

Hybrid Learning Space as an Alternative for Physical Education Learning Post Covid-19 Pandemic

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Abstract The Covid-19 pandemic has resulted in educational disruptions in around 80% of children worldwide and has had a devastating impact on the effectiveness of physical education (PE) learning. This research aims to design a hybrid learning space (HLS) as an alternative to PE learning post the pandemic. The participants consisted of 72 PE teachers spread across 35 Senior High Schools and covered in 12 sub-districts in Central Lombok Regency, West Nusa Tenggara. This research used a *mix of methods with embedded design*, which combined qualitative and quantitative methods with data collection techniques through Focus Group Discussion (FGD), interviews, and teacher's assessment questionnaires. Qualitative data analysis uses inductive content analysis, which includes data collection, data coding, theme mapping, finding reporting, and interpretation of the meaning of the findings. Meanwhile, quantitative data analysis uses statistic descriptive which aims to get an overview of the assessment results from teacher. The results of qualitative data analysis showed that the design of HLS had conformity with the conditions, needs, and characteristics of high school students, and can be implemented directly in PE learning. Meanwhile, the results of quantitative analysis showed a high percentage of assessment from teachers about the efficiency of the design of HLS, although there were still various internal and external factors that hinder the PE learning.

Keywords Covid-19 Pandemic, Flipped Classroom, Hybrid Learning Space, Model-Based Practice, Physical

Education

1. Introduction

The pandemic of Covid-19 has crippled the education system globally and resulted in educational disruptions in around 80% of children worldwide [1]. This is a major problem at all levels of education in identifying and formulating effective learning for students [2,3], and an extraordinary challenge that can change social life in society [4]. Significant disruptions to student learning, assessment, and competence are also the most felt impacts in the world of education during the pandemic [5].

Data from the *UNESCO Institute for Statistics (UIS)* showed that most countries in the world have opened access to their education systems completely [6]. However, the implementation in Indonesia still does not provide a full access to face-to-face learning in schools. Online learning is still a critical consideration in transferring knowledge [7,8], and a primary alternative used in the education system in Indonesia [9]. However, online learning still cannot provide the expected results, because most students cannot access the internet due to technical and economic problems [10]. Research results from Adnan and Anwar [11] showed that out of 78.6% of respondents felt that conventional classes were more effective compared to online learning.

Online learning emphasizes more on the use of internet

networks with accessibility, connectivity, flexibility, and the ability to give rise to various types of learning interactions [12], where interactions are not carried out directly (*physical contact*), but through media or online platforms [13]. In the context of PE, online learning methods are considered irrelevant because the PE learning emphasizes more on movements, physical activities, sports, and games to achieve educational goals [14], thus all PE activities are more predominantly carried out outdoors [15].

Research results from Varea and González-calvo [16] explained that teaching PE during Covid-19 had many shortcomings, such as no interaction and emotional closeness, loss of PE identity, loss of physical contact, and created more individual activities than groups. Furthermore, O'Brien et al. [17] conducted research related to the impact for *Physical Education Teacher Education (PETE)* during the pandemic of Covid-19 in five different countries in Europe (UK, Finland, Greece, Ireland, and Portugal). The results of his research showed that weaknesses in PE learning during the pandemic, included technological limitations, underdeveloped online teaching skills, lack of available professional development programs, loss of learning opportunities in practical subjects, lack of facilities/media to participate in online learning, absence of physical contact causing limited experiences in PE learning, and vast rapid learning changes during the Covid-19 pandemic, were considered creating stress and threatening.

The results of previous research have shown the weaknesses of online study methods in PE learning, however, it is undeniable that online learning methods have a significant contribution to the global education system during the pandemic. Therefore, PE learning must adapt to all possible learning methods in order to maintain its existence in the future [18]. In online learning, there is a special time classification between face-to-face and online learning, as well as some commonly used terms, such as ; '*e-learning, online learning, hybrid learning, blended learning, distance learning and distance education*' [17,19]. One of the online learning methods used in this research is '*hybrid learning space*' [20], which is based on theories or pedagogical concepts of '*model-based practice in PE*' [14,21].

HLS is a learning that combines physical and virtual environments, where students and teachers can still interact with each other [22]. The proportion of time in a HLS is (30-70% online) [23], thus it has the flexibility of utilisation in combining online learning methods and physical environments. Meanwhile, model-based practice in PE offer possible solutions to problems in PE by limiting the range of learning outcomes, subject matters, teaching strategies, and it can be used to determine educational values [14]. The conceptual basis of this model is the idea that PE has a plenty of potential to contribute to the achievement of various useful outcomes

in education and life, thus to achieve these goals, it requires a new and diverse perspective or a PE learning model that suits the needs of students.

