Blended Learning: Online and Recorded Video as Innovative Strategy to improve 21 Century Skills for Pre-Service Teacher
In a Systematic Literature Review

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ABSTRACT

Blended Learning is a formal education program in which students learn at least partially through online learning, with some element of student control over time, place, path, and/or pace. Typically, Blended Learning involves part teacher-led classes and part-time classes where students are instructed in the content through an online digital curriculum. The Blended Learning model has the advantage of being able to create learning without being limited by space and time. Blended Learning allows learning to take place even if they do not meet face to face in the same place. Fellow students can also share learning materials online. The weaknesses of the Blended Learning model require adequate internet access. Students who do not have facilities related to facilities and infrastructure that support online learning such as computers, laptops, or smartphones will find it difficult to carry out learning using the Blended Learning Model.

Keywords: Blended, Learning, Online, Recorded, Video.

1. INTRODUCTION

Learning during the Covid 19 Pandemic is faced with the problem of looser learning control, especially in Higher Education. Including at the Universitas Negeri Padang, especially in the learning of prospective teachers. During this Covid-19 pandemic, distance learning using various applications was implemented by lecturers to help students to get more leverage in learning. Several types of research and digital searches have been carried out by several researchers on how the University responded in the face of the Covid 19 pandemic. The University responded by distance learning via information technology, with online media, and some chose to maintain a 1.5-meter distance from one another [1]. Empirical feelings for international students in China written by can be a reference for how students feel and experience during the Covid 19 period in China carrying out the learning and learning process, online, where there is pride in the speed of action in China and initial skepticism about online learning, their difficulties maintain self-commitment to continue learning and maintain the spirit to remain consistent in ongoing online learning activities [2].

The question that is often asked by educators is how to transform attitudes, values, and character (soft skills) to students and prospective teachers. Learning in the 21st century requires skills, there are at least 3 skills that must be possessed in learning, namely information literacy skills, media literacy skills, and information and communication technology literacy (ICT) [3]. To achieve these 3 expected skills, the lecturer as a lesson planner plays an important role in preparing relevant learning. The learning model that can be a solution to problems during the covid pandemic and facing the challenges of achieving 21st-century skills for students is through Blended Learning

Blended Learning is defined as any formal education program in which students learn at least partially through online learning, with some element of student control over time, place, path, and/or pace [4]. Typically, Blended Learning involves part teacher-led classes and part class time in which students are instructed in the content through an online digital curriculum. The available evidence suggests that Blended Learning can produce some positive impacts

on student learning perhaps depending on the content area and the type of Blended Learning implemented [5]. The practice of Blended Learning is felt to be useful in mathematics classes, especially for students who are behind academically and need additional learning [6].

Blended Learning can help improve high-quality professional development for principals [7]. Students reveal that their relationship in Blended Learning is student-centered. This student-centered relationship is the best practice, engages students, and results in student learning [8]. Students' perceptions of blended according to positive learning styles where the highest convergent ranking was followed by Accommodator, Divergent, and Assimilator [9]. Blended Learning is effective in developing Saudi students' competence in writing paragraphs [10]. Blended Learning is supported by four core competency areas (1) online integration, (2) data practice, (3) personalization, and (4) online interaction [11].

During the COVID-19 pandemic, learning activities in the form of face-to-face meetings are difficult to carry out. Face-to-face meetings using video conferencing such as Google Meet, Zoom, and Skype are an alternative to what is called virtual face-to-face. Zoom cloud meeting is one of the most popular applications used in learning during the covid 19 pandemics. Many use this zoom application because it has features that are easy to use [12]. The use of Zoom Cloud Meetings is considered practical and efficient for students because by using Zoom Meetings, communication between students and lecturers is easier than communicating in writing or via chat [13]. Synchronous and asynchronous online whole-class meetings can help students feel a stronger connection with their peers and instructors [14]. Providing online instruction (asynchronously) is not sufficient for the meaningful involvement of students in the implementation of learning, so it is necessary to implement Blended Learning [15].

In this article, a literature review will be conducted on Blended Learning: Online and Recorded Video as Innovative Strategy To improve 21-century Skills for Pre-Service Teacher.

2. METHOD

This study limited the search for literature to the topic of project-based learning and the stages of its implementation so that it is relevant to be one of the alternative methods that can be applied to learning condition in the Covid-19 era which makes face-to-face learning unable to be implemented. Project-based learning is implemented as an effort to develop students' 4Cs in order to be successful in completing their education and in their lives in the 21st century era.

This article is a literature review carried out by steps in learning by Arksey and O'Malley (2005) and summarizes the results of each step as shown in table 1.

3. RESULT AND DISCUSSION

3.1. Implementation of Blended Learning

Blended learning developed around the 2000s and is now widely used as an alternative to learning during the pandemic. Blended learning is a learning approach that seeks to integrate face-to-face offline learning with online (distance) learning by utilizing a choice of communication tools that can be used by lecturers and students [16],[17]. Blended Learning allows students to be able to learn independently of time, place, and sequence, as well as learning speed [18]. As a strategy that combines face-to-face learning with online learning, blended learning must be designed in such a way that learning objectives can be achieved.

