Blended Learning as a Choice of Learning Model in Vocational Education After the COVID-19 Pandemic

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Abstract

Various online learning models were applied during the COVID-19 pandemic, ranging from simply using communication applications, to those using learning systems or a combination of both. The majority think that online learning must be done face-to-face, even though online. In each meeting, it is usually equipped with material sharing, exercises or even video tutorials. Students have extensive opportunities to communicate with lecturers, either during scheduled meetings or outside of schedules. Although the learning process will be returned to normal due to the end of the pandemic, the online learning experience for two years has given a distinct impression to students and lecturers. There is a desire to maintain it as a distraction from classroom learning. Blended learning, namely the learning process in the classroom interspersed with online learning is the right choice. The study program and lecturers must jointly make an agreement to determine the material and portion size between offline and online learning, as well as monitor and evaluate its implementation. The quality of the output must be able to be maintained or even improved through this blended learning process.

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1 Introduction

The COVID-19 pandemic has had a significant impact on people's lives in general. To prevent the spread of the pandemic and increase the number of victims, the government has issued various policies which are essentially aimed at limiting people's activities outside the home, and trying to carry out activities from home. Then came various terms such as working from home for office workers and learning from home for education circles (Karma et al., 2021).

The restrictions on the movement of residents have also made parents worried about the continuity and quality of their children's education. Educational institutions are required to adapt to this crisis situation. Educational institutions must have the insight that the use of technology, such as multimedia, the Internet and social media, can provide more benefits in the learning process. Learning will be more imaginative which of course will be able to increase student interest in learning (Rennie & Morrison, 2013). Many campuses are adopting distance learning by making it web-based learning with a learning management system that allows learning to take place on campus or off campus (Samarawickrema & Stacey, 2007). With restrictions on the movement of people, including students, there has been an effort to organize a distance education process or often referred to as e-learning. E-learning is a learning system that has been widely used in developed countries and is increasingly popular in developing countries, such as Indonesia (Alkhalaf et al., 2012). During the pandemic, e-learning has been widely applied in various schools or campuses, instead of face-to-face lectures in class. E-learning is the right choice to replace face-to-face learning in the classroom in a crowd-restricted situation such as during this pandemic. E-learning is felt to be very effective in improving the learning process and administration. Students also get flexibility in learning (Laurillard, 2005). It must be admitted, this online learning was previously not so popular in the world of education. Even if they understand the meaning, they rarely use it in the learning process. They still rely on traditional learning methods, namely coming to campus, meeting lecturers in the classroom/lab, lecturers explaining in front of the class, and students interacting during lectures. After the class meeting is over, the learning process ends. The process will be repeated/continued at the next meeting schedule (Moore et al., 2011; Dong et al., 2020).

Although this is considered the right step to avoid a vacuum in the learning process, it also creates new problems. In practice, online learning is carried out with various patterns. This relates to the habits and readiness of lecturers, as well as the facilities provided by the campus. On the other hand, campuses sometimes also do not provide some kind of limitation on how this e-learning model lecture should be carried out. The priority that is put forward is that learning can work. Therefore, it is only natural that this e-learning model is applied in various ways. Another thing that can interfere with the implementation of e-learning is the readiness of the infrastructure that supports the implementation of e-learning, whether owned by institutions, lecturers or students (Hänze & Berger, 2007; Pedaste et al., 2015).

The shift of learning from traditional learning, face to face in front of the class, to online learning, is a challenge for lecturers. Not all lecturers can understand well how online learning is. This is where the role of the campus to regulate it. Campuses cannot only demand effective online teaching, but must provide training or workshops related to this learning. In addition, the faculty must be responsible for providing infrastructure that can support the implementation of this online learning (Belt & Lowenthal, 2020). In general, related parties are more focused on choosing a learning management system (LMS) in this transition period. But in reality, students don't really care about this. The most important thing is that learning can run as expected, with any model and platform. As one of the learning technologies, e-learning is easy to implement, but usually has problems in developing its resources (Muniasamy & Alasiry, 2020).

Preparing for full online learning is a big and integrated step. It is not enough just to prepare materials and lecturers, but also to prepare a set of guidelines that regulate the implementation of online learning. It must be determined in detail the strategic approach that will be applied to the entire campus, such as the role and involvement of the relevant parties, what are the lecturers' rules for teaching, what is the curriculum, learning content and technical distribution. No less important is related to support services for students and analysis of the ongoing learning process (Stone, 2017).

