

Problematics Study of Natural Sciences (IPA) Online at Junior High School in the Time of the Pandemic Covid-19

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Abstract – The purpose of this study was to determine the scientific and online learning process at home following the COVID-19 pandemic. The study uses sample research methods used to obtain information on the constraints and constraints resulting from the COVID-19 pandemic on the activities of the scientific learning process in the province of Riau. In this study, the respondents were 50 lower secondary teachers in each district. Province of Riau. Semi-structured interviews were conducted and a list of questions was compiled on the Google-Forms platform. The interview was developed on the basis of certain related documents. The respondents to this study were teachers of lower secondary education and those who taught science courses in the province of Riau. The results of this study are that there are several obstacles encountered by teachers and students in online teaching and learning activities, namely that there is a decrease in the online learning process by 93.3, teachers have never done as much online learning as 43.3, there are factors that prevent online learning namely facilities and infrastructure limited to 70 and Internet networks up to 'at 66.7, a lack of concentration of students in the learning process which can reach 76.7, the respondents declared that they agreed if online learning is applied after the pandemic, but also interspersed with 50% face to face. Online learning ineffective up to 70 and 63.3 of the Core Competency of learning in the natural sciences are not fully transmitted.

Keywords – Covid-19 Impact, Online Learning, Teacher of Natural Sciences at Riau, Google-Forms Platform.

I. INTRODUCTION

In today's world, there is a rampant epidemic of Covid-19. Covid-19 itself is a large family of viruses that cause illnesses ranging from mild to severe. There are at least two types of Covid-19 known to cause illnesses that can cause severe symptoms. Covid-19 is a new type of disease that has never been identified before in humans. On January 30, 2020, the WHO designated the public health emergency as disrupting the world. On March 2, 2020, Indonesia reported 2 confirmed cases of Covid-19. Until March 16, 2020, 10 people tested positive. (Yurianto, Ahmad, Bambang Wibowo, 2020:56). The Covid-19 virus in Indonesia is currently affecting the entire community. According to the compass, on 03/28/2020, the effects of the Covid-19 virus are occurring in various areas such as social, economic, tourism

and education. On March 24, 2020, the Minister of Education and Culture of the Republic of Indonesia published Circular Letter No. 3 of 2020 concerning the implementation of education policy during the emergency period of distribution of Covid-19. (Ministry of Education and Culture, March 24, 2020). In the circular, it is explained that the learning process takes place at home through online / distance learning carried out to provide meaningful learning experiences for students. Because the impact of this pandemic is very influential on the world of education. Central and regional governments also have policies in place to fire all educational institutions. This was done in order to prevent the spread of the Covid-19 transmission.

The government has carried out all stages of crisis management in education in order to deal with the Covid-19

emergency. From the pre-crisis, including the training of all leaders of educational institutions. The next step, the government released a crisis program in the form of a home study (SFH). This program is a type of teaching and learning activities carried out by distance or implementing home learning. Given the characteristics of distance education, an online learning system is put in place.

Online technology should be a solution as a means of learning during the Covid-19 pandemic. During SFH, the government also carries out monitoring and evaluation. This stage is a manifestation of the final stages of crisis management (in dasrumhidayat, et al). Online learning is considered a learning medium that can be used as a media medium (Dwi Nuriyanti and Rahayu Utami, 2013:2). Online learning materials are very diverse, ranging from sending messages (chat) to materials that can display videos or organize videoconferences. All online course platforms offer a variety of cool features and can facilitate online learning.

Learning that is done using online / distance learning is actually not a problem for schools that already have an online school system. According to Isman, online learning is the use of the Internet in the learning process. With online learning students have the flexibility of time to study, can learn anytime and anywhere. Students can interact with the teacher using multiple apps such as the classroom, video convergence, phone or live chat, zoom, or via WhatsApp groups. This learning is a pedagogical innovation to meet the challenges of the availability of varied learning resources. (Nakayama M, Yamamoto H, 2007: 56) This government policy is also a problem for schools that do not yet have an online academic system. The lack of preparation of schools to carry out online learning is a major factor in this chaos, even if the government in fact offers alternative solutions to assess students as a condition of graduation or leaving school. Teaching in emergencies like this. The transition to this mode of learning requires the different parties to follow the path that could be taken so that learning can take place and an alternative is to use technology as a support for online learning.

