

## Teachers' readiness in the implementation of online learning during COVID-19 pandemic

Islamiani Safitri<sup>1</sup>, Ika Chastanti<sup>2</sup>, Rohana<sup>3</sup>, Lily Rohanita Hasibuan<sup>1</sup>, Irmayanti<sup>4</sup>, Sujarwo<sup>5</sup>, Hamni Fadlilah Nasution<sup>6</sup>

<sup>1</sup>Department of Mathematic Education, Universitas Labuhanbatu, Rantauprapat, Indonesia

<sup>2</sup>Department of Biology Education, Universitas Labuhanbatu, Rantauprapat, Indonesia

<sup>3</sup>Department of Civic Education, Universitas Labuhanbatu, Rantauprapat, Indonesia

<sup>4</sup>Department of Information System, Universitas Labuhanbatu, Rantauprapat, Indonesia

<sup>5</sup>Department of Primary Teacher Education, Universitas Muslim Nusantara, Medan, Indonesia

<sup>6</sup>Department of Sharia Economics, Institut Agama Islam Negeri Padang Sidimpunan, Padang Sidimpunan, Indonesia

### Article Info

#### Article history:

Received Jun 30, 2021

Revised May 21, 2022

Accepted Jun 26, 2022

#### Keywords:

Learning from home

Online learning

Teacher readiness

### ABSTRACT

This research investigated teachers' readiness in implementing online learning during COVID-19 pandemic. This was quantitative research with a description analysis approach. The data collection technique used a structured questionnaire. It involved 78 senior high school teachers as respondents spread across nine sub-districts in Labuhanbatu Regency, Indonesia. The results revealed that the implementation of online learning has not been maximized. There are several factors that influence science teachers in running online learning, including the readiness of teachers to use various platforms as online learning media has not varied, the quality of the internet network is poor in some areas, some students do not have a smartphone/computer and have difficulty in buying internet data packages. The results of this study are expected to be used as an evaluation material to improve the online learning system to make it more effective and efficient.

This is an open access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



### Corresponding Author:

Ika Chastanti

Department of Biology Education, Universitas Labuhanbatu

Rantauprapat, Labuhanbatu, Indonesia

Email: [chastanti.ika@gmail.com](mailto:chastanti.ika@gmail.com)

## 1. INTRODUCTION

In December 2019, the new pneumonia appeared at Wuhan, China and spread to different countries rapidly. This disease was named as 2019 novel coronavirus (2019-nCoV), then, the World Health Organization (WHO) announced the new name as Coronavirus Disease (COVID-19) caused by virus of *Severe Acute Respiratory Syndrome Coronavirus-2* (SARS-CoV-2) on February 11, 2020 [1]. The COVID-19 epidemic has become a critical problem in the world, as it has not only claimed many victims, but also paralyzed all systems in every aspect or component of life. Until 7 June 2020, the total cases of Coronavirus in the world was 6.981.011 people, 402.237 of which dead and 3.413.270 recovered [2].

The first report of COVID-19 in Indonesia was on March 2, 2020 with two cases. Data as on June 7, 2020 showed that the confirmed total number of cases was 30,514 including 1,801 deaths [3]. On the other hand, in 2021 the mortality level of COVID-19 in Indonesia is 7.2%. It is indicated as the highest number of deaths in Southeast Asia and this number will continue to grow for an unspecified time [4].

In order to overcome the panic caused by the COVID-19 virus, many countries adopted different policies. One of the policies was 'lockdown' with the hope that lockdowns would be able to break the chain of COVID-19 disseminating spread rapidly [5]. Not like in China, USA, Italy, Malaysia, and other countries

with taken lockdown policy, Indonesia chooses to decrease the outside of interaction and activity with large-scale social restriction (LSSR) implementation at this pandemic. One of the large-scale social restrictions have been implemented by government is learning from home (LFH) program. LFH is the online learning and teaching with switched to every student's homes. In this case, there is no face to face on learning and teaching processing, and all of assignments will be collected online [6].

