smooth implementation of learning.

A. INTRODUCTION

The Covid-19 virus started in February 2020, which has resulted in changes to the order of people's lives, since the implementation of work from home through a letter issued by the Ministry of Administrative and Bureaucratic Reform Number 19 of 2020 concerning adjustments to the work system of the State Civil Apparatus in an effort to prevent the spread of Covid-19 in the government environment is a guideline for government agencies and institutions and regions in carrying out official duties by working from home or where they live in minimizing the spread of Covid-19. During the implementation of learning from home, the process of providing material, email, assignments and exams is carried out online using the Whatsapp application, Zoom Meeting, Google Meet, and others. With the new learning method applied, teachers and students feel different things compared to face-to-face learning. Where the online learning method has become a new habit that must be implemented during the Covid-19 pandemic.

Through e-learning, students not only listen to material descriptions from teachers or instructors but also actively observe, perform, demonstrate, and so on. Everyone can feel the tendency for students to experience obstacles while carrying out online learning, which differs from the implementation if it is done offline. This can be seen from several factors as follows: 1) The intensity of student presence during the learning process; 2) student activity in the learning process (dialogue, question and answer, and group discussion); 3) Collection of assignments that are often late; 4) Decrease in student scores compared to the previous semester. From this background, the researcher is interested in discussing a phenomenological study of the obstacles Mathematics faced by students during the Covid-19 pandemic, which aims to dig up information on the obstacles to learning

Mathematics online that were carried out during the Covid-19 pandemic during recent years. It is hoped that this article will be able to provide information about the constraints of learning Mathematics online for teachers and students from a phenomenological study approach.

B. RESEARCH METHODS

The method that uses a phenomenological approach is usually interpreted as a subjective experience or phenomenological experience. Phenomenology is a view of thinking that emphasizes the focus of human subjective experiences and interpretations of the world. Using a phenomenological approach makes it possible to reveal the problems of teachers and students in carrying out online learning. Data collection through interviews. In this article the analysis is carried out in several stages, namely: First, the data obtained from the results of the interviews are indexed in tables; Second, make initials for participants for coding; The third is studying data and studying keywords; Fourth, draw and reduce data in accordance with the constraints of implementing online learning; Fifth make conclusions and report writing. While the implementation procedure starts from setting research objectives, determining research settings and subjects, making designs and instruments, collecting data, processing data, analyzing data, and presenting data.

C. RESULT AND DISCUSSION

The meaning of online learning is learning that utilizes internet access by using audio video separately. All forms of materials, tests and communications are distributed and carried out online through applications and social networks. Apart from the Whatsapp Group (WA Group), other media used in online learning is the Zoom Meeting platform. Zoom Meeting itself is a learning medium using video. There are also applications used such as Google Classroom, Google Meet, Edmudo and Zoom. Online learning is an educational innovation that involves elements of information technology in learning. The use of the application while online depends on the teacher requesting it, the application is very helpful but very difficult if there is a problem on the network. The applications that are often used are: a) Zoom meeting Zoom is a communication application that uses video as if it were a video call simultaneously and can accommodate many people. The application can be used in various mobile devices such as hand phones, desktops, to telephones and room systems so that it can facilitate the process of learning mathematics. In synchronous learning such as using the zoom application or something similar, sometimes there are internet connection problems which cause the delivery of material to be unclear and understanding the material to be less in-depth b) Whats App. Whats App is an application for smartphones with basic similar to blackberry messenger. WhatsApp is a messaging application that allows us to exchange messages and can create group messages so that it makes it easier for notifications in the teaching and learning process. The implementation of online learning is betterusing wifi, but students who don't have it are forced to use cellular networks. This is very draining, because apparently there are some students who do not get quota assistance from the government. And the internet connection is not stable so it often disconnects during learning. Online learning at school is good, organized and full of preparation. The problem is in the network. It's just how not to be boring. Furthermore, so that the schedule is not tentative so that students can maximally participate in the learning process. The ratio of attendance is balanced, depending on the coordination of the teacher. Student delays are due to internet connection, tentative study hours, and student delays in knowing information about learning. But there will be more if it is done offline, because most students can make excuses if they are not present in learning. In implementing ideal online learning, a strategy is needed so that learning is not boring, discipline by attending according to schedule. If there is a change in schedule or unable to attend, you can be notified in advance. Furthermore, the ideal method: a) must generate motivation when teaching and use any media so that students are motivated and more enthusiastic in participating in learning. b) Interactive when doing learning. c) Make students understand what is learned and then ask students to study the material provided. d) Provide understanding and convenience in giving assignments to students and provide instructions so that students can easily do assignments. e) Building a spirit of collaboration during lectures so that collaboration between students and lecturers is established. Discussion Online learning is an option implemented during the Covid-19 pandemic.

