

LEARNING ENVIRONMENT OF INDONESIAN UNIVERSITIES ADAPTIVE TO COVID-19 DISRUPTION

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Abstract

The Covid-19 pandemic has resulted in a paradigm shift in the implementation of the learning process at the school to university level. The policy of social distancing, or physical distancing (maintaining physical distance) to minimize the spread of Covid-19 forces the learning process in tertiary institutions to continue, but with distance learning. The learning process of most of the courses of many universities includes e-learning. However, the implementation of e-learning in many universities in Indonesia, of course, still encounters many obstacles besides the many benefits obtained. So far, the Open University (UT), which has implemented distance education, needs to know the obstacles to implementing distance learning from other universities in Indonesia. The information on these constraints is useful for UT to improve the quality of its learning. Therefore, this research examines the implementation of distance learning in other universities in Indonesia. The purpose of this study is to identify problems in the implementation of distance learning in other universities in Indonesia. In addition, this study also examines the perceptions and expectations of UT's mathematics education master's students towards the learning management system provided by UT. This study uses content analysis of several articles that have been published in indexed journals throughout Indonesia from 2019 to 2022, with focus about the implementation of distance learning during and after the pandemic from various universities as the focus of the study. Among these publications, the most dominant research design is qualitative. In addition, generally, the respondents are students and lecturers. The findings of this study inform that students' habit using gadgets or electronics in their daily lives makes it easy for them to adapt to online learning. Second, a good network is very important so that easy access to online lectures can be obtained anywhere and anytime. Third, the applications used in online learning are Google Classroom, Zoom, E-Learning, and WhatsApp, however for Indonesia Open University using platform Learning Management System (LMS). Fourth, the main obstacle for students in online learning is the unstable internet signal. Now, after the relative Covid-19 pandemic has passed, PJJ with e-learning has become a reliable learning alternative. The implications of the findings of this research are important for other University in Indonesia to take policy steps, that, distance learning has become a solution to educational problems, which is not only UT as a University provide distance learning, but also for all University. This research recommends other University in Indonesia to adapt to advances in information technology by facilitating students to be able to learn by means of distance learning, especially for courses that allow not face-to-face.

Keywords: Covid-19, online learning, University in Indonesia.

1 INTRODUCTION

At a time when the spread of Covid-19 was still occurring, the Indonesian government implemented social and physical distancing policies to stop the spread of Covid-19 (Hasrul, 2020; Levani et al., 2019). This restriction has an impact on various fields, including education in Indonesia. The impact of government policies due to COVID-19 is that educational institutions temporarily stop face-to-face classes and switch to online learning, this emergency period requires learning to be replaced with online learning to ensure the learning process continues. After the pandemic has relatively stopped, several educational institutions are still implementing online learning for some of their learning activities.

Online learning is a part of the distance learning process where learning uses electronic tools and the internet (Andriyani, Murti, Mustadi, Sukma, Gunarti, 2022). Online learning is an interaction between educators and students carried out by means of a network on an electronic device (Fathoni et al., 2021; Maulana & Hamidi, 2020).

The pandemic has changed human activities, making people realize the importance of technology in communication and information search. In every aspect of daily life, evidence shows that humans are no longer rigid about technology due to current developments. As a result of the pandemic, technology has shifted from the offline world to the online world, particularly in the fields of work, health, and education, including learning activities. Human activities did not pay attention to technology before, but after being hit by a pandemic, people are encouraged to use technology in communicating or seeking information, especially in a learning process.

Additionally, online learning in education program must inspire student to participate actively in the program's scheduled activities. To be able to participate in challenging coursework, students must also maintain learning mental stability, thus students must search for a supportive environment to complete their study work successfully. Increasing the role and activities of students in understanding the various media and technologies used in online learning greatly influences the success of implementing online learning. The transfer of providing education for students to online lectures certainly requires various facilities and means that can be accessed by students using the internet (Mansyur, 2020; Saragih et al., 2020).