However, the lack of technological knowledge of teachers and students is a problem in the implementation of online methods. Although the teacher should always enrich and upgrade the science, it is not easy to quickly request and adapt various applications that support online learning, not just future teachers. Weak Internet networks are also a barrier often encountered by teachers and students, especially those living in areas with minimal Internet access. (NingsihWidya: 2020:1). The purpose of this study was to obtain information

on the impact of Covid-19 on the implementation of online learning in middle and high school on science courses in Riau.

II. THEORETICAL REVIEW

A. Learning Natural Science

The natural sciences (IPA) deal with how to discover (investigate) nature and in a systematic way, so that science is not only the mastery of a body of knowledge in the form of facts, but also a process of discovery. Science education in secondary schools should be a way for students to learn about themselves and the natural environment, as well as the prospects for developing its application in everyday life (Trianto, 2012: 100).

Wisudawati (2014: 22) states that the natural science (IPA) are a group of sciences that has special characteristics, namely the study of natural phenomena that are factual (factual), either in the form of reality (reality) or d 'events (events) and cause and effect relationships. Knowledge that was initially obtained and developed on the basis of (inductive) experiences, but in later developments, the API is also obtained and developed on the basis of (deductive) theory. Ministry of Education and Culture (2014: 21) Science is concerned with systematically discovering nature, so that science does not only master a body of knowledge in the form of facts, concepts or principles, but also a discovery process. The science learning process emphasizes the provision of direct experience to develop skills to explore and understand the scientific nature. Science education is research and action oriented to help students better understand the natural environment.

However, the development of information and communication technologies has had an influence on the world of education in Indonesia, in particular on the learning process. One indication of this phenomenon is a change in the learning process where interaction between teachers and students takes place not only through face-to-face relationships, but also with communication media such as computers, Internet, etc. According to Ade Kusuma, online conferencing is a learning process that uses information technology, in this case, using the Internet as a method of dissemination, interaction and facilitation. Inside, there is support for learning services that can be used by study participants. A learning system design can also be learned and known by each learning participant (Saputro, Somantri and Nugroho, 2017:46). Learn all the time where learning is accessible anytime and anywhere (Sofiana, 2015).

B. Covid Pandemic 19

Indonesia is currently colonized by the Covid19 pandemic, where the world of education has felt its impact. A distance learning policy is implemented so that the learning activities continue. And while preserving health, safety and well-being during the Covid pandemic19 (Chick et al., 202: 1-4). The application of distance education is certainly not a problem for schools and colleges that are used to tracking their academic activities online, but it will be felt by schools and colleges that have not or are unfamiliar with the online academic system.

Students encounter several problems or obstacles in the implementation of this distance education, such as cost, motivation to learn, service, feedback, lack of experience and habits (Attri, 2012:42). Distance learning is not considered better than face-to-face or face-to-face learning (Fojtik, 2018:14). Lack of effective interaction, lack of organization is one of the obstacles to distance education, effective distance education must be supported by the content provided, internet connection facilities and attention and availability considerable (Buselic, 2012:23). Consequently, the use of teaching aids in its application affects learning and reflection in progress (King et al., 2001:14).

The use of teaching aids which are not interactive, do not dance, it will be difficult for the pupils to increase their motivation of learning, then interactive and interesting teaching aids to produce good achievements of the pupils (Handhika, 2012:109). A particular concern in the implementation of distance education, such as in remote regions or regions that do not have an Internet connection and limited ownership of technology must be a major obstacle because educators and schools do not have the facilities and facilities for the distance learning process (Basilaia and Kvavadze, 2020:9). Therefore, the determination of the learning media has a big influence on learning.