The design of HLS in this research is based on the guideline of "*School reentry considerations: K-12 physical education, health education, and physical activity*", which emphasizes hybrid learning in PE and health [24]. In this guide, it should be considered the flipped classroom approach, where students learn about a topic at home and then prepare to learn more about it in the class [25]. However, in adapting the learning design of a country, it must be adapted to the curriculum and characteristics of students in Indonesia. Therefore, the design of HLS emphasizes the use of flipped classroom approaches, model-based practices in PE, and PE curriculum standards in Indonesia.

Based on theoretical and empirical support related to the effectiveness and benefits of using flipped classroom approaches and model-based practice in PE, the hybridization of these two models becomes an innovation or something new in the context of PE learning in Indonesia. These type of hybridization has also been adapted to the PE curriculum standards in Indonesia, which emphasizes the competence of knowledges and skills related to the physical fitness, physical activity/exercise, maintaining a healthy dietary habit, and a healthy living behavior [26]. Therefore, the purpose of this research is to produce a design of HLS as an alternative method to PE learning post the pandemic of Covid-19. In accordance with these objectives, the researcher has formulated two research questions, as follows: (a) how the design of HLS is able to be implemented as an alternative to PE learning post the pandemic of Covid-19?, and (b) how are the results of the implementation of HLS in PE learning viewed from a teacher's perspective?.

2. Materials and Methods

2.1. Research Design

This research used *mix methods with embedded design*, which aimed to collect qualitative and quantitative data simultaneously or sequentially, but it had one form of data that plays a role in supporting other forms of data [27]. Qualitative methods were used during the collection FGD data and interviews, while quantitative data were used after the implementation of learning designs, and teachers provided assessments through questionnaire instruments. The results of this design are expected to be an alternative solution in overcoming problems in PE learning.

This research is also based on the paradigm of pragmatism, which believes philosophically that in using "functioning" procedures for a particular research problem being studied, then have to use many methods in understanding research problems [28]. Hence, the writer's

position in this research puts more emphasis on the exploration of diverse views or associating more on views and assessments of the teacher during teaching PE. Perspectives and assessments from teacher were used as the main data in helping to evaluate the learning outcomes of the design of HLS.

2.2. Participants

The participants consisted of 72 PE teachers across 35 High Schools which located in 12 sub-districts in Central Lombok Regency, West Nusa Tenggara. All of these teachers are members of the PE Subject Teacher Deliberation (MGMP), which is an association or community in conducting discourses related to the issues and development of PE learning. The determination of participants or teachers was through population study techniques because the entire population has the same

possibility of being sampled in the research [29]. After determining the participants, the next step for the researcher was to obtain written approval or permission from the participants as the evidence of willingness to help in providing information and supporting research activities. However, the participants would be excluded from the analysis if they did not implement the design of HLS, because they were assumed to be unable to carry out further analysis or assessment [30]. Therefore, the samples produced in this research were 35 teachers, consisting of 23 men and 12 women. All samples were between 26 - 56 years old, with an average age of 41.34 years ($SD = 9.788$). This research was conducted for 3 months, in June to August 2021, which was divided into three stages of researches, namely; FGD, implementation of the design of HLS, and teacher assessment. Description of the teachers who were willing to follow the research, can be seen in (Table 1).

Table 1. Characteristics of PE Teachers

No	Demographic Characteristics	Classification	Total	Explanation
1.	<i>Gender</i>	Male	23	Teacher's
		Female	12	Teacher's
		Average	41.34	Years
2.	<i>Age (Years)</i>	Range	26 – 56	Years
		Standard Deviation	9.788	SD
		Praya	5	Sub-district
3.	<i>School Location</i>	Praya Barat	2	Sub-district
		Praya Timur	2	Sub-district
		Praya Tengah	4	Sub-district
		Praya Barat Daya	1	Sub-district
		Batukliang	2	Sub-district
		Batukliang Utara	2	Sub-district
		Jonggat	4	Sub-district
		Pringgarata	3	Sub-district
		Janapria	2	Sub-district
		Kopang	2	Sub-district
		Pujut	6	Sub-district
		PE learning	3	Teacher's
		Large Ball Games (Basketball, Volleyball, Football, Futsal)	12	Teacher's
Small Ball Games (Tennis, Table tennis, Badminton)	15	Teacher's		
4.	<i>PE Specialist</i>	Athletics	2	Teacher's
		Sports massage	2	Teacher's
		Karate	2	Teacher's
		Swimming	3	Teacher's
		Recreational activities	2	Teacher's
		Bachelor	35	Degree
5.	<i>Educational Qualifications</i>	Master	0	Degree
		Doctor of Philosophy	0	Degree
		Sum	521	Years
6.	<i>Career Length</i>	Average	14.88	Years
		Range	3 – 31	Years