The quality of online learning is always associated with the impression of students as learning participants in the learning process. The impression is related to the level of acceptance/satisfaction of students in learning, which in turn is related to their level of success in learning (Lee, 2010). To achieve good quality online learning, there are 3 (three) inseparable factors that can be used as indicators. The first is the quality factor of the online learning management system itself. Online learning must be supported by a learning management system that is indeed

prepared for the implementation of online learning. The second factor is the quality of lecturers and learning materials, which are the most influential factors in determining the quality of learning. The third factor is the quality of administration and support for online learning services. Although not directly involved in the online learning process, this third factor plays a very important role in maintaining the continuity and reliability of this online learning process (Pham et al., 2018, 2019). Another thing that deserves attention is related to its impact on the world of education in the future (Nørgård, 2021).

Currently, online learning has become an important part of the secondary and higher education process. The pandemic period has provided a new experience for the majority of students in participating in this online learning. Apart from having made it an alternative, it turns out that some have considered it a necessity (Kuo et al., 2013). The development of technology has been able to support the implementation of learning like traditional learning in the classroom. Online learning can be carried out either synchronously or asynchronously (Skylar, 2009). Asynchronous learning provides the feel of independent online learning, it can be anytime and anywhere, although there are complaints about the lack of interaction between students and lecturers (Cole et al., 2014; Talan & Gulsecen, 2019).

Many conveniences are felt with online learning that is asynchronous. In addition to the freedom and flexibility of students to carry out the learning process, it can actually foster student independence. However, when compared to a synchronous implementation, many parties claim it is better. The main reason is the obligation of students/teachers to attend and participate during the implementation of learning and the direct interaction between them. This turned out to be considered able to increase motivation, especially for students (Chen et al., 2004).

The existence and mastery of information and communication technology (ICT) plays a very important role in the implementation of this e-learning. It is impossible to organize e-learning if teachers and students do not master ICT. Likewise, if ICT infrastructure is not available, it is impossible to create virtual classrooms, access web-based learning materials/facilities, interact between lecturers and students and other activities. No less important is how to build a student-centric learning process so that students are assisted in acquiring the knowledge and skills they want (Bojović et al., 2020). The participation of students in online learning, apart from being quite effective in delivering subject matter, is also perceived to be able to improve students' skills in utilizing technology (Skylar, 2009).

Various terms then developed to describe the learning process that combines face-to-face learning, both synchronously and asynchronously, such as hybrid, blended or mixed learning. This combined learning process turned out to be more satisfying when compared to learning that was carried out entirely online. What deserves attention in the implementation of hybrid learning is the balance between traditional learning in the classroom and online learning (Callaway, 2012).

Over time, many people begin to feel bored at home, both for work and study. With relatively tight supervision, the government also allows people to carry out activities outside the home, must still be limited by capacity and time. What is clear is that there are activities like before the pandemic, it must be with new habits. The world of education also began to enforce the same thing. Students have started to be allowed to go to school/campus to study in a limited number and time. What is certain is that the direction of opening schools/campuses as before the pandemic has begun to be discussed. The activities of people outside the home have also started to look like before the pandemic (Stockwell et al., 2015). It is very possible that everything will return to how it was before the pandemic. Students will return to full learning at school/campus. The question is, then what are all the resources that have existed so far, especially resources related to online learning, which are used as a means of learning from home during the pandemic (Rasheed et al., 2020; Boelens et al., 2017).

It is generally known that vocational education such as Polytechnic is education that prepares graduates to have expertise and skills in their field, so they are ready to work and be able to compete globally. To produce graduates with such qualifications, learning at the Polytechnic will contain more practice or work on exercises/cases than theoretical presentations. In the learning process, in general, vocational education has a portion of 60% practice and 40% theory. Although it seems inappropriate if vocational education is carried out online, because it is affected by the pandemic, it is still carried out online.

This study tries to find a picture of what online learning is like at the polytechnic, how students feel so far and tries to find solutions related to learning models that should be applied after the pandemic, especially for vocational education such as Polytechnics.

Related works
The variety of terms related to online learning sometimes makes it a bit confusing, resulting in a misunderstanding of these terms. In order to achieve a common understanding, the following will explain the meaning of some terms that will be used in this study.

Distance learning

As the name implies, distance learning is a form of learning in which in the process, the existence of lecturers and students are separated by distance and are in different locations. For the purposes of communication between lecturers and students, it is done by utilizing various telecommunication media. This learning model actually appears to overcome the limitations faced by students in attending class, due to factors living far away in remote areas, working with tight working hours and so on.

