

Online Learning During the Covid-19 Pandemic and Its Effect on Future Education in Indonesia

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Abstract

The Covid-19 pandemic forced all universities in Indonesia to divert their learning process from face to face to online mode within a limited resource and in a very short time. The approach, methods, and mechanisms of learning process, which have to be adjusted, during the Covid-19 are extremely varied within university. The study was conducted to explore the implementation of online learning in Indonesia during Covid-19 pandemic. In order to get information on how the institution, lecturers and students face this situation, an online survey was conducted. The questionnaire contained some aspects of approaches, methods and mechanisms of online learning; provisions of learning materials; resources such as devices for accessing online learning, internet connection, the cost of the internet connection; as well as the usability of online learning after the Covid-19 pandemic. There were 828 respondents participating in the survey. The participants involved in the survey were lecturers (51.21%) and students (35.39%) from various universities and the rest 13.41% from other institutions in Indonesia. A case study of Universitas Terbuka on the strategies, methods, and techniques of organizing online learning during the Covid-19 pandemic was discussed specifically to enrich the information. Based on the information from online survey and a case study of Universitas Terbuka, the learning strategies, methods and technics in online learning in the future, after the Covid-19 pandemic have been addressed.

Keywords: Covid-19 pandemic, online learning.

1. Introduction

The Covid-19 pandemic has impacted the education in all over the world, including in Indonesia. The education system has been disrupted. Moreover, the impact of Covid-19 on the education sector are limited opportunity for education resulting from school shutdowns, “incomplete” learning due to online learning activities, and health issues. Surviving during the Covid-19 requires building support communities, sharing tools and knowledge, and listening to different voices (Bozkurt, 2020).

In Indonesia, this impact of Covid-19 was officially announced by the President of the Republic of Indonesia on March 2, 2020, when the case of the first patient of Covid-19 in Indonesia appeared. This situation has a direct impact on all sectors of life, such as economic, social, and education. On March 9, 2020 the Ministry of Education and Culture has issued a regulation addressed to the head of the schools and universities to implement working from home and learning from home.

Referring to the policy that was issued by the government, learning process in the elementary school through university has changed totally from face to face into online learning. This condition has created a huge problem for all schools and even universities, particularly for those that never applied online learning at all. Not all teachers and lecturers are ready to implement online learning and it has caused some barriers, for examples no sufficient knowledge of online learning methods, lack of supporting resources, such as computer devices and internet connection. Therefore, how the education sector, especially in higher education level, can overcome this extraordinary and unexpected situation, is a very important issue to be addressed in this book chapter.

In Indonesia, with the number of populations of 260 million, the Covid-19 pandemic affecting 4,621 universities that spread throughout Indonesia which serves 8.3 million students (Directorate General of Higher Education, 2020). This drastic change of learning process from face to face to online learning for 8.3 million students is not an easy task. Out of 4,621 universities in Indonesia, only a small number of them who has resources and capacity in organizing online learning. This book chapter aims to describe the implementation of online learning in Indonesia during Covid-19 pandemic and deliver some possible recommendations for practicing effective online learning in the future based on the results of the study.

2. The fact of online learning usage during the covid-19 and its expectation for future higher education in Indonesia

Referring to the first aim of this study, i.e. describing the implementation of online learning in Indonesia during Covid-19 pandemic, this chapter discusses the situation that faced by universities in Indonesia in carrying out the learning process during the Covid-19 pandemic. For examples, how a university, whether in institutional level as well as lecturers, innovates in implementing its learning process during this crisis. With limited resources and in a very short time, only one month, all universities were forced to divert their learning process from face to face to online mode. Meanwhile, the approach, methods, and mechanisms are extremely varied within university, which have to be adjusted.

2.1. Methods

In order to get information on how the institutions, lecturers and students face this situation, an online survey was conducted. There were 828 respondents participating in the survey. The participants involved in the survey were lecturers (51.21%) and students (35.39%) from various universities and the rest 13.41% from other institutions in Indonesia. The questionnaire contained 32 questions in the form of open and closed questions using Survey Monkey and carried out for three weeks.

The questionnaire explored some aspects of approaches, methods and mechanisms of online learning; provisions of learning materials; resources such as devices for accessing online

learning, internet connection, the cost of the internet connection during the Covid-19 pandemic; as well as the usability of online learning after the Covid-19 pandemic.

A case study of Universitas Terbuka on the strategies, methods, and techniques of organizing online learning during the Covid-19 pandemic was discussed specifically to enrich the information. Based on the information from online survey and case study of Universitas Terbuka, the learning strategies, methods and technics in online learning in the future, after the Covid-19 pandemic have been addressed

2.2. Finding and discussion

Based on the survey results, there are interesting data to be presented in this chapter related to demographic information from respondents / participants. The presentation of the results of this survey is also divided into three parts, namely the use of online learning before the covid-19 pandemic, during the covid-19 pandemic, and online learning expectations after the covid-19 pandemic.

