Problems of students in following the online learning process in the covid-19 pandemic

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Abstract. The Covid-19 pandemic requires people to work remotely from home or Work from Home (WFH), including lecture activities. The goal of WFH is to break the chain of spread of the corona virus. Transfer of lecture activities from campus to home as an effort to maintain social distancing. Like it or not, students must learn more independently. Many students respond well to online learning when it is implemented. However, students actually experience difficulties in learning after the online lecture process is running which has an impact on decreasing the quality of their learning. This survey research aims to determine the obstacles faced by physics students in participating in the online learning process during the Covid-19 pandemic. The research sample of 331 respondents who have participated in the online learning process activities in the Covid-19 pandemic were taken randomly. The research instrument was a questionnaire sheet distributed on google form for 20 days. The results showed that students tended to choose the learning process on campus compared to studying online. The factor influencing online learning are the internet network, the readiness of students to receive and send information and the accessing the Learning Management System (LMS). The influence of these factors is found by students when they take courses in Disaster Management, Fundamental Physics, Mathematical Physics, Computational Physics, Algorithms and Computer Programming.

1. Introduction
The Corona virus pandemic (COVID-19) has infected the entire world community, including the Indonesian people. Epidemiologists agree that the physical distancing or quarantine policy is one of the necessities to reduce the spread of this virus. Indonesia implements the COVID-19 health protocol referring to the WHO decision \cite{1,2}. The World Health Organization (WHO) declared the 2019 coronavirus novel pandemic (2019-nCoV) a Public Health Emergency of International Concern (PHEIC). This condition causes changes in almost all aspects of community life, such as in the way of working. Office employees are required to adopt a new work pattern, where employees work remotely from their homes, known as Work From Home (WFH). The same way of working also applies to the learning and learning process, namely Learning at Home and Teaching Form Home (LAHTFH) by
implementing online distance learning [3]. This is done in an effort to break the chain of the COVID-19 pandemic in the educational institution cluster.

Online learning is an alternative learning strategy that can be applied to distance learning in today's rapidly developing technology and communication era [4]. Online LAHTFH has also been implemented at Padang State University since March 17, 2020. LAHTFH was applied during the corona virus pandemic in order to avoid face-to-face and crowds in classrooms and study rooms. LAHTFH online is a real action related to the selection of learning strategies in the Covid-19 pandemic, but it is a challenge for the education system [5] and lecturers in optimizing learning outcomes. Therefore, innovation in learning is needed so that the educational process continues well [6]. An online learning system that may be implemented during the COVID-19 pandemic is e-learning using a certain online flat form system [7]. So, the use of online media and distance learning via the internet network is unavoidable.

Online learning as a learning system can be viewed from three perspectives. First, online learning as a learning media system that encourages the implementation of learning more effectively. Online learning media tends to provide more satisfying services to students [8]. Online learning involves selecting many components that can help improve the quality of the learning process that allows students to engage with learning content [9]. Second, online learning makes it easy for students to access learning materials. The level of need for internet use encourages lecturers to develop learning materials and leads to the creation of the final product in the form of e-material. Students in online learning tend to access learning material in the form of lecture slides, video lectures, joint assignments, and forum messages [10]. Differences in student behavior in learning such as discipline in self-regulation and how to use analysis tools have an impact on student learning outcomes. Third, online learning is a complement to offline learning that combines some of the best aspects of face-to-face learning and learning based on information technology and online communication.

Online learning must make it easy for students to access learning materials. Lecturers and parents must be aware of the behavior of students who spend a lot of time viewing online learning materials, but most of them do not use the learning and analysis tools needed to understand the subject matter [11]. This learning strategy equips students with knowledge about how to access practical and realistic course material, as expected in Blended Learning [12]. Blended learning is a combination of online and offline learning to support mastery learning and meaningful learning without leaving the values contained in traditional higher education institutions [13]. The description above shows that the success of online learning is determined by three groups of factors. The first group of factors relates to supporting systems and infrastructure such as internet and computer networks, because the development of online learning occurs in line with developments in information and communication technology. The second group is factors related to the content and information provided in learning. The obstacle faced is the lack of multimedia-based learning content owned by the lecturers. The third group is a factor related to the readiness of system users including management and staff who support the operation of the system. Lecturers, students, and parents must be able to adapt to the online learning system. The government, universities, lecturers, administrative staff, technicians, students, and parents must work together to improve the online learning system so that it runs more effectively [14]. Attitude, intention and satisfaction are aspects related to human factors that determine the success of online learning. A person’s attitude refers to certain behaviors that are the result of beliefs about certain behaviors inherent in his beliefs[15]. Based on the three categories above, every educational institution that carries out online learning needs to consider the balance of preparation of the three characteristics of the factors that affect the success of this online learning.

