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SYSTEMATIC LITERATURE REVIEW: ANALYSIS OF CHALLENGES AND OPPORTUNITIES FOR IMPLEMENTING BLENDED LEARNING TO INCREASE LEARNING FLEXIBILITY IN HIGHER EDUCATION

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Abstrak
Perkembangan teknologi yang hadir telah mendorong lembaga pendidikan untuk memberikan inovasi dalam menciptakan pembelajaran yang mendukung pendidikan di era digital. Blended learning menjadi alternatif bagi lembaga yang masih menerapkan pembelajaran tatap muka untuk mengintegrasikan teknologi dan menjadi solusi untuk mengatasi permasalahan durasi waktu pembelajaran agar mahasiswa dapat belajar secara aktif dan fleksibel. Penelitian ini bertujuan mengkaji literatur secara sistematis terkait implementasi blended learning dalam memberikan fleksibilitas dalam belajar. Metode penelitian yang digunakan adalah Systematic Literatur Review model PRISMA (*Preferred Reporting Items for Systematic Review and Meta-analysis*). Artikel yang diambil pada penelitian ini berupa artikel jurnal terakreditasi Sinta dan jurnal internasional terindeks Scopus. Hasil penelitian mengungkapkan bahwa dalam mengimplementasikan blended learning, Pendidikan tinggi perlu mempertimbangkan tantangan serta peluang yang ada, serta memastikan kesiapan dosen, mahasiswa, serta fasilitas kampus agar kegiatan belajar dengan blended learning tersebut dapat belajar dengan lancar dan mencapai tujuan yang diharapkan.

Kata Kunci: Blended Learning; Fleksibilitas; Tinjauan Literatur

Abstract
The rapid development of technology requires educational institutions to provide innovation in creating learning that supports education in the digital era. Blended learning is an alternative for institutions that still implement offline learning to integrate technology and become a solution to address the issue of prolonged learning durations so that students can learn actively and flexibly. This research is to lead a comprehensive systematic review related to the enactment of blended learning in providing flexibility in learning. The research method used is the Systematic Literature Review model PRISMA (Preferred Reporting Items for Systematic Review and Meta-analysis). The research article taken in this study are in the form of Sinta-accredited journal articles and Scopus-indexed international journals. The outcome of the research show that in implementing blended learning, universities need to consider the challenges and opportunities that exist and ensure the readiness of lecturers, students, and campus facilities so that learning activities with blended learning can run smoothly and achieve the expected goals.

Keyword*: Blended Learning; Flexibility; Systematic Literature Review*

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INTRODUCTION

A nation's ability to sustain and enhance the caliber of its people resources depends heavily on its educational system. The significance of education as stated by (Fitriani, 2021) aims to develop competent human resources with an emphasis on spiritual, emotional, and intellectual dimensions. Competent people can be produced by high-quality education. Naturally, raising the standard of education is something that requires a lot of focus in order to do this. Thus, technology-based learning is one strategy that can be applied to raise the standard of education. The development of technology which is increasingly developing massively, encourages educational institutions to continue to provide innovation in creating effective and efficient learning in order to achieve an optimal educational goal. E-learning as an important approach to education that will survive until now has changed the way people learn in the 21st century. The combining of online learning and blended learning in higher education is no longer inevitable (Xu et al., 2023). Technology and learning media are inseparable because both has same function to facilitate educators in conveying messages to students effectively and are also able to increase educator creativity. This is an effort by educational institutions to follow the growth of technology-based learning systems. In the modern world, using technology as a teaching tool is inevitable. (Suminar, 2019).

Blended learning is a strategy that is often used in higher education to make an effective and efficient learning process because it offers greater flexibility in terms of time and place, making higher education accessible to a wider community. (Müller & Mildenberger, 2021). To put it simply, blended learning seeks to improve learner engagement and contribute more flexible learning performance by assisting in-person and virtual sessions, by using a variety of online learning objects to support offline classes (Hrastinski, 2019). Basically, the system used in blended learning is the same as direct learning. (Smaldino et al., 2012) Because the components of blended learning still involve objectives, lecturers, students, methods/strategies/media/materials, and evaluation (Prawiradilaga, 2016). Blended learning can be a major consideration for higher education to change offline learning with online learning. Well-designed blended learning will provide learning that is equivalent to offline learning even though class meeting time is reduced by 30 - 79 percent. (Müller & Mildenberger, 2021). With blended learning, it can make it easier for students in higher education to study anywhere and anytime.

