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Blended Learning Design As an Alternative Solution for Limited Face To Face Learning

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Abstract

After the Covid-19 emergency period lasted for 1.5 years, there are now Joint Decrees of the Minister of Education and Culture, the Minister of Health, and the Minister of Home Affairs of Indonesia which allow limited face-to-face learning in schools . The implementation rules limit the number of students in the class to only 50% and the duration of study in class is a maximum of 3 hours. The research aims to develop an effective blended learning design as an alternative solution for face-to-face learning in the classroom, especially in science and biology. Blended learning can be applied in 2 strategies, namely flipped classroom and hybrid learning. This research design is reffer to model from Borg & Gall that are including: research and information collecting, planning, develop preliminary from product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation. The product of this research includes a set of blended learning plan, digital learning material, digital student worksheet, and digital evaluation have good feasibilities and can be implemented in science and biology learning the junior high and senior high school. Therefore, Blended learning can be a solution to overcome limited face-to-face learning in the classroom after the COVID-19 pandemic.

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INTRODUCTION

The challenges for education in Indonesia during the Covid-19 Pandemic is to provide an education system that can accommodate the students and is able to accelerate education through the use of information and communication technology. One of the strategies used is known as Electronic Learning (E-Learning). E-learning uses technology such as computers, smartphones, and internet networks (Handarini and Wulandari, 2020). E-Learning is familiar with distance learning that facilitates interaction between students and materials, students and lecturers, teachers, instructors and students. E-learning is the answer to a health problem for the COVID-19 pandemic in education (Yuliana, 2020).

E-learning is different from conventional learning. Using e-learning requires readiness both from the infrastructure and from the technical capabilities of its users. After the online learning process for 1.5 years during the pandemic period, the Minister of Education and Culture, the Minister of Religion, the Minister of Health, and the Minister of Home Affairs of Republic Indonesia released a Joint Decree of guidelines for the implementation of limited face-to-face learning in schools

The regulation about Limited face-to-face learning is carried out by limiting the number of students to 50% and limiting study time allocation to only three hours in a class. the regulation was issued because mainly students get off the negative social impact of distance learning, especially those who do not have facilities. These negative social impacts include a decrease in learning achievement (learning loss), students dropping out of school, and violence against children (Nyoman Serma Adi et al., 2021)). the strategy of Limited face-to-face learning is done by combining the online method with conventional methods in the classroom known as blended learning. Limited face to face learning is carried out so hard that schools can continue to comply with health protocols.

Blended learning is learning that intentionally mixes online activities and face-to-face activities that aim to stimulate and support the ongoing learning process (Boelens, Wever, & Voet, 2017). Through activities designed with blended learning, learning that takes place will be more effective (Josten, Bath, Harnest, & L.Weber, 2014)

Blended learning is one solution that can be implemented by teachers in a pandemic issue. Blended learning is an opportunity to integrate the innovations and technologies offered by online learning with the interaction and participation of conventional learning. Blended learning activities are characterized by combining conventional and online learning. The combination of learning is adjusted to the learning objectives to be achieved.

Limited face-to-face learning using blended learning can be a solution in delivering learning materials during offline learning for a pandemic (Tanuwijaya & Tambunan, n.d.). The flipped classroom and hybrid method as part of blended learning that combines online learning with limited face-to-face learning is able to increase learning independence outside the classroom and improve learning outcomes (Supriatna, 2021)

During the COVID-19 pandemic, many schools conducted online learning using Google Classroom. Google Classroom is an application created by Google that aims to assist lecturers in organizing classes and communicating with students online. Google Classroom is a medium that provides convenience in the distribution of learning materials and questions and can be used as a means of assessing students' work and interacting with other users (Millatana, 2019). The advantages of Google Classroom in learning are: 1) Teachers and students become accustomed to using online learning. 2) The teacher wants to try using other online learning facilities besides Google Classroom. 3) Teachers in teaching can be wise in managing the class. 4) Make it easy for students and teachers to connect with each other inside and outside the school (Maharjono, n.d.).