Students in taking online lectures during the corona virus pandemic encountered several obstacles. The impact can be seen from the work done and the learning outcomes achieved by students, where the results are not optimal. The difficulties and obstacles faced by students following online lectures, especially students of the Department of Physics, State University of Padang have not been properly identified and analyzed. Therefore, two research questions were formulated as follows; 1) What are the obstacles faced by students during the online learning process of the COVID-19 pandemic; 2) How
is the distribution of constraints faced by students during the COVID-19 pandemic online learning process for each course. Research needs to be carried out starting from the argument that online learning does not only take place in the COVID-19 pandemic situation, but is an alternative and innovative learning strategy that must be well prepared, from the system, technical and material aspects to deal with offline learning that cannot be implemented. Online learning will also be able to realize self-regulated learning-based learning strategies that are in line with the times that require every student to be independent and innovate in the learning process. Based on the above results, a descriptive research was carried out which aims to identify and analyze the obstacles faced by students of the Department of Physics, Faculty of Mathematics and Natural Sciences, Padang State University in taking online lectures. Research is expected to contribute to the improvement of online learning that continues during an infectious disease outbreak.

2. Research Methods
Respondents in this survey research were students of the Department of Physics, Faculty of Mathematics and Natural Sciences, State University of Padang who attended lectures in the January-June 2020 semester. The sample of this study consisted of 331 respondents who were actively taking courses in Algorithms and Computer Programming, Basic Natural Sciences, Computational Physics, Disaster Management, Fundamental Physics, Geoelectrical Methods, Material Characterization Techniques, Mathematical Physics and Photograph. Data is collected online via Google Form. The data collection technique is by distributing questionnaires to all students, by sending a questionnaire link to the Physics Department lecturer, then asking the lecturer for help to pass on to the students who are taking the lectures they coach. Subjects used as samples, if the respondents in the lecture were more than 15 people. The subjects that were recorded as the first sample were 20 subjects, with a total of 453 responses. However, only 9 courses have a response of more than 15 people, 11 other courses are less than 12 people, so it is not suitable to be used as a sample, so the sample of this study becomes 331 respondents.

As a survey research, the research objective is to present data from the object of research, and interpret and analyze it systematically. Research is useful for obtaining facts from existing symptoms and seeking factual information from a group for planning and decision making. The online survey instrument was developed using Google Form software. The questionnaire consists of 32 items which include closed questions, multiple choice and short answers about learning difficulties and answers in the form of paragraphs about suggestions for improving the implementation of online learning. Survey data are grouped into 3 (three) categories, namely factors related to systems and supporting infrastructure, content and information, and readiness of system users. Closed questions are arranged using a Likert scale. The Likert scale is used to collect information about perceptions [16] which is related to the implementation of online learning. The questionnaire for this study used a Likert scale with five levels (strongly agree, agree, doubt, disagree and strongly disagree). The data generated from the survey were then analyzed in the Google Form report using descriptive statistics to explain the respondent variables for each question item and for each subject. Although the survey sample is relatively small to provide statistically significant conclusions, this approach is used as a method of gathering information from respondents to provide a brief overview of their experiences taking online lectures. This research is useful for obtaining information about student perceptions about the implementation of online learning.