Online learning is used to describe the learning system with internet technology or computer-based learning. In the next development, the function of computer is changed by smartphone or others. With the computer based learning, the study becomes flexible and everyone can learn everywhere, every time, and in every situation [7]. Other than that, online learning also build engagement in an online course through creating forum of learning for discussion in which students shared responsibility for self-directed learning or self-regulated learning with the teacher [8].

Conducting learning online will be different from conducting learning offline. The government said that online learning becomes effective when it contains three elements in the learning environment. These elements are presence of social, teaching, and cognitive [9]. If these elements are able to be presented in online learning, the learning objectives can be achieved. To implement online teaching and learning, the process have to achieve creditability by maintaining standards of education expertise, material delivery, and student assessment despite possible challenges and obstacles in every carrying out of process [10]. In order for the learning objectives to be achieved, it is necessary to be precise in choosing the platform used in online learning. The change of learning process from offline to online can affect the student's learning quality if wrong in choosing the media and platform of learning. Therefore, teaching and learning in online situation needs different strategy that can make the learning activities going maximally and optimally.

In facing these differences, not all regions in Indonesia are ready to get along with online learning activities. Some of them are still struggling with various problems, one of which is the teachers' readiness in preparing media and conducting teaching and learning activities. Therefore, every element of society such as government and schools need to see the readiness of every teacher in order to whether or not teachers are given further treatment to prepare the optimal online learning activities for their students. According to explanation, this research aimed to investigate the teachers' readiness in implementing online learning during COVID-19 pandemic.

## 2. RESEARCH METHOD

This research used a quantitative method with a description analysis approach [11]. The subjects of the research are senior high school teachers in Labuhanbatu Regency. There are 60 senior high schools either public schools or private schools. The schools are spread in nine regencies. The technique of selecting participants was purposive sampling. The sample was selected with certain considerations representing each teacher in 60 schools in Labuhanbatu [12]. The participants are selected based on their relationship on online learning implementing in each school. They are active teachers and as curriculum coordinators. The total participants in this study were 78 teachers. The distribution of participants in this study is shown in Table 1.

Table 1. The spread of participants in every subdistrict at Labuhanbatu Regency

Subdistricts	Principals	Head of curriculum	Teachers
Bilah Hulu	0	3	5
Bilah Barat	0	0	2
Bilah Hilir	2	0	6
Panai Hulu	2	2	3
Panai Tengah	0	2	2
Panai Hilir	0	4	4
Pangkalan	2	0	6
Rantau Utara	5	5	10
Rantau Selatan	3	4	6
Total	14	20	44

The questionnaire was distributed to 78 respondents spread across 60 senior high schools. Considering that data collection during the COVID-19 pandemic, the questionnaire delivered by Google Form. The Google Form link was shared through WhatsApp and other social media platform. The data validity technique used is the descriptive statistic with the purpose to describe what occurred in the sample and to detect sample's characteristics that may influence the conclusions of the research [13].

### 3. RESULTS AND DISCUSSION

#### 3.1. Teacher's knowledge about technology

Based on the result of questionnaire conducted, it can be said that many teachers acknowledge about technological development in education. This is shown in the basic abilities of teachers in operating computers and using several applications on smartphones such as WhatsApp, Facebook, and other social media. Although overall teachers are able to use several applications on smartphones, only about 60% of teachers are able to use these applications optimally. This means that 60% of teachers are able to take advantage of all the features in the application, while 40% are only able to use basic applications such as uploading photos, writing comments, and typing a status.

If we look further, this actually happens because the teachers are lack to using technology in the teaching and learning process [14]. Not because of low interest in implementation, it is just that there are many things prepared to support it so that teachers prefer to teach traditionally. One of researcher from Russia stated that why there are many teachers still applying traditional teaching models, this is because they believe that it takes a lot of time to prepare for online learning. In addition, the lack of material compensation also reduces the interest of teachers in using technology during the teaching and learning process [15].