The implementation of blended learning must be qualified to the needs and characteristics of learning by using a specific pedagogical model approach so that the expected purpose can be reached. (Horn & Staker, 2015) Presented four blended learning models, namely: 1) Station Rotation Model: conducted online or offline, this model rotates various groups according to a preset timetable. 2) Flex Model: Lecturers still provide venues to support offline meetings and are outfitted with digital amenities, but learning materials will be given online. 3) The Self-blend Model, in which learner supplement conventional courses with one or more online courses. 4) The Enriched Virtual Model, in which learner snap their time among learning virtually and on campus. In order to address the issue of learning duration and enable learner to study actively and flexibly, blended learning may be a viable alternative for educational institutions that continue to use in-person instruction.

Previous research suggests that further systematic and carefully reviewed research is needed to inform the design and learning approaches integrated into blended learning (Jen & Hoogeveen, 2022; Müller & Mildenberger, 2021; Xu et al., 2023). Research by (Jen & Hoogeveen, 2022) showed that although online learning is more supportive of some learning outcomes, different studies have shown that online learning and in-person training are created simultaneously, some students could still choose in-person instruction. Additionally, additional research has been done to ascertain how beneficial blended learning is for learning. through improving academic

achievement, independent learning skills, and student learning attitudes by proposing the flex model (Tong et al., 2022).

Although previous studies have provided some perspectives in finding solutions to identify and solve learning problems, it is still not easy to get a complete picture of how to analyze learning problems to get the right solution and can provide added value for adult learners who have other activities besides studying. Therefore, this study focuses on literature review and information gathering about the putting on blended learning in providing flexibility to students from various other studies that have been conducted, so that can know comprehensively about what are the advantages, disadvantages, and demand in implementing blended learning in an educational institution. So that way, this information can be used as an initial basis for educational institutions in choosing, preparing, and implementing incorporating blended learning into the educational process in order to appropriate. In this study, several important questions related to learning were raised. First, to find out the demand faced in using blended learning in the learning process. Next, how to design an effective blended learning model, which is expected to sustain learning flexibility in higher education. Finally, exploring how the blended learning model can contribute to the development of 21st-century skills in the higher education environment.

METHOD

This systematic literature review was led by the PRISMA (Preferred reporting items for systems review and meta-analysis) guidelines. A diagram that shows and visualizes the procedure of identifying and choosing the study findings that are being considered is provided by the PRISMA guidelines. The eligibility requirements, data collection procedure, data specifics, and findings synthesis are all frequently described using the PRISMA approach as a reference (Surahman & Wang, 2022).

Selection criteria in systematic literature reviews (SLR) are essential to determine the scope and ensure the validity of the evidence synthesized to answer a particular research question. These criteria, often referred to as inclusion and exclusion criteria, are pre-defined in the review protocol and are essential to maintaining the systematic nature of the review process. Inclusion and exclusion criteria are pre-defined to ensure the selection of relevant primary studies. To improve the credibility and strength of SLR, stricter monitoring and adherence to methodological standards are needed, as well as consideration of innovative approaches to refine and apply selection criteria more consistently. Table 1 displays the inclusion and exclusion criteria.

Table 1. Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Article Type: Scientific Journal	Article type: proceedings, non-research articles, books, or teaching materials
Articles use Indonesian and English.	Articles use languages other than Indonesian and English.
Articles are accessible	Articles cannot be accessed.
Articles review blended learning.	Articles do not discuss blended learning.
Articles are indexed by SINTA or internationally indexed by Scopus	Articles are not indexed by SINTA or Scopus

Figure 1 shows that at the identification stage, out of the 180 items that were found, 58 did not fit the requirements. Additionally, as indicated in Table 1, screening was done using inclusion and exclusion criteria in order to respond to the study questions. A few of the papers did not directly address the research questions. 35 publications satisfied the requirements for this study's review based on the screening phase. The 35 articles were then examined to address the research

issue. The review's findings were then examined, and in light of the literature study's findings, judgments were made about each research issue.