3. Result and Discussion
3.1. Result
The results of the research at the stage of searching for research potential were seen based on the observation of supporting factors for physics learning in SMA Pembangunan Laboratorium UNP to support physics learning activities in schools both in terms of curriculum, educators, facilities and infrastructure and the environment. While the first problem that is obtained is based on the results of
the observation sheet of physics learning in the integration school for new literacy and disaster literacy in learning physics is still in poor criteria. Both the integration of new literacy and disaster literacy in physics text books used by students are still in the inadequate category, so they have not been able to support students’ new literacy skills and disaster literacy. The text books namely are a physics textbook for class XI written by Mediatama, a physics textbook for class XI BSE, a textbook for class XI by Marthen Kaingin, a textbook for class XI by Sunardi Paramitha, and a textbook for class XI by Media Pratama. The last problem is seen based on the average acquisition of the results of the students’ initial knowledge test, namely 30.37. This illustrates that students’ knowledge regarding new literacy and disasters is still low.

The research sample is students who actively participate in various types of courses online, but they are constrained by following explanations from lecturers. The conference platforms used by lecturers include Zoom Meet, Google Meet, Video Conference on Whasapp, Microsoft Teams, Room Cheating on Facebook, Google Classroom. Survey data are grouped into 3 (three) categories, namely factors related to systems and supporting infrastructure, content and information, and readiness of system users. Survey data on factors that influence online learning are related to supporting systems and infrastructure as in Table 1. Table 1 shows that the dominant factors affecting online learning related to supporting systems and infrastructure are: (1) internet network access through the statement "internet signals affect my comfort in taking online lectures", (79.8% strongly agree, 14.8% agree) with the statement this; (2) both the availability of mobile devices and computers owned by students respectively are (42.6% strongly agree, 42.3% agree) and (35% strongly agree, 44.4% agree). This condition causes online learning to be more expensive than offline learning. Survey data on factors that influence online learning are related to the content and information provided in learning as in Table 2.

Table 1. Factors related to online learning support systems and infrastructure

| Questions | Strongly agree (%) | Agree (%) | Doubt (%) | Disagree (%) | Strongly disagree (%) |
|------------|--------------------|-----------|-----------|--------------|-----------------------|
| Internet signal affects my comfort in attending online lectures | 79.8 | 14.8 | 2.7 | 0.9 | 1.8 |
| The condition of the learning environment does not affect the implementation of online lectures | 7.3 | 14.8 | 17.2 | 33.2 | 27.5 |
| Online lectures require a good quality Hendphone device | 42.6 | 42.3 | 11.5 | 2.9 | 0.9 |
| Online lectures require a good quality laptop device | 35 | 44.4 | 14.8 | 4.5 | 1.2 |
| Online lectures do not require a special place of study | 18.8 | 36.1 | 21.8 | 13.3 | 10 |
| Online lectures are more cost effective than face-to-face offline lectures in class | 5.4% | 16.3 | 17.5 | 28.1 | 32.6 |

Table 2 shows that the dominant factors affecting online learning related to information and learning content are students’ readiness to listen to information provided by lecturers, student readiness to communicate online with their friends. Obstacles in communicating with friends online are the main problems in the content and information factor group.
Table 2. Factors related to the content and information provided in learning

| Questions                                                                 | Strongly agree (%) | Agree (%) | Doubt (%) | Disagree (%) | Strongly disagree (%) |
|---------------------------------------------------------------------------|--------------------|-----------|-----------|--------------|-----------------------|
| Asking lecturers is more freely done when lecturing online compared to offline lectures | 8.5                | 21        | 27.7      | 26.8         | 15.9                  |
| I caught the stimulus given by the lecturer to actively learn during the online learning process | 3.6                | 21.4      | 38.1      | 25.1         | 11.8                  |
| If there are questions from students, the lecturer can provide the answer quickly during online lectures, while offline lectures cannot answer them quickly. When the lecturer asks students to ask questions, I can listen to these questions and answers from friends or from the lecturers well | 2.1                | 10        | 32.1      | 37           | 18.8                  |
| Question and answer with lecturers is easier to do in online lectures than offline lectures | 14.5               | 40.8      | 31.7      | 8.5          | 4.5                   |
| I find it easier to discuss online lectures than offline lectures | 16.3               | 17.8      | 27.5      | 30.5         | 17.8                  |
| Making conclusions about lecture material is easier when lecturing online compared to when lecturing offline | 4                  | 11.9      | 27.4      | 37.4         | 22.2                  |
| Shere screens help me understand the material on online lectures | 5.1                | 14.8      | 28.4      | 33.2         | 18.4                  |

Table 2 shows that lecturers can provide answers quickly during online lectures compared to offline lectures, if there are questions from students (37% disagree, 18.8% strongly disagree). The statement "when a lecturer asks students to ask questions, I can listen to questions and answers from friends or lecturers well" (14% strongly agree, 40.8% agree). But in the statement "I find it easier to discuss online lectures than offline lectures" (37.4% disagree, 22.2% strongly disagree) and question and answer with lecturers is easier to do in online lectures than offline lectures (30.5% disagree, 17.8% strongly disagree). Results data about factors affecting online learning relate to the readiness of system users as in Table 3.