2.3. Data Collection

Data collection through FGD was carried out with all PE teachers ($n=72$) who were members of MGMP PE. FGD was technically carried out before the design of HLS was implemented, or was emphasized more as the first step before the implementation of the product. FGD in this research has several purposes, as follows; (a) discussing the theoretical framework underlying the formulation of the design of HLS; (b) obtaining an initial illustration from the teacher's perspective on the suitability of the design of HLS to the needs of students during the PE learning process; (c) providing examples of approaches and learning materials applied in PE learning in several countries in the world; and (d) discussing possible solutions that could be implemented in PE learning post pandemic of Covid-19.

In this research, the interview was conducted at the implementation stage which aimed to evaluate the PE learning process using the design of HLS. The results of the interview from the teacher were then interpreted to get the suitability of the design of HLS with current conditions and needs, and whether this design can be used as an alternative solution in the PE learning process. The last stage in the data collection process was to assess the design of HLS using a questionnaire instrument. The assessment aims to verify or provide an assessment related to the efficiency of the design of HLS and is carried out by PE teachers who have implemented the design of HLS in the PE learning process. In addition, this assessment was also used as data that supports the results of data collection in the previous stage.

2.4. Research Instrument

In facilitating the data collection process, researchers have first compiled research instruments in the form of FGD guidelines, interview protocols, and assessment questionnaires according to research objectives. The FGD

guidelines and interview protocols used have been validated or reviewed by qualitative research instrument experts (*expert judgment*) to minimize structural errors and content of research questions. The validation results or expert reviews were also being an empirical evidence of *trustworthiness* to collect data and information in the field for the instruments used in qualitative research [31].

Furthermore, the questionnaire instruments used to assess the efficiency of the design of HLS in PE learning, has been proved validity and reliability. The evidence of the validity of the instrument was carried out by providing an assessment of the content/substance of the research instrument (*content validity*) and an assessment of the suitability and connectedness of each instrument indicator (*construct validity*) [32], which was assessed by 2 quantitative research instrument experts in the field of PE. The results of expert assessments related to the validity of the content and construct instrument, then determined based on the categories of score distribution [33], such as; (a) **very invalid** (interval: $1.00 \leq X < 1.75$); (b) **invalid** (interval: $1.75 \leq X < 2.50$); (c) **valid** (interval: $2.50 \leq X < 3.25$); and (d) **very valid** (interval: $3.25 \leq X \leq 4.00$).

Meanwhile, the estimation of reliability uses *inter-rater reliability*, which aims to study the effect of different raters using the same tool and is generally estimated by *percentage agreement* [34]. Percentage agreement is a basis of *inter-rater reliability* index that offers a measure of raw agreement, with a classification that has been divided into 3 categories, namely; (a) value $\geq 75\%$ represent of '**excellent agreement**'; (b) values between 40% - 75% represent of '**good agreement**'; and (c) value 40% indicative of '**poor agreement**' [35]. The results of proving the validity of the instrument, which amounted to 25 questions, had a high validity with an interval of values between (3.25 – 4.00) the estimated reliability of the instrument using *inter-rater reliability* showed high *percentage agreement* (84% for *content validity* and 76% for *construct validity*) (see Table 2).

Table 2. The Results of the Validity and Reliability of Research Instruments

Assessment	Expert	Question	Indicator of Hybrid Learning Space			Validity	Reliability
			Design	Material	Application		
<i>Content Validity</i>	1	25	3.66	3.33	3.71	Very Valid	84%
	2		3.83	3.58	3.85	Very Valid	
	Average	3.75	3.45	3.78	Very Valid		
<i>Construct Validity</i>	1	25	3.83	3.41	3.85	Very Valid	76%
	2		3.50	3.75	3.57	Very Valid	
	Average	3.66	3.58	3.71	Very Valid		

2.5. Data Analysis

Qualitative data analysis emphasizes on inductive content analysis in formulating research findings, such as; data collection, data coding, theme mapping, finding reporting, and interpretation of the meaning of the findings [36]. In obtaining the *dependability* and *credibility* of the findings, the research used data triangulation techniques (sources, methods, and investigators) [37]. Data triangulation techniques stress the collection of information from different sources by different methods, and the collection of data by the same methods towards different sources of information [38]. The formulation of the most relevant and representative FGD results and interview excerpts is used as material in interpreting research results.