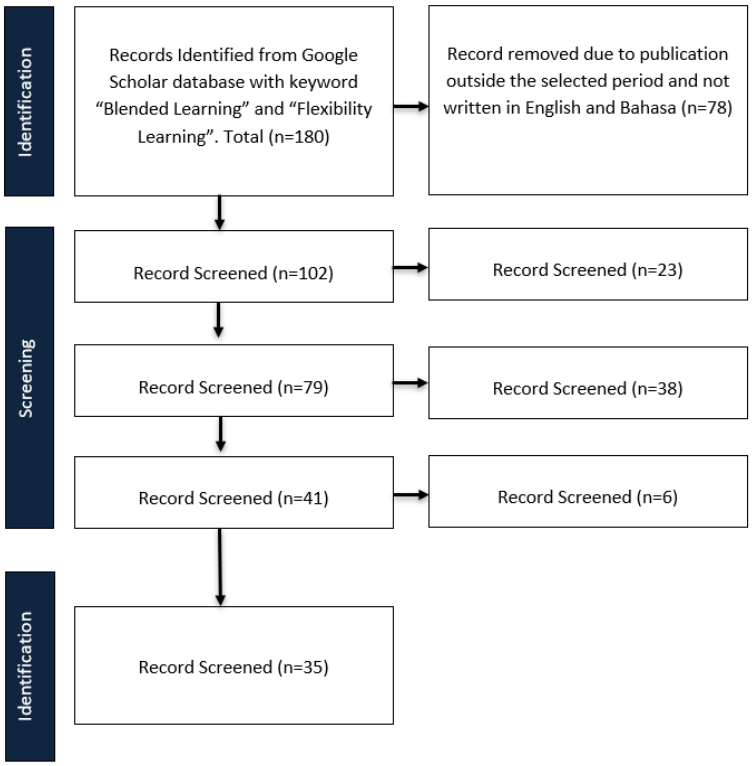

Figure 1. Search and Selection Process Study Using PRISMA Flowchart

RESULTS

The initial process to understand the blended learning trend in providing learning flexibility began with the implementation of a systematic literature review. Through metadata from the Harzing's Publish or Perish application, 180 articles were found. After going through a selection process with inclusion criteria, finally, 35 articles were selected as the final results that met the criteria. The following are some articles that fall into the inclusion criteria for research: shown in Table 2.

Table 2. Inclusion Criteria Article

Index	Source	Amount
Q1	(Al-Kahtani et al., 2022; Ashraf et al., 2021; Attard & Holmes, 2022; Fan et al., 2024; Harper et al., 2024; Heilporn & Lakhal, 2021; Hill & Smith, 2023; Kang et al., 2022; Müller & Mildenberger, 2021; Tong et al., 2022; van Dorresteijn et al., 2024; Westhuizen et al., 2023; Xu et al., 2023; Zhao & Cao, 2023; Zheng & Zhang, 2020)	14
Q2	(Amenduni & Ligorio, 2022; Ashraf et al., 2021; Håkansson Lindqvist et al., 2024; Heilporn & Lakhal, 2021; Jen & Hoogeveen, 2022; Li et al., 2022; Nikolopoulou & Zacharis, 2023; Shrivastav et al., 2024; Wut et al., 2022)	9
Q4	(Shamad & Wekke, 2019; Syarifah et al., 2022)	2
SINTA 2	(Andrini & Yusro, 2021; Darmayanti et al., 2022; Siregar & Manurung, 2020; Sukmawati et al., 2020)	4
SINTA 3	(Dewi, 2021; Fitriyanti et al., 2023; Munsharif et al., 2024; Rina Patriana Chairiyani et al., 2023; Rudi, 2021; Siswanto et al., 2023)	6

The difficulties encountered when integrating blended learning into the educational process are the main topic of this study. Based on the analysis conducted on various studies, the author found several significant challenges that need to be considered. The following are the main findings resulting from the analysis.