Online learning is an option implemented during the Covid-19 pandemic. This is because teachers and students cannot meet face to face, so they must be assisted with an internet connection and applications. Bearing in mind the Circular Letter of the Minister of Education and Culture Number 4 of 2020 also states that, (1) Learning from Home via the web/distance learning is carried out to provide meaningful learning experiences to students, without being disturbed by requests for completion of all educational plan achievements for grade increases and graduation; (2) Learning from Home can be focused on basic skills training, including related to the Covid-19 pandemic; (3) Learning from Home in the form of exercises and

study assignments may fluctuate between students, as indicated by their respective strengths and conditions, including the notion of access holes/offices for home study; (4) Evidence or results of Learning from Home exercises are given subjective and useful criticism from educators, without the need to give quantitative values/values. Therefore, every organization or instructor is required to provide the furthest progress to frame a successful learning measure.Different strategies for web-based learning interactions can be changed by the circumstances of each student and instructor. Even so, in terms of web-based learning, it certainly requires special data and devices so that learning runs as expected. One of them is a cell phone that can be used as a pick-up mechanism when learning arithmetic online. The mobile phone is a necessary innovation in the advancement of media and sight and sound. Learning via cell phones is relied upon as a preferred learning asset that can build skills and adequacy of student learning measures. Judging from Sutomo's examination (2017), it is stated that there is a positive impact from the use of cellular phones. Utilization of uses in cell phones that help the learning cycle will work on the nature of learning interactions. The use of cell phones to help practice learning will expand the achievement of learning continuity. There is a very large positive relationship between learning interactions and student achievement. The use of mobile phones in web-based learning has been considered by analysts. Learning from home applies to all students wherever they live. Students who live in villages or villages have different constraints than students who live in cities. Likewise, the constraints experienced by teachers in the village and in the city. Everyone has different obstacles, but we can see the obstacles that are generally experienced by those living in villages and those living in cities. In its implementation there are obstacles that result in both students and teachers not being able to carry out learning optimally. Implementation of learning activities from home with online media requires students to master a variety of media. With a variety of online media that they have never used before, students are required to master them. Various online learning activities result in the use of various online media or applications for the effectiveness of the course of learning. Some interpretations of the obstacles experienced during online learning for learning, especially Mathematics.

Tabel 1. Constraints experienced during online learning for learning, especially Mathematics

No.	Village/village constraints	Constraints in developed cities/regions
1.	Android cellphones are still or not owned by students.	Sometimes network glitches
2.	Mobile phones in the household still belong to parents	Not all children get a study quota
3.	There are many households that don't have an Android cellphone and still use a regular cellphone	Economic limitations to buy mobile data if there is no wifi
4.	The network exists in certain places/areas that may have to be reached in quite a long time because it is far away (1-2 hours) and the signal is unstable	The allocation of the learning process is small compared to face-to-face.
5.	Economic limitations buying credit	
6.	Inability to keep up with IT developments (teachers, parents, students)	
7.	There are still many other obstacles	

A stable internet connection such as wifi is very supportive in carrying out online learning, the causes of student absences are mostly due to connections, tentative schedules, and delays in receiving information. In its implementation so that it is not boring, the learning strategies used should be motivating, interactive, able to make students understand, collaborate, and can be given convenience in carrying out assignments. Online learning can be effective when accompanied by student independence in managing their study schedule. If the use of wifi is better than the cellular network, the implementation of learning is good, but it must be accompanied by a method that is not boring and can provide confirmation if there is an absence. Although smartphone features can help students and teachers to seek additional material literacy and be able to establish good communication, the use of smartphones in mathematics learning has an impact on students' lack of understanding of the material presented, even though the teacher has provided additional learning videos. In addition, there was also a decrease in students' response and enthusiasm for learning mathematics compared to face-to-face learning. Mathematics learning is still not optimal.