#### 3.2. The platform used in online learning

Choosing the right platform is very useful in implementing the online learning, because online learning requires special teacher's attention refers to the condition of the environment. Even though students learn by online, they also need someone to guide the learning process. Therefore, teachers need to provide feedback to students, respond promptly, and provide individualized guidance for each student. This interaction will improve student motivation in the online learning process [16].

From the results of questionnaire conducted with 78 participants about the types of platforms used in implementing online learning during LFH, it was recorded that most of participants (79.49%) used WhatsApp. The percentage of use of various types of platforms in online learning implementation can be seen in Figure 1. The reason why WhatsApp was chosen in online learning implementation is because this platform is familiar among the public and easy to use. Taibah University research states that WhatsApp application makes the learning process easy, favors problem-solving, and resolves to learn difficulties related to the learning content distributed through WhatsApp and knowledge sharing [17]. This is different from Gon's research results which state that more than 70% of students agreed that there were no efforts by some students to learn the material lesson and they shared it only to impress the teacher [18].

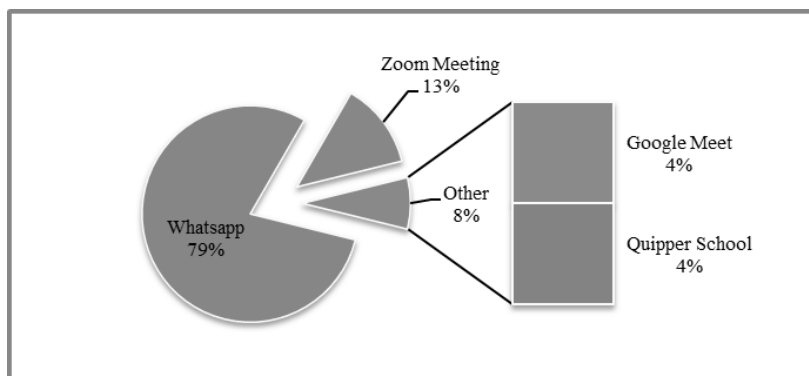


Figure 1. The percentage of platform usage in online learning

The study by Malaysian researcher also confirms that the teachers' level of knowledge on technology is moderate. They used the main applications which are commonly used in the teaching and learning such as spreadsheet, presentation software and e-mailing [19]. In the areas of technology usage, students find it difficult to use e-mails and the learning management system, but they are not used very often by students. Students instead prefer instant messaging applications and mobile technologies as their preferred form for learning [20].

Only 12.82% of teachers use Zoom as a platform in online learning implementation. It is because Zoom is one of a new application used in Indonesia, so that it is not familiar to the people of Labuhanbatu Regency. Relate to the Serhan's funding research that teachers were not ready to accept the change that required the new platform, activities design, and delivery methods. Some users find the technical difficulties

while using the new platform including internet access and Zoom process [21]. Zoom has started to be popular used by academics in Indonesia in March 2020, namely since the implementation of the LSSR during the COVID-19 pandemic. However, the popularity of Zoom is still widely used by activists of higher education alone to conduct online seminars, while among teachers and students, Zoom is not yet popularly used. Even so, the teachers who have used Zoom in implementing the online learning think that application is better than the others because besides being easy to use, it can also directly meet all students. In addition, the subject matter can be given maximally because the teachers are able to present teaching materials in the power points and others as well as explain the material in the teaching materials directly [22]. Students also have the opportunity to express opinions and ask questions from material that has not been understood. Despite Zoom being user friendly, the majority of users had difficulty 'joining the group'. Common technical problems include weak internet network quality, outdated hardware specifications, or a malfunctioning webcam and microphone. This is because using Zoom requires high-speed Internet access [23].