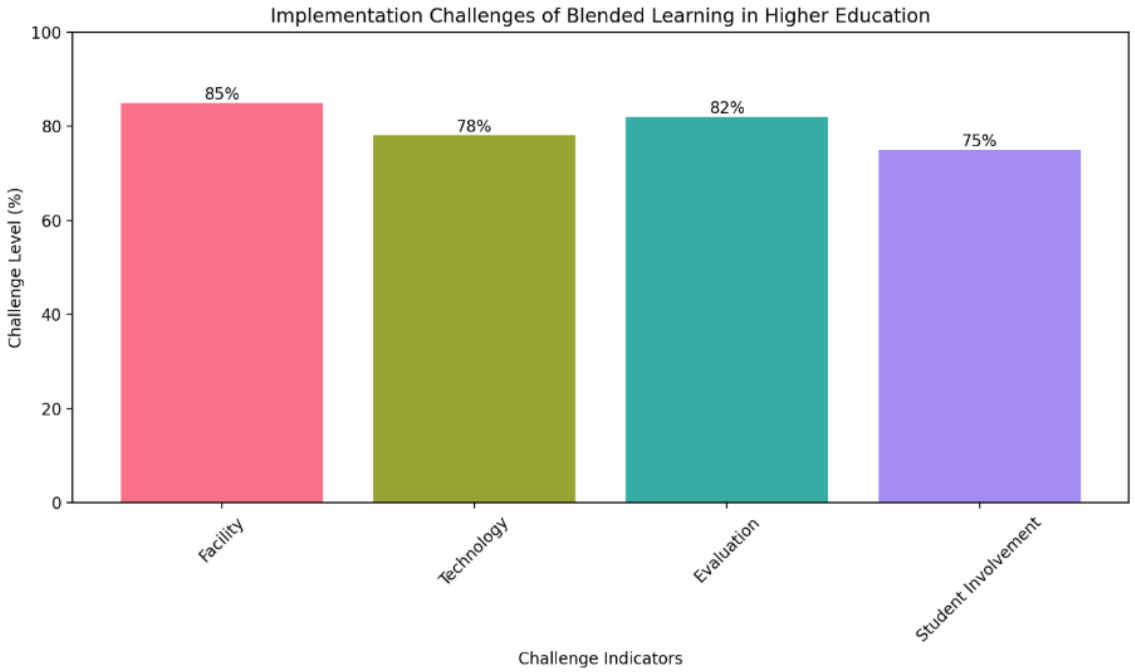

Figure 2. Challenges of implementing blended learning

The data provides insight into the demand of blended learning in higher education, streak on four indicators: facilities, technology, evaluation, and student engagement. Here is an analysis of the data to highlight the most significant challenges and their implications:

Table 3. Implementation Challenges of Blended Learning in Higher Education

No	Indicator	Percentage %	Description
1	Facility	85%	Facility is the most significant challenge, indicating that infrastructure, equipment, and learning spaces are often inadequate or not optimized for blended learning. Higher education institutions may face difficulties in providing sufficient physical and digital resources.
2	Evaluation	82%	further highlights problems with assessment methods, progress monitoring, and providing effective feedback. This suggests the need for better tools and strategies for evaluating student performance in a blended learning context.
3	Technology	78%	These challenges related to digital tools, internet connectivity, and technical support reflect the ongoing digital divide and the need for robust technical infrastructure and support systems.
4	Student Involvement	75%	Despite being the lowest indicator, student participation and engagement remain significant challenges. This suggests that students may have difficulty adapting to the blended learning model, requiring more effort to encourage active engagement and involvement.

Dependent on the data, it can be assumed that the facilities and evaluation indicators are the most pressing challenges, indicating that institutions need to prioritize investment in infrastructure and develop more effective evaluation frameworks. Technology remains an important driver, but the challenges are slightly less severe, likely due to the increasing adoption of digital in education.

Student engagement highlights the importance of designing engaging and inclusive learning experiences to ensure active participation. Therefore, institutions should focus on improving facilities and creating flexible learning spaces, developing innovative and measurable evaluation methods, providing technical support that can mitigate technology-related issues, and strategies to increase student engagement.