This condition is also urgent to carry out new innovations and adaptations related to the use of available technology to support a learning process (Ahmed et al., 2020; Aji et al., 2020). The

essence of online learning is that every student can participate in class and access course materials at any time and from any location (Kurniasari et al., 2020). Using internet to access education expected will increase motivation and take care an educational quality of student throughout the pandemic (Hidayah et al., 2020).

Each university has different policies for conducting online learning. In addition to different policies, each tertiary institution also faces different obstacles as well. Even though there are still obstacles and problems in online learning, in 2023 after Covid-19 it has relatively diminished, several tertiary institutions are still implementing online learning for several subjects where learning can be carried out effectively online.

2 METHODOLOGY

2.1 Research Design

This research in accordance the principle of content analysis, which was focused on findings from numerous studies that had been published in scientific journals in Indonesia. This study follows five stages of scoping review (Arksey & O'Malley, 2005) follows the steps that have been carried out Nur et al (2021) that is; identifying research questions, identifying relevant articles, and selecting articles, mapping data, and compiling, summarizing, and reporting results.

2.2 Identifying research questions

This research begins by identifying related research questions as a guide in conducting a review of the scope of the study. Based on the results of previous research (e.g., Adler et al., 2016) helps decision-making to focus on the topic of study, subtopics, keywords, type and research design, characteristics and number of participants, data collection, and data analysis used in each article. The research questions used in this study are (1) what type and design, what research used? (2) who are the respondents? (3) how is the data collected (4) how is the data analyzed? (5) what topics are researched?

2.3 Identifying and Selecting Relevant Articles

The data sources in this study are articles published in indexed journals Sinta database (<https://sinta.kemdikbud.go.id/>) and has a rating of 1 to 6. Articles ranked at the top one or two journals have adequate peer-review with due international readability mostly written in English (Prahmana et al., 2020). The selection of journal articles in Sinta was considered because it was easy to find topics of study if traced through the Sinta database. Sinta was first launched

as a reference in analyzing research studies in various fields of science, including online learning. Obtaining relevant articles is gained through identifying articles in journals indexed by the Sinta database.

3 FINDINGS AND DISCUSSION

The results of the identification of relevant articles that fulfilled the criteria with the screening stage produced 5 journals with the Sinta 2 category (second place), 10 with the Sinta 3 category (third place), and there were 12 journals with the Sinta 4 category (fourth place). Articles with online learning studies that are relevant to the topic of this research are journals with an educational scope. These selected journals are published within a limited accreditation period from 2020 to 2022. Thus, the selection of articles is based on two criteria; load research topics related to online learning and published by Sinta on period 2020 to 2022. The information collected includes the name of the journal, year of publication, Geographical area of research implementation is visualized in tabular form using Microsoft Excel.

Table 1. Distribution of The Selected Journals

| No | The Name of Journal | Study | Location of Research | SINTA Index | Publication Years | Vol | Number |
|----|---------------------|---------------------------------------|------------------------------|-------------|-------------------|-----|--------|
| 1 | AKSIOMA | Mathematics Education | East Nusa Tenggara (Flores) | 2 | 2021 | 10 | 4 |
| 2 | EDUKASI | Education | West Kalimantan | 2 | 2022 | 20 | 1 |
| 3 | IQRA | Islamic Education | Central Sulawesi (Palu) | 2 | 2022 | 17 | 2 |
| 4 | TAZKIYA | Islamic Education | West Sumatra (Padang) | 2 | 2022 | 11 | 1 |
| 5 | JPPP | Educational Research and Development | Yogyakarta | 2 | 2022 | 6 | 1 |
| 6 | FIBONACI | Mathematics And Mathematics Education | West Nusa Tenggara (Mataram) | 3 | 2020 | 6 | 3 |
| 7 | JPIPS | Social Education Science Education | Ambon | 3 | 2020 | 12 | 2 |