2.2.1 Participants

The total number of respondents who participated in this survey was 828 respondents. The respondents were lecturers (51.21%) and students (35.39%) from various universities and the rest 13.41% from other institutions in Indonesia, consisting of 41.79% male, and 58.21% female. Most of the respondents were in the age range of 31-35 years (19.32%) and 26-30 years (17.27%).

Table 1.

Institutional Status

Institutional Status	Responses	
Public University	48.67%	403
Private University	31.04%	257
Academy	6.88%	57
Others	13.41%	111
	Answered	828

The data shows that almost half of the respondents are from public university. Meanwhile, 31.04% and 6.88% came from private universities and academics. Based on Table 2, it shows that the location of the respondents' institutions mostly came from the islands of Java (54.95%) and Sumatra (26.45%). This is quite reasonable considering that most universities in Indonesia are located on these two islands.

Table 2.

Institution's Location

Institution Location	Responses	
Java	54.95%	455
Sumatra	26.45%	219
Borneo	1.09%	9
Bali	0.36%	3
Nusa Tenggara	3.86%	32
Sulawesi	3.50%	29
Papua	0.24%	2
Others	9.54%	79
	Answered	828

2.2.2 Online Learning before the Pandemic Time Covid-19

Information on how higher education institutions have used online learning before the Covid-19 pandemic is very important to map. Thus, to what extent can higher education institutions in Indonesia quickly provide online learning services when the Covid-19 pandemic occurs? Some interesting data regarding the utilization of online learning before the pandemic can be seen in table 3 and 4.

Based on the survey results, it can be seen that as many as 61.11% of respondents stated that their institution had online learning before the Covid-19 pandemic, as shown in Table 3.

Table 3.

Utilization of Online Learning before the Pandemic Covid-19

Online Learning	Responses	
Yes	61.11%	506
No	38.89%	322
	Answered	828

The Indonesian government has indeed issued various laws and guidelines that encourage universities to implement distance learning, but not many universities take advantage of it. One of the programs is called SPADA which is a program to encourage the development and dissemination of open educational resources or OER, *massive open online courses* (MOOCs) and online courses. Until now, there are more than 200 universities that participate in this program. Moreover, the establishment of Indonesia Higher Education and Research Network – INHERENT in 2004 has also contribute as a network of universities from various provinces in Indonesia. In 2011, more than 300 universities joined in INHERENT (Belawati & Nizam, 2020).

However, the use of online learning in these institutions before the pandemic period was still very limited, where most of them only used 25% of online learning and the rest was face-to-face. In fact, as many as 21.86% of respondents stated that in their universities they have never used online learning.

How long has a higher education institution been using online learning as part of the learning process is shown in Table 4 The data shows that the largest composition is less than 1 year, as many as 32.62% of respondents. However, an interesting finding is that 27.84% of respondents, mostly from private universities, stated that they have used online learning for more than 8 years.

Table 4.

The Length of Time That Higher Education Institutions Have Used Online Learning before the Covid-19 Pandemic

Online learning usage	Responses	
< 1 year	32.62%	184
1-3 years	25.71%	145
4-7 years	13.83%	78
> 8 year	27.84%	157
	Answered	564
	Skipped	264

2.2.3 Online learning during the Covid-19 pandemic

The Covid-19 outbreak has directly influenced the education system, including the practice of teaching learning at all levels. The emergency remote education has become one of the best concepts to be practiced, including in Indonesia, to ensure the continuity of education (Bozkurt, et.al, 2020). The Indonesian government, through the Ministry of Education and Culture, launched a policy of transforming the school practice into online learning for the first time on 2 March 2020 when the Covid-19 was confirmed to have spread in Indonesia. In the

following week, the Minister published a letter of circulation about schools' activities from home, and starting from 17 March all students were totally doing school activities from home. In the early April, the pandemic had spread to all 34 provinces in the country. Regarding the learning activities in higher education, there were 832 offering online learning and since 9 April 2020, 98% higher education institutions had applied online learning system.