The previous results of research on online learning readiness in junior high schools conducted by Juliari and Mufida (2021), indicate that in terms of technology, innovation, human resources, and self-development, teachers and students are not ready to do online learning properly. Based on this research, the online media platforms used by teachers are mostly used to upload student materials and assignments and not used to discussion or interactive process learning. This affected online learning to be less interesting, passive, and has an impact on students' low knowledge in absorbing the information provided by the teacher

The implementation of limited face-to-face learning which will be implemented starting from the 2021/2022 school year is very much supported by teachers and students in schools, but in the implementation of limited face-to-face learning it limits the number of students in class to 50% and the duration of study in class is a maximum of 3 hours. The limitations imposed by the rules make teachers have to do blended lear-

ning, but the facts are teachers still have difficulty developing effective blended learning strategic. Therefore, this study aims to develop an effective blended learning design as an alternative solution for face-to-face learning in the classroom, especially in science and biology. The learning set includes a set of blended learning plan, digital learning material, digital student worksheet, and digital evaluation.

METHOD

This research is development research that refers to the research and development model (Research & Development) from Borg & Gall (1993). This research and development consist of 10 stages, including: research and information collecting, planning, develop preliminary from product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation.

Development product validation begins with curriculum experts and learning media experts to obtain substantial recognition of feasibility. The curriculum expert is a senior lecturer that teaches strategy and curriculum subjects. The learning media expert is a lecture that teaches a multimedia subject.

Further validation was carried out to non-user senior teachers and user teachers at the school where the research was conducted in junior and senior schools. The developed product can be implemented in limited face-to-face interaction in the classroom, especially in science and biology.

The data collection instrument used a product assessment checklist feasibility. Product feasibility data analysis was carried out using a descriptive percentage technique (Purwanto, 2010) which was calculated by the following formula:

$$N = \frac{k}{Nk} \times 100\%$$

Information :
N : percentage of feasibility aspect
k : score of data collection results
Nk : maximum score (highest criteria score x number of aspects x number of validators).

Table 1. Product Feasibility Interpretation (Purwanto, 2010)

Interval kriteria	Kriteria	Konversi
86 % ≤N < 100%	Very good	A
72 % ≤N < 85%	Good	B
58 % ≤N < 71%	Enough	C
44 % ≤N < 57%	Less	D
N ≤ 44 %	Very less	E

Products that have received a feasibility assessment from experts are then applied in class. Hybrid learning design is implemented in science subjects in junior schools, with 32 students involved in this research. Flipped classroom design is implemented in biology subject in senior school, with 34 students in the class. The data collection instrument used a product feasibility assessment and student learning outcomes test. Product feasibility data analysis was carried out using a descriptive percentage technique (Purwanto, 2010).

RESULT AND DISCUSSION

Blended learning mixes online learning with face-to-face learning. This learning requires a strategy that manages the time both online and face to face learning. Therefore, a good lesson plan is needed so that blended learning can take place effectively. Blended learning can be done in two strategies, that are hybrid learning and flipped classroom.

After the Covid-19 pandemic, the government, through the Ministry of Education and Culture has allowed schools to carry out face-to-face learning in class. This learning allows students to return to school and learn in class with teachers and friends. However, face-to-face learning is still limited. the regulation about Limited face-to-face learning is carried out by limiting the number of students to 50% and limiting study time allocation to only three hours in a class.

Implementation of blended learning in schools after the COVID-19 pandemic, both in the form of hybrid learning and flipped classrooms, need learning tools that designed specially for limited face-to-face learning. The learning tools are lesson plans, teaching materials, student worksheets, learning media, and learning evaluations of blended learning. The form of lesson plans for hybrid learning and flipped classroom learning is presented in the following figure.