There are four distinguishing characteristics of distance learning. First, distance learning by definition is carried out through institutions, not independent learning or non-academic learning environments. This institution can provide classroom-based learning, or it may not. But this institution meets the accreditation requirements of institutions that use traditional methods. Second, geographical separation is inherent in distance learning, and time can also separate students and lecturers (Udo et al., 2011; Ginns & Ellis, 2007; Markova et al., 2017). To increase accessibility and convenience, the program must be well designed to bridge the intellectual, cultural and social differences between students. Third, interactive telecommunications connects individuals in study groups and with lecturers. Interaction is important and can be done with various media. Finally, distance education, like other education, forms learning groups, sometimes called learning communities (Simonson & Berg, 2016).

The development of technology, especially the Internet, has made it possible for anyone to be able to learn from anywhere and anytime. The use of technology in distance learning will of course provide higher opportunities for anyone to access higher education. It will indirectly increase the diversity of students (Traxler, 2018).

E-learning

Simply defined as a learning process that is held electronically, via the Internet, so that it can be accessed anytime and anywhere (Tamm, 2020). In its implementation, this learning model does not use material in the form of printed media, but electronic media, which can be accessed using various electronic devices such as computers and smartphones (True Education, n.d.). The application of e-learning gives students and lecturers the freedom to interact without time and distance limits (Sun et al., 2008). The letter "e" in e-learning stands for "electronic", so e-learning can be interpreted not only as online learning, but also combining online or offline learning activities with electronic-based learning media (Som Naidu, 2006).

The presence of the Internet with a variety of content and information it has, has changed people's habits. There is a tendency for people to read or search for information on the Internet first compared to reading books or asking other people. This is what makes e-learning important (Digital Class Educational Marketplace, n.d.).

The development of technology, especially Internet technology, makes e-learning widely used in the world of education. In addition to being applied as web-based online learning, e-learning is also widely used as an additional complement to classroom learning. In order to maintain its existence, apart from technical and economic factors, human and environmental factors also deserve attention (Alharthi et al., 2019). Technical and economic factors are important because e-learning in its application utilizes and follows technological developments, which in the end will be related to economic factors. The human factor relates to the readiness of the organizers and participants, while the environmental factor relates to the support of other parties in supporting the implementation of the e-learning. The biggest obstacle in the development of e-learning is the human factor (Alsharhan et al., 2020).

Blended learning

Blended learning is often interpreted with various definitions, models and concepts. In addition to being confusing, this of course can be confusing. Besides being defined as learning that includes face-to-face and online learning, blended learning is also defined as learning that combines various instructional methods, pedagogic approaches and technology (Hrastinski, 2019). The combination of this method is more directed at improving learning outcomes, by applying learning technology (Akkoyunlu & Soylu, 2008). The development of communication and information technology that is increasingly advanced and growing, apparently affects the implementation of this blended learning (Dziuban et al., 2018). That is why blended learning is then translated as learning that combines face-to-face learning with online learning, either synchronously or not (Hariadi et al., 2016; Makhdoom et al., 2013). In essence, in blended learning, online learning and offline learning are complementary (Quigley, 2019).

Defining blended learning as simply a mixture of face-to-face learning in class and learning using technology (online) is not appropriate. Blended learning must be defined as learning that includes context, theory, methods and

technology used in the learning process. Blended learning should be defined as learning that combines theory, methods and technology to produce an optimal learning process in a particular context (Cronje, 2020). This means that the implementation may be different, depending on the course and learning objectives.

Blended learning combines traditional face-to-face learning, online learning with the Internet and supported by various technologies, to achieve the best learning environment. With the aim of motivating students and increasing success in learning, blended learning is carried out by utilizing the best components of traditional and online learning, technology and media for providing learning content, as well as applying different teaching methods, in groups or individually and interacting synchronously or not (Hoic-Bozic et al., 2009).

Hybrid learning

In hybrid learning, face-to-face learning in class and online learning are carried out simultaneously. This is more intended to facilitate active interaction between lecturers and students who take part in learning in class and online. Learning occurs just like in a classroom, but is followed either physically in the classroom or online (Sonnic, 2021). In this learning process, technology, especially Internet technology, plays a very important role (Hariadi et al., 2019). Lecturers carry out their teaching duties like in front of the class, with or without students. In synchronous implementation, students who are not present in class can follow it online at the same time and can interact directly like attending class. For asynchronous implementation, learning is carried out online which is equipped with lecture videos (Boyarsky, 2020; View Sonnic, 2021).