The Ministry also conducted a study on the needs and programs, especially for higher education, to be developed during the pandemic situation. First, the Indonesian government focused on the learning access for the frontier, outermost, and developed regions. As an archipelago, the number of students living in such regions is high. Second, the government's supports were also given in the form of funding for students and teachers' internet connection and students' school fees. The funding was allocated for more than 1,000 students from semester 3, 5, and 7. For teachers, trainings on online learning are conducted with 107,054 lecturers. Third, the government focused on building the infrastructures, such as strengthening the online platform (SPADA), servers and bandwidth, as well as national webinar platform (Umeetme, CloudX), and also preparing Indonesia Cyber Education (ICE). Institute. Last, implementing the program of teaching campus to support the basic education.

The descriptions of the Indonesian government's initiatives during the Covid-19 outbreak show that the government has concerned with the education aspects. However, the information about the students' and teachers' experiences in teaching learning practices is also necessary as the information from different perspectives. The following are the results of the survey conducted in this study. The study focused on some teaching learning aspects during the Covid-19 outbreak divided into five main aspects, i.e. the modes of teaching learning activities, the access of learning materials, the practice of online learning, the students' learning assessments, and institution's partnerships.

2.2.3.1. Modes of Learning

The Covid-19 outbreak has changed the learning models carried out in schools. Based on the survey results in this study, during the pandemic, 91.79% of respondents stated that they did online learning, while 7% did learning in the form of a combination of face-to-face and online learning or blended learning. Some respondents stated that they continued to do face-to-face learning, as much as 0.85%, and the remaining 0.36% stated that they apply other learning models.

Table 5.
Online Platforms

Learning Management System (LMS)	Percentage
Moodle	30.19%
Blackboard	1.81%
TalentMS	2.05%
Dacebo	0.48%
LMS365	11.71%
Unknown	22.46%
Others	31.28%

Table 5 shows the percentage of the learning management system they apply to conduct the online learning. The results show that 30.19% of the respondents use Moodle LMS, while 11.71% apply LMS365 for their learning activities. Others stated that they use Blackboard, TalentMS, and Dacebo. More than 50% chose unknown and others. From further explanation provided in the questionnaire, some respondents mentioned some other platforms they used during the pandemic situation, such as Microsoft Teams, Google Classrooms, WhatsApp Web, Eldiru (local), Schoology, and internal platforms developed by the institutions. Some respondents admitted that there are some benefits of using LMS for their learning activities, i.e. efficient distribution of learning materials, more flexible, and effective social interaction among students.

The following table describes the practice of online learning in terms of the communication methods.

Table 6.

Online Communication Method

Communication Method	Responses	
Asynchronous	19.57%	162
Synchronous	33.70%	279
Combination between Asynchronous and Synchronous	44.32%	367
Others	2.42%	20
Answered		828

Table 6 explains the methods of the online communication between teachers and students, whether asynchronous or synchronous. Asynchronous learning is a learning technique in which the online communication is done indirectly, while synchronous learning is done directly and in “real time”. The data show that the method of online communication the respondents used was dominated by the combination between both asynchronous and synchronous learning. Furthermore, learning platforms the respondents used for synchronous are also various as described in the following chart.

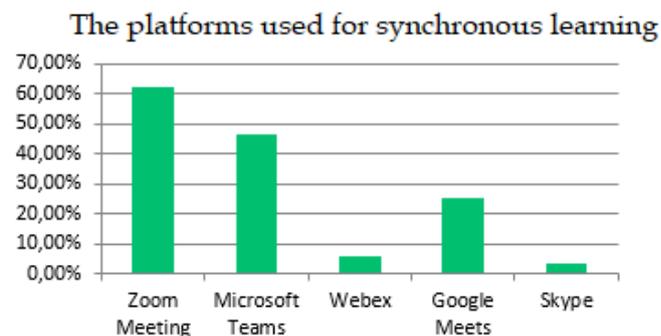


Figure 1.

Synchronous Learning

The Figure 1 shows that the platforms used by the respondents for synchronous learning are dominated by 514 (62.08%) respondents using Zoom Meeting, followed by 383 (46.62%) respondents using Microsoft Teams and 210 (25.36%) Google Meets. Beside Webex And Skype, there are some other platforms used by the respondents, including WhatsApp, WhatsApp Groups, Line, BigblueButton, and Discord.

The frequency of synchronous web-meeting has become important aspects in students' learning activities since it influences the completion of student-teacher interactions as well as student-student interactions.

Table 7.

Synchronous Web-Meeting

Frequency	Responses	
< 4 times	21.50%	178
4 - 6 times	35.02%	290
8 - 12 times	35.99%	298
Others	7.49%	62
Answered		828

More than 70% of the respondents stated that they did the online learning frequently four to twelve times a semester, while 21.50% did the online learning less than four time in a semester. The respondents explained that they did the synchronous learning less than four

time because there were some lecturers who prefer giving assignments asynchronously. Besides, some stated that the lecturers were not used to doing synchronous web-meetings.