III. METHODOLOGY

The research method used was descriptive qualitative research (Maolani and Cahyana, 2016) using survey techniques. The finding aid used was an online questionnaire and interview in Google format. The sample taken was a teacher or educator of scientific disciplines from the province of Riau. The questionnaire was given to teachers who were implementing online learning. The questionnaire provided included 25 statements with yes or no answers and there were also written questions to respondents (Sigiyono, 2018:4).

The scientific way of obtaining data in writing and also certain uses is generally called the research method. Achieve

the required objectives and in accordance with the desired needs relevant methods (Sigiyono, 2018: 2). This research is a descriptive quantitative study to discover the impact of online learning using online media on natural science subjects in the province of Riau. The research population is made up of teachers from each regency in Riau province who teach scientific subjects using online media. The sample of respondents to this study was 50 lower secondary teachers in each district. The province of Riau uses simple random sampling techniques to take into account the homogeneity of the population. Data collection uses a questionnaire containing types of closed, semi-closed and open questions shared using Google forms. Data analysis uses statistical validity using computerization.

IV. RESULTS AND DISCUSSION

A. Presentation of the results of the data analysis

1. Descriptive analysis

Descriptive statistical analysis aims to find a general description of the research data.

Based on the research and data collected, the results of the study will then be presented in a descriptive manner. Descriptively, the research results that have been collected will be used to describe the activities of teachers and student feedback obtained in this online learning process, which includes: the learning spirit of students, the application of online science learning in front of the educator Covid-19, learning about inhibitory factors online, the impact of online learning, respondents' responses to online learning, respondents to the application of e-learning after a pandemic, the effectiveness of e-learning and CI in learning science that is not fully transmitted.

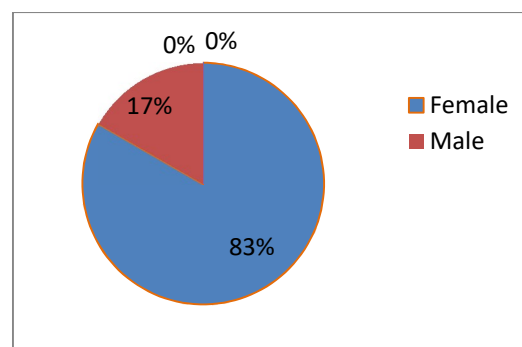


Figure 1. Gender

Based on the data obtained, 50 samples of science teachers from Riau province were made up of 83.3% women and 16.7% men. In addition, the data obtained is described in detail in each aspect described as follows:

- a. Students' learning spirit or learning spirit decreased by 93.3% when learning online. From the data obtained during the implementation of this homework, the respondents can be classified as "yes". This may be due to the fact that students are "not good" in performing these online learning activities (see Figure 2).

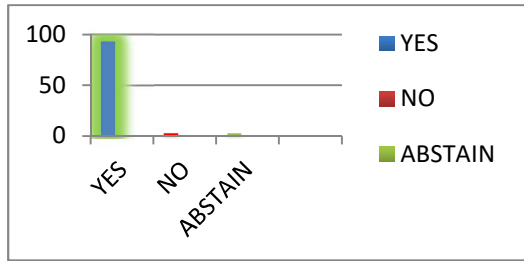


Figure 2.Management of the online learning and education process.

- b. Can be (See Figure 3) the percentage of the application of online science learning before this educator is, the teacher has never done online learning the percentage of 43.3%, has (1x) done online learning as much as 10%, sometimes (2-5x) as much as 26.7%, often (more than 6x) do online learning as much as 20%.

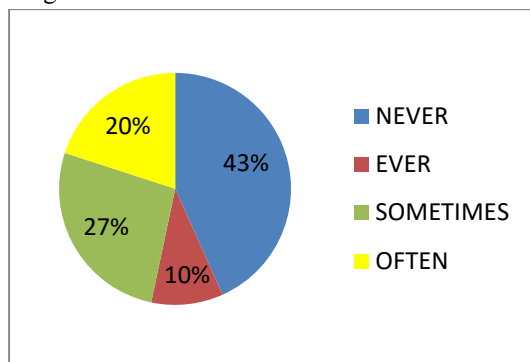


Figure 3. Online application of natural science learning before the covid-19 pandemic

- c. According to the results of the questionnaire completed by the respondents, some of the factors that most inhibit the activities of the natural science learning process online are the limitations of facilities and infrastructure up to 70% and the Internet network up to at 66.7%. Especially for teachers and students who live in rural or remote areas, it will be very difficult to access the Internet (Figure 4).