Along with the times, the implementation of blended learning is growing. Blended learning is now not only a combination of face-to-face learning and online learning, but it can also mean the combination of all modalities, learning styles, and instructional methods in learning, as well as the learning resources, used [19]. So, Blended Learning can also be interpreted as a combination of synchronous and asynchronous learning that can be done online or offline, or also a combination of both. In this literature review, the author wants to focus more on the study of blended learning on the combination of synchronous and asynchronous learning that is carried out online.

Synchronous learning is learning that is carried out at the same time between lecturers and students, or often known as real-time [20]. While asynchronous learning is learning that is not carried out at the same time between lecturers and students [21]. In its implementation, synchronous learning is often found in offline learning, while asynchronous learning is often applied to online learning. However, in further development with the online meeting application, it is very possible to create blended learning that combines

synchronous and asynchronous methods based online [22]. Synchronous learning can be created when students and lecturers can exchange information and interact together in an online learning community with a late set time together using learning technologies such as internet conference, video teleconferencing, and chat [23],[24]. While asynchronous learning is learning that

is carried out freely not bound by time, where students can interact with special learning materials at the time they choose [25],[26].

Table 1. Literature Review Steps

	Step/Activities	Outcomes
1.	Identify research question(s)	How is blended learning implemented? what are the advantages and disadvantages of applying blended learning, how to make blended learning an innovative learning strategy during the covid 19 pandemic, how to make blended learning a strategy to improve the 21st-century skills of prospective teacher students?
2.	Identify key terms and use them to find pertinent studies	The following are the strings of key terms used for the primary search of materials. 1. Implementation Blended learning 2. Blended learning advantages and disadvantages 3. Blended learning as a learning strategy in pandemic covid 19 eras 4. Blended learning as learning strategy to improve 21 century Skills for Pre-Service Teacher.
3.	Select the related studies	The literature review was conducted from a total 47 documents. The following is the breakdown: 1. 66 Journal articles 2. Four conference papers 3. Three books
4	Extract the major themes and constructs	The major themes that were running throughout the available literature include: 1. Opportunities and challenges for using blended learning as a learning strategy during the COVID-19 pandemic 2. Opportunities and challenges of using blended learning as a learning strategy to improve the 21st-century skills of prospective teacher students.
5.	Integrate, summaries and report the findings	The study integrated and summarized the finding in step 4 and made a narrative report that is presented in this paper

In this literature review, the author focuses the discussion on online blended learning by combining asynchronous methods; direct interaction between students and lecturers which is carried out at the same time using a supporting virtual meeting application, with the synchronous method; providing pre-recorded learning videos as learning resources, then students are given the freedom in terms of time to carry out their learning activities on the supporting website provided (e-learning).

3.2. *Blended Learning Advantages and Disadvantages*

Blended learning is a learning activity that can be carried out in the classroom or outside the classroom by utilizing technology [27], [28].

Blended learning was developed because of the weaknesses that arise in face-to-face learning and e-learning [29]. Besides being developed because of the weaknesses of the two learnings, blended learning was developed because it has many advantages [30], [31]– [35].

The Blended learning model has the advantage of being able to create learning without being limited by space and time [30],[31], [32]– [37] By utilizing learning technology it can be implemented when and where [29], [36]. Learning problems related to distance and time can be overcome with Blended Learning which allows learning to take place even though it is not face to face in the same place [19], [36], [37]. Fellow students can also share learning materials online [29], [38]. Students can also discuss

and communicate with the teacher both in class and outside the classroom [27], [29].

The advantage of the next Blended Learning model is that it can create independent learning for students [27],[29], [31], [38]. Students can study the subject matter independently by utilizing the materials available online [29], [30], [31]. The teacher designs and submits materials and questions online so that the learning process can take place independently by students [27], [29], [39], [40]. Teachers can ask students to take tests conducted before learning begins online so that teachers can provide feedback and utilize test results effectively [27], [29], [39]. Teachers can control and manage the learning that is done by students independently.

The increased interaction that occurs between teachers and students is also one of the advantages of the Blended Learning Model [29], [30], [41]. Interaction can occur in teaching 'synchronously' (at the same time) or 'asynchronously' (at different times) [29]. Through the Blended Learning model, the interaction between fellow students and students and teachers becomes better. Students who are embarrassed to speak or give opinions directly in the classroom in a face-to-face manner can use online communication to interact with teachers and other students. The Blended Learning model provides a better atmosphere in producing higher student participation because of the many interactions compared to face-to-face or online classes [29], [38], [41]

By using the Blended Learning model, learning can be carried out effectively and efficiently [29], [42], [43]. Learning can be carried out effectively because the Blended Learning model can increase student participation in learning in class and learning independently [29], [34], [35], [39]. The Blended Learning model takes the advantage of each face-to-face learning in class and online. Learning can also be done efficiently by saving time, cost, and space [27], [29], [30], [35], [37], [44]. Blended Learning can save time as students can complete the time to do assignments in a short time. Furthermore, Blended Learning can also save cost and space. Students can save costs in buying physical books because learning materials can be accessed online. Students can also save on transportation costs to the school. Blended learning can also save space because it can be done anywhere. Schools with a large number of students who are usually divided into several shifts for face-to-face learning in class can be overcome using the Blended Learning model.