Table 3 shows that the dominant factor affecting online learning related to the readiness of system users is that students find it difficult to access the Learning Management System (LMS) platform provided in tertiary institutions, specifically for Padang State University called e-learning. This is accessed through the question "e-learning provided by tertiary institutions is easy to access everywhere", (32.6% disagree, 49.6% strongly disagree). Lecturers to solve this problem use various methods in learning. Lecturers use Google Meet flatfrom, Video Conference on Whasapp, Microsoft Teams, Room Cheating on Facebook, Google Classroom, to help with weaknesses in the LMS, but learning services like this have not made relx students learn. This was accessed through the question "I feel relxed to take part in online learning", students responded with (33.8% agree, 19.3% strongly disagree) (Table 3).

Table 3. Factors related to the readiness of system users

| Questions                                                                 | Strongly agree (%) | Agree (%) | Doubt (%) | Disagree (%) | Strongly disagree (%) |
|---------------------------------------------------------------------------|--------------------|-----------|-----------|--------------|-----------------------|
| Lecturing online is more fun than face-to-face lectures offline in class | 1.8                | 7.6       | 26.3      | 37.2         | 27.2                  |
| Online lectures make me more relaxed in understanding the lecture material | 3                  | 17.2      | 26.6      | 33.8         | 19.3                  |
E-learning provided by the Higher Education is easily accessible everywhere. Online practicum is more fun than offline practicum. Lecturers can apply various methods when studying online. Online testing does not require mature preparation, as the test is not supervised. When asked to choose between online exams and offline exams in class, I choose online exams, because I have the opportunity to ask friends.

The details of the responses for each course are as shown in Graph 1. Graph 1 shows that the largest percentage of students are not happy to take Disaster Management courses (36.54% disagree, 25% strongly disagree), then Fundamental Physics (34.29% disagree, 28.57% strongly disagree), Mathematical Physics (40.63% disagree, 18.75% strongly disagree) and Computational Physics (32.93% disagree, 23.17% strongly disagree), then Algorithms and computer programming (37.5% disagree, 15.63% strongly disagree).

![Figure 1](image_url)

**Figure 1.** Graph of detailed responses about relaxing in lectures

Through statements making conclusions lecture material is easier to do online lectures than offline lectures (18.4% doubt, 33.2% disagree and 18.4% strongly disagree). The results revealed that students generally had difficulty in making conclusions about lecture material during online lectures. Details for each course (Table 4).

| Course                                      | Strongly agree (%) | Agree (%) | Doubt (%) | Disagree (%) | Strongly disagree (%) |
|---------------------------------------------|--------------------|-----------|-----------|--------------|-----------------------|
| Algorithms and computer programming        | 5.88               | 14.71     | 23.53     | 38.24        | 17.65                 |
| Basic Natural Sciences                      | 12.00              | 16.00     | 28.00     | 20.00        | 24.00                 |
| Computational Physics                       | 1.28               | 8.97      | 26.92     | 38.46        | 24.36                 |
| Disaster Management                         | 9.09               | 12.73     | 34.55     | 30.91        | 12.73                 |
| Fundamental Physics                         | 2.78               | 13.89     | 19.44     | 41.67        | 22.22                 |
| Geoelectrical Methods                       | 0.00               | 33.33     | 26.67     | 33.33        | 6.67                  |
| Material characterization techniques        | 4.76               | 23.81     | 42.86     | 14.29        | 14.29                 |
| Mathematical Physics                        | 3.13               | 15.63     | 21.88     | 37.50        | 21.88                 |
| Photograph                                  | 2.78               | 16.67     | 25.00     | 36.11        | 19.44                 |
Table 4 shows that in the Fundamental Physics, Computational Physics, Mathematical Physics, Algorithms and computer programming and Photograph courses more than 50% of students have difficulty making conclusions online about the course material. The information that is accessed through a statement that online lectures are more enjoyable than face-to-face offline lectures in front of the class (37.2% disagree, 27.2% strongly disagree). Students in the courses of Fundamental Physics, Geoelectrical Methods, Computational Physics, prefer lectures through staying in front of the class where more than 70% (disagree + strongly disagree) of the statements given.

