



Unleashing the potential of blended learning: An in-depth investigation in Indonesia and Malaysia

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ABSTRACT

A limited literature on mixed method research to reveal the effect of blended learning in physical education turn out to be a gap in this research. Therefore, our study aims to investigate the perceptions of teachers about the effects, effectiveness, and challenges of blended learning in physical education classes through mixed-methods research. This study adopted a mixed-methods type with a mixed methods research. There were 12 participants involved in this study, which included elementary school teachers (n=4) and high school teachers (n=4) from Indonesia and elementary school teachers (n=2) and high school teachers (n=2) from Malaysia. The qualitative instrument included in-depth interviews. While, the quantitative instrument used a questionnaire. The qualitative study used statistical analysis with qualitative thematic methods. Meanwhile, in the quantitative study, all responses from 12 analyses were to find the frequency and percentage values of each response. Based on the results of the qualitative study, the majority of teachers perceived that blended learning in physical education classes had a significant effect on the development of students' domains and it was effective to implement physical education learning in elementary schools and high schools. While, results of quantitative study show that the biggest challenges due to the implementation of blended learning in physical education were the lack of technological facilities (86.2%), lack of understanding of teachers and students (72.7%), poor internet connection (64.8%), and limited learning duration in offline classes (50.0%). Therefore, the results of this study are essential and must be evaluated continuously, so that the physical education learning process through blended learning in a sustainable manner can have a positive effect on students at all levels of education in Indonesia and Malaysia or other countries in the world.

Keywords: Teachers perspective; blended learning; physical education

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INTRODUCTION

Nowadays, the implementation of physical education also faces global challenges due to the COVID-19 pandemic (Kalloo, Mitchell & Kamalodeen, 2020; Almonacid-fierro, Vargas-Vitoria, Carvalho & Fierro, 2021). The data recorded several challenges, namely the learning process at the elementary school (Chan et al., 2021), until university levels could not run optimally (Konukman, Filiz, & Unlu, 2022), and must be closed for a while (Moorhouse, 2020; Leacock & Warrican, 2020; Carrillo & Flores, 2020). Another problem is there were several people claimed that online-based learning was ineffective in physical education classes (Kwon, 2020), for example, poor internet network, expensive internet quota, the difficulties to understand complex motion learning through online systems (Jumareng et al., 2021; Jumareng et al., 2022).

Previous research has reported that switching from face-to-face to online learning resulted in a significant decline in learning outcomes (Coman, Tiru, Mesesan-Schmitz, Stanciu & Bularca, 2020), due to a lack of infrastructure and experience in using technology (Almendingen, Morseth, Gjolstad, Brevik & Torris, 2021; Blain, Standage & Curran, 2022). In addition, learning a skill also becomes difficult (Jumareng et al., 2021; Jumareng et al., 2022). Based on this fact, several countries had tried to overcome this problem by implementing blended learning.

Blended learning is a learning system that combines offline and online teaching (Smith & Hill, 2019; Hrastinski, 2019; Amenduni & Ligorio, 2022). Offline learning is carried out face-to-face in class (Fresen, 2018; Lissy & Mahalakshmi, 2022), while online learning is carried out through available platforms on the internet (e.g., Zoom meeting, Google meet, Edmodo, Google classroom and Moodle) (Jumareng et al., 2021). Blended learning is an innovation in learning that is in accordance with the current modern era that can facilitate students to learn independently and involved actively in the physical education learning process (Taufik, Ridlo, Solahuddin, Iskandar & Taroreh, 2022).

A recent study reported that blended learning has provided several benefits, for example, it can improve problem solving and critical thinking skills to students' academic achievement (Wang, Dev, Soh, Nasiruddin & Wang, 2023). The popularity of blended learning continues to increase and has been studied in various disciplines including in the context of physical education (Zheng, Ma & Lin, 2021). For example, China and the United States have implemented blended learning in the curriculum for their future education (Liu et al., 2022). Research by Liu et al. (2022), revealed that by using blended students were much more active in the learning process.

While there has been extensive international research into blended learning (Calderón, Scanlon, MacPhail & Moody, 2021; López-Fernández, Burgueño & Gil-Espinosa, 2021; André, Vidoni & Fitzgerald, 2021; Rorimpandey & Midun, 2021; Faridah et al., 2022; Nguyen, Thu & Quang, 2022), however, there are still gaps in understanding teachers' perceptions of the implementation of blended learning in physical education, especially in the context of blended research methodology. In addition, this study presents a novelty in terms of analyzing the effects of blended learning through mixed research methods. It is expected that this study could contribute on conveying important information to stakeholders (e.g., teachers and government) about the implementation of blended learning in the context of physical education, so that later the achievement of learning outcomes through blended learning is more optimal. Therefore, our study aims to investigate the perceptions of teachers about the effects, effectiveness, and challenges in of using blended learning for physical education classes through mixed research methods.