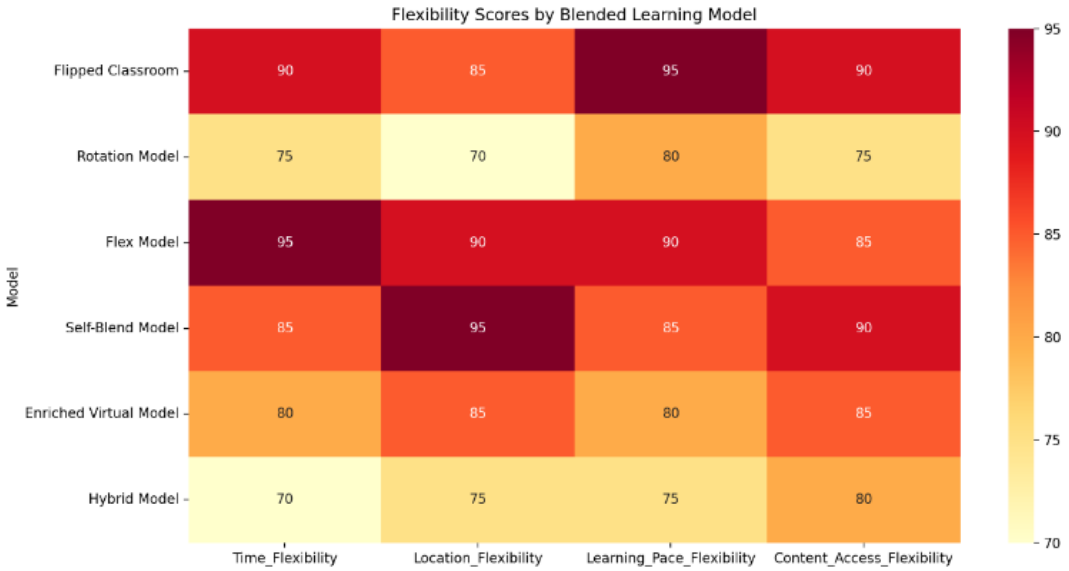

Figure 3. Flexibility Score by Blended Learning Model

Furthermore, this research aims to provide recommendations for designing an effective blended learning model to support learning flexibility in higher education. Based on the analysis conducted on flexibility in blended learning models from various studies, the author found several important aspects that need to be considered. The following are the main findings resulting from the analysis.

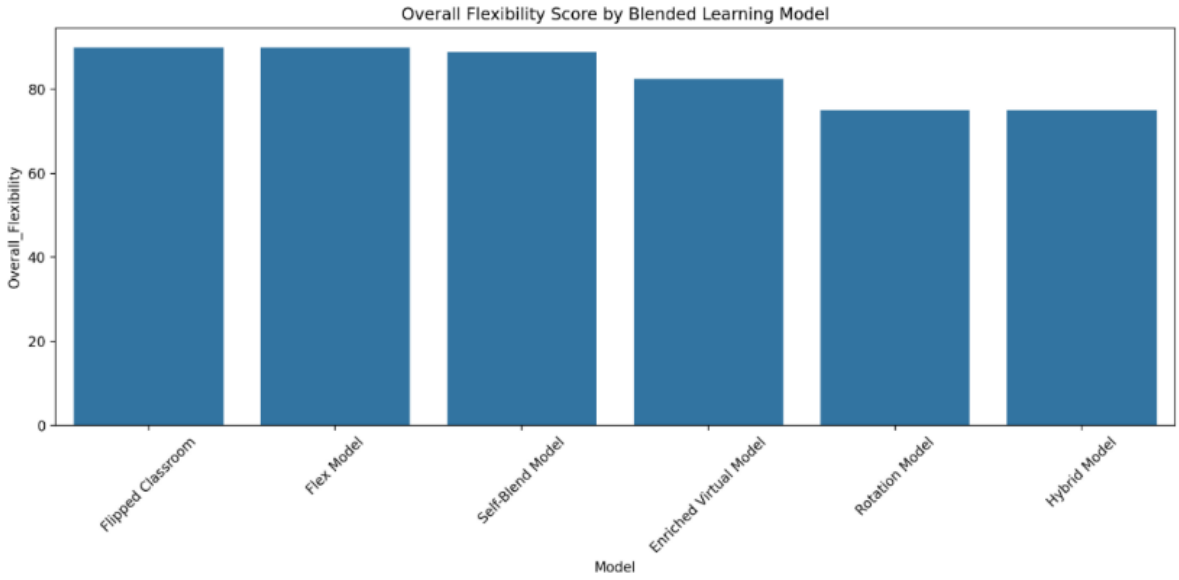

Figure 4. An effective blended learning model supports learning flexibility.