| No | The Name of Journal | Study | Location of Research | SINTA Index | Publication Years | Vol | Number |
|----|---------------------|---------------------------------------|------------------------------|-------------|-------------------|-----|--------|
| 8 | JPIS | Social Education Science Education | Central Sulawesi (Palu) | 3 | 2020 | 17 | 2 |
| 9 | WACANA | Communication Studies | Jakarta | 3 | 2020 | 19 | 2 |
| 10 | CETTA | Educational Sciences | Bali | 3 | 2021 | 4 | 3 |
| 11 | PAI | Islamic Education | Central Java (Solo) | 3 | 2021 | 9 | 2 |
| 12 | CIVIC HUKUM | Law | Banten | 3 | 2022 | 7 | 2 |
| 13 | JRnDJE | Educational Research and Development | DKI Jakarta | 3 | 2022 | 8 | 2 |
| 14 | SCHOLARIA | Education | Central Java (Surakarta) | 3 | 2022 | 12 | 1 |
| 15 | SQUARE | Mathematics and Mathematics Education | West Nusa Tenggara (Mataram) | 3 | 2022 | 4 | 1 |
| 16 | PLACENTIUM | Health Sciences | Central Java (Surakarta) | 4 | 2020 | 8 | 2 |
| 17 | BIODIK | Biology Education | Jambi | 4 | 2020 | 6 | 2 |
| 18 | BIOMA | Biology Education | West Sulawesi | 4 | 2020 | 2 | 1 |
| 19 | DEDIKASI PENDIDIKAN | Education | DKI Jakarta | 4 | 2020 | 4 | 2 |
| 20 | KAJIAN ILMIAH | Education | North Sumatra (Medan) | 4 | 2020 | 1 | 1 |
| 21 | TARBIYAH WA TA'LIM | Education and Learning Research | North Sumatra (Medan) | 4 | 2020 | 7 | 3 |
| 22 | EDUEKSOS | Social Education Science Education | West Java (Cirebon) | 4 | 2021 | 10 | 1 |
| 23 | EDUKATIF | Educational Sciences | West Java (Karawang) | 4 | 2021 | 10 | 6 |

| No | The Name of Journal | Study | Location of Research | SINTA Index | Publication Years | Vol | Number |
|----|---------------------|------------------------|-------------------------|-------------|-------------------|-----|--------|
| 24 | EMIK | Education | Central Java (Magelang) | 4 | 2021 | 3 | 2 |
| 25 | JESYA | Economy | Central Java (Semarang) | 4 | 2021 | 4 | 2 |
| 26 | JPTM | Mechanical Engineering | Central Java (Semarang) | 4 | 2021 | 11 | 1 |
| 27 | JAMBURA | Education | North Sulawesi | 4 | 2020 | 2 | 1 |

3.1 Mapping Data, and Compiling

The grouping of information data was carried out based on research objectives, characteristics of the population or sample, methodology, and important findings from each article are discussed, and analyzed based on content (Ryve, 2011 in Nur et al., 2021); design and type of research, research participants, number of samples, data collection, data analysis, research topics, and keywords. The articles were then analyzed and reviewed substantively on the research findings. Data analysis was done manually with priority on abstracts, methods, and conclusions as important information from an article.

Table 2. The Research Objectives and Important Findings from each Article

| No | Research Objectives | Important Findings from each Article |
|----|---|--|
| 1 | to find out the effectiveness of distance learning during the Covid-19 pandemic for students of mathematics education at the University of Flores (Tute et al., 2021) | The effectiveness of distance learning during the Covid 19 pandemic for education students Mathematics at the University of Flores is very effective from the aspects of the facilities used, human resources, and student economic life to support the distance learning process. |
| 2 | To describe the advantages and disadvantages of online learning during the COVID-19 pandemic at SMP Negeri 1 Bonti (Praditama et al.,2022) | The benefits of online learning, namely students can take part in learning from home, have more time to do the task, and more relaxed inside, follow learning. The obstacle to online learning is the difficulty of networking internet, not all students have gadgets, lack of control over ethics and courtesy of students, as well as not optimal delivery of material. |
| 3 | To examine the use of technology in the learning system in higher education | Uneven provision of facilities in the form of supporting infrastructure in the use of technology in education and the unpreparedness of human resources to use technology |