METHOD

This research used a mixed method type, which combined qualitative research through phenomenological (Widyawan, Ma'mun, Rahely & Hendrayana, 2020; Jeong & So, 2020; Jumareng et al., 2022), and quantitative research through online surveys (Chan et al., 2021). The mixed research method design is presented in Figure 1.

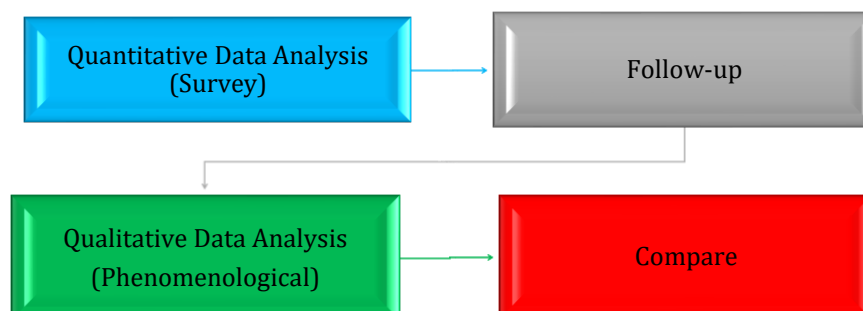


Figure 1. Mixed Research Method Design

Participants

The participants in this study were 12 teachers which comprises elementary school teachers (n=4), high school teachers (n=4) from Indonesia and elementary school teachers (n=2) and high school teachers (n=2) from Malaysia. The recruitment process are as following: (i) researchers sent invitations to participate in the research via e-mail to teachers, (ii) researchers recorded how many teachers were willing to participate in this study, (iii) teachers who were selected have experience in using blended learning, (iv) teachers were asked to make a statement about their willingness to be involved in this research, (v) teachers who were participated got a reward of \$30. The details of the characteristics of the participants are presented in Table 1.

Table 1. Profile of Participants

Participants	Gender	Research Subject
		Characteristics
Teacher A	Male	He is a 30-years-old teacher and has 5 years of experience in using the blended learning methods in elementary school.
Teacher B	Male	He is a 28-years-old teacher and has 3 years of experience using the blended learning methods in high school.
Teacher C	Male	He is a 31-years-old teacher and has 4 years of experience using the blended learning methods in elementary school.
Teacher D	Male	He is a 34-years-old teacher and has 6 years of experience using the blended learning methods in high school.
Teacher E	Female	She is a 25-years-old teacher and has 3 years of experience using the blended learning in elementary school.
Teacher F	Female	She is a 33-years-old teacher and has 5 years of experience using the blended learning methods in high school.
Teacher G	Male	He is a 27-years-old teacher and has 3 years of experience using the blended learning methods in elementary school.
Teacher H	Male	He is a 29-years-old teacher and has 4 years of experience using the blended learning methods in high school.
Teacher I	Female	She is a 26-years-old teacher and has 3 years of experience using the blended learning at the elementary school.
Teacher J	Male	He is a 32-years-old teacher and has 6 years of experience using the blended learning at the elementary school.
Teacher K	Male	He is a 30-years-old teacher and has 5 years of experience using the blended learning at the high school.
Teacher L	Male	He is a 29-years-old teacher and has 4 years of experience using the blended learning at the high school.

Instruments

Qualitative Instruments

Instruments to reveal the perceptions of teachers regarding the implementation (e.g., effect, effectiveness) of using blended learning in physical education were in-depth interviews for 30 minutes per individual (Jumareng et al., 2022). Data was collected through in-depth interviews with participants regarding their perceptions towards the implementation of blended learning in physical education in their respective workplaces. Interviews were conducted using language English, the results were collected by researchers and analyzed with qualitative thematic analysis (Widyawan, Ma'mun, Rahely & Hendrayana, 2020). This instrument has face validity and has been proven effective based on previous studies (Jumareng et al., 2022).