In this study, Quipper School and Google Meet was each used only 3.85% in online learning. Similar to Zoom, these two applications are not very popular in the community so they are still little used. Even so, Quipper School and Google Meet were chosen by teachers because they can provide assignments and assessments directly to each student. Teachers can also create portfolios of student learning progress through this application making it easier for teachers to make final assessments on a subject being taught. The results of research in Malaysia show that all students claim to be satisfied using Google Meet and its effective use as an active learning tool. The results of these studies were obtained through observations, surveys, and student demographic analysis as well as course design that led to greater student satisfaction with learning methods. This study will also contribute to online instructor training in the method and design of educational support programs that enable students to succeed in online learning [24]. Google Classroom is also able to build an attractive learning atmosphere because this application was developed with information in the form of audio and video which is in accordance to the pedagogical technological aspects. Thus, the learning quality will be better [25]. However, not all teachers understand about information technology, especially the elderly teachers. They feel difficult to understand Quipper School and Google Meet because they do not understand technology.

### **3.3. Student responses during the online learning process**

In general, all students were very enthusiastic in online learning during their LFH period. This is characterized by active and communicative students during the learning. Students also always try to attend the online learning at the agreed time. There were some interesting things during the online learning process, namely some students who were usually passive in offline learning, but were quite active in the online learning process. The active is refers to the courage of students in asking questions and expressing opinions regarding the material presented. This happens because during the implementation of online learning students do not meet each other so there is no pressure from other students and self-confidence is easier to build. In contrast to the conditions of offline learning where all students meet face to face so that it becomes a burden on students who have low self-confidence. Therefore, online learning can also be used as an alternative way to increase student confidence in the learning process. The implication of this online learning is that teachers should be aware not only to dichotomize students into "motivated" and unmotivated groups, as students with the same motivation level, but have different reasons for participating in class. In online learning, students have different reasons for participating in class. They may have internal reasons such as interest or excitement. Students can also have external reasons for participating in class, such as fear of being out of date, being coerced by the authorities, pursuing better results, or pressure on exams [26].

### **3.4. Teachers' obstacles in online learning implementation**

The sudden and unexpected transition of the teaching learning process creates obstacles and difficulties for teachers who carry it out. Indonesia is a country with minimal technology facilities, especially in remote areas. This situation is able to create difficulties for teachers and students.

#### **3.4.1. Not all students have smartphones**

The mandatory requirements that must be fulfilled in order for online learning to be implemented are the existence of a smartphone or computer as the implementation medium. Although currently these two types of goods are almost owned by everyone, the existence of smartphones and computers are still items that are difficult to reach for people with middle to lower economies [27]. In Labuhanbatu Regency itself, the middle to lower economic community is still classified as high, namely 41,520 people or 8.44% of the population in Labuhanbatu Regency. Likewise, some high school students registered in Labuhanbatu Regency, based on the results of interviews with 78 informants, it was noted that 98% of students have smartphones and 2% do not own smartphones. A total of 2% of these students belong to the middle to lower economic community who do not own a smartphone and only have a cellphone with telephone service

facilities or send messages only. Therefore, to participate in online learning these students have to borrow from relatives and close relatives because it is not possible to buy a new smartphone. Even some students also have to be absent from online learning when they don't get a smartphone loan. As the result, students miss the lessons without any warranty from the school and the teachers. In addition, this is an obstacle for students and teachers in the process of online learning during LFH to balance it [28].

### 3.4.2. Limitations of internet data packages

Besides having to have a smartphone or laptop, a data package is important for implementing online learning. The data package is used to obtain an internet connection in maximizing the use of the platform as online learning media. Internet data packages are available at various credit sales counters, both offline and online [29]. To buy an internet data package, students have to spend around tens of thousands to hundreds of thousands depending on the quota of the data package purchased. The nominal is of course big enough for students with middle to lower income levels so that sometimes some students are disconnected in the middle of the online learning process due to insufficient quota, there are even students who have been absent who do not participate in online learning because they do not have money to buy internet data packages.

### 3.4.3. Networking quality

Apart from having a smartphone and internet data package, the quality of the internet network in each region is very important. For areas close to the city center, of course already have good network quality, but for the areas far from it, the network quality is still an obstacle in online learning implementation. Table 2 shows internet networking quality in each sub-district in Labuhanbatu Regency.