| No | Research Objectives | Important Findings from each Article |
|----|---|---|
| | which are still not optimally and evenly utilized both in terms of equipment and management. As well as a little about the problems related to the use of e-learning as a learning model applied in universities (Fahmi, et al., 2022). | information and communication in the implementation of learning. This is what makes the obstacles and challenges that occurred during the implementation of the e-learning in university during the pandemic. |
| 4 | To find out the difficulties of students taking online lectures during Covid-19, especially Program students Early Childhood Islamic Education Studies State Islamic Institute Padangsidempuan (Ikawati & Dalimenthe, 2022). | The difficulties experienced by students the most are internet signal and data quota. Difficulties in online learning among them are signal, network, and data quota issues for accessing Google Meet or Zoom. Due to the poor internet signal, many students are busy looking for a place with a strong network so that you can access information during lectures online. The solution given, i.e., the lecturer chose to share the material only through the WhatsApp application. In this case, explanations of material from lecturers are sometimes not conveyed effectively and efficient. |
| 5 | To analyze student perceptions towards online lectures as a means of learning during covid-19 (Andriyani et al., 2022). | Students accustomed to using learning technology; easy access anywhere and anytime during the process learning if the network is good; application used in online learning; student barriers during implementation online learning; the negative impact of online learning; and student expectations of online learning. |
| 6 | To analyze student involvement and response in online learning using Google Classroom during the Covid-19 Pandemic (Febrilia,et al., 2020). | Student involvement in online learning during the Covid-19 period was quite good characterized by high enough student participation in asking, answering lecturer questions, collect assignments according to deadlines, active in inter-discussion forums students and lecturers as well as the emergence of various positive attitudes that exist in themselves student. Implementation of lectures using Google Classroom gets positive response and full involvement of students because it provides an atmosphere new to their lectures, making it easier for them to access lecture materials anytime and anywhere. Even so, there are still some drawbacks implementations of online learning. |
| 7 | To identify obtaining information constraints and the impact of the learning process teaching online at | There are several obstacles and impacts experienced by students and lecturers in online learning activities, namely the lack of facilities and infrastructure and unstable signal, while the impact on students is the increase in the cost of |

| No | Research Objectives | Important Findings from each Article |
|----|--|--|
| | home due to the COVID-19 pandemic (Dewi, 2020). | buying internet quota, lack of understanding of lecture material and too many assignments. Obstacles for signal lecturers are not stable, unprepared human resources and lack of infrastructure owned by students, impact on lecturers are syllabus that is not appropriate, giving grades that are not objective and decreasing the quality of learning. |
| 8 | to analyze the implementation of online learning during the Covid-19 pandemic in the PKn Education Study Program of Tadulako University (Palimbong, , 2020). | The implementation of learning carried out during the Covid-19 pandemic in PKn Education uses an online model with applications in the form of: LMS, zoom, WhatsApp, telegram, google classroom. The implementation of online learning went smoothly, although it was felt less than ideal. Student learning outcomes vary from unsatisfactory, sufficient to good. The obstacles faced by students and lecturers in online learning include: the availability of internet quota, unstable networks, and supporting tools such as gadgets and laptops. Online learning is considered effective if the internet network system is maintained or in the area where students live, but a more varied model is needed to remain attractive if used in the long term. |
| 9 | To examine the effectiveness of online lectures during the COVID-19 pandemic (Elen & Putri, 2020). | Online lectures during the COVID-19 pandemic are less effective in terms of providing material but are quite acceptable given the limited space for people today. Based on the results of this study, we suggest that the government should further improve the quality of online lectures during the COVID-19 pandemic. The results obtained are also more satisfying. |
| 10 | to find the right formulation of the online lecture system in the future (Supada et al., 2021) | -adoption of information technology as a component support in implementing e-learning during the Covid-19 pandemic positive and real contribution to students in terms of learning motivation. - more intensive e-learning learning during the covid-19 pandemic carried out with a variety of lecturers' creativity, the quality of student learning will be maximally achieved. - role lecturers in carrying out various online learning innovations can grow enthusiasm and motivation for student learning. |
| 11 | to determine how the strategies carried out during distance learning (PJJ) during the Covid-19 pandemic | The strategy for implementing distance learning (PJJ) in Salatiga is to take advantage of technological developments such as: zoom meetings, WhatsApp groups, google forms, |