Meanwhile, quantitative data analysis uses descriptive statistics that aim to get an overview of the assessment results from the teacher. Descriptive statistics can provide an overview of how long, far, many, or percentages are generated, so that these values can be compared with norms, standards, and results reported in previous studies [39]. Furthermore, in determining the efficiency of the design of HLS, researchers used a likert scale technique with 4 criteria, as follows; (Score 1: *very irrelevant*, Score 2: *irrelevant*, Score 3: *relevant*, Score 4: *very relevant*) [40].

3. Results

The results of this research are described in three stages, namely; FGD, implementation of HLS, and teacher's assessment. In the first stage, namely FGD, an agreement was generated related to the design of HLS which was implemented in PE learning, as follows; theoretical framework underlying the formulation of the design of

HLS, an initial overview of the design of HLS, learning materials and approaches applied in PE learning, and alternative solutions in solving various problems in PE learning post the pandemic (see Appendix A). At this stage, 72 teachers who participated in the FGD examined and analyzed the design of HLS that had been formulated earlier. During the FGD process, all teachers have submitted arguments, suggestions, inputs, and criticisms of the design of HLS. This is done to obtain a more qualified formulation of the design of HLS and have conformity with the conditions and needs of students. In general, at this FGD stage, all teachers have provided positive support through a consensus agreement stating that the design of HLS can be implemented in the PE learning process in schools

The second stage, namely the implementation of HLS, has been carried out by 35 PE teachers spread across 35 schools. Teachers prepared all the needs in implementing HLS in the previous PE learning, in the form of; (a) compiling a syllabus and class activity plan according to the material in the design of HLS; (b) establishing learning activities and methods used; (c) preparing online and offline learning equipments; and (d) preparing rubrics or observation/evaluation guidelines to assess the progress of the PE learning process. Furthermore, after the HLS implementation process, an interview was conducted with all teachers (n = 35) aimed at evaluating and getting an overview of the results of the HLS implementation. The results of the interview from the teachers produced 3 main themes that support the suitability of the design of HLS with the characteristics and needs of high school students, namely; (a) Theoretical Framework of HLS Design; (b) Supporting Materials of HLS Design; and (c) Impact of Application HLS Design. This was an excerpt of the transcript of the most representative interview results in the study (Table 3).

Table 3. Interpretation of Research Interview Results

Theme	Sub-Theme	Interpretation of Interview Results
<i>Theoretical Framework of HLS Design</i>	Flipped Classroom	The utilization of online and offline methods in PE learning is excellent, however, there are still several obstacles, especially for the students who have financial problems which is unable to own a gadget and access for internets
	Model-Based Practice	Learning process of model-based practice is very suitable to be implemented in schools due to its flexibility in accommodating various PE learning methods
	PE curriculum in Indonesia	The PE curriculums in Indonesia emphasize more on developing the spiritual and social aspects, knowledges, and skills
	Physical activity and fitness for health-enhancing	Physical activity and fitness materials are very suitable to be taught for senior high school students because they can provide students with knowledge and skills to maintain their health and fitness through various physical activities or sports
<i>Supporting Materials of HLS Design</i>	Enjoyment of sports and games	Students are enjoying in various physical activities or sports taught by the teacher, this can be seen from the enthusiasm and cooperation of students during the PE learning process
	Movement concepts and motor skills	There are still some high school students who have not been able to understand and practice the movement concepts and motor skills
	Value of physical activity and sport	An understanding of the value of physical activity and sport should be instilled in students to form the habits of practicing sports and physical activity
<i>Impact of Application HLS Design</i>	Direct impact	Teacher's gain knowledge about the content in PE learning from various countries. Students become more motivated to participate in PE learning
	Indirect impact	Improving the quality of PE learning in senior high schools

Table 4. Teacher's Assessment Regarding the Efficiency of Hybrid Learning Space Design

Teacher's Assessment		Question	Indicator of Hybrid Learning Space (%)			Criteria
			Design	Material	Application	
Male	23	25	89.85 %	80.34 %	86.49 %	Efficient
Female	12	25	97.22 %	88.36 %	89.28 %	Efficient
All Teacher	35	25	92.38 %	83.09 %	87.44 %	Efficient
Average			93.15%	83.93%	87.73%	
Total			22,17	39,88	24,48	
Maximum			24	48	28	
Standard Deviation (SD)			3,61	10,40	5,74	

Note: The value of percentage agreement must be more than (> 80%) with criteria of "efficient" and less than (< 80%) with criteria of "not efficient"

The third stage was the teacher's assessment related to the efficiency of the HLS design in the PE learning process, which was carried out using questionnaires with the likert scale technique. HLS efficiency assessment was carried out simultaneously by teachers using the medium of *Google Form*. The assessment results emphasized on the assessment of each indicator covered in the design of HLS, namely; *design*, *material*, and *application*. The assessment uses recommendations from the research of Irmansyah et al. [26] to determine the percentage threshold, namely that the percentage value of expert approval must be more than (> 80%). The results of the assessment from PE teachers regarding the efficiency of the design of HLS can be seen in Table 4.

