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The Perspective of Physical Education Teachers: Challenges within the Project-Based Learning Model

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Abstract

Background. Physical Education (PE) in Indonesia encounters challenges in optimizing learning based on the progress and development of the era. The challenge is also observable through the implementation of the Project-Based Learning (PjBL) model.

Objectives. This study aimed to describe the perspectives and challenges encountered by PE teachers in implementing the PjBL model at various educational levels.

Materials and methods. This descriptive quantitative approach research used structured and unstructured questionnaire instruments, involving 28 PE teachers from elementary, junior high, and senior high schools.

Results. The findings of the study revealed that the perspectives of PE teachers on the PjBL model at the elementary school level obtained a score of 82%, while junior high and senior high schools had scores of 78% and 75%, respectively. For the indicators of understanding, implementation, and execution of the PjBL model in Q1, Q2, and Q3, the results were 93%, 82%, and 68%, respectively. Meanwhile, the encountered challenges by PE teachers in implementing the PjBL model include limited facilities and infrastructure, a lack of teacher understanding regarding the model's implementation, and insufficient time to carry out projects. Geographic factors also posed a challenge, especially for schools in remote areas.

Conclusions. In conclusion, the perspectives of PE teachers on the PjBL model are generally quite effective, but there are still various problems, so that the experiences provided by the PjBL model cannot be absorbed well by students.

Keywords: Project-Based Learning, physical education, teacher, learning model.

Introduction

Indonesia is currently encountering 21st-century challenges due to various global issues and is dealing with three main trends: (1) the ongoing Fourth Industrial Revolution, indicated by improvements in information and communication technology in the digital revolution era; (2) societal changes observed via culture, civilization, and education transformations; and (3) the rise of the creative age, perceiving information, innovation, creativity, and knowledge as valuable resources for both individuals and society (Hendra, 2021). Education primarily aims to prepare human resources to adapt and excel competitively in the era of global competition.

The role of Physical Education (PE) as the foundation and vanguard of the Indonesian nation requires serious efforts to develop scientific knowledge, motor activities, and the character of students (Arifin, 2017). PE is thought to make a significant difference in a lot of different physical activities and movements (Mustafa & Dwiyogo, 2020) that help children grow and develop based on their cognitive, psychomotor, and affective traits, and their character development (Yuliawan, 2016).

Essentially, PE learning are always physical activities that give students meaningful teaching and learning opportunities and help them understand the needs, benefits (Abduljabar, 2014), and lifelong learning opportunities that come with being physically healthy (Firmansyah, 2011). PE within the national education program serves as a comprehensive learning process that encompasses all aspects of education (Mustafa, 2022). The underlying reason is the rapid societal changes and growth, requiring that PE lessons, teaching models, and methods need to improve and keep up with the era (Prasetyo & Hamami, 2020; Santika et al., 2022).

PE is expected to make a significant contribution to children's development not only intellectually and psychomotorically through movement but also in terms of personality development, particularly regarding character (Yuliawan, 2016). This responsibility lies heavily on educators to provide appropriate and effective stimuli, which significantly influence students' cognitive, affective, and motor development. Changes in the learning process impact the stimuli provided by teachers to students. Additionally, the teaching designs created by teachers profoundly affect learning outcomes.

The generational shifts and demands of the times present unique challenges and skills for PE teachers to optimize students' abilities. Applied teaching models must provide meaningful learning experiences for students, focusing on intellect, character, and physical activity. Across educational levels, educators have applied various PE teaching models, including cooperative learning, sports education, and teaching games for understanding. However, thorough research on several other teaching models is still pending (Arufe-Giráldez et al., 2023).

Currently, PE learning predominantly focuses on sports techniques. Consequently, it is unsurprising that students' interest in PE diminishes over time, and they become less active in subsequent school years. For both boys and girls, the choice of teaching materials and styles often fails to provide meaningful and socially relevant experiences (Hardman, 2010). Field observations indicate that many PE teachers do not fully utilize teaching syntax, methods, or strategies, leading to unstructured learning processes for students.

Fostering enjoyable learning environment strategy design and teaching models are important for students. This underscores the need to adapt and utilize effective models that enhance students' understanding of PE materials and movements. PE teachers must revisit and refine their teaching designs. Despite the availability of various teaching models, many PE teachers still employ monotonous approaches (Khairuddin et al., 2023). Limited capacity to develop and implement diverse teaching models remains a significant issue in providing quality PE instruction (Putra & Sepriadi, 2022).