| No | Research Objectives | Important Findings from each Article |
|----|--|--|
| | outbreak (Khamid, & Umam 2021). | google classroom, google meet, and YouTube. As for the positive or supporting impacts. |
| 12 | to know about how the implementation hybrid learning lectures during the Covid 19 pandemic which were held in semesters even academic year 2021/2022 (Bahrudin dan Legiani, 2022) | Hybrid learning lectures that are implemented in the Pancasila and Citizenship Education study program, this is going well implemented in the implementation of hybrid learning lectures starting from the planning stage lectures, the lecture implementation stage, and the evaluation stage always put forward quality to achieve learning achievement goals or competencies from the eye university, although there are still some relatively small obstacles in implementation hybrid learning lectures starting from the constraints experienced by lecturers, students, and facilities infrastructure, but these obstacles can still be resolved properly through a solution that applied by lecturers in implementing hybrid learning lectures. |
| 13 | to get an answer empirical: (1) The Effect of Distance Learning on Learning Outcomes Students during the Covid-19 Pandemic, (2) The Effect of Learning Interest on Student Learning Outcomes during the Covid-19 Pandemic, and (3) Influence Distance Learning and Interest in Learning (Yusuf & Sari, 2022) | (1)The effect of PJJ and Learning Interest simultaneously on learning outcomes student. This indicates that the more creative the Lecturer is in Utilizing learning media will foster student learning interest which in turn can improve student learning outcomes. (2) The influence of PJJ partially on student learning outcomes. This matter indicates that the more creative and varied the lecturers are in using learning media and methods during PJJ, the more enthusiasm students follow the learning and, in the end, get improve student learning outcomes. (3) The influence of interest in learning partial to student learning outcomes. This indicates that the higher, the more enthusiasm, and enthusiasm in participating in PJJ will improve student learning outcomes. |
| 14 | to answer the formulation of the problem (1) Analyzing the distance learning practice during the Covid-19 pandemic era and (2) Identifying the role of teachers, schools, and students in implementing learning distance in the perspective of Anthony | The use of simple media in the form of WhatsApp, giving simpler assignments and assessments is a realistic choice for teachers during online learning. Participation of parents would be an important point in the child's education process. |

| No | Research Objectives | Important Findings from each Article |
|----|--|--|
| | Giddens Process (Astutik, et al., 2022) | |
| 15 | To find out whether there is a difference in readiness between Mathematics students towards face-to-face learning from the pandemic to the Covid-19 endemic period (Putri, & Abdurahim, 2022). | There is no difference in readiness between students of the Education Study Program Mathematics, Teaching and Education Faculty, Mahasaraswati University Denpasar, direction of readiness respondents is towards ready for face-to-face learning in endemic times. |
| 16 | to find out the impact of online learning on students (Argaheni, 2020). | The impact of online learning on students; student become passive, less creative and less productive; accumulation of information / concept less useful for students; students experience stress; as well as existence increase in language literacy skills of students. This can be an evaluation so that online learning can sought to be well received by students without reducing the essence of education itself. |
| 17 | To obtain an overview of the implementation of online learning in Biology Education Study Program, Faculty of Education, Jambi University as an effort to suppress the spread of co19 in Higher Education (Sadikin, & Hamidah, 2020) | (1) students already have the basic facilities needed to take part in online learning; (2) online learning has flexibility in its implementation and is able to encourage the emergence of independent learning and motivate students to be more active in learning; and (3) distance learning encourages the emergence of social distancing behaviours and minimizes the emergence of student crowds so that it might be able to reduce the potential for the spread of Covid-19 in the university environment. Weak supervision of students, lack of signal strength in remote areas, and the high cost of internet credits challenge in online learning. Increasing learning independence, interest and motivation, the courage to express ideas and questions other benefits of online learning. |
| 18 | To explore the impact of the Covid-19 pandemic on learning in higher education. (Firman, 2020) | The impact of the Covid-19 Pandemic on learning includes: (1) Change face-to-face learning into online learning; (2) Increased use technology in learning; (3) Increasing student learning independence. The results, this research can be used as material for consideration in designing learning in new normal era. |
| 19 | To determine the various types of applications used in the online learning process in university during the | There are 9 types of applications that are often used in the online learning process, that are often used include (1) zoom, (2) google classroom, (3) WhatsApp group, (4) |