Based on the data, shows that the overall flexibility rating for various blended learning models, with "Flipped Classroom" and "Flex Model" getting the highest scores reviewed from several indicators including time, location, learning pace, and content access. For the flipped

classroom model, a score of 90 was found for time flexibility, 85 for location flexibility, 95 for learning pace flexibility, and 90 for content access flexibility. For the flex model, a score of 95 was found for time flexibility, 90 for location flexibility, 90 for learning pace flexibility, and 85 for content access flexibility. Thus, it can be assumed that the flipped classroom model and the flex model can be considered to provide the most learning flexibility because they allow students to fully organize their learning process based on their individual needs and abilities. These blended learning models support learning flexibility by utilizing technology to increase student accessibility and engagement. With proper implementation, these models can enhance a more adaptive and responsive learning experience in higher education environments.

Finally, this study also investigates how the blended learning model can support the development of 21st century skills in higher education. Based on the analysis conducted on 21st-century skills in the field of blended learning from various studies, the author found several important findings. The following are the main findings resulting from the analysis.

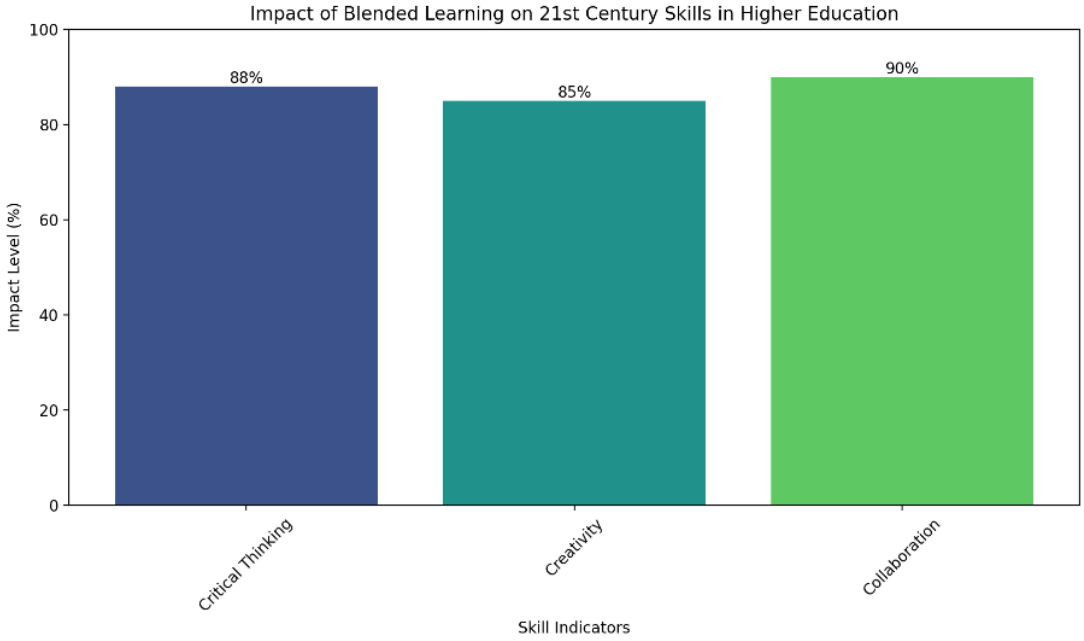

Figure 5. Blended learning supports 21st-century skills

According to data above, it can be analyzed that the impact of blended learning on 21st-century skills in the critical thinking aspect is (88%) in improving analytical skills and problem-solving abilities. In the creativity aspect, it is (85%) in fostering innovative thinking and idea creation. Furthermore, in the collaboration aspect, it is (90%) in encouraging teamwork and effective communication. Therefore, by combining online and offline learning to foster more interactive and collaborative learning, the blended learning approach can greatly aid in the development of 21st-century abilities in higher education. Students will acquire more than just academic knowledge with this method; they will also acquire practical skills like critical thinking, creativity, communication, and teamwork. Therefore, by giving students relevant and usable skills, blended learning not only improves learning effectiveness but also gets them ready for the demands of the always evolving workplace.