Among the many advantages, there are also some disadvantages of learning using the Blended Learning Model [29], [34], [40], [44]. The Blended Learning model requires adequate internet access. If

the internet network is not adequate, it will make it difficult for students to participate in learning with the Blended Learning Model [44]. Furthermore, the media used in the Blended Learning model are also diverse [39]. Students who do not have facilities related to facilities and infrastructure that support online learning such as computers, laptops, or smartphones will find it difficult to carry out learning using the Blended Learning model. Students are also required to have adequate technological knowledge [34], [39], [44]. Students who do not have good knowledge of technology will find it difficult to follow learning with the Blended Learning model.

Based on the description above, it can be concluded that using the Blended Learning Model has advantages and disadvantages. The advantages of using the Blended Learning model are that it can create learning without being limited by space and time, creating independent learning students, increasing student participation in learning and interactions that occur between students and teachers and students, and learning can be carried out effectively and efficiently. While the shortcomings of the Blended Learning model are the need for internet access, facilities, and adequate technological knowledge by teachers and students

3.3. Blended Learning as A Learning Strategy in Pandemic Covid 19 Era

During the COVID-19 pandemic, 1.2 billion students were unable to carry out classroom learning [45]. Direct contact cannot be carried out during the covid pandemic, so it is necessary to arrange the implementation of activities [46]. Educators urgently need the ability to present the latest technology in technical studies as well as develop students' skills to work with mobile devices and technical information available on the university web [47]. Blended learning is one of the strategies for using technology during the covid 19 pandemics. The application of blended learning with Google Classroom can increase students' learning independence and critical thinking skills [48].

Blended learning has become the choice of many educators to improve learning achievement during the COVID-19 pandemic [49],[50]. The implementation of blended learning needs to be well designed so that the benefits of the learning can be felt [40]. There are three types of online learning implementation, namely synchronous learning, asynchronous learning, and blended online learning. Blended online learning can be done by mixing synchronous and asynchronous types of online learning, using chat/forums, quizzes and others. Implementation of learning with blended learning

tends to report more positive effects than distance learning only synchronously or asynchronously [51], [52].

3.4 Blended Learning as Learning Strategy to Improve 21 Century Skills for Pre-Service Teacher.

Skills in the 21st century are skills that must be possessed by individuals to be able to live in the 21st century era. Some of the skills needed include: critical thinking and problem solving, communication, collaboration, creativity and innovation (4CS) [53]. Prospective teachers in the 21st century need various important skills, not only cognitive skills but also life skills, workforce skills, interpersonal skills, applied skills and metacognitive skills [54]. A teacher in the 21st century requires learning skills, collaboration and skills to use ICT [55], [56], [57]. Cultivating 21st century skills is very challenging for the world of education because of the need for collaboration and digital literacy in the education system [53]. To grow these various skills, they can be developed through learning that utilizes information technology and computers. Learning using information technology and computers can bring real-life situations into the classroom by showing relevant videos, pictures, short stories and animations [58].

Blended learning is an implementation of the use of learning using information technology and computers. Blended learning supports the achievement of increasing the ability of students' technology pedagogical content knowledge framework [6]. Blended learning is widely applied in various countries and provides a flexible learning experience for students [59]. In blended learning, educators must be able to plan, implement, and manage class well [60]. Blended learning brings better results compared to learning that only uses an online approach [61]. Learning with blended learning produces better results than traditional learning [62].

The application of blended learning is able to increase student activity in learning [63], provide a better personal experience [11], provide more opportunities for students to participate in lectures [14]. Learning with blended learning can be designed to provide meaningful learning for students [64]. Students will experience meaningful learning when they are in participatory learning [65]. Blended learning is also effective in growing language skills and student autonomy [6]. Blended learning is able to improve the ability of 21st-century learners [66]. Various studies conducted in various countries have shown that blended learning

is one of the recommended methods to improve the abilities of 21st-century students.

4. CONCLUSION

Learning with blended learning is learning that gives students the opportunity to learn with face-to-face and online systems. Various benefits are felt by learning with a blended learning system including flexibility in time, distance, and the opportunity to actively participate in lectures. The implementation of blended learning was originally in the form of face-to-face meetings with the use of online learning, but with the COVID-19 pandemic conditions and increasingly advanced technological developments, various patterns of implementing blended learning have arisen. Learning with blended learning can be carried out with variations in the implementation of online learning, for example, asynchronous with synchronous or online video with the recorded video. Further research is needed to measure the effectiveness of learning with a blended learning system with various variations of existing online learning.

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