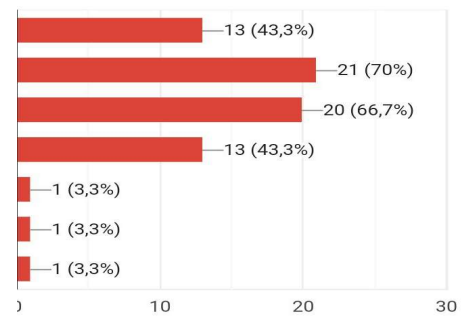


Figure 4. Factors inhibiting online science learning activities

- d. Respondents stated that the impact that occurs on students due to online learning in science classes is the lack of concentration of students in the learning process, which is up to 76.7% students more often absent during online learning because not all students come from good families and environments- well. It is a very difficult challenge for teachers to apply the online method. Teachers have to work very hard for students to start following the online learning model, as there are not many students who want to pay attention and focus during learning, teachers also need to be more creative by combining a variety of online teaching materials, as you can see (see Figure 5).

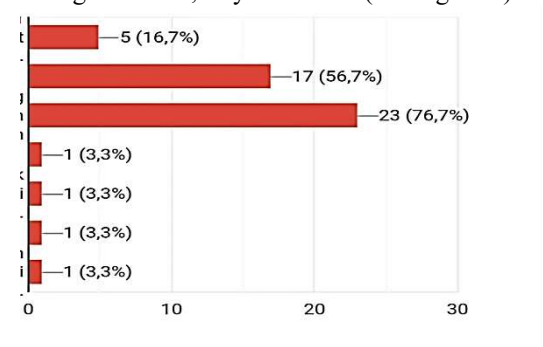


Figure 5. Impact of online learning on the science learning process

- e. Many teachers' responses to online learning are unhappy, and results show that teachers dislike online learning as much as 73.35 and teachers who like online learning up to 26 , 7% (see Figure 6).

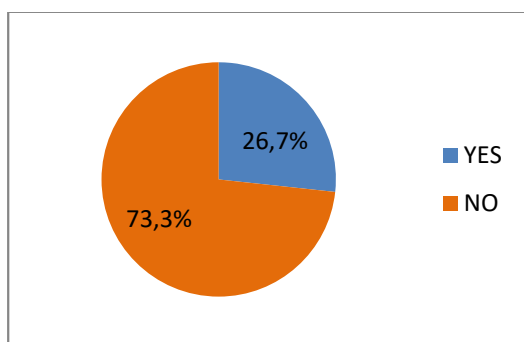


Figure 6. Teacher's Response to Online Learning

- f. Respondents stated that they agreed if after the online learning pandemic is no longer activated but also interspersed with 50% face to face, respondents who disagree up to 30%, respondents who are agree up to 13.3% and abstain up to 6.7% (see Figure 7).