3.2. Discussion
Based on student responses accessed with a closed and closed questionnaire, it is known that the main obstacle in online recovery is interference with the internet network system (Table 1). Internet network is the main external factor affecting online learning because the available internet network is neither supported nor available but is slow. The installation of the internet network is not evenly distributed throughout Indonesia, this condition is exacerbated by the undulating topography of Indonesia with high mountains. Some regions in Indonesia do not even have supporting tools, such as gadgets, so students are forced to rely on internet cafes to carry out online learning. The availability of cellphones and computers owned by students makes online learning more expensive than offline learning. Data which reveals that students like to discuss online is caused by students having difficulty understanding questions and answering questions from both fellow students or from lecturers [17]. Students admit that they can hear questions asked by their lecturers or friends, they can answer them well, but the answers given are not what their friends or lecturers want. This shows that being able to hear explanations is an important component in learning. If someone misrepresents the information received, it will cause that person to experience a wrong orientation [18] and misconceptions [19],[20]. Students admit that lecturers have used various methods in online learning, but the variety of methods used is very limited.

The application of online learning requires the readiness of both the infrastructure and the organization that houses the online learning system. One of the factors that influence the successful implementation of e-learning applications is the service from the lecturer. The very varied abilities of students demand service support from lecturers for the effectiveness of using the e-learning platform. Based on the results of research and respondents' suggestions, it shows that the e-Learning learning system has a tendency to ignore academic or social aspects, students who have low learning motivation tend to fail, not all places are available internet facilities or the electricity is cut off. Lack of interaction between lecturers and students and between students itself slows down the formation of values in the learning process.

Table 3 shows that the dominant factor affecting online learning related to the content and information provided in learning is the readiness of students to listen to information provided by lecturers, how readiness of students and communicating online with each other. Constraints in communicating online are the main problems in the content and information section. The data in Table 2 shows that if there are questions asked by students during online lectures, students feel that the lecturer cannot provide answers quickly as when lecturing offline. The factors that cause this condition to occur include the lecturer not being able to grasp the meaning of the question from the good student, the lecturer does not understand the meaning of the question from the student, the lecturer has difficulty asking the student to repeat the question asked. This condition indicates the occurrence of miscommunication between lecturers and students, because communication only relies on words and sounds. On the other hand, good verbal communication in the learning interaction process requires verbal communication with voice, gaze, and gestures to influence [21]. If the lecturer cannot capture or understand questions from students well, the lecturer cannot provide answers to questions immediately. Different conditions, if the lecture is offline, where the lecturer can ask students to repeat the questions asked. Lecturers can also understand the students' intentions based on the gaze and gestures shown by the students.
Students can listen to answers from friends or lecturers well because communication can take place well. Students cannot discuss online with, discuss solving problems faced are important in learning [22]. However, students revealed that the presentation materials and teaching materials distributed by the lecturer before lectures could help, cheating through the WhatsApp platform, Google classroom, lecturers' explanations using a share screen or on a whiteboard can help them understand this online lecture. Student responses to the question 'online practicum is more fun than offline practicum' (32% disagree, 40.3%, strongly disagree). This shows that online lectures cannot be applied to practical courses. The consequence of all the weaknesses above is that students have difficulty making lecture conclusions.