In terms of implementation, the hybrid learning model can be considered the most effective model (Dwijonagoro & Suparno, 2019). The effectiveness of this learning model has been proven to be successful in increasing students' ability to think mathematically (Aristika et al., 2021). In addition, hybrid learning can also improve various aspects of student knowledge regarding the application of learning methods, face-to-face and online, which is supported by various international-scale learning resources (Pavlidou et al., 2021).

In terms of financing, the implementation of hybrid learning requires greater funding compared to only fully implementing learning, whether held face-to-face in class or online. Therefore, efforts to implement hybrid learning must be based on careful calculations (Xiao et al., 2020).

Purpose of analysis
The purpose of this research is to get an idea of how the fate of online learning will be after the pandemic. What kind of implementation will it take if it is necessary, and what courses will allow it to be carried out online.

2   Materials and Methods

To get an overview of the implementation of online learning and students' impressions of its implementation, a questionnaire was distributed using Google Forms to semester 1, 3 and 5 students in Diploma 3 and 4 programs from various study programs. There are three main things that are asked in this questionnaire, which are related to the general description of the online learning model that they lived during the pandemic, the responses and learning achievements they got in online learning and their expectations with learning after the pandemic. The collected data was then analyzed using quantitative descriptive analysis techniques.

3   Results and Discussions

The questionnaire which was distributed online via the Internet, was responded by 157 students with a distribution of 76.4% by semester 1 students, 22.9% semester 3 students and 0.6% semester 5 students, consisting of 89.2% Diploma 4 students and 10.8% Diploma 3 students, from various study programs. Considering that online learning has been implemented for two years, practically those who respond to this questionnaire are students who really feel fully what online learning is implemented by their lecturers.

The obligatory online learning, without being followed by further arrangements regarding its implementation, has resulted in a variety of learning models applied by lecturers. There are lecturers who carry out online learning by only using communication applications such as Whatsapp or Telegram, but there are also using a learning system, although various such as Classroom or Moodle. Among them, there are also lecturers who take advantage of a

combination of the two. The learning process is carried out using a learning system, while the interaction between students and lecturers is carried out by utilizing the communication media used between them. This combination model is usually carried out by online learning lecturers who do not limit time. Students are given the freedom to do their learning.

In the implementation of online learning, it turns out that many lecturers do it by means of face-to-face meetings online. There are those who carry out the majority of the total learning meetings, but there are also those who only occasionally when needed. Lecturers who carry out practical learning always face to face arguing that teaching must explain like in class. Meanwhile, those who carry out face-to-face meetings occasionally are generally due to certain needs, for example, because the material being taught is relatively difficult if students only read it themselves, or students do feel that they need further explanation directly by the lecturer. There are also those who just do a review or need feedback from students, related to learning that has been done previously. What is interesting then is the majority of students stated that it is better if online learning is equipped with face-to-face. Online learning that is not equipped with face to face is not perceived as learning.

If learning is not done face-to-face, the majority of learning is done by distributing video tutorials, training materials and materials. A small number of lecturers only submit presentation material for learning materials that are equipped with practice materials, although there are also those who only submit material or only practice. This can be considered as a reflection of the understanding and readiness of lecturers in conducting online learning. Lecturers who distribute video tutorials, training materials and materials show the readiness and seriousness of the lecturers concerned in carrying out online learning, in addition to showing a better understanding of the meaning of online learning.

Regarding the opportunity for students to communicate with lecturers, it turns out that almost 95% of respondents stated that their lecturers gave them the freedom to be contacted at any time, either personally or in class groups. What is a little unfortunate, it turns out that there are also students (2.5%) who state that their lecturers can only be contacted during scheduled meetings. The enthusiasm of students in participating in online learning is quite large. However, when compared to face-to-face learning in class, some stated that they prefer face-to-face learning in class, while some of them are the same between online learning and face-to-face learning in class.

The existence of video tutorials as a substitute or complement to face-to-face meetings online is very popular with students. In addition to feeling that he received direct guidance from his lecturer even through video, it turns out that the reason for being able to be watched repeatedly is also another reason. Half of respondents expect online learning to still be done face-to-face, even though online. They want to get the impression they are studying like in class. During online learning they also expect interaction, either directly or indirectly, active or inactive with their lecturers. This indicates that they still need the presence of a lecturer to guide and increase confidence in the abilities they have achieved.