Rosihudin in Millati (2020: 13) obstacles in learning are problems that interfere, hinder, or make it difficult and even result in failure in achieving learning goals. Factors that cause learning obstacles are the approach used, the curriculum, and the professionalism of educators. Hermansyah, Annur (2020) Even though they cannot meet face to face, the teacher must think hard so that the lessons delivered can still attract students' interest to follow them. As a learning process faced with various obstacles, the problem of teaching and

learning interaction is a complex problem because it involves various factors that are interrelated with another one.Khasanah, Syarifah (2021) The Zoom application is an e-learning that can support online learning activities. According to Sanjaya in Millati (2020: 15) online learning is learning that utilizes technology or internet networks in the learning process. Rapid technological developments have brought this civilization to the industrial revolution 4.0. Sri Widayati (2020) The current era of globalization and industrial revolution 4.0 requires all educational institutions to provide services using digital technology in learning. The provision of educational services using digital technology aims to make it easier for students to access related materials. Students can study anytime and anywhere. That's one hope. E-learning which is an electronic learning system or e-learning in the form of a website that can be accessed anywhere and anytime. Lesson materials are not only shown through textbooks which we usually buy but can already use e-books. Teachers and students together can view learning resources from various sources. It can also be accessed anywhere and anytime. Learning is not only in one place called the learning class but everywhere. It's very easy and this is the phenomenon that was created during the Covid-19 era. Starting from us entering the era of 4.0. We are currently in an era where technology and the internet support various aspects of life. The Covid-19 outbreak suddenly attacked us and all students who were still not used to using technology were forced to use it. This drastic change is certainly not easy for some parties to accept, but for now only technology with learning from home can be a bridge to continue the transfer of knowledge. Nurhabibah, Hannikah, Widiawati (2020). The learning method by utilizing technology through the network (online), has its own challenges during the current pandemic outbreak.

There are several advantages and disadvantages in online learning. The Covid-19 outbreak that has spread in Indonesia has not caused education providers from elementary schools to tertiary institutions to change their strategy in implementing learning. Study rooms began to be emptied en masse. Nastit, Hayati (2020). Online learning has indeed become an alternative learning solution for teachers and students in the midst of this pandemic. Learning from home is a certainty to break the chain of covid-19. In a situation like this all elements need to adapt quickly. Information Technology (IT) and communication are no longer stuttering with the use of technology in the teaching and learning process. Learning through digital audio-visual or using the internet is commonplace in everyday life at home. In implementing this online, a teacher should know the steps of online learning, namely: a. Educators must take advantage of the time and give assignments via Google Classroom, pre-test or giving assignments using Google Drive. This absolutely must be done to transfer knowledge to students. b. Educators must present planned and effective learning within limited time. c. In the final activity of online learning, an educator should provide character strengthening/motivation to students so that they are ready in any condition, such as what happened during this corona pandemic. One thing is if we look at the lower levels, for example the elementary and junior high schools. Online learning systems are something different from what we saw previously as constraints. At this level, students are more aware of the use of smartphones not only as the main source of learning. In fact, many parents complain that children at this elementary school age have not been able to make the most of online learning opportunities. If students are at the elementary school level, parents must accompany them in reading, observing and exploring mathematics subject matter. In terms of many parents do not have the skills in that field. So that children do not learn optimally. Students at the junior high school level also experience different obstacles. students at this level cannot yet be trusted to study online properly. They use smartphones as an excuse to study but many misuse them as a source of play. For example studying only takes a little time and most of it is used for games, and so on. Mathematics is something abstract but must be real in learning. The online system is almost saturated for children. In a learning should be influenced affectively. Phenomenology of Mathematics is something interesting because e-learning advances can color the way of learning mathematics. Finally, there is integration between offline and online. Students and teachers alike are creative in finding multi-method learning and teaching methods. From not knowing how to use IT to knowing, especially using learning applications.

D. CONCLUSION AND SUGGESTIONS

Online learning has many advantages or advantages. Starting from villages/villages to cities, they are required to be able to use IT as a learning tool and source. Those who never knew before are now forced to know, because one of the ways to work and study during the Covid-19 era is to study/work from home. The obstacles in implementing online learning during the Covid-19 pandemic were more on network problems that were less supportive. The village situation, the signal or network can only be in a certain place, so students and teachers must move to that place so that the learning process can take place. This is because students still depend on cellular networks in carrying out online learning, so that during the implementation there are many

who are interrupted. In addition, there are also students who do not get quota assistance, so they spend money in carrying out learning.

Complaints generally occur on an unstable internet network, materials that cannot be delivered in full at each meeting, the lack of supporting media facilities in online learning activities. Other factors such as students making excuses by linking them to connection factors, delays in receiving information, and tentative schedules make the implementation of online learning not optimal. But apart from all that, this Covid-19 situation also has advantages or positive things for us. The advantages are that it forces us all to enter the era of using IT, easy access to teaching materials, we have to be creative and much more. E-learning makes it easy for students and teachers to learn anywhere and anytime. All available to access.

