

DIDACTICAL OBSTACLES FOR JUNIOR HIGH SCHOOL STUDENTS IN POST-PANDEMIC MATHEMATICS LEARNING

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ABSTRACT

Face-to-face learning has been re-implemented by several schools after 2 years offline, and this has caused several obstacles when implementing it. Especially mathematics learning, which tends to require more effort to deliver material. Post-pandemic learning causes didactical obstacles to student and teacher learning during the teaching and learning process. So the purpose of this study is to analyze student barriers to post-pandemic learning. The research method used in this study is qualitative-descriptive, with data collection techniques such as survey methods, observation results, questionnaires, and interviews. The object of this study was 19 grade VIII–4 students and senior teachers at SMP Negeri 1 Cihampelas. This research uses several instruments for students, and the results can be analyzed for obstacles to the post-pandemic learning process. Based on the results of the study, it shows that post-pandemic learning barriers for Grade VIII–4 students are adaptation to a new environment; understanding the material is more difficult and ineffective because the learning process does not involve technology, conventional learning methods, psychological changes, or habits when online learning is still carried over so that it affects face-to-face learning, where students are not ready to get the next material due to the material they previously did not understand due to the lack of maximum understanding of students when learning online. Not only students, but teachers also have their own obstacles when learning after this pandemic, so teachers also need time to be able to adapt to face-to-face meetings that run according to mutual expectations.

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INTRODUCTION

After the world improved with the extinction of the COVID-19 virus, now we are improving the Post-Pandemic effect, where many things have changed and every human role must adapt to this difficult condition. Both from the fields of mining, various industries, clothing, energy, *Consumer electronics*, *Basic materials*, and education. One of the fields that adapts very crucially is Education, where the effects of this post-pandemic make the quality of education

decline, and it is our duty to improve the quality of education. In line with Ningrum, (2016), education is Among the most important areas to improve the quality of a smart nation and build human resources is education. Budiyanto et al. (2015) state that a well-organized, planned, organized, orderly, and clean education is a quality and superior education. Because the escalation of education will have an impact on the smart sector of the nation (Makkawaru, 2019). According to Pujilestari (2020), The core problem in the world of education that often occurs in the field is the difficulty in the learning process. Whereas when teaching and learning are still less effective and efficient because they still use conventional methods on the one hand, the development of the times is increasingly blooming and the rotation of delivering information is accelerating without waiting for word of mouth.

Educational problems will become serious problems and have an effect on the systematics of the learning process in the classroom, especially the internal factors faced by students, which are much more important at the level of understanding of the material that is considered comprehensive. Plus learning in the 21st century era is defined straightforwardly as learning to equip students with capacity *Hard Skill and Soft skill* i.e. 4C, Inclusive (*Inclusive*), Communication (*Communication*), Collaboration (*Collaboration*), critical thinking (*Critical Thinking*), innovative (*Innovative*) and creative (*Creative*) and troubleshooting (*Problem Solving*). In line with the opinion of the US-based Partnership for 21st Century Skills (P21), identify the skills needed in the 21st century, namely the "4 Cs"—communication, collaboration, critical thinking, and creativity. These competencies are important to teach students in the context of core subjects and 21st century subjects (Zubaidah, 2020). This is an obstacle for a teacher and students in applying it to the learning process. There are several obstacles, according to Mathematiques (1997), namely: (1) limited ability in its development period (*Obstacle Of ontogenic origin*); (2) *Miscommunication* in the learning process when in the field (*Obstacle of Didactical Origin*); and (3) the limited space of a person in understanding a particular context (*Obstacle of Epistemology of Origin*).

One of the problems of education is that students find it difficult to understand mathematics lessons. Mathematics is one field of study that is still considered difficult by students (Darman, 2017), though this lesson is very important for everyday life. According to Sinaga (Agustina, 2016), Mathematics is very important as a basis for the mastery needed for all students later in life in the era of globalization, where there is no work without involving mathematics. Because mathematics is not just counting but also has an influence on mindset, one's ability to solve problems, reason, and many other aspects of life (Indrawati et al., 2019).

Another obstacle in the learning process is that teachers still use the lecture method when in class. In fact, in the 2013 curriculum, teachers must use the Problem-Based model of *Problem-based learning*. Disclosure *Discovery Learning*, *inquiry Learning*, *Project-based learning*, Social interaction (*The social interaction family*), group investigation, social research, and role play (Harosid, 2018) Srirahmawati (2021) argues that in education today, students can seek knowledge and find solutions to problems where the teacher acts as a *Facilitator* in learning activities. The Learning Process Plan (RPP) must be in accordance with the approach or model that has been determined by the teacher in order to achieve the objectives of each competency and learning indicator. In line with previous research on learning after the COVID-19 pandemic, there are obstacles faced by teachers, including curriculum changes, changes in learning approaches and methods, the use of learning media, and the use of online media (Nur, 2022). Slightly different from Muzdalifa, (2022), According to field data, there have been changes after the implementation of post-pandemic learning, especially in terms of students enthusiasm and learning methods.