Table 2. The quality of internet networking at Labuhanbatu Regency

Sub-districts	Internet networking
Bilah Hilir	Average
Bilah Hulu	Good
Bilah Barat	Bad
Panai Hilir	Average
Panai Hulu	Average
Panai Tengah	Bad
Pangkalan	Average
Rantau Utara	Good
Rantau Selatan	Good

Some sub-districts in Labuhanbatu Regency, at Bilah Barat and Panai Tengah Districts still have poor connection to the internet. The consequence of it, the online learning implementation does not really work as in other sub-districts with the better connection. This is one of the reasons why most teachers use WhatsApp in online learning. WhatsApp can be accessed even though in bad networking, it is contrast to other platforms (Zoom, Google Meet, and Quipper School) which do require a good networking to access it. According to the explanation from several informants through depth-interviews, sometimes the students who have to leave the house to higher ground to get good signals. In addition, this is very contradictory to the LSSR policy which expects people to stay at home. In addition, this can also threaten the safety of students if they are not careful in looking for a higher place.

### 3.4.4. Cannot meet face-to-face

Online learning implementation limits the students and teachers to learn by face-to-face. Learning from a far distance makes a different learning atmosphere certainly. In online learning implementation the teacher cannot lead and control student development directly during the learning process. As the result, teachers do not have sufficient information regarding students' affective development. In practice, online learning requires a different perspective compared to direct teaching. When teaching larynx, the teacher attends physical classes, but when teaching by online, the teacher pays attention to the virtual classroom consistently. As a consequence, online teaching and learning can be very time-consuming and tiring, and it may be difficult to set limits for maintaining the workload that teachers can manage [30].

### 3.5. The teachers' expectations on online learning implementation

Various hopes of participants for the government to improve of online learning in the future appears. This unprecedented situation will certainly change the pattern of education for students at least for the next few months until things return to normal, or even longer. In addition, this situation requires innovation and cooperation between education activists and the government in maintaining the education standards that have

been set [31]. According to Hodges, careful online learning planning includes not only identifying the content to be discussed but also tends to how to support various types of interactions that are important for the learning process. online learning recognizes that learning is a social and cognitive process, which is not just a matter of transmitting information [32]. Table 3 is a summary of the teachers' expectations regarding the implementation of online learning in Indonesia.

Table 3. The expectations of online learning implementation in the future

No	Expectancy
1	The government and institutions related to the implementation of education to more prepare facilities in online learning implementation, such as internet data packages and networking quality in the regions.
2	Extending the internet networking to remote area so that students and teachers do not get problems in implementing the online learning. If necessary, provide online learning support facilities such as phones for students and teachers.
3	The government should give more attention to the students' conditions with middle and lower economies so that they are able to participate in online learning without obstacles.
4	Hope that the implementation of online learning is not sustainable; this is due to the inadequate quality of the internet networking in some areas so that the learning process does not run effectively.
5	Online learning models can to be applied continue in the learning process so that it can be more effective and fun. Because in this modern era the use of IT has mushroomed, especially among high school students.

In addition, online learning integrates technology into the online teaching and learning process. The pedagogies must be raised with online tools, namely the suitability and ability of technology. It is crucial to ensure that the selected tools or resources help students achieve the desired results such as videos can help develop practical knowledge. Regarding the profession and linking educational theory to practice, chat rooms are beneficial for mutual support and cooperation within group members, while online forums are suitable to share the narratives that enhance the skill of noticing [33].

#### 4. CONCLUSION

This research revealed that the online learning implementation during the COVID-19 pandemic among senior high schools in Labuhanbatu Regency has not run well. There are many problems that need to be solved. They are including the readiness of teachers to use various platforms as online learning media, the quality of the internet networking, the availability of internet data packages for students, and the lack of smartphone or laptop facilities. Therefore, every element of society in Labuhanbatu needs to contribute a solution to the problems to improve and maximize the online learning activities during COVID-19 pandemic.