Quantitative Instruments

In measuring the challenges due to blended learning, this study used questionnaires that were adopted from previous research (López-Fernández et al., 2021). This questionnaire has 4 items, for example (i) "lack of technological facilities causes challenges to implement blended learning", (ii) "lack of understanding among teachers and students causes challenges to implementing blended learning", (iii) "bad internet connection causes challenges to implement blended learning", (iv) "limited learning duration in offline class". In order to fill out this questionnaire, the researchers used a Likert scale with a value of 1 = Strongly disagree, 2 = Disagree, 3 = Neither agree, 4 = Agree, and 5 = Strongly agree (López-Fernández et al., 2021). This instrument has a Cronbach Alpha reliability coefficient of 0.83 and a validity coefficient scale of 0.88 in this study.

Research Procedure

This research was conducted in May-June 2023. The implementation of this research followed the ethical guidelines of the World Medical Association (Helsinki Declaration). All participants were interviewed about the implementation of blended learning in physical education. In-depth interviews took place for 30 minutes individually online using the zoom meeting platform. In addition, the interviews were conducted in English languages. Meanwhile, quantitative research was carried out by distributing questionnaires via e-mail to administer an online survey for elementary and high school teachers in Indonesia and Malaysia. These data were guaranteed confidentiality according to ethical standards for human research. Participants were allowed minimum of 20 minutes to complete the questionnaire.

Statistical Analysis

Qualitative Analysis

Data obtained from in-depth interviews were processed through thematic analysis, with the following steps: (i) results of the interviews were transcribed verbatim, (ii) the interviews were read repeatedly by the researchers and 3 experts in blended learning to obtain a better understanding, (iii) the data was sorted by coding (iv) the set of phrases were arranged into themes and there were two themes applied, namely the effect and effectiveness of using blended learning in physical education (Widyawan, Ma'mun, Rahely & Hendrayana, 2020; Jumareng et al., 2022).

Quantitative Analysis

Based on the objectives of this study, we conducted a descriptive analysis to reveal the challenges in using blended learning for physical education using IBM SPSS version

25.0 (Armonk, NY: IBM Corp). All responses from 12 teachers were entered into an analysis to find the frequency and percentage values of each response (Chan et al., 2021; Liu et al., 2022). In addition, we analyzed Cronbach's α to determine the consistency of the internal questionnaire to reveal the challenges in implementing blended learning in physical education classes.

RESULTS AND DISCUSSION

Qualitative Results

The results of in-depth interviews with twelve participants about their perceptions of the implementation of blended learning obtained the following results:

Theme 1: Application of blended learning at the elementary level

Subtheme: Teacher's Perception of effects of blended learning in physical education at elementary school

The effect of using blended learning in physical education at the elementary school level leads to the development of the psychomotor domain of students, because in this age, they cannot be forced to improve the domain at once. In this case, the participants argue that:

"I agree, that blended learning has been proven to improve the psychomotor domain of students, because they get more movement experience. For example, getting the experience of learning movement in offline and online classes" (From an in-depth interview with Teacher A).

Teacher C argued that: "in blended learning, students in elementary school show more enthusiasm for learning because they follow online and offline learning, and so far, blended learning has been effective in developing students' motor skills. For example, students become skilled at performing basic shooting techniques in soccer games".

According to Taufik et al. (2022), blended learning has an important role in the physical education learning process at the elementary school level, because by applying blended learning students can develop movement skills.

"In an online class, students can directly perceive the lesson material presented by the teacher in the form of a video or on YouTube, while in an offline class, they get hands-on experience of movement or the teacher demonstrates it, so this learning is much more effective than conventional method" (From an in-depth interview of Teacher E).

"In my opinion, the implementation of blended learning on students at the elementary school level is not only focused on the development of the psychomotor domain, but also other domains. But it has to be gradually improved and in the current pandemic era, I am focusing more on involving them gain movement experience, so that later it will be useful for them to have a healthy body in their daily life" (From an in-depth interview of Teacher G).

Subtheme: Teachers' perceptions of the effectiveness of using blended learning at the elementary level

The effectiveness of learning physical education through blended help students to optimize their learning in each subject matter. At the elementary school level, learning

must be adapted to the needs and characteristics of students, to achieve the objective of learning.

"I think!! Blended is a learning model that is easier to implement. For example, students can interact and obtain learning materials online that can be carried out anywhere and anytime. If the students have not understood the subject matter in the online class, then they can re-learn the movement task in the offline class" (From an in-depth interview with Teacher G).

"Blended is an alternative learning and solution to replace online learning which I thought was not yet optimal in physical education classes. Blended can provide convenience for students to gain knowledge. It is proven that their learning outcomes have increased after participating in this blended learning" (From Teacher A's in-depth interview).