Departing from the above problem of the difficulties of students and teachers in the learning process, it is necessary to conduct an analysis to determine the learning obstacles of junior

high school students in post-pandemic mathematics learning so that it becomes a consideration in further learning improvements. Student achievement results can increase if learning is structured by considering the difficulties experienced by students and becomes a solution for teachers to be better in the learning process.

METHOD

This research was conducted at SMPN 1 Cihampelas, which is located in Cihampelas Village, Cihampelas District, West Bandung Regency. The research period was carried out in the even semester of the 2022–2023 academic year, precisely from April 9, 2023, to April 10, 2023. The research was carried out during school hours, namely 07.20–08.40 WIB. The interview process is carried out during school breaks. Research conducted using the method used in this study is qualitative and descriptive, with data collection techniques such as survey methods, observation results, questionnaires, and interviews. Student learning outcome data, observation data, and interview data were used to identify *didactical obstacles* for grade VIII students. The data sources used in this study were grade VIII teachers and 19 grade VIII students of SMP Negeri 1 Cihampelas. The data collection procedure in this study uses observations, interviews, test results, and documentation that will be analyzed to make decisions.

RESULTS AND DISCUSSION

Results

This data collection instrument is in the form of interview questionnaires given to students in the post-pandemic learning process in mathematics subjects to find out the obstacles or difficulties faced by students. The following table shows respondents filling out questionnaires for 19 students in grades VIII–4.

Table 1. Number of Participants

No	Students Total	Percentage
1.	19	100%

The results of the study that have been analyzed show that we conducted interviews with 19 students in grades VIII–4 at SMP Negeri 1 Cihampelas. These students filled out questionnaires whose indicators were modified from Amran et al. (2021). To find out the obstacles and difficulties felt by students during post-pandemic learning.