2.2.3.2. Access to Learning Materials

Accessing learning materials is a very important aspects in practicing online learning. There are various ways of accessing the materials as illustrated in the following table.

Table 8.
Learning Materials

Learning materials	Responses	
Handouts	46.74%	387
Textbooks	39.25%	325
Book Chapters	16.30%	135
Powerpoints (PPT)	81.28%	673
Videos	50.60%	419
Open Educational Resources (OER)	46.26%	383
Others	2.17%	18
Answered		828

From the Table 8, it is obviously that the use of PowerPoints still dominated the materials used by the lecturers. More than 80% respondents used PowerPoints to share the learning materials. However, the videos, open educational resources (OER), and the handouts were also used by lecturers to deliver the learning materials. Some other respondents stated the lecturers used the combination of PPT and videos and voice recordings.

Regarding the delivery of the learning materials, most of the respondents (64.61%) stated that they use WhatsApp to deliver the materials, followed by respondents using LMS to access the materials. The Table 9 describes the learning material delivery during the Covid-19 outbreak.

Table 9.
Access to Learning Materials

Frequency	Responses	
Learning Management System (LMS)	55.07%	456
Institution's Website	37.92%	314
Email	36.84%	305
WhatsApp	64.61%	535
Others	5.19%	43
Answered		828

From the additional information, the respondents explained that they used WhatsApp groups to communicate with each other as well as sharing the materials. However, the learning materials delivered through Google Classrooms has been taken by some lecturers while they are doing the interactions.

2.2.3.3. Online Learning Practice

The devices to access online learning and the learning materials also become important aspects in online learning practices. Recently, the use of mobile learning devices has dominated the modes of students' learning styles. The following is the illustration of the use of the devices to access the online learning.

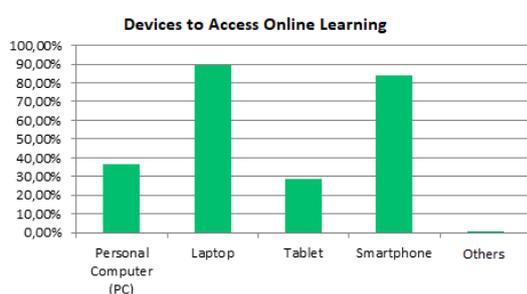


Figure 2.

Devices to Access Online Learning

The laptops are the devices that were mostly used by the respondents at 89.49% and followed by 83.70% respondents using smartphones in their online learning activities. The use of tablets have also become trends for the students, whereas the use of personal computers (PCs) to access online learning was taken by 36.47 respondents. The results show that the use of mobile devices dominated the devices for accessing online learning.

Using mobile devices for online learning has consequently related to the choices of internet providers. In Indonesia there are some companies concerning in internet providing. Some big internet providers in Indonesia are Telkomsel, Indosat, IndiHome, and First Media. However, there are many other internet providers offering their services for online learning such as Speedy, Axis, My Republic, etc. The following shows the percentage of internet providers used by the respondents.

Table 10.

Internet Providers

Internet provider	Responses	
Telkomsel	74.15%	614
Indosat	30.07%	249
IndiHome	39.13%	324
First Media	8.57%	71
Others	6.40%	53
Answered		828

The data show that more than 74% of the respondents use Telkomsel as their internet provider, while not more than 40% use the Indosat and IndiHome for their internet providers. Regarding the expenses the respondents spent for the internet connection, the following chart illustrates the monthly internet expenses.

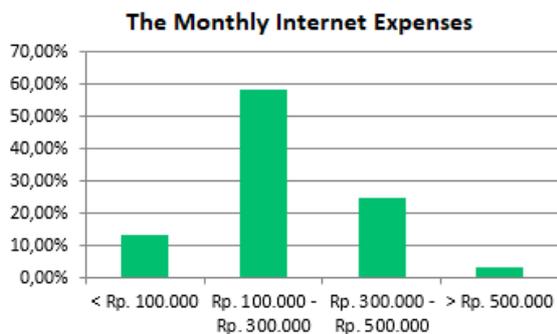


Figure 3.

Monthly Internet Expenses

Most of the respondents stated that they spend one hundred to three hundred rupiah for the internet connection, while some other spend three hundred to five hundred rupiah per month. Some institutions have concerned about giving subsidy for the lecturers and students for monthly internet expenses as seen from the following table.

Table 11.