PE curriculum, which includes the "Merdeka Curriculum" and its predecessors, focuses on turning knowledge into activities that are focused on the students, rather than activities that are focused on the teacher (Priyambudi et al., 2023; Sudrahat et al., 2022). "Merdeka Curriculum" allows educators to tailor high-quality learning experiences that align with students' needs and environments (Masturi, 2023; Mujiburrahman et al., 2023). It emphasizes active student participation to foster engagement and provide opportunities for students to develop and optimize their creativity and potential.

However, the role of PE remains underutilized by some teachers. Evaluations of PE teaching activities indicate suboptimal outcomes, with most teachers relying on teacher-centered approaches rather than student-centered ones (Putra & Sepriadi, 2022). (Sumardi et al., 2020) revealed that 59.17 % of elementary school teachers use teacher-centered approaches, while only 40.83 % adopt student-centered processes. Furthermore, 59.17 % still employ conventional methods lectures and note-taking, whereas only 40.83 % utilize techniques oriented toward higher-order thinking development.

Current PE teaching models have yet to address the various issues within PE instruction effectively. In many secondary schools, PE teachers continue to rely on conventional methods, resulting in unremarkable sports skills and learning experiences for students (Khairuddin et al., 2023).

Materials and Methods

Study Participants

This research involved male teachers teaching physical education (PE) at various educational levels in East Java, Indonesia. The selected subjects were useful to identify the perceptions and direct experiences of teachers regarding the implementation of the Project-Based Learning (PjBL) model. The research participants consisted of 28 PE teachers from various types of educational institutions: 11 teachers from elementary schools, 12 teachers from junior high schools, and 5 teachers from senior high schools. By involving teachers from different educational levels, the research provides a comprehensive overview of PjBL implementation at the PE level in the region. Data collection in this study was conducted following the Declaration of Helsinki and received approval from the University Ethics Committee.

Study Organization

This descriptive quantitative approach research provides a comprehensive overview of teachers' actual perceptions. The researchers collected information to reveal objectively the real portrays of the implementations of Project-Based Learning (PjBL) model, such as the teachers' perspectives, problems, and limitations. This research involved male teachers teaching physical education (PE) at various educational levels in East Java, Indonesia. The selected subjects were useful to identify the perceptions and direct experiences of teachers regarding the implementation of the Project-Based Learning (PjBL) model. The research participants consisted of 28 PE teachers from various types of educational institutions: 11 teachers from elementary schools, 12 teachers from junior high schools, and 5 teachers from senior high schools. By involving teachers from different educational levels, the research provides a comprehensive overview of PjBL implementation at the PE level in the region.

Statistical Analysis

Data analysis in this research includes: data reduction, data display, and conclusion drawing. The researchers began the process by collecting data through questionnaires, analyzing the data to create a data display, reducing the data in the form of narrative text to provide a clear and detailed description. The final step was to draw conclusions, where the results of the data display analysis were useful to strengthen the obtained findings, and to formulate research conclusions.

Results

Table 1 presents a compilation of survey results from each education level, from elementary to high school.

Table 1. The Implementations of PjBL at Various School Levels

Subjects		Q_1	Q_2	Q_3	$\sum Q_1$-Q_3	$\bar{x} \pm SD$	%
Primary School	Sample 1	2	3	3	8	2.67 ± 0.6	1.00
	Sample 2	2	1	1	4	1.33 ± 0.6	0.50
	Sample 3	2	3	2	7	2.33 ± 0.6	0.88
	Sample 4	2	3	3	8	2.67 ± 0.6	1.00
	Sample 5	2	3	3	8	2.67 ± 0.6	1.00
	Sample 6	2	2	1	5	1.67 ± 0.6	0.63
	Sample 7	2	3	2	7	2.33 ± 0.6	0.88
	Sample 8	2	2	1	5	1.67 ± 0.6	0.63
	Sample 9	2	3	3	8	2.67 ± 0.6	1.00
	Sample 10	1	2	2	5	1.67 ± 0.6	0.63
	Sample 11	2	3	3	8	2.67 ± 0.6	1.00
	∑	21	28	24	73	2.21 ± 0.69	0.82
Junior High Schools	Sample 12	2	3	3	8	2.67 ± 0.6	1.00
	Sample 13	2	3	1	6	2.00 ± 1.0	0.75
	Sample 14	2	2	2	6	2.00 ± 0.0	0.75
	Sample 15	2	3	3	8	2.67 ± 0.6	1.00
	Sample 16	2	3	3	8	2.67 ± 0.6	1.00
	Sample 17	2	2	2	6	2.00 ± 0.0	0.75
	Sample 18	2	2	2	6	2.00 ± 0.0	0.75
	Sample 19	2	2	2	6	2.00 ± 0.0	0.75
	Sample 20	2	2	2	6	2.00 ± 0.0	0.75
	Sample 21	2	3	3	8	2.67 ± 0.6	1.00
	Sample 22	1	2	1	4	1.33 ± 0.6	0.50
	Sample 23	1	1	1	1	1.00 ± 0.0	0.38
	∑	22	28	25	75	2.08 ± 0.64	0.78
Senior High Schools	Sample 24	2	3	1	6	2.00 ± 1.0	0.75
	Sample 25	1	1	1	3	1.00 ± 0.0	0.38
	Sample 26	2	3	3	8	2.67 ± 0.6	1.00
	Sample 27	2	3	1	6	2.00 ± 1.0	0.75
	Sample 28	2	3	2	7	2.33 ± 0.6	0.88
	∑	9	13	8	30	2.00 ± 0.85	0.75