Learning Method
1. Learning Models : *Discovery learning* (contoh)
2. Learning Strategy : *Flipped Classroom*

Learning Activities

Step of activities	Online learning	Face to face learning	Time
A. Preliminary			
Orientation			
Aperception and motivation			
B. Essence			
Stimulation			
Problem Statement			
Data Collection			
Data Processing			
Verification			
Generalization			
C. Clossing			
Evaluation			

Figure 1. Design acitivy of flipped classroom

In a flipped classroom, the teacher begins learning by providing online activities and materials for students to work on and study, then during face-to-face learning in the classroom, the teacher continues to review assignments and material reinforcement. The syntax of the learning model used in flipped classroom learning is not separate and is a learning unit for one meeting. The flipped classroom learning requires additional applications as a learning management system, such as google classroom.

Learning Method
1. Learning Models : *Discovery learning* (contoh)
2. Learning Strategy : *Hybrid learning*

Learning Activities

Step of activities	Online learning	Face to face learning	Time
A. Preliminary			
Orientation			
Aperception and motivation			
B. Essence			
Stimulation			
Problem Statement			
Data Collection			
Data Processing			
Verification			
Generalization			
C. Clossing			
Evaluation			

Figure 2. Design activity of Hybrid learning

In hybrid learning, the teacher combines offline and online learning at the same time, students who receive offline learning and students who receive online learning share the same activities as the teacher at that time. Hybrid learning requires additional applications for virtual meetings during the learning proses.

The design activities learning of hybrid learning and flipped classrooms use discovery learning as examples. The lesson plan refers to the Format taken from the training module for the 2013 Curriculums, Ministry of Education and Culture, 2019. Furthermore, Design Activities of Hybrid learning were developed for science material in junior school, and design activities of flipped classrooms were developed for biology material in senior school. Effective hybrid learning and flipped classrooms are supported by using learning media, teaching materials, student worksheets, and evaluations where their form of them was adapted to the activities carried out in the classroom. For example, in flipped classroom activities, learning materials, and student worksheets are developed in the form of digital because will be studied by students before entering the class.

The Learning tools have been developed, and then validated by experts and practitioners in schools. This validation ensures that the learning tools are appropriate to the school.

Table 2. The Results of hybrid learning tools validation by experts and practitioners

Learning tools	Percentage of feasibility	Interpretation
Lesson plan	88,45	Very good
Electronic worksheet	78,3	Good
Learning media	79	Good
Evaluation	86, 83	Very Good

Table 2 shows that the hybrid learning tools has good feasibility and can be implemented in the school. During validation, experts give suggestion to write a plan for assessing the attitudes and skills. The teaching materials and digital worksheets that are developed also need to adjust the font size and background colour so that students are more interested in learning the material.

Table 3. The Results of flipped learning tools validation by experts and practitioners

Learning tools	Percentage of feasibility	Interpretation
Lesson plan	87,41	Very good
Electronic worksheet	80,42	Good
Learning media	79,42	Good
Evaluation	88,57	Very Good

Table 3 shows that the flipped learning tools has a good feasibility for use in learning at school. The experts suggest to more careful in writing the material in the developed teaching materials and worksheet so that there are no errors in typing letters.

Learning tools are a set of learning plans prepared by the teacher as a guide in conducting learning in the classroom. It means that a learning plan is an activity to formulate learning outcomes into learning objectives, how to achieve learning goals, and how to assess these learning objectives (Ministry of Education, n.d.). To develop learning tools, it is necessary to design learning strategies that are able to provide quality experiences for students according to the situation and conditions in the schools.

Blended learning is a strategy that can be an alternative solution for limited face-to-face learning in the classroom (Tanuwijaya & Tambunan, n.d.). Learning with blended learning has a more effective impact both online and offline learning (Abdullah, 2018). Blended learning can be done in two strategies, that are hybrid learning and flipped classroom.

Hybrid learning is strategy that combines offline and online learning at the same time. Hybrid learning combines message delivery in two ways, namely online and directly in face-to-face learning (Abdulhak et al., 2018). In process of hybrid learning some students that present in class and some students are in online (not present in class) are at the same time. Hybrid learning strategies can be used to assist the learning process that limiting the number of students in the class to only 50% of the total. Hybrid learning provides opportunities for students to prove the concepts they understand and help add or improve understanding of the material during the learning process (Aristika et al., 2021).