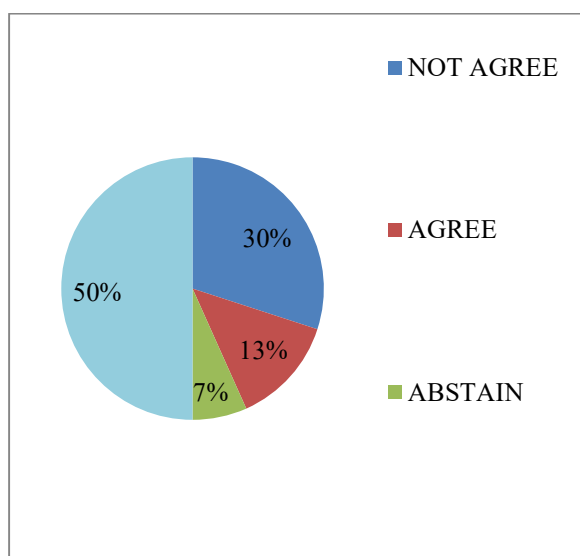


Figure 7. Respondents to Implementation online learning after a pandemic

- g. The effectiveness of this online learning as much as 70% of teachers answered "no" This illustrates that the effectiveness of learning. Respondents stated that online learning is not as effective as teaching and learning as usual or face to face. According to him, certain elements must be explained directly. Based on his experience in online education, this system is only effective for assigning homework. Other respondents also added: online learning is effective during the pandemic, but it is not effective in assessing student homework because not all students do their homework online. In online learning, teachers also find it difficult to motivate students to think critically in learning science online (see Figure 8).

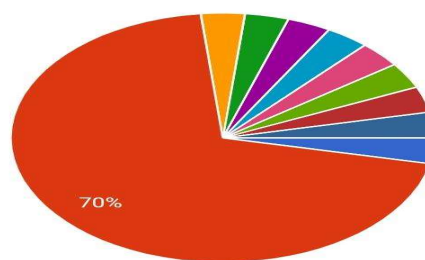


Figure 8. Online learning is not effective

- h. In this online learning process, the KIs (basic skills) in each learning science are not fully transmitted, this can be seen from the results of the data from respondents who indicate "yes", the percentage is 36.7% and those who say "no" are 63.3% (see Figure 9)

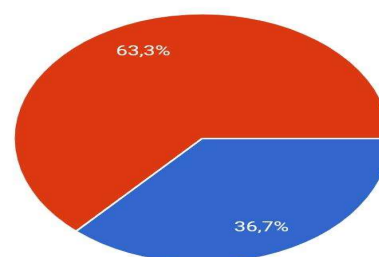


Figure 9. Problematic of scientific learning through online at junior high school IN THE COVID-19 PANDEMIC PERIOD

V. DISCUSSION

With the spread of the co-19 pandemic that swept the world so quickly, teachers and students inevitably had to fight this situation. The previous situation where the learning process took place face to face, with a direct orientation to meet the teacher in the classroom became something that could no longer be achieved. Lockdown-induced closure of higher education institutions will compel teachers and students to resort to online mode, and along with other dictations, there would be a call for a de facto switching to the system of virtual learning (Gurukkal, R .,2020:5). In different circumstances, not as usual and with different learning processes, students should continue to be mindful of learning activities. According to the results of the research written above, students decreased during the online learning process. This makes science teachers unable to maximize the learning of their students. As a social creature, communication between people is absolutely necessary, which underlies the importance of intrapersonal abilities. Online learning activities, although carried out independently at home, this should not also limit intrapersonal communication, but their implementation is not as effective

as direct learning or face to face learning. With the diversity of communication media at present, it is possible for students to be able to choose and use them easily and effectively, but not all students can maximize them, it all comes down to the facilities and infrastructures belonging both teachers and students.

Hartanto (2016:14) found that cheap and easy information technology and telecommunications will eliminate the space and time limitations that have so far restricted the world of education. Some logical consequences that occur in the use of online learning online, among others (1) students can easily access learning materials anywhere without being limited again in terms of location and time; (2) students can easily learn and chat with experts or experts in the areas of interest; (3) learning materials can even be easily taken to various parts of the world without depending on where the students learn. However, these opportunities still face challenges both in terms of costs, Internet networks and the preparation of IT infrastructure.