"In my opinion, blended is a pedagogical tool that helps teachers in delivering subject matter to students and can optimize active learning both offline and online" (From Teacher C's in-depth interview).

"We as teachers at the elementary school level feel helpful by this blended learning model, because previously students felt bored in online learning and now through blended learning, they can learn the basic techniques of the game online or directly in the field (offline)" (From Teacher E's in-depth interview).

Theme 2: Application of blended learning at the high schools

Subtheme: Teacher's Perception of effects of blended learning in physical education at high schools

The effects of blended learning that often occur on students at the high school level are more diverse. For example, apart from the psychomotor domain, other domains also become a focus for teachers.

"At the high school level, as a teacher, I prefer to focus on being able to increase the potential of students related to the psychomotor, cognitive, and affective domains. This is because the three domains have an important role in students to support success in achieving academic achievement at school. Through blended learning applied in physical education, students can gain knowledge quickly via the internet (e.g., YouTube) and even students gain knowledge from teachers in offline classes, which can help their cognitive domains become increase" (From Teacher F's in-depth interview).

According to [Jumareng et al. \(2021\)](#), it is also an effective way to improve the psychomotor domain and effective domain of students, in online classes we give assignments to students to study a subject matter on the internet so that they have the responsibility to do it. Then, in offline classes students must be able to do their assignment in front of class.

"Students at the high school level are teenagers, so it is important for them to have good knowledge, attitudes, and psychomotor skills. Therefore, in blended learning students are taught to be responsible for doing movement assignments at home (online) to find assignments independently and be able to present these assignments during offline

classes. That's an effective way to increase all three domains at the same time" (From Teacher H's in-depth interview).

"In my opinion, blended learning has the effect to increase all three domains at the same time, because the advantage of blending is the learning can be conducted in two systems, namely offline and online. In online meetings, I focus more on improving the cognitive and affective domains of students by giving them many assignments, and in offline meetings I focus on improving the psychomotor domain by means they have to get various kinds of motion experiences from volleyball lessons, handball, basketball or anything else" (From Teacher B's in-depth interview).

"I am interested in blended learning! This is because when using full online learning, students often felt bored, unmotivated, and less than optimal in learning the subject matter. But it changes when students get blended learning. The combination of online and offline (blended) can solve problems that often occur in full online or traditional settings" (From Teacher D's in-depth interview).

Subtheme: Teachers' perceptions of the effectiveness of using blended learning at high schools

To ensure the learning process can be carried out smoothly, it not only depends on the implementation but also needs to be considered supporting factors in the implementation of learning, such as internet quotas and technology.

"In my opinion, blended learning can reduce the budget in purchasing internet quotas, because in fully online learning students were required to buy large internet quotas which have an expensive price range between 100 thousand to 120 thousand. With blended learning, meetings are not fully conducted online, so the budget has decreased and students only need to buy an internet quota at a price of 50 thousand" (From Teacher B's in-depth interview).

Jumareng et al. (2021), explained that internet quota is very important in blended learning because with internet quota students can follow and carry out online learning. In addition, the use of advanced technology media must be prepared, to make it easy for students to learn (Ashraf et al., 2021).

"Blended learning help teachers and students, teachers can transfer their knowledge and students can get the knowledge quickly, efficiently, and optimally, namely through zoom meetings and offline. I am satisfied using blended learning in physical education classes" (From Teacher D's in-depth interview).

"High school students possess technology devices, both smart phones and laptops, so they can carry out learning effectively. I often interact, discuss and guide students through the zoom meeting platform. Then I can repeat these activities in the face-to-face meeting. In this way, blended learning helps teachers and students to carry out active learning" (From Teacher F's in-depth interview).

"In my opinion, the convenience provided by blended learning is (i) students and teachers can carry out physical education learning anywhere and anytime, (ii) teachers can control students more optimally, (iii) students gain more knowledge, (iv) cost and time saving" (From Teacher H's in-depth interview).

Quantitative Results

The Cronbach's alpha test results on the questionnaire about the challenges in implementing blended learning are presented in Table 2. The quantitative results showed that 10 teachers strongly agreed (86.2%) that the challenge that was often found when implementing blended learning was the lack of technological facilities, 8 teachers (72.7%) stated that they strongly agreed that the second challenge was the lack of understanding of teachers and students, 7 teachers (64.8%) stated that they strongly agreed that the third challenge was a poor internet connection and 5 teachers (50.0%) stated that they strongly agreed that the last challenge was the short duration of learning in offline classes (Table 3).