#### REFERENCES

- [1] World Health Organization (WHO), "Naming the coronavirus disease (COVID-19) and the virus that causes it," 2019. [Online]. Available: [https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-\(covid-2019\)-and-the-virus-that-causes-it](https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/naming-the-coronavirus-disease-(covid-2019)-and-the-virus-that-causes-it).
- [2] Worldometer, "COVID-19 Coronavirus Pandemic," Worldometer, 2020.
- [3] S. Olivia, J. Gibson, and R. Nasrudin, "Indonesia in the Time of Covid-19," *Bulletin of Indonesian Economic Studies*, vol. 56, no. 2, pp. 143–174, 2020, doi: 10.1080/00074918.2020.1798581.
- [4] R. Djalante *et al.*, "Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020," *Progress in Disaster Science*, vol. 6, 2020, doi: 10.1016/j.pdisas.2020.100091.
- [5] U. Anand *et al.*, "Novel coronavirus disease 2019 (COVID-19) pandemic: From transmission to control with an interdisciplinary vision," *Environmental Research*, vol. 197, 2021, doi: 10.1016/j.envres.2021.111126.
- [6] H. J. Wang, S. H. Du, X. Yue, and C. X. Chen, "Review and Prospect of Pathological Features of Corona Virus Disease," *Journal of Forensic Medicine*, vol. 36, no. 1, pp. 16–20, 2020, doi: 10.12116/j.j.issn.1004-5619.2020.01.004.
- [7] M. J. Sousa and Á. Rocha, "Digital learning: Developing skills for digital transformation of organizations," *Future Generation Computer Systems*, vol. 91, pp. 327–334, 2019, doi: 10.1016/j.future.2018.08.048.
- [8] N. Fujita, "Transforming online teaching and learning: towards learning design informed by information science and learning sciences," *Information and Learning Science*, vol. 121, no. 7–8, pp. 503–511, 2020, doi: 10.1108/ILS-04-2020-0124.
- [9] T. Cooper and R. Scriven, "Communities of inquiry in curriculum approach to online learning: Strengths and limitations in context," *Australasian Journal of Educational Technology*, vol. 33, no. 4, pp. 22–37, 2017, doi: 10.14742/ajet.3026.
- [10] R. N. Singh and D. C. Hurley, "The Effectiveness of Teaching-Learning Process in Online Education as Perceived by University Faculty and Instructional Technology Professionals," *Journal of Teaching and Learning with Technology*, vol. 6, no. 1, pp. 65–75, 2017, doi: 10.14434/jotlt.v6n1.19528.
- [11] P. Yannis and B. Nikolaos, "Quantitative and Qualitative Research in Business Technology: Justifying a Suitable Research Methodology," *Review of Integrative Business and Economics Research*, vol. 7, no. 1, pp. 91–105, 2018.
- [12] C. Gear, E. Eppel, and J. Koziol-Mclain, "Advancing Complexity Theory as a Qualitative Research Methodology," *International Journal of Qualitative Methods*, vol. 17, no. 1, 2018, doi: 10.1177/1609406918782557.
- [13] C. B. Thompson, "Descriptive Data Analysis," *Air Medical Journal*, vol. 28, no. 2, pp. 56–59, 2009, doi: 10.1016/j.amj.2008.12.001.