| No | Research Objectives | Important Findings from each Article |
|----|--|--|
| | emergency period to prevent the spread of Covid 19. (Fuadi, 2020) | google meet, (5) skype, (6) Webex, (7) email, (8) Edmodo dan (9) Cam studio. |
| 20 | To discuss learning in university in the network (online) during the Covid-19 pandemic by using studies from several literature sources. (Wijayanti, 2020) | The implementation of online learning still has obstacles in terms of internet connection, applications used, quality of presentation and topic facilities material. |
| 21 | To explore student perceptions of implementation online learning during the ongoing Covid-19 pandemic for approximately one semester. (Saragih, 2020) | Majority students have positive perceptions regarding the implementation of lectures online in two aspects, namely aspects of the teaching and learning process and aspects lecturer capability but has a negative perception in the aspect of facilities and infrastructure. Limitations of internet network and learning tools owned by students is an obstacle for students in take online courses. Researchers recommend that lecturers can provide material that students can access with using convenient, flexible, and unnecessary applications large bandwidth and quota to avoid unattainability competence. |
| 22 | To describe the difficulties faced by IAIN Syekh Nurjati Cirebon students in online learning during the COVID-19 pandemic. (Ratnawati, & Utama, 2021). | There are several difficulties faced by students in online learning that can be classified into technical difficulties, adaptation difficulties and teacher unpreparedness. To overcome these difficulties, teachers need to make changes in learning strategies that can support the acceleration of adaptation students in online learning. Besides that, teachers are also expected to improve their ICT skills so they can use the media more varied online learning according to the technical difficulties faced. |
| 23 | To analyze and describe student responses in online PAI learning during the Covid 19 pandemic. (Permatasari, 2021) | An effective online learning implemented in learning in tertiary institutions. Most students feel satisfied, and students support sustainability of online learning. This is supported by the availability of facilities and media support for learning continuity. With the availability of good facilities to help students well to streamline their study time. Although several studies reveal barriers and the ineffectiveness of online learning during a pandemic. However, different results will be found in environment, availability of facilities, access, teaching competence of |

| No | Research Objectives | Important Findings from each Article |
|----|---|--|
| 24 | To discuss how students adapt in relation to various policies, the impact of online learning, and students' strategies in maintaining body immunity during the Covid-19 pandemic (Kadir, & Idrus, 2021). | lecturers, and student learning conditions more conducive to support the achievement of learning objectives. During the Covid-19 pandemic, students experienced many changes. Students themselves adapted to various emerging policies related to Covid19, which include not only government and lecturing policies, but also internal student organization policies. For students, online lectures have impacted not only on the learning process, but also on student health. Various strategies were carried out by students to maintain body immunity during the Covid-19 pandemic policy, namely complying with health protocols; implementing a healthy lifestyle; managing stress; and taking supplements. It is argued in this articles that to prevent the spread of Covid-19, students adapt to the conditions that occur during the Covid-19 pandemic and apply related strategy. Lecturers also need to create a friendly environment and creative method of teaching, so that students can enjoy online learning on that limited screen. |
| 25 | To analyze perceptions students towards the application of online learning, the use of applications appropriate in online learning and the advantages and disadvantages in application of online learning during the Covid-19 pandemic. (Yunus, 2021) | Perception students towards online learning by 46.9% answered helping understand lecture material. 39.1% answered online learning can increase learning motivation, only 21.6% of students answer online learning runs effectively. applications deemed effective in online learning are google classroom, WhatsApp, and SIP. Online learning has advantages and obstacles in its implementation. |
| 26 | To know or evaluate how the practicum learning process is face to face during the period pandemic. (Budiarjo, & Hidayatullah, 2021). | From preparation, students already understand and are aware, then they can fulfill the required equipment prepared to maintain Health protocols in the learning process, and implementation learning is good with a note of the need for improvement to be more effective in the protocol Health and material delivery. |
| 27 | To know implementation of online learning during the Covid-19 pandemic in universities (Yunus et al., 2022) | In online learning, lecturers often using various learning models such as inquiry, assignment, and problem-solving learning. Student learning motivation is at a moderate level. The problem of online learning is dominant in internet network availability. The advantages of online learning can prevent transmission of Covid-19 and spending more time |