4. Discussion

The discussion has been elaborated into 3 main themes according to the specific objectives of each research question. The first question is discussed in the *design of hybrid learning space*, meanwhile the second one is included in the *implementation of hybrid learning space* and *teacher's assessment*.

4.1. Design of Hybrid Learning Space

The design of HLS in this research had a credible, dependable, transferable, and accountable knowledge construction since it is based on an established theoretical framework and is empirically proven. Various references from books, scientific articles, study guides, and report results were carefully collected and analyzed by the research team to find relevant references to use as the theoretical basis for the formulation of the HLS design, such as; Flip your classroom: Reach every student in every class every day [25]; School reentry considerations: K-12 physical education, health education, and physical activity [24]; Educational value and models-based practice in PE [14]; Hybridizing pedagogical models: A systematic

review [41]; Toward the development of a pedagogical model for health-based PE [42]; Curriculum of PE learning in Indonesia [43]; and Quality physical education (QPE): Guidelines for policy-maker [44].

The results of the research findings from the FGD, which was attended by 72 PE teachers, have reached an agreement that the design of HLS was in accordance with the characteristics and needs of students, and can be implemented in PE learning, although there were still some shortcomings that PE teachers express when the discussion took place, such as; the teacher's difficulty in translating references from outside (in English); simulation of how to use the design of HLS in the form of videos or live demonstrations; and hybrid forms of assessment in PE learning. The design of HLS produced in this research was compatible with several previous studies that have adopted and modified HLS in PE learning according to the needs and characteristics of students. For instance, the study of Mettis and Vājataga [45] the study transformed physical and virtual environments into hybrid learning settings that attract and motivate students through web and location based applications, namely 'Avastusrada' (avastusrada.ee), which provided structures and paths for learning activities. In addition, the research results of Gil-Arias et al. [46] examined the impact of hybrid learning that incorporates the TGfU-Sport Education model on student motivation in PE learning, which was possible to design various learning situations, such as affiliation, leadership, and trust that must be fostered, as well as tasks adapted to student characteristics.

In addition to the construction of knowledge and theoretical basis, the design of HLS also includes various relevant learning materials and approaches to be implemented in high school students, which can be used as alternative solutions in solving various problems in PE learning post the pandemic of Covid-19. The material in the design of HLS is determined based on PE learning conditions during pandemic which emphasizes more on learning about physical activity and fitness for

health-enhancing [47], enjoyment of sports and games [48], movement concepts and motor skills that are safe and appropriate [49], value of physical activity and sport [50], maintain of nutrition and a healthy lifestyle [51], and teaching personal and social responsibility [52]. Although the hybrid learning design has been supported theoretically and conceptually in improving online learning, there are still doubts from some physical education teachers during its implementation. The following is an excerpt from the opinion expressed by the teacher during the FGD.

In general, learning using a hybrid learning space is very good for use during a pandemic in urban schools with students with middle to upper economic class, while in rural schools there are definitely problems with the availability of student quotas. The online learning design is also adjusted to the conditions of each school so that it can be carried out properly and correctly. Teachers are also required to teach more, especially physical education teachers, in addition to teaching practical teachers, teachers are also required to teach theory, not to mention for students who do not have androids, limited quotas, and difficult signals for students who are far from the city. So this hybrid learning design must really be able to accommodate the needs of students in physical education learning.

Therefore, teachers must be able to use various approaches that have been proven effective and efficient in improving the quality of PE learning, namely; Cooperative Learning: focuses on social learning outcomes such as cooperation and the ability of students to support each other [53]; Teaching Games for Understanding (TGfU): develops the decision-making and performance of students' skills in games and sports [54,55]; Teaching Personal and Social Responsibility (TPSR): facilitates positive social and moral behavior, and identifies the transfer of learning as an integral part of the pedagogical approach [52, 6]; Sport Education Model (SEM): allows sports-based activities to have a broader meaning and value for students [21,57]; Games Centred Approach: is student-centered with a focus on the game as the center of a lesson to create a fun learning environment [58,59]; and Model of Physical Literacy in Indonesia: provides a variety of approaches and assessments holistically in PE learning [26].

4.2. Implementation of Hybrid Learning Space

The implementation of HLS has been applied in 35 high schools and had a positive impact on PE learning. This is because HLS learning has flexibility and wider learning space for increasing student competencies. The results of the interview with the PE teacher explained that the usage of online and offline methods (flipped classroom) in PE learning was excellent to adapt, however there were still challenges, especially from the low-level economic

students who were unable to access internet and own a gadget. The following is an excerpt from an interview with Mr. BN who is a physical education teacher at a high school.