Institution's Subsidy for Internet Expense

Internet expenses subsidy	Responses	
No Subsidy	68.72%	614
< Rp.25.000	0.60%	249
Rp.25.000 – Rp.50.000	7.25%	324
Rp.50.000 – Rp.100.000	15.22%	71
> Rp.100.000	8.21%	53
Answered		828

There were 614 respondents (68.72%) stated that they did not get any subsidy for the monthly internet expenses. However, there were 15.22% got internet subsidy about fifty thousand

rupiah to one hundred thousand rupiah. Only 53 respondents or 8.21% got the subsidy of more than one hundred thousand rupiah from their institution for internet expenses.

The practices of online learning have created some constraints both for lecturers and students including material preparation, learning the materials, joining the web-meetings, and internet connections. The following is the descriptions of the constraints.

Table 12.
Constraints in Learning Process

Constraints	Responses	
Material preparation	25.00%	207
Learning the materials	19.81%	164
Joining Web Meetings	24.76%	205
Internet Connections	83.21%	689
Others	7.13%	59

Most of the respondents got difficulties in their internet connections such as slow connections and the electricity problems. In some areas, the electricity connection is still unstable, and it influences the internet connections as well. In terms of material preparations, the respondents explained that they got difficulties in preparing the materials due to the bad internet connections. It has created difficulties in accessing the materials for learning.

2.2.3.4. Learning Assessments

During the Covid-19 outbreak, the online examinations seem to dominate the ways of assessing students' competencies. There were 527 respondents or 63.65% did online assessment for the students as seen in the following table.

Table 13.
Learning Assessment

Type of assessment	Responses	
Online Assessment	63.65%	527
Written Assessment	26.21%	217
Course Assignment	73.19%	606
Others	4.47%	37

2.2.3.5. Institution's Partnerships

The partnership among higher education institutions or between institutions with the government or private companies have been some alternatives during the pandemic situations for different purposes. The following Table 14 illustrate the trends of the partnerships.

Table 14.
Partnership

Partnerships	Responses	
No Partnership	65.34%	541
National Government	11.59%	96
Regional Government	8.70%	72
Other Universities	7.61%	63
Private Companies	14.49%	120
Others	8.70%	72

The data show that more than 65% respondents stated that they did not have any partnerships with other institutions nor the government. 14.49% of the respondents stated that they did partnerships with private companies, while 11.59% with the national government.

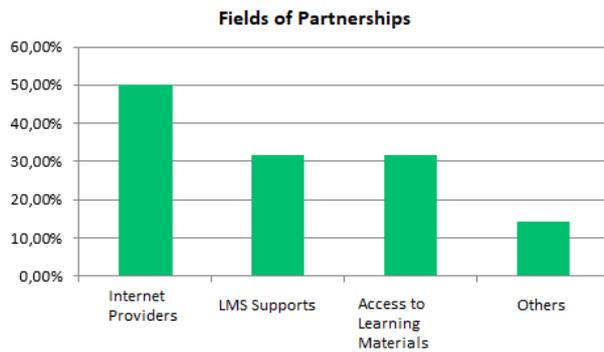


Figure 4.
Fields of Partnership

The partnerships were dominated between institutions and the internet providers. It seems that the internet providers have been the necessity for higher education institutions to cooperate and provide the internet services.

2.2.4 Expectation of Online Learning after the Pandemic Time Covid-19 (Era New Normal)

Regarding the comparison of the use of face-to-face learning and online learning that can be applied after the pandemic, almost 50% of respondents stated that 100% online can be applied. The increasing number of video-conferencing platforms and free LMSs available out there could be the reasons why many universities are ready for this, even though, many of them do not have their own online learning platform.

Table 15.
The Usage of Online Learning and Face-To-Face Learning after the Pandemic

Learning delivery	Responses	
100% online: 0% face-to-face	43.72%	362
0% online: 100% face-to-face	6.64%	55
75% online: 25% face-to-face	16.18%	134
25% online: 75% face-to-face	11.11%	92
50% online: 50% face-to-face	18.48%	153
Others	3.86%	32
	Answered	828

Table 16 shows the online learning facilities that must be provided by the institution. The provision of Learning Management System (LMS) received the largest portion of respondents as much as 66.67% followed by internet access (60,51%), training on online learning strategies, methods, techniques (53,99%) as well as training on the development of online teaching materials (49,64%) and provision of a web meeting platform (42,51%). The provision of an LMS is indeed important because it is needed for the management of learning materials.

Table 16.
The Online Learning Facilities That Must Be Provided by the Institution

Learning Facilities	Responses	
Learning Management System (LMS)	66.67%	552
Synchronous web meeting platform	42.51%	352
Training on the development of online teaching materials	49.64%	411
Training on online learning strategies, methods, techniques	53.99%	447
Internet access	60.51%	501
Others	1.93%	16
	Answered	828

In relation to the online learning method that will be used, 48.91% of respondents answered combination of face-to-face and online learning (hybrid / blended learning). A large number of people who have difficulty accessing the internet and constraints on internet costs could be the causes that some universities feel face-to-face learning are still needed.