- [14] I. Safitri, R. Pasaribu, S. S. Simamora, and K. Lubis, "The effectiveness of android application as a student aid tool in understanding physics project assignments," *Jurnal Pendidikan IPA Indonesia*, vol. 8, no. 4, pp. 512–520, 2019, doi: 10.15294/jpii.v8i4.19433.
- [15] I. A. Leontyeva, "Modern distance learning technologies in higher education: Introduction problems," *Eurasia Journal of Mathematics, Science and Technology Education*, vol. 14, no. 10, pp. 1–8, 2018, doi: 10.29333/ejmste/92284.
- [16] P. Gómez-Rey, E. Barbera, and F. Fernández-Navarro, "Measuring teachers and learners' perceptions of the quality of their online learning experience," *Distance Education*, vol. 37, no. 2, pp. 146–163, 2016, doi: 10.1080/01587919.2016.1184396.
- [17] A. B. Amry, "The Impact Of WhatsApp Mobile Social Learning On The Achievement And Attitudes Of Female Students Compared With Face To Face Learning In The Classroom," *European Scientific Journal*, vol. 10, no. 22, pp. 116–136, 2014, doi: 10.19044/esj.2014.v10n22p%25p.
- [18] S. Gon and A. Rawekar, "Effectivity of E-Learning through WhatsApp as a Teaching Learning Tool," *MVP Journal of Medical Sciences*, vol. 4, no. 1, p. 19, 2017, doi: 10.18311/mvpjms/0/v0/i0/8454.
- [19] T. K. R. Singh and S. Chan, "Teacher Readiness on ICT Integration in Teaching-Learning: A Malaysian Case Study," *International Journal of Asian Social Science*, vol. 4, no. 7, pp. 874–885, 2014, [Online]. Available: <https://archive.aessweb.com/index.php/5007/article/view/2684>.
- [20] D. Adams, M. H. J. Tan, and B. Sumintono, "Students' readiness for blended learning in a leading Malaysian private higher education institution," *Interactive Technology and Smart Education*, vol. 18, no. 4, pp. 515–534, 2021, doi: 10.1108/ITSE-03-2020-0032.
- [21] D. Serhan, "Transitioning from Face-to-Face to Remote Learning: Students' Attitudes and Perceptions of using Zoom during COVID-19 Pandemic," *International Journal of Technology in Education and Science*, vol. 4, no. 4, pp. 335–342, 2020, doi: 10.46328/ijtes.v4i4.148.
- [22] N. Guzacheva, "Zoom Technology as an Effective Tool for Distance Learning in Teaching English to Medical Students," *Bulletin of Science and Practice*, vol. 6, no. 5, pp. 457–460, 2020, doi: 10.33619/2414-2948/54/61.
- [23] M. M. Archibald, R. C. Ambagtsheer, M. G. Casey, and M. Lawless, "Using Zoom Videoconferencing for Qualitative Data Collection: Perceptions and Experiences of Researchers and Participants," *International Journal of Qualitative Methods*, vol. 18, 2019, doi: 10.1177/1609406919874596.
- [24] I. N. M. Shaharane, J. M. Jamil, and A. S. S. M. Rodzi, "The application of Google Classroom as a tool for teaching and learning," *Journal of Telecommunication, Electronic and Computer Engineering*, vol. 8, no. 10, pp. 5–8, 2016.
- [25] D. A. Fitriningtiyas, N. Umamah, and Sumardi, "Google classroom: As a media of learning history," *IOP Conference Series: Earth and Environmental Science*, vol. 243, no. 1, 2019, doi: 10.1088/1755-1315/243/1/012156.
- [26] K. C. Chen and S. J. Jang, "Motivation in online learning: Testing a model of self-determination theory," *Computers in Human Behavior*, vol. 26, no. 4, pp. 741–752, 2010, doi: 10.1016/j.chb.2010.01.011.
- [27] S. McCarty, H. Obari, and T. Sato, *Implementing Mobile Language Learning Technologies in Japan*. Springer Singapore, 2017, doi: 10.1007/978-981-10-2451-1.
- [28] J. Cai, I. A. C. Mok, V. Reddy, and K. Stacey, *International Comparative Studies in Mathematics: Lessons for Improving Students' Learning*. Springer Cham, 2016, doi: 10.1007/978-3-319-42414-9.
- [29] R. E. Baticulon *et al.*, "Barriers to Online Learning in the Time of COVID-19: A National Survey of Medical Students in the Philippines," *Medical Science Educator*, vol. 31, no. 2, pp. 615–626, 2021, doi: 10.1007/s40670-021-01231-z.
- [30] C. J. Tanis, "The seven principles of online learning: Feedback from faculty and alumni on its importance for teaching and learning," *Research in Learning Technology*, vol. 28, 2020, doi: 10.25304/rlt.v28.2319.
- [31] R. C. Chick *et al.*, "Using Technology to Maintain the Education of Residents During the COVID-19 Pandemic," *Journal of Surgical Education*, vol. 77, no. 4, pp. 729–732, 2020, doi: 10.1016/j.jsurg.2020.03.018.
- [32] C. Hodges, S. Moore, B. Lockee, T. Trust, and A. Bond, "The Difference Between Emergency Remote Teaching and Online Learning," *EduCause*, Mar. 2020, [Online]. Available: <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>.
- [33] C. Carrillo and M. A. Flores, "COVID-19 and teacher education: a literature review of online teaching and learning practices," *European Journal of Teacher Education*, vol. 43, no. 4, pp. 466–487, 2020, doi: 10.1080/02619768.2020.1821184.