In this pandemic period, we teachers are indeed required to design how to keep learning going and make learning more interesting and innovative so that children don't get bored of learning from home. This is our challenge as teachers, and it is through this hybrid learning that we can make variations in learning during this pandemic. However, there are several obstacles that I found when carrying out this hybrid learning, especially for children who can take turns to study online, we both know that not all children have a large quota and have Android that supports Google meet or zoom meetings. So that's the problem I found and as input for researchers there may be a solution, thank you.

This explanation is relevant to the results of the study from Hinojo Lucena et al. [60] which emphasized that flipped classroom was an effective and innovative learning approach in PE, due to its potential to improve academic indicators, student autonomy, and interaction between teachers and students. In addition, the utilization of flipped classrooms in the setting and implementation of PE in schools, was able to increase higher motivations, functional fitness, and motor qualities [61]. Various changes have also been detected in PE learning during pandemic, such as technical support for video editing, filmmaking, and sound technology [62], loss of PE identity [16], and how the pandemic produced fear, vulnerability, and insecurity [3].

Furthermore, the results of interviews with PE teachers regarding the use of model-based practice in PE, explained that it was completely suitable to be implemented in schools due to its flexibility in accommodating various PE learning methods. Model-based practice in PE focuses on though interactions between students, teacher, and content in the learning processes [63]. In this research, model-based practice in PE emphasizes the application of pedagogical models (PMs) [41] and model of physical literacy in Indonesia [26] which implemented through a flipped classroom approach. The application of PMs itself has shown benefits in increasing student motivation, engagement, and learning [64], while the model of physical literacy in Indonesia has been adapted to the curriculum and characterization of students in Indonesia which emphasizes more on developing aspects of spiritual and social attitudes, knowledges, and skills. The research from Melero-Canas et al. [65] further supported the hybridization of PMs because it has benefits in producing improved physical fitness, physical activity, and sedentary behaviors.

Technically, in implementing the design of HLS, students must have a laptop or gadget that is used as a tool in conducting online learning. However, the fact showed

that not all students in the school have such media, due to the low-economic conditions of the family. This finding was supported by the results of PE teacher interviews which revealed that the main obstacles in the implementation of online learning were lack of online learning facilities provided by schools, many students who did not have gadgets, and the inability of students to access the internet. This statement was relevant to the research of the O'Brien et al. [17] which revealed that limited support of technology and digitality were the challenges for many teachers, students, parents, and policymakers. This condition is very concerning when viewed from a global perspective in the current digitalization era [66], thus schools, universities, and educational institutions have to be able to transform and adapt to various changes in the education system.

On the other hand, the materials covered by the design of HLS substantively are transferred on a asynchronous and synchronous by PE teachers [62]. Teachers create videos in person or look for online videos related to the material physical activity and fitness for health-enhancing, enjoyment of sports and games, and movement concepts and motor skills. Moreover, the task for the students is to watch and recreate an interesting video content related to one of the materials presented by the teacher. The results of interviews with PE teachers stated that all the materials in the design of HLS were excellently suitable to be taught for high school students because they provide students with knowledges, skills, and enthusiasm to maintain their health and fitness through various physical activities or sports. Furthermore, the distribution of material regarding to value of physical activity and sport, maintain of nutrition and a healthy lifestyle, and teaching personal and social responsibility is implemented by synchronous via zoom meeting, google meet, or other websites provided by schools. The PE teacher stated that these materials must still be instilled in students to form students' habits in practicing sports and physical activity.

The observations of PE researchers and teachers of the implementation of the HLS design, both online and offline, showed positive results. The majority of students focused on the learning process and put attention to material delivered by the teacher during the online learning. Meanwhile, the offline learning showed the contradict, students were extremely happy and excited to do physical activity and sports since they had not interacted with teachers and other friends for certain period of time, as well as get new materials that have never been taught by the teacher before. The results obtained through these observations were supported by research of Gil-Arias et al. [46] which emphasized the model of Teaching Games for

Understanding and Sport Education can stimulate the increase of autonomy, interrelationships, competence, autonomous motivation, enjoyment, and willingness to be physically active compared in direct instruction. The modified game design is also a key to the simplification of sports demands in improving student progress. In addition, other factors that should be considered to integrate the effective online teaching and learning in PE programs, namely; (a) designing online learning practices; (b) teacher-student interaction; (c) transition of pedagogical knowledge and online content; and (d) navigating instructional tools and technologies [67]. The purposed challenge is referring to creation of opportunities to reshape learning programs, settings, and designs as an effort to achieve more valuable learning experiences and improve the quality of PE learning.

