# Physics Learning Problems During The Covid-19 Pandemic

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**Abstract:** This study aims to describe the problems experienced in studying physics during the Covid-19 pandemic at State High School in Pagaralam City. The method used in this study was descriptive quantitative. The data were collected using questionnaires that was distributed online using *google forms* which were then analyzed descriptively. The results stated that the average percentage for each indicator of physics learning problems during the Covid-19 pandemic at State High School Pagaralam City in general there were seven aspects of problems experienced by students and four aspects of problems experienced by teachers. The lower the number obtained, the lower the problem and vice versa. The problems of students include: understanding of material, use of applications, processing time, task work, difficulty to concentrate, interaction process, and motivation in learning. Furthermore, the problems experienced by teachers include: internet network, class control, mastery of technology and material delivery.

**Keywords:** Covid-19 Pandemic, Physics learning problems

**INTRODUCTION**

Education is an effort to provide influence, and help students to be able to carry out their own tasks without the help of others (Naolaka, 2017)The quality of education will increase if there is an update to the learning process and the education system that are adjusted to the current situation to be more effective. The update made by the Ministry of Education and Culture (Ministry of Education and Culture) was to change the face-to-face learning system to be online.

Indonesia is affected by the spread of Covid-19. So that the chain of spread of Covid-19 is cut off, all countries in the world carry out the *lockdown* policy. All activities are converted into online, including learning activities. The existence of the Covid-19 pandemic requires that learning be changed to distance learning or carried out online. The Covid-19 pandemic requires the Indonesian Education world to understand the distance learning system, prepare to survive the challenges of the times and life after the pandemic (Naolaka, 2017)

Online learning is a form of distance education that aims to increase equitable access to quality learning (Rumengan et al., 2019). Online or in-network learning is also a learning system that uses the internet as a medium to deliver the lessons. This form of teaching can be carried out at any time without being time-bound and without having to come face to face. Nowadays technology for online implementation is increasingly sophisticated with various applications and features that make it easier for learners (Syarifudin, 2020). Learning during the COVID-19 pandemic is done online using the Google Class application, and this online learning can be done synchronously and asynchronously. In online learning, teaching materials that have an important role include student worksheets (LKS), picture media, books, journals, and other teaching materials (Distrik & Sesunan, 2022)

The Covid-19 pandemic requires the practitioners of Indonesian Education to understand the distance learning system, prepare to survive to face the challenges of the times and life after the pandemic (Arif Widodo, 2020). The ease of access in online learning does make students feel more practical in participating in learning but in online learning there will be a barrier to communication and interaction between students and teachers. Many problems arise behind the ease of access from the online learning system, namely the short time of work and task collection, lack of understanding of learning materials so that students have difficulty in doing school assignments given by teachers.

Online learning is useful so that learners are more effective in using time, online learning models are able to increase the absorption of learning materials, providing new experiences that are more challenging than face-to-face (Kuntarto, 2017). Online learning also has other benefits such as increasing understanding of technology from both students and educators themselves, improving the time management of students and educators.

The use of the internet in online learning can make it easier for the knowledge to be conveyed (Sadikin & Hamidah, 2020). With the current situation, online learning is very useful as a medium to deliver the lessons by teachers and the current technological sophistication is expected to create the learning independence of students to become more active in learning. Online learning is learning that is carried out at a distance and using tools such as smartphones and computers (Wibowo et al., 2021). By using

sophisticated tools in online learning that require students to be more active while learning takes place and independence of learning is formed. In addition, online learning methods can also encourage students to be more active during learning and exercise students' learning independence (Rahman, 2020)

The ease of online learning is also felt by teachers, such as flexible times and teaching done from home allow teachers to do activities at home while teaching. However, many problems arise behind the ease of access from the online learning system, namely the short time of work and task collection, lack of understanding of learning materials so that students have difficulty in doing school assignments given by teachers. In addition, network connection is an influential problem in the online learning process. The obstacles referred to such as failure in doing assignments, being late to the online class, and difficulties in listening to the teacher's explanation (Morgan, 2020). The constraints of the internet network are not only felt by students, teachers also experience an unstable internet network which resulting in the slow delivery of learning materials to students and takes a long time to understand (Satrianingrum & Prasetyo, 2020)