| No | Research Objectives | Important Findings from each Article |
|----|---------------------|--|
| | | with family. Type applications used in online learning, namely WA groups, zoom, google meet/classroom and e-learning. Based on the results obtained, it is necessary to develop facilities that are evenly distributed throughout Indonesia. |

4 RESULTS AND DISCUSSION

The effectiveness of distance learning during the Covid 19 epidemic for university, can be felt by lecturers and students. However, it is strongly influenced by the aspects of the installation used, the finances that students must spend cause of the increasingly expensive cost of purchasing internet quota, and the quality of students' economic life, all of which affect the quality of the distance literacy process.

The benefits of online learning can be had because the learning process can be followed by students to study from home, have more time to do assignments, and be more relaxed inside, following lectures. The uneven provision of installations in the form of support structures in the use of technology for education and the financial unpreparedness of the people involved in utilizing information and communication technology in the implementation of lectures, are often obstacles. This is what makes the obstacles and challenges that were passed during the perpetration of the e-learning in university during the epidemic. Therefore, the most difficulties experienced by students and lecturers are signal, network and data sharing problems to penetrate Google Meet or Zoom.

Due to the poor internet signal, many students are busy looking for a place with a strong network so they can get information while studying online. Finally, many student lecturers agreed to choose to send lecture material only via the WhatsApp operation, but the material from lecturers was sometimes not conveyed properly and effectively.

For students who are familiar with the use of learning technology; easy to access lessons anytime, anywhere during the learning process if the network is good. Using an online model with applications in the form of: LMS, google class, zoom meetings, WhatsApp groups, google forms, google meetings, skype, Webex, email, Edmodo, Cam studio, and YouTube. Video

conferencing during the COVID-19 pandemic was less efficient in terms of documentation, but very acceptable given the current limited space for people to move.

Some universities state that student participation in e-learning during the Covid-19 period was quite good, indicated by the high participation of students in asking questions, answering questions from teachers, submitting papers on time, actively participating in discussion forum activities between students and teachers and the emergence of many positive attitudes among students. Implementation of classes using Google Classroom received positive responses and full participation of students, because it created a new atmosphere in the classroom, making it easier for them to access subject matter anytime, anywhere and anywhere. Even so, there are still weaknesses in the implementation of e-learning. The e-learning rollout went smoothly, although it didn't seem ideal. Student academic results range from unsatisfactory, moderate to good. However, more intensive online learning during the Covid-19 season has been achieved with the creativity of many different teachers, so that the quality of student learning is maximized. The role of lecturers in presenting various e-learning innovations can increase student learning enthusiasm and motivation.

The research results of several researchers from several universities stated that the impact of online learning on students; students become passive, less creative, and less productive; accumulate information/concepts that are not useful for students; stressed students; and improve students' language skills. It can be used as an assessment so that online learning can be well received by students without reducing the nature of education.