4.3. Teacher's Assessment

In general, the average teacher assessment results related to HLS efficiency have exceeded the assessment threshold, with indicator values; *design* (93.15%), *material* (83.09%), and *application* (87.73). This result further confirms that the HLS design formulated by researchers with PE teachers through FGD procedures, are ready to be implemented and proven to be efficient in supporting the PE learning process in high school students'. The PE teacher assessment process is also relevant to the results of the systematic review of González-Vilora et al. [41] which explained the advantages of implementing a HLS design because it can increase outcomes in various domains (physical, cognitive, social, and affective). However, there are still interferences or obstacles during the implementation of HLS design, thus the results of this quantitative assessment, are not the only basis in justifying or representing the efficiency of implementation in the whole design of HLS. There are several essential points in implementing a HLS, such as the ability to estimate costs and predict the student's satisfaction during the hybrid learning, because a high level of student's satisfaction is correlated to students' willingness to experience the same learning again and have an impact on better academic performance [22]. In addition, the implementation of HLS design or various PE programs should indeed aim to assist all students in developing their potential, instead of creating gaps or supporting the only talented student to excel at the expense of incapable students [68]. To make it easier for readers to understand the results of teacher assessments related to HLS efficiency, the following has been visualized in the form of a bar chart in Figure 1.

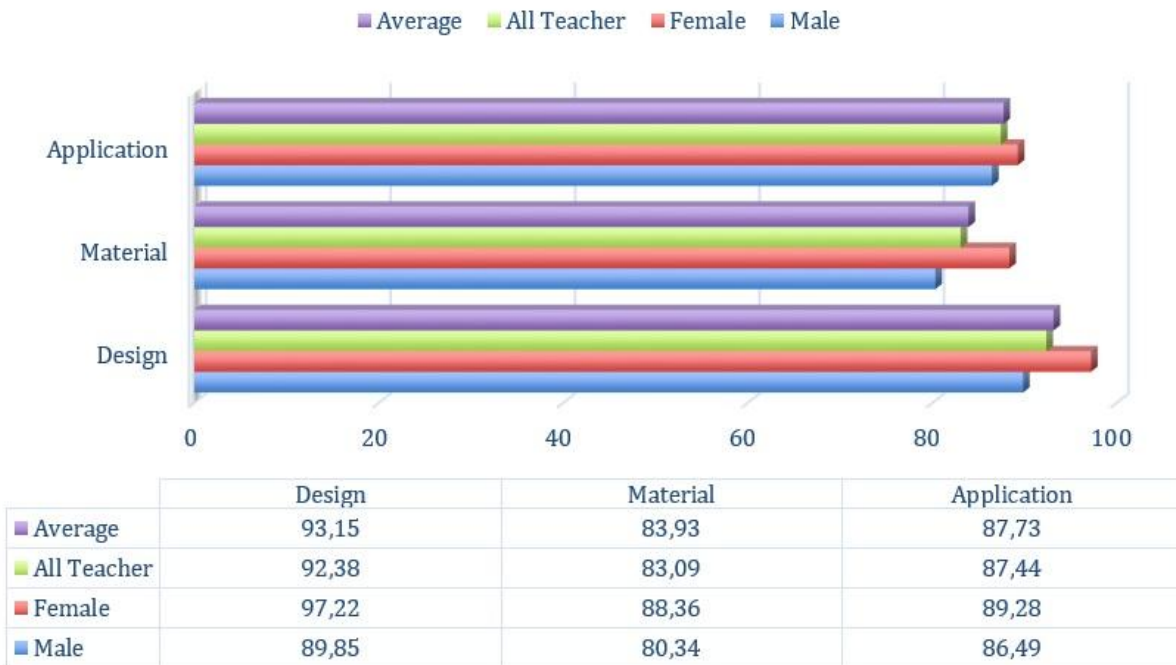


Figure 1. Visualization of Teacher’s Assessment Regarding the Efficiency of Hybrid Learning Space Design

5. Conclusions

The HLS designed in this research had a theoretical framework that was constructed through various relevant and well-established references in PE learning. Various empirical theories and facts from previous research were collected, analyzed, and used to strengthen the credibility and transferability of the design of HLS. The FGD process and in-depth interviews with PE teachers were also carried out to get various perspectives from PE teachers who have first-hand experience in teaching PE and interacting with students. Moreover, FGD activities with 72 PE teachers resulted in a consensus agreement that the design of HLS was appropriate and suitable to be implemented in the PE learning process. Meanwhile, the results of in-depth interviews produced an illustration that the implementation of HLS design had a positive impact in increasing focus, motivation, excitement, enthusiasm, and enjoyment in conducting PE learning, although there are still various technical obstacles in the implementation of online learning. The results of this FGD and interview are further strengthened by the assessment carried out by PE teacher through a questionnaire on the efficiency of the design of HLS, which showed that the value on each indicator was above the predetermined assessment threshold.