Physics is one area of the lessons that is difficult to learn, because physics requires relatively high intelligence. Students who have high intelligence and thinking ability could easily understand physics learning while students with low thinking ability or with low level of understanding tend to have more difficulty in understanding physics subjects, especially through online learning that does require students to think more critically. In the context of developing physics, students need to be accustomed to using higher order thinking. Higher order thinking skills are one approach in learning where students are taught to think critically, logically (Marliani & Walid, 2019)

With these complex characteristics, it can be one of the indicators that can cause problems in learning physics. Each student experiences different problems, this can be evidenced by the number of studies examining the problems in learning physics in high school, for the example on research (SAMUDRA et al., 2014) especially with changes in the learning system in Indonesia at this time. This study aims to find out the description of the problems experienced in studying physics during the Covid-19 pandemic at SMA Negeri in Pagaralam City.

**METHOD**

This study aims to describe what are the learning problems that occur in State High Schools in Pagaralam City during the Covid-19 pandemic. This research used a quantitative approach to obtain the data on the description of the physics learning problems of SMA Negeri during the Covid-19 pandemic. The research method in this research was descriptive quantitative to systematically describe the phenomenon being investigated. This descriptive method also aims to get the meaning and picture of the problem to be solved (Rukajad, 2018). The subjects in this study were students and teachers in State High Schools in Pagaralam City. The participants were 30% of all students in State High School 1 and State High School 3 Pagaralam, which were about 108 students and 7 teachers who teach at State High School 1 and State High School 3 Pagaralam. Data collection in this study used a learning problem questionnaire that was distributed online.

The sampling technique of this research was *Purposive sampling*. *Purposive sampling* is a sample determination technique with certain criteria (Sugiyono, 2012). The criteria to be sampled is that the samples are considered homogeneous because they both carry out online learning since 2020 so that researchers took these two schools as samples, namely State High School 1 and State High School 3 Pagaralam. Furthermore, the school that will be sampled could be easily accessed by researchers. The data collection technique in this study was to distribute the questionnaire online through *google form.* Furthermore, data analysis techniques in this study were: 1) data verification, 2) scoring with the Guttman scale, 3) data processing, 4) drawing conclusions.

**RESULT AND DISCUSSION**

The data from the results were used to describe the problems of learning physics during the pandemic. The data were analyzed first by verifying the data, namely checking the student and teacher respondents' questionnaires, then a data tabulation was made by giving a score on each respondent's answer using the Guttman scale, then a statistical calculation was performed, namely calculating the percentage of frequency of each indicator of learning problems, then the results were categorized based on the criteria of learning problems. Furthermore, the data from the analysis of the learning problem indicators were categorized based on the qualification of the learning problem.

Table 1. learning problem classification criteria

| Score | Criteria |
| --- | --- |
| 75-100% | High |
| 50-75% | Medium |
| 25-50% | Low |

(Sudijono, 2011)

The results of the analysis of learning problems for students were discovered that students in State Schools in Pagaralam as a whole experienced learning problems during the pandemic in various aspects, including:

Table 2. Data from the analysis of learning problems for students

| Indicator | Average frequency (%) | Criteria |
| --- | --- | --- |
| **understanding of material** | 59% | Medium |
| **difficulty to concentrate** | 36% | Low |
| **application use** | 56% | Medium |
| **task work** | 51% | Medium |
| **processing time** | 55% | Medium |
| **interaction process** | 32% | Low |
| **learning motivation** | 25% | Low |

Furthermore, the data on the results of the analysis of learning problems for teachers was found that teachers at State High School in Pagaralam as a whole still experienced problems of learning physics during the Covid-19 pandemic in various aspects including:

Table 3. Data from the analysis of learning problems for teacher

| Indicator | Average frequency (%) | Criteria |
|---|---|---|
| mastery of technology | 17% | Very low |
| class control | 51% | Medium |
| internet network | 60% | Medium |
| delivery of material | 14% | Very low |

Learning problems are a condition where students and teachers experience obstacles/constraints during the learning process and cause a decrease in learning outcomes. Learning problems experienced by students and teachers usually vary, this depends on how students respond to learning and find solutions to the problems experienced. In the results of the study, if the value obtained is low, then the problem that occurs is lower and vice versa, if the value obtained is greater, then it means that the problem that occurs is also greater. In this study, based on the results of the analysis, it was found that there were 7 problems experienced by students. There were problems regarding the problem of understanding the material. This can be seen from the aspect of understanding the highest material was in the statement of better understanding the physics material when it is delivered directly rather than online by 99%, and the low statement does not make a summary of the material to facilitate understanding the material by 19%. Online learning activities independently cause difficulties in the implementation of learning, students are vulnerable to have difficulty learning online rather than learning face-to-face.

Learning that is carried out asynchronously or not simultaneously at the same time makes students learn independently, learn and understand the material alone because learning is not direct. The delivery of material is not done directly so that understanding the material becomes a challenge for students so that they find it difficult to understand the material (Jamaludin, 2020). On the other hand, there are some subject matter that is complex and abstract such as materials about sound waves, light waves, optical tools and natural symptoms such as global warming. Since it is difficult to be learnt independently, students need verbal explanations from the teacher so that the material can be understood. In some of the materials learned online, students had difficulty in understanding the material in the form of experiments that should go through a series of experiments to understand the material but with the Covid-19 pandemic which resulted in learning being carried out online and virtual laboratory activities were also not being carried out making students have difficulty in understanding the material.

Furthermore, problems in using the application. Some students still experienced the limitations of having a smartphone or computer to participate in learning during a pandemic (Štibi et al., 2021). This statement can be proven by the percentage of learning problems that belong to the medium category, which was 56%. This can be seen from the aspect of limited storage causing limitations in the use of applications on devices owned by students. Often, network constraints become problems when using online applications. Sometimes students also do not have data packages to run the online applications. From these three statements, it can be concluded that problems in the use of online applications cause problems during learning during the pandemic.

Problems regarding processing time. When learning during a pandemic, students had the flexibility to set the time to learn casually without being time-bound. However, this time flexibility had made students had difficulty in setting the time when learning online, difficulty in setting the time for virtual discussions that were scheduled together when online learning takes place. This can be proven by the percentage of learning problems that belong to the medium category, which was 55%. However, in this difficulty, there was a prominent aspect, namely the difficulty in setting the time for virtual discussions that are at the same time when learning online at 83%. The other aspect that arose from the problem of arranging learning time online was that students did not use their free time to repeat the material given by the teacher after attending virtual classes.

As long as there are problems regarding the work of the task. During a pandemic like this, it is a burden for students with many tasks given by teachers after the virtual classroom process is completed. This can be proven by the percentage of learning problems that belong to the medium category of 51%. This can be seen from the aspect of working on the highest tasks, namely students feel stress with the number of tasks given during learning during the pandemic of 80%. Assignments that were poorly understood and stressful feelings experienced by students caused the tasks done by students to be less than optimal.

Problems with difficulty concentrating. Less conducive environments such as disturbing atmosphere, unclean rooms and disturbing sounds from the surrounding environment became obstacles to students' learning success, these circumstances made students had difficulty in concentrating in learning. It was evidenced by the number of percentage of learning problems that belong to the low category of 36%, this can be seen from the aspect of the highest difficulty to concentrate there was a statement when online learning in the surrounding environment is less conducive, resulting in a reduced focus on learning by 75%. Furthermore, problems regarding the interaction process of interaction and communication were the most important components in online learning and time constraints made interaction virtually less optimal. This statement can be proven by the number of percentage of learning problems that belong to the low category of 32%. This is seen from the aspect of the highest interaction process there was a statement because of limited time students cannot interact virtually by 60%.