Furthermore, the ideal learning implementation expected by students is being able to motivate, be interactive, collaborate, be able to understand students, and provide convenience in assignments. Students and teachers become creative. Based on the research that was researched by researchers using phenomenological studies, namely examining the phenomenon that is currently happening, namely the existence of the Covid-19 pandemic which resulted in the closing of schools and the replacement of face-to-face learning to online learning which had a negative impact on the world of education. Precisely in learning mathematics in general. Even though the use of smartphones as online mathematics learning media is able to help students with their features such as finding or increasing literacy for the material and assignments given by the teacher, helping teachers to make it easier to convey material to students, and making teachers more creative in delivering material. as innovative as possible. However, students still have difficulty understanding the material if mathematics learning is still taking place online. Values, interests, enthusiasm, and student responses are also influential due to online learning during the Covid-19 pandemic. So the researchers concluded that the use of smartphones as a medium for learning mathematics and the teacher's view of the use of smartphones during learning is said to be not good.

ACKNOWLEDGEMENT

First of all, I would like to praise and thank God Almighty because with His blessings and protection I was able to finish this article. Although there are many shortcomings that still need improvement from various parties. My gratitude goes to Mr. The powerful lecturer in the field of study of philosophy of science at Jakarta State University to Mr. Tian Abdul Aziz, Ph.d and Dr. Lukman el Hakim. I've tried to finish it well and as much as I can. I have also read many sources for information on compliance with this article. I still ask for the willingness of my lecturer to provide input for the perfection of this article and in the future it will be useful for many people who want to make and study similar articles. I also express my gratitude to my postgraduate friends at Jakarta State University who are in my class. Where we support each other and provide educational information in daily life in the educational process that we are currently involved in. Finally, I would like to thank all parties whose names I cannot mention one by one, but I can feel their support in completing this article. Finally, I apologize for the imperfection of this article.n this occasion the authors would like to express their sincere thanks and highest appreciation to all those who have helped the author: Prof. Dr. Bornok Sinaga, M.Pd as the supervisor I and Chair of the Mathematics Education Postgraduate Study Program and Dr. Elmanani Simamora, M.Si as the supervisor II and Secretary of the Doctoral Program in Mathematics Education

REFERENCES

Khasanah, S. U., & Syarifah, A. (2021). *Persepsi Mahasiswa Pendidikan Bahasa Inggris UIN Sunan AmpelSurabaya Terhadap Pembelajaran Daring Via Zoom Pada Masa Pandemi Covid-19.*

Nastiti, R., & Hayati, N. (2020). *Pembelajaran Daring pada Pendidikan Tinggi: Tantangan Bagi Mahasiswa dan Dosen di Tengah Pandemi. INOBIS:*

Martiarini, N. (2016). Eksplorasi Nilai-Nilai Pendidikan Karakter Di Sekolah Dasar. *Intuisi: Jurnal Psikologi Ilmiah*, *8*(1), 54-60.

Dwirahayu, G., Sandri, M., & Kusniawati, D. (2020). Inquiry based RME terhadap kemampuan representasi matematik siswa. *FIBONACCI: Jurnal Pendidikan Matematika dan Matematika*, *6*(1), 45-58.

Nuryadi, N. (2022). Kemampuan Berpikir Kritis: Pendekatan Ketidakpastian Melalui Etnomatematika. *EDUSCOPE: Jurnal Pendidikan, Pembelajaran, dan Teknologi*, *7*(2), 11-20.

Heryan, U. (2018). Meningkatkan kemampuan komunikasi matematis siswa SMA melalui pendekatan pembelajaran matematika realistik berbasis etnomatematika. *Jurnal Pendidikan Matematika Raflesia*, *3*(2), 94-106.

Lestari, W. D., & Aisah, L. S. (2019, March). Pembelajaran Matematika Berbasis Fenomena Didaktis Melalui Pendekatan Saintifik Untuk Meningkatkan Habits Of Managing Impulsivity Siswa Smp. In *Prosiding Seminar Nasional Pendidikan Matematika* (Vol. 1, No. 1).

Fajriyah, E. (2018, February). Peran etnomatematika terkait konsep matematika dalam mendukung literasi. In *PRISMA, Prosiding Seminar Nasional Matematika* (Vol. 1, pp. 114-119).

Sarwoedi, S., Marinka, D. O., Febriani, P., & Wirne, I. N. (2018). Efektifitas etnomatematika dalam meningkatkan kemampuan pemahaman matematika siswa. *Jurnal Pendidikan Matematika Raflesia*, *3*(2), 171-176.