This research had limitations during the process of implementing the design of HLS since the research team could not completely monitor 35 schools simultaneously in implementing the design of HLS. Moreover, the analysis of other data related to the efficiency of the design of HLS,

only used a simple analysis, namely descriptive statistics, thus the data produced was only a general description of the efficiency of the HLS design. Therefore, further researches are expected to be able to test the efficiency and effectiveness of the design of HLS using more complex research methodologies (eg. Experimental Design). Another limitation was also experienced by teachers who could not optimally carry out the offline learning process due to social distancing restrictions. In addition, it is necessary to collect data from a student's perspective to obtain broader and more in-depth findings.

6. Recommendations

The impact of the Covid-19 pandemic required PE teachers to learn faster and adapt to substitution in offline to online teaching methods, although PE identity was strongly attached to physical contacts, play activities, gatherings, and interactions without any distancing restrictions. Schools, universities, communities, and educational institutions also have an important role in providing various facilities, media, and regulations to make it easier for teachers and students to execute the learning. The findings of this research are expected to be able to encourage other researchers to study and develop PE learning models that are more attractive, innovative, simple, and useful. In addition, the various PE learning materials and approaches are also qualified to be adapted and implemented directly in PE learning.

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Conflict of Interest

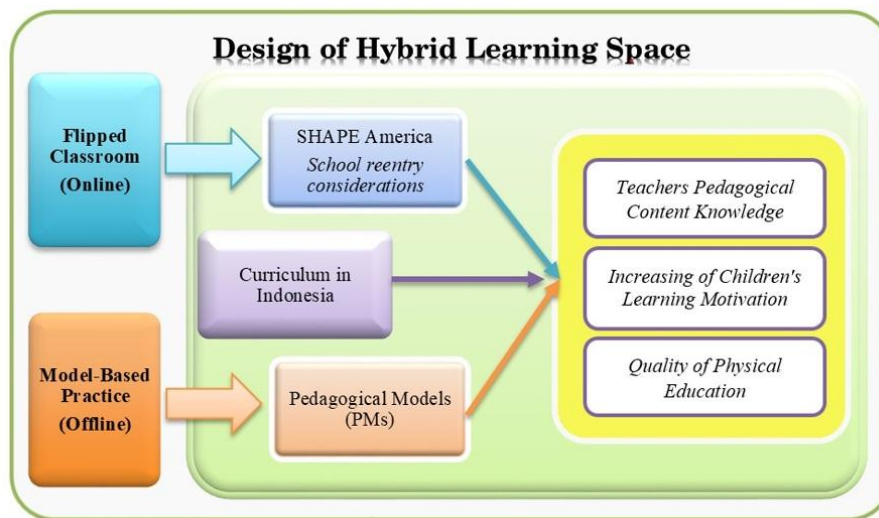
The authors report that there is no potential conflict of interest.

Appendix A. Design of Hybrid Learning Space in Physical Education

1. Theoretical Basis

- a. Flip your classroom: Reach every student in every class every day [25]
- b. School reentry considerations: K-12 physical education, health education, and physical activity [24]
- c. Educational value and models-based practice in PE [14]
- d. Hybridizing pedagogical models: A systematic review [41]
- e. Toward the development of a pedagogical model for health-based PE [42]
- f. Curriculum of PE learning in Indonesia [43]
- g. Quality physical education (QPE): Guidelines for policy-maker [44]

2. Design



3. Material

	<i>Flipped Classrom (Online)</i>	<i>Model-Based Practice (Offline)</i>
<i>Video Teacher's or Others</i>	Physical activity and fitness for health-enhancing. Enjoyment of sports and games Movement concepts and motor skills that are safe and appropriate	a. Cooperative Learning b. Teaching Games for Understanding (TGfU) c. Teaching Personal and Social Responsibility (TPSR)
<i>Zoom Meeting, Google Meet, etc.</i>	Value of physical activity and sport Maintain of nutrition and a healthy lifestyle Teaching personal and social responsibility	d. Sport Education Model (SEM) e. Games Centred Approach
<i>Students' Homework</i>	Watch and create interesting video content related to one of the material presented by the teacher	f. Model of Physical Literacy in Indonesia

4. Application/Impact

Direct impact: Increasing of teacher's pedagogical content knowledge and students' learning motivation

Indirect impact: Increasing the quality of PE learning

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