Figure 1. Student Questionnaire Filling Documentation

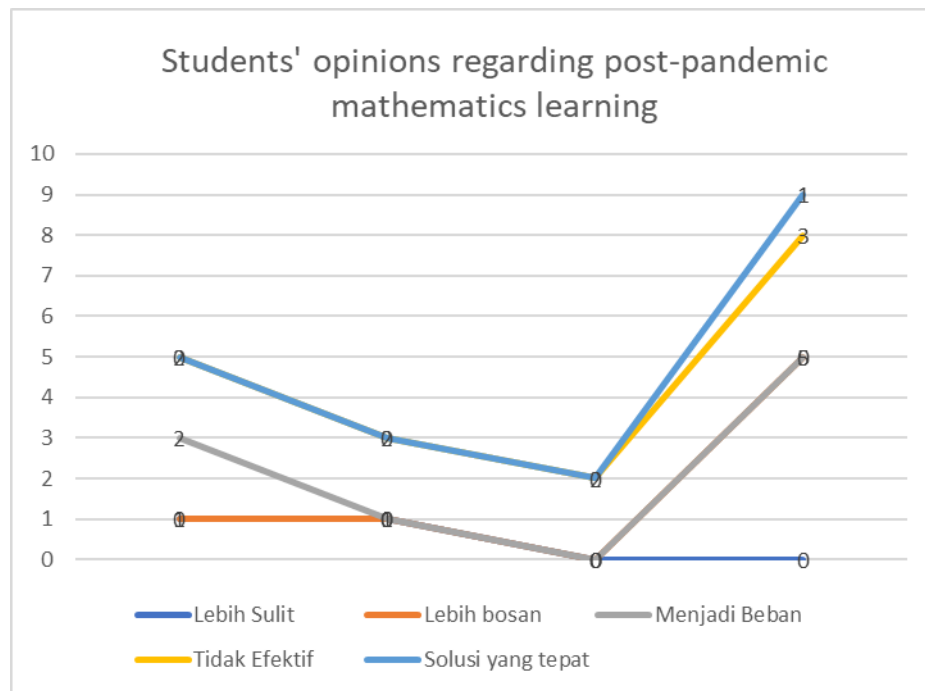


Figure 2. Student opinions on post-pandemic learning

Based on the data obtained regarding students' opinions on post-pandemic mathematics teaching, it is stated that it is more difficult to graph higher than the right solution. After further review, post-pandemic mathematics learning is more difficult. Interviewing students who choose more difficult X: Why do you think that post-pandemic math learning is more difficult? Y: Because in the past 2 years I have not fulfilled the concept of the previous material, when studying mathematics and face-to-face with more rising material, I did not understand. In accordance with previous research, it is stated that there is a decrease in the ability to understand mathematical concepts in students due to limited meetings, direct interaction between teachers and students that is not optimal, and low parental support for the independence of learning mathematics, causing interference with the understanding of mathematical concepts (Annisah et al., 2021). The second graph shows the ineffectiveness of post-pandemic learning. The effectiveness of learning will not be separated from the interaction and learning conditions in class. This will be quite a difficult situation when virtual face-to-face learning has to return to face-to-face. Here, there are psychological changes in children that make post-pandemic mathematics learning ineffective. In line with research Nur (2022), it states that students have passion and ethos for face-to-face learning, but *Habits* Online learning is still carried over in face-to-face classes, so students get out of control and have to get used to reducing ICT use and returning to learning to communicate with the real world. The alignment indicators can be said to be effective if (1) The success of a learning process, (2) The success of communication in learning, (3) maximum success in managing learning, (4) Success in the implementation of learning, (5) Success in preparing for learning mathematics material, and (6) Success in measuring learning outcomes (Herawati et al., 2021).

The third graph is more of a burden for students, causing obstacles to learning mathematics. The stigma of being a burden is when students find it difficult to adapt again to a new environment, where all the learning atmosphere, friend behavior, and teacher pressure to support students in learning cause them to feel learning becomes a burden. Not to mention the added homework that you don't understand because you have to understand the material

related before. Teaching mathematics is often underestimated and the most difficult subject, so students who have a view of the burden of learning mathematics—too many formulas, memorization must be strong, and other assumptions—are afraid. This is what causes students to become passive and the heavy burden felt by students when learning. In the graph, there are opinions of students who choose boring. Changes in learning before full virtual media that make students not bored because of the effects of watching YouTube or other interactive interactions that cause students not to be bored, and when meeting face-to-face again, teachers do not use ICT again, use conventional methods that tend to be boring, and use teaching materials that are not yet interactive. In the learning process, one of the supporting factors for understanding the material is the teaching material. Latifah & Widjajanti, (2017) The teaching materials used are still not effective and cannot facilitate students development of their curiosity properly. In addition, teachers need to make their teaching material interesting and not monotonous as a step to improving student learning outcomes (Suprihatin & Manik, 2020). Plus, in education today, students can seek knowledge and find solutions to problems where the teacher is a facilitator in learning activities (Srirahmawati, 2021).

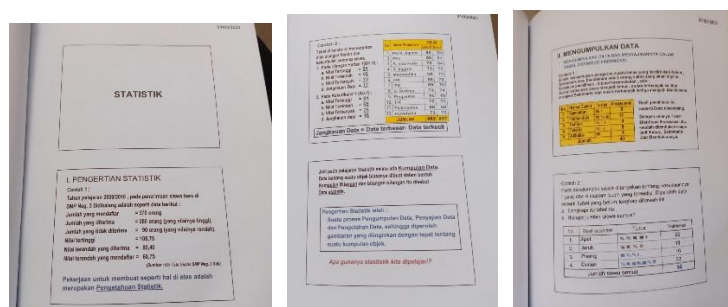


Figure 3. Teaching materials during the Covid-19 pandemic

Based on the results of an interview that has been conducted with one of the mathematics teachers at SMP Negeri 1 Cihampelas about the effects of online learning and how post-pandemic obstacles affect the learning process in the classroom, In summary, the following are the results of an interview with a math teacher about the post-pandemic situation:

- A : What do you think about yesterday's online learning that has been carried out at this school?
- B : Thank God, everything went well, and indeed there were many obstacles. But we teachers must give our best to their students to deliver the material as much as we can.
- A : What are the obstacles that occur when learning online, especially mathematics material?
- B : Among the obstacles are inadequate student facilities and infrastructure. So when learning takes place, there are students who disappear because of signals, students who cannot operate their devices, and students who do not have devices at all, so that it affects the understanding of tea. How to want to understand the material while students and even teachers are also still adapting to the digital world of online learning. On the other hand, schools have not been able to facilitate students in providing devices or quotas intensely.
- A : What effect does this online learning have on Post-Pandemic learning?
- B : Very true; there is a change in behavior or declining morals among students. Psychologically and academically, both declined. So this has an impact on the current learning process. In math, children decline in counting. They are confused about how multiplication, division, and addition are large calculations.