Table 2. Cronbach's Alpha of Questions on Challenges in Implementing Blended Learning

Item	Questionnaire	α
Q1	Lack of technological facilities causes challenges to implement blended learning.	0.850
Q2	Lack of understanding among teachers and students causes challenges to implement blended learning.	0.870
Q3	Bad internet connection causes challenges to implement blended learning?	0.845
Q4	Limited learning duration in offline class.	0.856
Cronbach's alpha		0.879

Table 3. The Results of Responses from 12 Teachers about the Challenges in Using Blended Learning

Item	Strongly Agree n (%)	Agree n (%)	Neither Agree n (%)	Disagree n (%)	Strongly Disagree n (%)
Q1: Lack of technological facilities causes challenges to implement blended learning.	10 (86.2)	2(13.8)	Nil	Nil	Nil
Q2: Lack of understanding among teachers and students causes challenges to implement blended learning.	8 (72.7)	3(21.8)	1 (5.5)	Nil	Nil
Q3; Bad internet connection causes challenges to implement blended learning.	7 (64.8)	4(29.6)	1 (5.6)	Nil	Nil
Q4: Limited learning duration in offline class.	5 (50.0)	4(32.0)	3 (18.0)	Nil	Nil

This study aims to investigate the perceptions of teachers about the effects, effectiveness, and challenges in using blended learning for physical education classes through mixed research. The qualitative findings in this study indicate that the majority of teachers perceived that blended learning has a positive effect on student development and provides convenience in the implementation of physical education learning at elementary and high schools. The positive effects due to this method were the development of students' movement abilities (Finlay, Tinnion & Simpson, 2022). A study revealed that blended proved to have a major effect on improving the long jump ability of elementary school students (Bayyat, 2020). Through the application of blended learning students obtained broader knowledge. For example, critical thinking and problem solving skills (Wang et al, 2023), students were more responsible, and motivated (Kyriakidis et al., 2021), independent and disciplined in studying. This is because blended learning has the strength in an offline and online learning system (Calderón et al, 2021; Fantiro, Arifin, Muzakki & Setiawan, 2022), so that learning can be

carried out more effectively and students gain more knowledge (Blaine, 2019). According to Amenduni and Ligorio (2022), several factors cause the effect of blended learning to be very significant, such as: the intensive interaction between students and teachers and when the students did not understand the subject delivered via online, they can discuss again during offline classes. The results of this study are in line with previous studies which reported that the effectiveness of blended learning was integrated face-to-face and online learning, so that teachers obtained more benefits from the two learning models (Rorimpandey & Midun, 2021; Nguyen et al, 2022). In addition, many experts claimed that blended learning was a tool to build a quality education system in the future (Shaowei, Zainuddin & Kun, 2022). Finally, blended learning research has effect in promoting flexible learning, creating active involvement of students in learning (Ashraf et al., 2021; Ashraf, Mollah, Perveen, Shabnam & Nahar, 2022).

The quantitative results indicate that the challenges in implementing blended learning in physical education were related to the lack of technological facilities. According to Jumareng et al (2021), technological media such as laptops, computers, and smartphones that were connected to adequate internet and zoom meeting platforms or Google meet were the main tools for carrying out blended learning. The second challenges relates to the teachers and students was lack of understanding or not being literate in using technology which could hinder the learning process and the achievement of learning outcomes also could not optimize (Blain et al, 2022; Almendingen et al, 2021). The third challenge was the internet network that depends on the weather (Jumareng et al., 2022), which causes students not to understand the subject matter delivered by the teacher. The last challenge relates to the limited duration of learning that was conducted offline.

CONCLUSION

Based on the qualitative and quantitative findings, it can be concluded that blended learning has positive effectiveness on students' development, provides convenience for teachers and students to carry out physical education learning activities at the elementary and high school. However, teachers and students also reveal its challenges such as the lack of technological facilities, the low understanding of teachers and students about technology, poor internet connection, and the limited duration of offline learning. This research contributes to providing information and insight to stakeholders (e.g., teachers and the government) regarding the importance of using blended learning and its effects on the physical education learning process. Eventually, blended learning can be continuously used at all levels of education in Indonesia and Malaysia. This study was limited in uninvolved participants from all levels of education in Indonesia or Malaysia. It is recommended that future research needs to add the scope of participants, to obtain more information about the perceptions of teachers and students about the effects of blended learning.

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CONFLICT OF INTEREST

The authors state no conflict of interest.

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