DISCUSSION

The revolution in various fields including science and technology, has experienced rapid development. Therefore, every educational institution must actively implement renewal and seek the right solution to various problems found in the learning process to realize the best education.

(Acosta et al., 2018; Bray & Tangney, 2017; Mohammad et al., 2020). By fusing traditional in-person (synchronous) online learning session, blended learning is student-centered learning (Attard & Holmes, 2022; Keržič et al., 2019). As a outcome, blended learning has emerged as the most popular educational approach for promoting active learning and raising student achievement (Ashraf et al., 2021). Although blended learning has been growing and developing for a long time, there are still some challenges associated with it.

Learning is a continuous process of human interaction with learning devices that support the achievement of learning goals. In underdeveloped nations like Indonesia, learning facilities and infrastructure in educational institutions, especially in higher education, already involve technological devices (Dewi, 2021; Mosalanejad et al., 2020). However, procurement that has not been standardized in each educational unit means that the quality of learning has not reached the maximum level. (Ashraf et al., 2021). Thus, this is among the difficulties encountered while putting blended learning into practice. As in the study carried out by (Intang et al., 2024; Malina et al., 2020) Regarding the limited access to stable internet and adequate devices, it is among the primary challenges in putting blended learning into practice. Many students do not have smartphones or other devices needed to engaged in online learning, thus reducing the effectiveness of learning. The availability of equitable technology infrastructure is also a significant challenge. In many areas, internet access is still limited, which creates a gap in educational accessibility (Mariani, 2020).

In line with the importance of improving the quality of procurement, use, and evaluation pertaining to the adoption of blended learning in academic settings, the evaluation procedures is one of the element that measures whether the learning model is implemented well, or needs improvement and adjustment in its implementation. The evaluation process for the using of blended learning is often inadequate and becomes a challenge in measuring student progress and the effectiveness of blended learning (Intang et al., 2024; Mariani, 2020; Rusmulyani & Riani, 2024). Proper evaluation is needed to ensure that learning objectives are achieved. The evaluation process is one of the factors that has not received serious attention in the process of implementing blended learning (Intang et al., 2024; Mariani, 2020; Rahmawati et al., 2023). As research conducted by (Mariani, 2020) shows that even though the blended learning quality assurance system is implemented, the quality of learning is still low. Data obtained through interviews, observations, and field notes show that students are not active in using e-campuses as a instructional strategy, and the materials provided are often ineffective because they come from unfiltered internet links. This shows that evaluation and control of the carry out of blended learning are still weak. Furthermore, in the study (Intang et al., 2024) also highlighted that evaluation is not fully optimal. Although blended learning has a good influence on the learning process, the evaluation conducted is still limited and does not cover all aspects of learners' needs.

In order to maximize the utilization of the various components and create an efficient working environment for both teachers and students, blended learning involves more than just alternating between in-person instruction and technological mediation (Amenduni & Ligorio, 2022; Nikolopoulou & Zacharis, 2023). Higher education's mixed learning strategy blends in-person engagement with the flexibility and convenience of online courses (Al-Kahtani et al., 2022) and is relevant with profits such as flexible learning (Li et al., 2022) and increased self-directed/regulated learning by students (Siswanto et al., 2023; van Dorresteijn et al., 2024; Westhuizen et al., 2023). In the research conducted, it was found that blended learning combines offline and online learning, which increases student engagement in the learning process. The study noted that students responded positively to this model, which increased interaction between lecturers and students, and facilitated access to learning materials more widely (Intang et al., 2024; Rahayu et al., 2022;

Heilporn & Lakhal, 2021; Siswanto et al., 2023; Tong et al., 2022). The study of (Al Aslamiyah et al., 2019) shows that students show a positive tendency towards independent learning, are not dependent on others, and tend to be more independent in all things, while blended learning has been proven to be very supportive of learning and has a nice impact on student learning independence.