Although some stated that all lessons can be taught online, but most felt not / not sure about it. Lessons that they think are not suitable to be taught online are lessons related to specific skills and expertise that they must have in their respective fields. Meanwhile, what can be done with online learning are lessons that fall into the category of knowledge.

The majority of respondents stated that they experienced changes in learning methods and patterns with this online learning. In number, quite a lot of students find it difficult to accept and understand the learning materials provided online. In connection with the possibility of repeated online learning, in the end they admit that the level of understanding and learning achievement obtained is relatively better. This may be the reason why the majority of students agree that when learning returns to normal to face-to-face learning in class, it is interspersed with online learning (see Figure 1). The composition of online learning that they think is the most appropriate, although varied (see Figure 2), but the majority want 40% of the total meetings. In this online learning, students no longer require face-to-face online meetings and distribution of exercises, but they still have to exist. As shown in Figure 3, it appears that students really hope that there will always be distribution of video tutorials and subject matter in every online learning implementation.
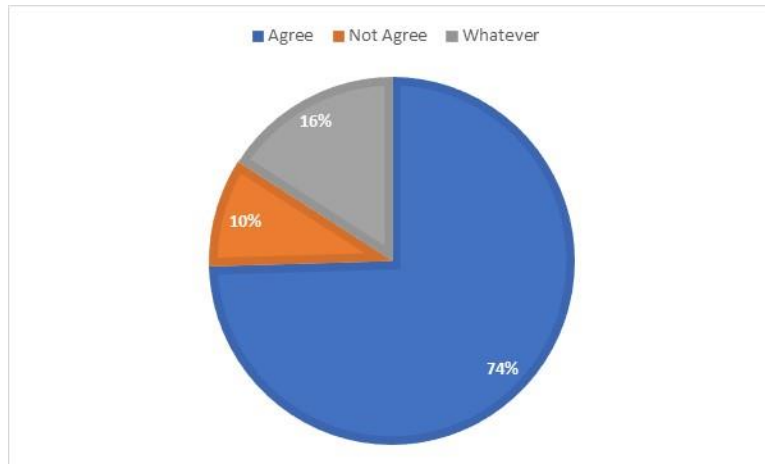
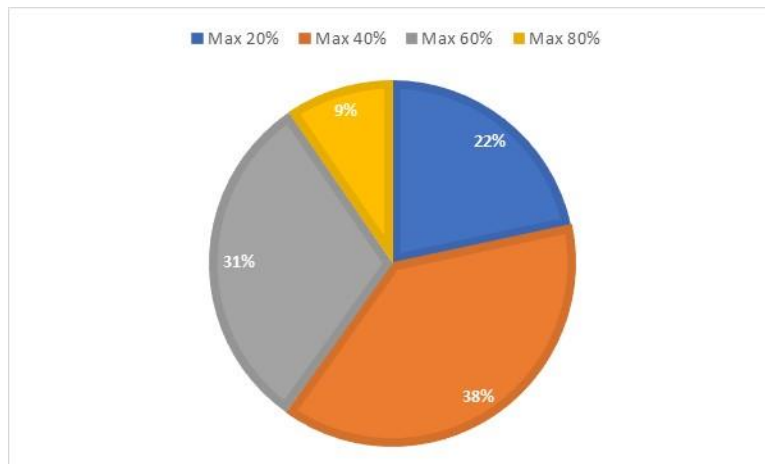Figure 1. Level of agreement on online learning as a classroom interlude

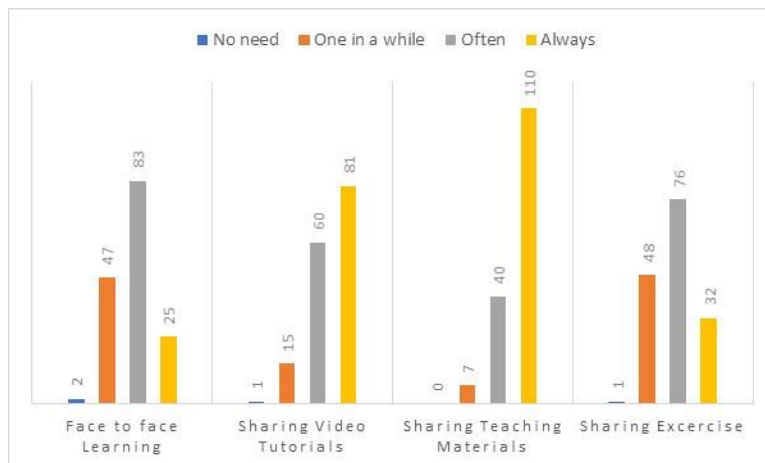Figure 2. Maximum desired portion of online learning

Figure 3. Types and comparison of desired online learning components

Discussion

Over time, even though they have to make adjustments to their study habits, finally students feel they are used to this online learning. They often face a number of obstacles, especially those related to Internet access problems. Some students do live in remote areas where the quality of the Internet connection is sometimes not good. But it did not discourage them to learn.