Table 17.
The Online Learning Method That Will Be Used

Online learning methods	Responses	
Synchronous via web meeting	43.48%	360
Asynchronous through Learning Management System	30.07%	249
Combination of face-to-face and online learning (hybrid /blended learning)	48.91%	405
The combination of synchronous and Asynchronous	22.22%	184
	Answered	828

Regarding the online learning strategy that will be used, 70.29% of respondents chose to use variety of multimedia sources and 57.85% of respondents chose to create their own online learning materials. The existence of the internet makes it very easy for lecturers and students to get quality learning resources so that it can make it easier for students to understand the material presented.

Table 18.
The Online Learning Strategy That Will Be Used

Online learning strategy	Responses	
Creating your own online learning materials	57.85%	479
Using face-to-face learning materials	38.29%	317
Using variety of multimedia sources	70.29%	582
Presenting material creations from students (individual or collaboration)	47.95%	397
Presenting reflection of learning from students	31.88%	264
Others	1.09%	9
	Answered	828

2.3. Online learning strategies and methods: Universitas Terbuka's experiences in facing covid-19 pandemic

The Universitas Terbuka (UT) is a university that implements a distance education system that provides services to students who are spread across Indonesia and also overseas. The Universitas Terbuka's head office located in the city of South Tangerang, and it has 39 regional offices located in 34 provinces in Indonesia. Currently, the number of UT students reaches 312,565 students (Rector's Report, 2019). Universitas Terbuka provides teaching materials for a variety of learning medium. UT teaching materials are packaged in various types of media, such as in print, audiovisual, and digital teaching materials. UT's learning materials are designed as self-contained learning materials. The concept of self-contained learning material is defined as learning materials containing learning material and learning activities that can be used independently in accordance with learning objectives to be used by students according to their respective learning speeds (Guido, 2014).

Although UT prepares teaching materials with the concept of self-contained learning materials, students' learning support in the form of tutorials is still provided. The students' learning support are provided in the form of tutorials such as face-to-face tutorials, online tutorials, and web-based tutorials. The provision of various tutorials is due to the student's condition, among others due to the geographical factors where the student lives and the availability of access to technology or the Internet. Face-to-face tutorial services are managed and carried out in regional offices where students are.

In providing asynchronous online tutorial services, UT uses the Moodle learning management system (LMS) which is modified according to the learning needs and learning activities of students. The use of Moodle LMS has been started since 2004 until now, and has been developing from time to time for improvement. Meanwhile, for online tutorial services that are synchronous, UT uses the video meeting platform Microsoft Teams from 2018 to the present. Initially, the use of MS Teams for synchronous online tutorials was limited to UT's students living overseas.

With the Covid-19 pandemic that occurred in Indonesia in early March 2020, UT is one of the universities in Indonesia that is better prepared to face this situation. This is because UT as a distance university already has a good and quality learning process tool, starting from teaching materials, learning assistance including learning management system facilities. Even so, the condition of Covid-19 requires UT to make significant adaptations and modifications to a number of learning services for students.

2.3.1 The use of online learning during the Covid-19 pandemic

During the Covid-19 pandemic that occurred in March 2020, UT forced to do some adaptations and modifications to learning support services for students. One of the learning supports services that has undergone a significant change is the face-to-face tutorial. Face-to-face tutorials for the first semester of 2020 cannot be implemented at all and it has been changed to a synchronous online tutorial service called a web-based tutorial (Tuweb). Table 19 shows the comparison of the number of tutorial services provided before the Covid-19 pandemic in 2019 and during the Covid-19 pandemic.

Table 19:

Number of Tutorial Classes and Students Participated Before and During the Covid-19 Pandemic

Types of Tutorial	Before Covid-19 2019		During Covid-19 2020	
	Number of Class/courses	Number of students/courses	Number of Class/courses	Number of Students/courses
Face to face Tutorial	29,674	593,471	0	-
Synchronous Online Tutorial (Tuweb)	21	192	26,573	476,703
Online Tutorial (asynchronous)	12,580	596,010	12,991	605,237

Source: Pusat Bantuan Belajar UT

From Table 19, it can be seen that the number of face-to-face tutorial classes before the Covid-19 Pandemic was held as many as 29,674 classes/courses. During the Covid-19 pandemic, all face-to-face tutorial classes in the first semester of 2020 were canceled and replaced with synchronous online tutorials or web-based tutorials (Tuweb). There were 26,573 classes/courses of synchronous web-based tutorial classes (Tuweb) in total that have been created. This condition is a very drastic change considering that prior to covid-19, synchronous web-based tutorial services (Tuweb) were only held for UT students who live overseas, and only 21 classes. Regarding the replacement of face-to-face tutorial services to online synchronous tutorials (Tuweb), there was a decrease in the number of classes by 10%, from 29,674 classes to 26,573 classes. These data indicate that not all students were previously taking face-to-face tutorial services can follow synchronous online tutorial services (Tuweb). It is estimated that not all students have good and stable Internet access so that they will experience difficulties if they follow Tuweb. While for asynchronous online tutorial services, the the number of classes held before Covid-19 and during Covid-19 was increase 3%.