Problems regarding learning motivation. Students thought that trying something will bring only failure so that students experience a decrease in motivation in learning. Even so, the problem of learning motivation was not really felt by all students. This can be proven by the percentage of learning problems that belong to the low category of 25%, this statement can be seen from the aspect of highest learning motivation of 41%. The main problems experienced by teachers include the internet network. The internet network was an obstacle that was often experienced by teachers. Starting from sudden quota depletion during online learning, unstable signals, video and sound constraints that are paused or problematic. This statement can be proven by the percentage of learning problems that belong to the medium category of 60%, this can be seen from the aspect of the highest internet network of 86%. Problems that occur due to unstable internet networks made the process of delivering learning from teachers to students disoriented.

Problems of class control. Teachers cannot monitor what activities that were done by students during the class, the time used for online learning of physics was less

effective. Classroom control system that was usually easy for teachers during face to face learning was now a problem during online learning in the pandemic. This statement can be proven by the percentage of learning problems that belong to the medium category of 51%, this can be seen from the aspect of controlling the highest class of 86%. So much for the problem of technology mastery. The lack of experience of teachers in using learning resources during the pandemic requires a process to be able to use them (Ayta, 2021). Technology becomes an important thing after online learning during a pandemic is implemented and with the existence of technology makes it easier for teachers to convey material but technological progress sometimes makes it difficult for some teachers to run it. So that many technologies were not utilized to facilitate the learning process, this statement can be proven by the percentage of learning problems that belong to the low category of 17%. This can be seen from the aspect of the highest technological dissipation of 57%.

Problems regarding the delivery of materials. A challenge when learning online during a pandemic like this was because teachers experienced limited tools such as whiteboards to explain the material. The delivery of material carried out by teachers will be very easily accepted by students if learning is carried out directly but becomes a challenge when online learning during a pandemic such as this because teachers experienced limited tools such as whiteboards to explain the material. This statement can be proven by the low percentage of learning problems, namely 14%, this can be seen from the aspect of delivering the highest material by 57%. The limitations of the tool made it difficult for teachers to explain the material online. Although the number of problems that occured when learning during the pandemic takes place, it turnef out that student learning outcomes are still good, it can be seen from only about 20 students who did not meet the KKM. This means that the problems that occurred did not affect students' learning outcomes.

Based on the explanation of the learning problems above, this learning problem can be generalized throughout class XI of MIPA at State High School in Pagaralam City because the implementation of learning during the pandemic in class XI of MIPA was the same, namely through *Whatsapp* group. Teachers provided material notes, learning videos, and assignments that will cause possible problems experienced by class XI MIPA students in general will be the same. The existence of learning activities that were previously face-to-face into online learning like today, the hope is that learning will continue to run smoothly even though there are still some problems in learning. Researchers discuss learning problems in the hope of providing important information about what learning problems students and teachers experienced during the Covid-19 pandemic so that they can identify the problems, improve the learning process and find solutions to all the problems of learning problems during the pandemic.

**CONCLUSION**

Based on the results of the study, it can be concluded that the problem of learning physics during the Covid-19 pandemic at State High School in Pagaralam City in general there were seven aspects of problems experienced by students and four aspects of problems experienced by teachers. The problems of students include: understanding of material 59% (medium category), use of applications 56% (medium category), processing time 55% (medium category), task work 51% (medium category)

difficulty to concentrate 36% (low category), interaction process 32% (low category), and motivation in learning 25% (low category). Furthermore, the problems experienced by teachers include: internet network 60% (medium category), class control 51% (medium category), mastery of technology 17% (very low category) and material delivery 14% (very low category). The learning problems experienced by the students were highest in the aspect of understanding of material by 59% and lowest in the aspect of learning motivation by 25%. Furthermore, the highest percentage of errors experienced by teachers was in the internet network of 60% and the lowest in the aspect of material delivery of 14%.

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