Implementation of education at several universities after the pandemic, several universities in Indonesia have implemented various adaptive measures to ensure students can continue their education safely. How several universities overcame these challenges, and their adaptive steps are:

1. Online Learning Platforms: Universities in Indonesia have used online learning platforms, such as video conferencing tools and learning management systems. This platform allows students to participate in virtual lectures, engage in discussions, and access learning materials remotely.
2. Virtual Classrooms: To mimic the traditional classroom experience, universities have set up virtual classrooms. Professors hold live sessions where students can interact with each other and ask questions in real-time.

3. **E-Libraries:** Universities have strengthened their digital library resources, giving students online access to large collections of books, journals, and research materials. This ensures that students can continue their studies and research projects even if physical access to the library is limited.
4. **Remote Exams:** To ensure fairness and integrity, the university has implemented various remote exam methods. This includes online End of Semester Exams, timed assessments, and there is even a provision for video proctoring to ensure academic honesty.
5. **Student Support Services:** Universities have also enhanced their online student support services. Academic advisors, counselors, and tutors are available virtually to provide guidance, support, and assistance to students facing challenges during this time.
6. **Flexible Schedule:** Recognizing the various obstacles students face, universities offer more flexibility in study schedules. Recorded lectures and asynchronous learning options allow students to adapt their studies to their individual circumstances.
7. **Health and Safety Measures:** Universities in Indonesia have implemented strict health and safety protocols for on-campus activities. This includes mandatory mask wearing, physical distancing, and regular sanitation efforts to create a safe environment for those who need to access certain facilities or attend practice sessions. However, in 2023, many universities will no longer be so strict.

Although the transition to an adaptive learning environment is not without challenges, Indonesian universities have shown great resilience in leveraging technology and finding alternative ways to ensure education is not disrupted. They continue to look for innovative solutions to provide students with a holistic learning experience, even in challenging times like these.

The good aspect of online learning are: (1) students already have the basic facilities needed to take part in online learning; (2) e-learning is flexible in its implementation and can encourage independent learning and motivate students to study harder; and (3) distance learning encourages the emergence of social distancing behavior and minimizes the emergence of crowds of students to reduce the potential for the spread of Covid-19 in the university environment. Increased independence, interest and motivation to learn, courage to express opinions and ask questions, other benefits of online learning.

4.1 Perception of Students

Most students have a positive perception of the implementation of online courses in two aspects, namely the teaching and learning process and teacher competence, but have a negative perception of the opportunities for facilities and infrastructure. Limitations of the internet network and learning facilities owned by students are obstacles for students who want to take online lectures.

4.2 Recommendation

Recommended that lecturers can make material accessible to students by using applications that are simple, flexible, and do not require large bandwidth and quotas to avoid unattainable skills. Students experience several difficulties when learning online, which can be categorized into technical difficulties, adaptation difficulties, and lack of teacher preparation. To overcome these challenges, teachers need to make changes to learning strategies that can help motivate students to adapt to online learning. In addition, teachers are also expected to improve their Information and communications technology (ICT) skills so that they can use a wider variety of online learning materials depending on the technical difficulties they face. Online learning is effectively implemented in learning in university. Most students are satisfied, and students support continuing online learning. This is supported by the availability of facilities and materials that support continuous learning. With the availability of good facilities, students can help streamline their study time. Although several studies have shown that there are obstacles and inefficiencies of online learning during the pandemic. However, different results will be found in the environment, availability of facilities, accessibility, teacher pedagogical competence and student learning conditions that are more supportive for achieving these learning objectives.

5 CONCLUSION

Most students are satisfied, and students support the continuation of online learning. This is supported by the availability of supporting facilities and media for the continuity of learning. The availability of good facilities can help students to streamline their study time. Although several studies have revealed the obstacles and ineffectiveness of online learning during a pandemic. However, different results will be found in the environment, availability of facilities, access, teaching competence of lecturers, and student learning conditions which are more conducive to supporting the achievement of learning objectives.

Based on the results obtained, the Open University (UT) as a university that has implemented online learning for its students from the start, needs to develop facilities that are evenly distributed in all regional UTs throughout Indonesia. With adequate facilities for students who live in remote areas, UT students will be able to get a good learning process and produce good learning outcomes too.

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