Figure 4. Math Teacher Interview

Discussions

Based on the results of interviews with mathematics teachers, post-pandemic mathematics learning is indeed quite complex. Many students change drastically, both in mindset, mentality, and morals, when in school. Especially in mathematics, many students still have the stigma that mathematics is difficult. It is difficult to think, interpret, search, and do various other things. Plus, now there are complaints from students who are increasingly lazy to learn mathematics because of the change in learning from home to school again. In line with their research, penelitian Istivarati & Roesdiana, (2023), stated that the pandemic caused many obstacles to the field of education and that many changes occurred for students of high mathematical disposition. Mathematical disposition is classified based on several indicators, among others, diligent, diligent, confident, curious, sense of self, capable, flexible, and reflective, which are classified as high, so that this becomes an obstacle for students and certainly affects the mathematical learning process.

Didactical Obstacles experienced by the teacher himself, where obstacles in post-pandemic learning are quite difficult to return to normal and require time to run smoothly as before. In line with the results of the study, Huzaimah & Risma, (2021), stated that there are several obstacles to learning mathematics during pandemic learning: (1) Limited conditions for students to meet their needs in facilitating their devices; (2) Distribution of services or internet coverage that does not extend to all remote areas of Indonesia; (3) distraction when the learning process is at home; (4) Online learning devices that do not have sufficient capacity to install applications to support online learning and file storage; (5) difficulty in understanding the subject of the material taught; and (6) Limited space for direct correlation between teachers and friends.

Online activities have been carried out for less than 2 years since 2020. This is a challenge for schools and pre-parents in building education for students. It also has an impact on the child's social behavior and emotional state. In line with the results of the study by Kusuma & Sutapa, (2020), learning carried out at home during the COVID-19 pandemic makes children sometimes less cooperative to complete tasks given by teachers at schools who are assisted in doing so by parents. In addition, students also become less socialized in patterns such as language, association, dress, and many others. Whereas socialization is a process of learning roles, statuses, and values needed for participation in social institutions.

The implementation of face-to-face learning before the pandemic and post-pandemic face-to-face learning are very different, especially the early implementation of face-to-face learning. There are several obstacles felt by teachers and students themselves, including 1) lack of

mastery of the concept of material delivered by the teacher and 2) re-adaptation to the new environment. 3) Teaching materials used by teachers are still not relevant or in accordance with learning. 4) Learning methods still use conventional methods and do not use technology as before. In line with previous research by Alimuddin & Pratiwi, (2022), Teachers cannot directly and fully implement the same strategies or learning processes as before the pandemic. Student preparation for face-to-face learning is inadequate because they are familiar with online learning in terms of documentation, even though many materials are not understood by students during online learning. Students still need an adjustment process from previous learning that was carried out face-to-face online. Such transitional learning is not easy, especially for elementary school children who are still not cognitively mature. Adapting to new school routines not only means taking health measures such as maintaining hygiene, washing hands, and wearing masks, but also adapting to practices that show the same learning as before the pandemic. Students have to adjust to getting up early because they have to go to school early. Practice studying calmly and concentrating in class under the guidance of teachers who have studied at home before. Learn to hang out with friends and teachers at school. Learn to adapt to independence by doing everything yourself with your own skills and knowledge without parental help. In addition to adapting to study habits at home or online, the implementation of face-to-face learning after the COVID-19 pandemic has many challenges. These challenges include learning systems that must pay attention to safety and efficiency. The learning time is not too long, but the delivery of the material is concise and easy to understand by students, which encourages them to be more creative, innovative, independent, and efficient. Teachers must prepare students for online learning. Teachers must be patient with the adaptation process because adaptation requires socialization. It must take a long time to get used to it. Teachers must also be creative in finding learning strategies or methods that allow students to quickly adapt to face-to-face learning at school. Rapid adaptation to learning comes after effective pandemic management.

In contrast to online learning, the role of parents is greater than that of teachers at school. So there was a correlation between parents and students in the previous online learning process. Not far after the pandemic, parents must be more supportive and encourage their children to be able to adapt and provide motivation about the world after going through COVID-19. So that children can be more disciplined, responsible, and cooperative through habituation carried out at school during the post-pandemic period.

Not only that, teachers and schools must provide education or counseling about the importance of student character education both before and after the pandemic. The school environment is a motivation for students to develop again, both biologically and psychologically. According to Ramdhan et al., (2021), One of the efforts made by education staff in addressing these problems is to make written regulations contained in school padding, where these regulations are an effort to discipline school residents, both students and education staff, by providing sanctions for violators. So that students and teachers will easily adapt to the face-to-face environment.

CONCLUSION

Based on the analysis above, it can be concluded that there are *didactical obstacles* for junior high school students in post-pandemic mathematics learning. There are psychological changes and student habits that have an impact on face-to-face learning. Where students must adapt back to the learning atmosphere by interacting directly with friends, teachers, and the school environment. So that it is our collective duty to provide the best for effective mathematics learning, teachers need innovation in a lively, creative, innovative learning atmosphere and help students develop a sense of enthusiasm for learning again for post-pandemic learning that is not monotonous and boring.

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