The research shows that resources are available to students from anywhere at anytime. thanks to the blended learning model's adoption, which offers flexibility in the classroom. This study emphasizes that the function of technology in blended learning not only enriches the material but also improves students' technological skills (Astuti & Febrian, 2019; Rina Patriana Chairiyani et al., 2023). Other studies have shown that blended learning has a good impact on learner outcomes, especially through the COVID-19 pandemic. Students reported an increase in motivation and understanding of the material after implementing this method differentiate to conventional learning (Intang et al., 2024; Rahayu et al., 2022). Blended learning also can maintain student interest and involvement, maximize material delivery, maximize assessment, rich learning experiences, intrinsic motivation, and a pleasant learning environment (Ma'rifah et al., 2023). Furthermore, blended learning as an educational innovation that integrate direct and online methods, has been implemented in the department of educational technology since 2005, and its success is deeply dependent on the competence of lecturers and the readiness of students to learn independently in a supportive environment (Ramadani et al., 2019). The analyze of the result showed that the average student scores increased significantly after the implementation of blended learning, with the average score before implementation being 60 and after being 85 (Intang et al., 2024).

Theoretical studies presented by blended learning experts, design blended learning based on learning problems that are sought for solutions. These designs are then implemented and evaluated with the hope that the learning objectives set will be achieved perfectly. The flipped classroom, flex model, self-blend model, enriched virtual model, rotation model, and hybrid model are some of the different forms of blended learning models. Based on earlier research, it can be said that the flex model is the blended learning approach that best accommodates learning flexibility in higher education institutions (Hawamdeh & Adamu, 2020; Kang et al., 2022; Li et al., 2022; Müller & Mildenberger, 2021; Rahmadani et al., 2022; Sanchez et al., 2021; Schindelwig et al., 2017; Syarifah et al., 2022; Turan et al., 2022) dan flipped classroom (Cahyandari et al., 2022; Öztürk & Çakıroğlu, 2021; Suyatno et al., 2022; Wijaya & Hasanah, 2019; Wikanda et al., 2021; Zheng & Zhang, 2020). These two models not only increase student engagement but also provide freedom in the learning process, which is very important in today's digital era.

Students are adults who have a fairly high level of cognitive ability. In general, they were born when technology was developing rapidly, this is an advantage for their generation, followed by the level of development of learning abilities, and the growth of technology and information that helps them maximize their potential (Rudi, 2021). Adults can develop 21st century abilities like critical thinking with the help of the blended learning model (Andrini & Yusro, 2021; Kang et al., 2022; Maphalala & Mahlaba, 2022; Shrivastav et al., 2024) which brings out human creativity in overcoming personal and structural problems in their environment. Furthermore, blended learning also supports collaboration in learning because Student participation in the learning environment can be effectively facilitated through collaboration (Zhao & Cao, 2023), when designing and using blended learning courses, it is advised to facilitate cooperation and collaborative discussions. For instance, this can be done by encouraging students to participate in collaborative activities that target to produce group outcomes or by uploading topics for group discussions on online platforms. Students can take charge of their education by using technology to watch videos, participate in online or live discussions, and set their own pace (Wut et al., 2022).

CONCLUSION

The implementation of blended learning in higher education faces various challenges, such as limited infrastructure, technology, the absence of regular evaluation to check the quality of learning, and resistance from students. However, the opportunity to increase learning flexibility is very large, especially by designing an effective blended learning model that can be adjusted to the requirements and traits of student. This model not only supports flexibility, but also contributes to the development of 21st-century skills, such as critical thinking, creativity, and collaboration which are very important in today's world of work. Therefore, in order for blended learning to be implemented optimally, it is necessary to analyze needs and adjust to the characteristics of students, lecturers, and institutions. The right choice of models and strategies to be applied, also by paying attention to the challenges and weaknesses in the practices in previous studies, makes the design of blended learning in the future even better. Therefore, suggestions for further research are to conduct in-depth studies on training strategies and professional development for teachers, along with further explore the integration of innovative technology in blended learning models to maximize the potential of blended learning in improving students' learning experiences.

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