Husamah (2015:2) states that, in general, face-to-face learning has various advantages over teachers and students, including: 1. Formal discipline applied to face-to-face learning can form mental discipline; 2. Facilitate the provision of reinforcement immediately; 3. Facilitate the teacher assessment process; 4. Become a vehicle to learn how to interact with students. Respondents indicated several science learning methods that have been applied online now (1) the ideal online science learning process depends on conditions and situations. (2) The teacher strives to learn ideally with online learning plans that have been developed, such as the direct use of the zoom (considered absent from the students' presence), the sending learning videos and power points via the classroom application, and assigning homework. (3) Explain the material interchangeably and take a break so that the students do not get bored. (4) Provide a discussion space for students, (5) Use Google Classroom, (6) Provide memorization and ask questions and respond to students, (7) Watch videos of material that has been produced and then end with the 'assigned tasks, (8) Use alternatives via Whatsapp to submit assignments.

Research results from Sari, P. (2015:20) revealed that to motivate students intrinsically and extrinsically, online use in the learning process must pay attention to the principles of use as well as the benefits and disadvantages of the online learning process. The learning process using e-learning should not place students only as "listeners" or "viewers", but also encourage the active participation of students to interact, dialogue, work together, share and develop knowledge

together. In addition, when using online teachers, they must be creative and innovative and have a critical attitude in the choice of learning materials, have a good ethics in the use of these materials, avoid using images. or sounds less relevant to the learning material, encourage active student participation, pay attention and give more time to students not limited to face-to-face lessons, patiently guide students who have difficulty using learning online, professional and motivated to continue learning and improving knowledge and skills

The results of Hanum's research (2013:90) show that learning interactions can occur if there is a learning manager (teacher), learning resources, learners, interactions between teachers and the students. Learning management can be done by the teacher, so that the teacher plays an active role in the learning system, including online learning. Yazdi's (2012:143) research results show that through the discussion / forum method, teachers and students can interact directly to make it easier for students in the online learning process. E-Learning is an electronic-based learning process, the use of which is accessible online (Weni&Isnani, 2016:114). Increasing mastery of learning materials, increasing interaction between students and teachers and facilitating the learning process are objectives that e-Learning has in their application (Darmayanti et al., 2007:99). To be used effectively during this pandemic. However, use is lacking because the content is only in the form of text or presentation slides, there must be development to increase the interest in learning (Cucus and Aprilinda, 2016:5).

The development of e-Learning, the google application in the classroom as a means of learning during the pandemic, is considered to be effective because its use is effective and efficient and can be carried out anytime and anywhere, is convenient to use and can improve learning outcomes (Subandi et al., 2018). However, the use of Google Classroom needs to be balanced and adjusted with a good internal connection, this also becomes a problem if there are delays in the collection of tasks due to slow connections (Fauzan&Arifin, 2019:271). In this case we may not decide on adequate internet access for online learning.. It is important to note that the teaching and examination strategies utilized during COVID-19 teaching restrictions faced no interruptions. Both teachers and students had adequate access to internet resources and access to the MyElearning course page. However, the methodology is not immune to interruptions. Inadequate access to internet by teachers or students could adversely affect the use of these strategies (George, 2020:23).

Therefore, usage should be adjusted based on the level of learning, the quality of learning, and the intensity and time. Based on the collection of research data, it can be concluded that the implementation of learning activities between teachers and students via online media during the Covid-19 emergency response period was not doing well enough or was less effective. This needs to be improved as learning activities are important for achieving learning objectives. Obstacles to implementing e-learning activities during the current Covid-19 emergency period are underlying.

VI. CONCLUSION

The impact felt by the teacher in the online learning process is that the facilities and infrastructure are inadequate at home. The next obstacle is that teachers do not have a culture of distance education because during all this time, the learning system is set up face to face, teachers are used to being in school for interact with students, with the presence of distance teaching methods that make teachers need time to adapt and they face new changes that will indirectly affect the quality of learning outcomes. The existence of the Covid-19 epidemic has forced teachers to use technology, so whether they like it or not, they must inevitably learn and be prepared to teach at a distance using technology. The obstacle encountered by teachers is the increase in the cost of purchasing an Internet quota, online technology requires a network connection to the Internet and the quota, therefore, the level of use of the Internet quota will increase and increase. The charge on teachers' expenses. To learn online for several months, of course, more quotas will be required and will automatically increase the cost of purchasing Internet quotas.

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