During the covid-19 period, students who were not registered with the synchronous online tutorial service (Tuweb) or online tutorial service (asynchronous) due to geographic or Internet access constraints, were served by providing learning assistance services "Course Assignments". "Course Assignments" which consists of three assignments per course is given to ensure the student learning process. In providing "Course Assignments", UT develops applications to be used by students to download and to upload assignments. The number of

students who receive learning support services by "Course Assignments" is 529,805 students/course (Pusat Pengujian, 2020). With limited Internet connection for a number of UT students, the "Course Assignment" service is very helpful for students because for downloading or uploading "Course Assignments" does not require a lot of time of Internet connection.

Learn from the experience of providing online learning services during the covid-19 period, there some adjustment for improvement, especially in the use of synchronous online tutorial (Tuweb). During the Covid-19 pandemic in the first semester 2020, the Tuweb did not use a learning management system, the students received a links for synchronous tutorial per class session through WhatApps group or emails. In anticipating the Covid-19 pandemic still affecting the learning process for the second semester of 2020, the implementation of Tuweb was designed and prepared using the Moodle LMS. The design of a structured LMS Tuweb includes facilitation of schedules, link connections, and attendance of students and tutors. The innovation and improvement of online synchronous tutorial by using LMS will affect to a better learning support to UT's students. In the future, the Tuweb service application based on the Moodle platform will be equipped with more facilities such as learning material and assignments for the instructional process purposes.

Another learning support that was also used massively for students during the covid-19 pandemic that will be used after covid-19 is the "Course Assignment". The "Course Assignment" service provided for students who due to geographical and Internet access constraints during the Covid-19 period, were massively used by 529,805 students/course, will remain part of UT's learning support post covid-19 pandemic. Compared to other online learning services, the provision of "Course Assignments" requires a minimum used of Internet access connection. Thus, the students who have geographic and Internet access constraints still get learning support form "Courset Assignment" as a complement to the learning process through printed teaching materials.

2.4. Lessons learned from the covid-19 for better online learning practice in Indonesia

The Covid-19 pandemic has created difficulties in carrying out the face-to-face learning process at all levels of education. However, difficulties in organizing the learning process, especially at the tertiary level, can be overcome by the use of information and communication technology (ICT). The use of online learning in Indonesia before the Covid-19 pandemic was still limited to a number of universities in Indonesia. The Covid-19 pandemic has forced all universities in Indonesia to use online learning. Through the experience gained from higher education institutions, which suddenly have to use online learning, will have an impact on the implementation of lectures in the future. Higher education institutions no longer only rely on face-to-face lectures, but need to add online learning services to strengthen the face to face learning process in the future.

Based on the survey results, as previously discussed, there are some interesting data to analyze related to how universities will place online learning as part of their services and learning process.

Based on survey, only 6.64% remain to maintain the implementation of face-to-face learning, while 93.36% of respondents expect online learning to be part of the delivery method of learning, with various percentages ranging from 25% to 100%. This shows that respondents get new understandings from the use of online learning during the Covid-19 pandemic. The data also shows three important things that need to be considered in maximizing the use of online learning after the Covid-19 pandemic such as facilities for more optimal utilization of online learning, the online learning methods and strategies that will be used.

2.4.1 Aspects of online learning facilities

Learning from the conditions of the Covid-19 pandemic, online learning facilities that must be provided by higher education institutions for better use of online learning after Covid-19, include several aspects of the following facilities.

Learning Management System (LMS). The survey results show that 66.67% of respondents stated that LMS is a facility that must be prepared by universities. Bates (2015) defines a Learning management system (LMS) as software that allows the learning process between lecturers and students to log in and do activities with a password that secures the online learning process. Learning management systems such as Blackboard or Moodle are based on a replication of classroom learning design (Bates, 2015). For this reason, it is very important for universities to have an LMS that is used for online learning, where lecturers and students can carry out a better structured of online learning process.