As social beings, it turns out that students miss interacting directly with their friends and lecturers. That's why they were very enthusiastic when it was announced that they would return to face-to-face learning in class. As described previously, they have the desire to continue online learning, as a distraction/complement to face-to-face learning in class. This is certainly encouraging for campuses or lecturers who have done quite a lot of preparation and implementation of online learning during the pandemic. It's a shame if it's not used anymore. The problem is how to design such a combination learning.

The first thing to think about is the model or type of learning that will be applied. From the available options and adapted to the pattern of vocational education and the wishes of students, the model that deserves to be considered is blended learning or hybrid learning. However, due to limited facilities and infrastructure to support its implementation, the most likely option is blended learning. This means that learning is carried out face-to-face in class, and is interspersed with several meetings in the form of online learning. This online learning does not have to be filled in the form of face-to-face online, but wherever possible there is the distribution of video tutorials and subject matter. Students are also possible to interact actively with lecturers.

The problem is whether all courses can be applied with a model like this? What topics and how much portion of the meeting can be held in a blended manner? Ideally, this arrangement should be carried out at the study program level by involving lecturers. Each study program has determined what kind of graduate profile it wants to produce. This graduate profile is translated into four types of graduate learning outcomes, which relate to attitudes, knowledge, specific skills and general skills. Each learning achievement is then charged to courses, which are specifically designed to have certain learning outcomes. This learning achievement is a description of the graduate learning achievement. With an agreement on the burden given to these courses, a semester learning plan is then drawn up, which generally contains a learning guide for students so that they can finally achieve the learning outcomes that have been determined. In this section, you can sort out which part of the learning materials that can be given online. The criteria for sorting can be done based on the level of difficulty of the learning material and/or the type of learning achievement of the subject assigned to the learning material.

Another thing that can be used as a basis for determining is related to the category of material that must be taught and the category of learning outcomes to be achieved. In general, material that is theoretical in nature, oriented towards developing attitudes, increasing knowledge and opening students' perspectives and ways of thinking, which can be explained only through lectures from lecturers, can be carried out with online learning. Meanwhile, material related to training students' special and general skills should be carried out face-to-face directly in class. It is also possible to teach specific and general skills material online, by complementing it with video tutorials that are more directed towards a guide or demonstration.

It is very possible then that each course has a different portion of online learning. It is possible that some courses are more suitable if only taught through classroom learning, but there may also be some that can be done only through online learning. To be sure, a larger portion of online learning can be given to courses with learning outcomes related to attitudes and knowledge.

Whatever agreement has been decided, both on the selection of the learning model to be applied and the portion of the combination between classroom and online learning, it must always be monitored and evaluated. Of all that, the most important thing that must be maintained is the quality of the outcomes of this learning process. The quality of the output must be maintained the same, or if possible be better than the traditional learning process, namely face-to-face learning in class.

4 Conclusion

The end of the COVID-19 pandemic will be followed by learning with new habits. Students who are used to online learning and lecturers who object to online learning materials that have been painstakingly created are no longer used. The right choice is to apply a blended learning model, in which some learning meetings are conducted face-to-face in class and partly through online learning. In order to be more structured and in accordance with the objectives

to be achieved, the determination of learning patterns must be adjusted to the learning outcomes of subjects, which are specifically described to achieve graduate learning outcomes that have been determined in the study program curriculum. Each course has a semester learning plan that contains details of the planned implementation of lectures for one semester. In addition to describing the description of the material topics at each meeting, matters relating to the evaluation method and implementation of lectures are also determined. In this learning plan, it should have been determined which parts of the learning should be done face-to-face in class and which parts could be done online.

Conflict of interest statement
The authors declared that they have no competing interest.

Statement of authorship
The authors have a responsibility for the conception and design of the study. The authors have approved the final article.

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