Students on the statement "I caught the stimulus given by the lecturer to actively learn during the online learning process", (38.1%, doubt, 25.1%, disagree, 11.8%, strongly disagree). This means that students have difficulty receiving the stimulus provided by the lecturer during the online learning process. Deep stimulus is needed in science learning [23]. This condition causes students to have difficulty asking questions to lecturers and friends. This indicates that the discussion method is ineffective in online lectures. The data in Table 4 shows that lecturers cannot respond to questions from students as quickly as in offline lectures. When lecturers ask students to ask questions, students can listen to questions and answers from friends or lecturers well, but they are not sure whether the answers given by their friends match what the asker meant. Students find it difficult to discuss online lectures than offline lectures. As a result, students have difficulty in making conclusions on lecture material. This fact shows that the message conveyed did not reach the students well. A question or answer that is submitted by someone, even though they can hear clearly, is not necessarily well understood. However, if the message is delivered with the right gesture, the recipient of the message will be able to understand it. Body language can describe what the message giver wants to convey [24]. On the other hand, answering questions, asking questions of important activities in lectures [25]. So, gestures and expressions play a role in making it easier to convey messages in communicating.

Table 5 shows that in the Fundamental Physics, Computational Physics, Mathematical Physics, Algorithms and computer programming and Photograph courses, students have difficulty making conclusions. The formulation of conclusions from a topic to be discussed requires a comprehensive understanding and the ability to think critically and creatively [29]. In addition, drawing conclusions from a discussion depends on the smoothness of communication between each member of the discussion group. If the communication during the discussion does not run smoothly and the explanations of everyone involved are not properly captured, then conclusions about the material being discussed, such as lecture material, are difficult to formulate.

Furthermore, from the results of these studies, it was found that the use of the system was strongly influenced by the quality of the system, the quality of information and self-efficacy. Likewise, user satisfaction is strongly influenced by system quality, information quality and self-efficacy. Meanwhile, learning culture is only strongly influenced by self-efficacy. So that for the success of online learning the higher the quality of the system, the quality of information and self-efficacy, the higher the success rate of online learning will be carried out [14]. Apart from student admissions, the success of online learning is also influenced by the acceptance of academic staff. The dominant factor that affects online learning related to system user readiness is the difficulty of students accessing the Learning Management System (LMS) platform available in tertiary institutions. The condition has an impact on the competency test conducted by the lecturer.

Students prefer offline courses with a face-to-face system in this case because online lectures are very dependent on the internet network. If the internet signal is good, students get complete information, on the other hand, if the communication signal is not good, there is a risk of misinformation[26]. Correction of the misinformation takes time to reach the students. The mental condition of students when taking online lectures is accessed through statements, online lectures make me feel more relaxed in understanding the lecture material. Relax's condition of understanding material is a matter of learning [27]. Such conditions cause students not to feel comfortable in
learning. Students admit that the conditions of the learning environment affect the implementation of online lectures. The distribution of students' mental conditions for each subject is shown in the graph in Figure 1. Student responses to the statement "online examinations can be used to see differences in student learning abilities", (27.6%. Doubtful, 22.7% disagree, 9.1% strongly disagree). However, they chose to take the exam offline. Students are given the opportunity to respond, there are several students between (1) hopefully the Covid 19 Pandemic will end quickly; (2) online learning is not effective for learning Physics, (3) Students need direct explanations to better understand lecture material.

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The dominant factor that affects related online learning is the readiness of the system users themselves. The survey results show that students and lecturers have difficulty accessing the Learning Management System (LMS) platform available in universities. Information sent by lecturers is slow to reach students, not even all information sent by lecturers is accepted by students. On the other hand, system use is greatly influenced by system quality, information quality and system user efficacy [14]. One's learning culture depends on self-efficacy. This shows that the success of online learning is influenced by the acceptance of academic staff. This has an impact on student competency tests conducted by lecturers. So, quality systems and information and high self-efficacy will result in the implementation of quality online learning, of course student learning outcomes will also be meaningful.

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4. Conclusion
The dominant factor influencing online learning is related to the system and infrastructure to support the internet network and the availability of mobile phones and computers owned by students. The dominant factor affecting online learning related to the content and information provided in learning is the readiness of students to receive and send information, thus preventing discussing content that is difficult to understand. The dominant factor affecting online learning in relation to system user readiness is the difficulty of students accessing the Learning Management System (LMS) platform available in tertiary institutions. The influence of these factors is found by students when they take courses in Disaster Management, Fundamental Physics, Mathematical Physics, Computational Physics, Algorithms and computer programming.

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