Hybrid learning is able to improve teacher competence in learning, including increasing the ability to use information technology and the ability to manage learning using effective strategies using technology (Mulhayatiah et al., 2021). The application of hybrid learning in schools has a significant effect on student learning outcomes and also supports the learning process in accordance with the 21st century (Mahmudah, 2019).

Hybrid learning that is carried out directly on students in class and at home requires special strategies in planning their learning. Hybrid learning depends on how the teacher teaches, which is different from the usual activities in the classroom (Bower et al., 2015). Factors that need to be considered in implementing Hybrid learning include the teacher's ability to use technology, the location of the students, the design of the activities to be carried out, and the learning platform used (Raes et al., 2020).

The use of hybrid learning can improve the weaknesses of online and face-to-face learning. This is because, in hybrid learning, students are allowed to access the internet freely so that they can increase activity in learning, besides that the interaction between teachers and students directly through video conference will increase students' attention in online classes (Lestari et al., 2021) . On the other hand, (Meydanlioglu & Arikan, 2014), in his research, concluded that there was an increase in access to teacher material content by students, including an increase in student connectivity with materials in hybrid format learning, but there was no difference in the effectiveness of the interactions that took place between students who took online and face-to-face learning.

Flipped classroom (reverse learning) is a learning strategy that student before attended studied in class must to studied first through teaching materials and assignments given by the teacher, then during class learning the teacher follow up to review assignments and provide material reinforcement to students. The flipped classroom is a strategy in the field of education where in this strategy students jointly engage in interactive activities in the classroom and then interact with computer-based equipment individually when outside the classroom (Bishop, 2013)

The flipped classroom strategy can be used to assist the implementation of limited face-to-face learning which limits the duration of student learning in class. Flipped classroom learning has advantages compared to ordinary classical learning. Learning in the flipped classroom can improve students' independent learning, the ability to organize learning materials, and improve students' collaboration skills through discussion forums, thus helping to improve students' behavior and cognitive in learning (Jdaitawi, 2019). Research from (Gilboy et al., 2015) using the flipped classroom strategy, students are more effective in accessing access to learning materials shared by teachers and feeling connected to teachers during online learning.

An effective flipped classroom requires several things that be prepared, including: the quality of the videos or online teaching materials used to convey material in the reverse learning process, the way of interaction or the tools used to help students get feedback when they are working on assignments in outside classroom, as well as the ability of teachers and students to use the technology (Akçayır & Akçayır, 2018). Flipped learning can be implemented in limited face-to-face learning to facilitate students understand the concept of the material well, it means that teacher is able to provide the concept in its entirety even though it is limited by time. This is in accordance with the results of research by Awidi & Payner which states that flipped classroom learning is able to enrich students' experience in learning, increase student attendance in class, facilitating students' ability to understand the material more deeply, and increasing the proportion of students in doing assignments online (Awidi & Paynter, 2019) .

Blended learning can be a solution to overcome limited face-to-face learning in the classroom after the COVID-19 pandemic. Blended learning designs that combine online and offline learning can be developed with certain models. The success of blended learning does not only depend on the quality of the material and the digital environment that is formed, but also the level of readiness of students who will study in virtual classes, the ability to organize features in the learning management system, and the attitude of students' responsibility in doing the tasks assigned by the teacher. (Hubackova & Semradova, 2016).

CONCLUSION

The Limited face-to-face learning is done by combining online methods with conventional methods in the classroom known as blended learning. Blended learning can be applied in 2 strategies, namely flipped classroom and hybrid learning Both in the form of hybrid learning and flipped classrooms, need learning tools that designed specially for limited face-to-face learning. The learning tools are lesson plans, teaching materials, student worksheets, learning media, and learning evaluations of blended learning. The product of hybrid learning and flipped classroom from this research has good feasibility and can be implemented in the school. further research improvement is to write a plan for assessing the attitudes and skills; teaching materials and digital worksheets that are developed also need to adjust the font size and background color so that students are more interested in learning the material, and more careful in writing so that there are no errors in typing letters

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