Synchronous web meeting platform. Based on the experience of online learning during the Covid-19 pandemic, synchronous web meeting applications are used intensively by universities. Based on survey data, 42.51% of respondents considered that web meeting application facilities need to be provided by the institution. The choice of web meeting platform to be used can be the one that already used or a different platform. Under normal conditions, the appropriate selection can be reviewed within an adequate time.

Online teaching materials development training. At the time of the Covid-19 pandemic, online learning was carried out moderately, not all universities had skills in designing online teaching materials. This can be seen from 49.64% of respondents who expect training to develop online teaching materials in the after the Covid-19 pandemic. This shows that skills to develop online teaching materials are needed for a better quality of online learning after Covid-19.

Training on online learning strategies, methods, techniques. During the Covid-19 pandemic, lecturers and students did not have an opportunity to be trained in preparing and developing online teaching materials, or using online learning, it's happened so quickly and instantly. Lecturers do not have sufficient time to prepare online learning materials properly in terms of strategies or methods of presenting online learning material. In the future, after Covid-19 pandemic, training on online learning strategies, methods and techniques needs to be provided, this is in accordance with the survey results, 53.99% of respondents need to be trained.

Internet access. In online learning, access to an Internet connection is a must, 60.51% of respondents expect to get or have Internet access easily. In the future, to optimize the use of online learning, higher education institutions are expected to provide Internet access so that lecturers can use them to prepare online learning material on campus by providing Internet hotspots at certain points. It is hoped that this internet hotspot can also be used by the students.

2.4.2 Aspects of online learning methods and strategies

In general, the application of online learning during the Covid-19 pandemic was not well planned, especially related to online learning methods and strategies. Learning from the Covid-19 pandemic, respondent hopes that online learning after Covid-19 can be better prepared in various ways. Based on survey data, according to 43.48% of respondents, online learning was carried out synchronously through web meetings, while 30% of respondents suggested that asynchronous online learning were through LMS, 48.91% chose blended learning between face-to-face and online learning, and 22.22% chose a combination of online learning asynchronous with synchronous.

The survey results show the diversity of online learning that can be utilized in the learning process in higher education, namely the use of online synchronous, asynchronous learning, blended learning face to face and online learning, blended online learning (synchronous and asynchronous). Allen and Sieman (2006 in Crews Wilkinson & Neill, 2015) define online learning as is 80% of learning material is delivered online. If 1-29% of the material is delivered online it is called web-facilitated, and if 30-79% of the material is delivered online it is called blended. Universities in Indonesia have a various choices to integrate online technology in their learning process, whether in the form of web-facilitated, blended, or fully online. The efforts of each university in Indonesia in providing learning facilities that are integrated with online technology for their lecturers and students after the Covid-19 pandemic

will vary based on their experiences during the Covid-19 period and based on their own expectation for a better learning support to their students.

Regarding the choice of whether online learning is delivered asynchronously or synchronously, which one is better? Glassmeyer, Dibbs and Jenson (2011) in their study found that the use of online discussions synchronously is preferred by students. However, on the contrary, Hollenbeck (2011) found that students prefer asynchronous communication. In other studies that explore which ones students prefer, it turns out that it depends on several factors, such as students feel unable to speak freely in synchronous communication discussions (Offir, et al, 2008). Meanwhile, the student's dislike for asynchronous online communication is due to the factor of limited guidance from lecturers on how to interact in discussions (Gunawardena et al, 2010). From the results of these studies, it is obviously seen that planning and readiness to utilize synchronous or asynchronous communication in online learning are important factors.

Aspects of online learning strategies need a special attention. Based on the survey results, online learning strategies can be implemented in quite a variety of ways, namely: creating online learning materials, using learning materials commonly used in face-to-face learning, using various existing multimedia sources, presenting material creations from students and presenting learning reflections from students. This online learning strategy can be an option for lecturers in developing and preparing online learning materials post-Covid-19 pandemic. However, whatever strategy that will be used, it necessary to pay an attention to the quality. A high quality of online learning requires a good design from the material developer and also an instructional designer. Online learning should be designed based on instructional design principles combined with instructional components to engaged students in the learning process (Uvalic-Trumbic, Daniel, 2012).

3. Conclusion

The Covid-19 pandemic has forced all universities to utilize online learning massively in a very short period of time. All universities has been using all resources in implementing online learning without proper planning. Based on the experience of implementing online learning during Covid-19 pandemic, universities can identify the utilization of online learning that were designed properly. Therefore, the policy from the head of the university is needed in providing the facilities and resources in the implementation of online learning. Learning strategies, methods and technics in online learning in the future after the Covid-19 pandemic, which have been designed properly are expected to enrich the learning process at universities in Indonesia.

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