## BIOGRAPHIES OF AUTHORS






**Islamiani Safitri**    is a Lecturer at the Universitas Labuhanbatu. She was appointed lecturer in the university in 2014 and went on to pursue her graduate studies in physics teaching at the Institut Teknologi Bandung (ITB), Bandung. She is passionate about academic quality of learning of students and their development in the higher education settings. Islamiani's research interests in the character education, physics education, and teaching and learning. She can be contacted at email: [islamiani.safitri@gmail.com](mailto:islamiani.safitri@gmail.com).






**Ika Chastanti**    is a Lecturer at the Universitas Labuhanbatu. She was appointed lecturer in the university in 2015 and went on to pursue her graduate studies in biology education at the Universitas Negeri Medan (UNIMED), Sumatera Utara. She is passionate about academic quality of learning of students and their development in the higher education settings. Ika's research interests in the character education, biology science, and teaching and learning. She can be contacted at email: [chastanti.ika@gmail.com](mailto:chastanti.ika@gmail.com).






**Rohana**    is a Lecturer at the Universitas Labuhanbatu. She was appointed lecturer in the university in 2013 and went on to pursue her graduate studies in civic education at the Universitas Negeri Medan (UNIMED), Sumatera Utara. She is passionate about academic quality of learning of students and their development in the higher education settings. Rohana's research interests in the civic education, teaching and learning. She can be contacted at email: hanasyarif85@gmail.com.






**Lily Rohanita Hasibuan**    is a Lecturer at the Universitas Labuhanbatu. She was appointed lecturer in the university in 2010 and went on to pursue her graduate studies in mathematics education at the Universitas Negeri Medan (UNIMED), Sumatera Utara. She is passionate about academic quality of learning of students and their development in the higher education settings. Rohanita's research interests in the mathematics education. She can be contacted at email: lrohanita30@gmail.com.






**Irmayanti**    is a Lecturer at the Universitas Labuhanbatu. She was appointed lecturer in the university in 2010 and went on to pursue her graduate studies in mathematics education at the Universitas Negeri Medan (UNIMED), Sumatera Utara. She is passionate about academic quality of learning of students and their development in the higher education settings. Irmayanti's research interests in the mathematics education. She can be contacted at email: irmayantiritonga1@gmail.com.



**Sujarwo**    is a Lecturer at the Universitas Muslim Nusantara Al-Washliyah, Medan. He was appointed lecturer in the university in 2010 and went on to pursue his graduate studies in mathematics education at the Universitas Negeri Jakarta (UNJ), Jakarta. He is passionate about academic quality of learning of students and their development in the higher education settings. Sujarwo's research interests in the child education.



**Hamni Fadlilah Nasution**    is a Lecturer at the Department of Ekonomi Syariah, IAIN Padang Sidempuan. She was appointed lecturer in the university in 2010 and went on to pursue her graduate studies in mathematics education at the Universitas Negeri Medan (UNIMED), Sumatera Utara. She is passionate about academic quality of learning of students and their development in the higher education settings. Her research interests in the mathematics education.