The information includes how PE teachers understood the PjBL learning model idea, how they generally used the PjBL learning model PE, and how they particularly used the PjBL learning model in large ball games. These various indicators serve as a basis for providing a comprehensive assessment of PE teachers' perspectives in understanding the PjBL learning model.

PE Teachers' Perspective toward the PJBL Model

Results on the primary or elementary level obtain a mean of 2.21 with the deviation standard of ± 0,69 and the score percentage of 82 %, indicating a 'very excellent' perception category toward PjBL model. The score distributions of the junior high school and senior high school have the mean scores of 2.08 and 2 with SD values of ±0,64 and ± 0,85. The score percentages show 78 % and 75 %, indicating an excellent category of the PE teachers' perceptions toward the PjBL model.

Table 2. Achievement indicators of understanding, implementation, and PjBL model implementation

Question	∑	$\bar{x} \pm SD$	%
Q1.	52	1,86 ± 0,36	0,93
Q2	69	2,46 ± 0,69	0,82
Q3	57	2,04 ± 0,84	0,68

Indicators of Understanding, Implementation, and PjBL Model Implementation

Mean score for question 1, about how excellent PE teachers understand the Project-Based Learning (PjBL) model, is 1.86, with a standard deviation (SD) of 0.36 and

Table 3. Challenges and Implementations of PjBL encountered by PE Teachers

Subjects	Q_4	Q_5
Sample 1	Limited facilities and infrastructure	Previous learning often used problem-based learning methods.
Sample 2	Lack of understanding regarding the PjBL (Project-Based Learning) model	Learning innovation
Sample 3	Facilities and infrastructures	Different teaching activities
Sample 4	Limited facilities and infrastructures	Learning innovation
Sample 5	Limited facilities and infrastructure	Over time, a decline in students' interest in physical education
Sample 6	Diverse student backgrounds make the PjBL model less suitable for our institution, as most students come from rural areas.	Feeling curious to try and implement different teaching models than before.
Sample 7	Facilities and infrastructures	To improve students' talents
Sample 8	Facilities and infrastructures	Feeling curious
Sample 9	Encountering no challenges	Fostering joyful learning atmosphere
Sample 10	Having no ideas about PjBL	Trying new things
Sample 11	No challenges	To encourage students' learning interests
Sample 12	Taking longer time while using PjBL	Improving students' experience, creativity, critical thinking, and empathy.
Sample 13	Having no ideas what products to produce	Using smartphone as the media
Sample 14	Passive students	Trying new learning strategies to avoid classroom-boredome
Sample 15	No challenges	Being more aware toward students' developments while using PjBL
Sample 16	Inadequate facilities	Easy to use
Sample 17	Facilities and infrastructure present challenges, and students often struggle to comprehend assigned projects, necessitating additional guidance.	Encourage curiosity in students to foster creativity and imagination freely.
Sample 18	Time constraints due to other activities leave insufficient time for implementing the model.	Training students to think creatively
Sample 19	Limited understanding of the PjBL model	Innovation and variation in learning
Sample 20	Time constraints arise due to the school's hilly geographic location, limited funding, and challenging students to guide.	Assessing students' engagement and foster critical thinking
Sample 21	PjBL requires significant time to complete a project, delaying content coverage.	Through the process, teachers can monitor students' progress, from planning to execution and final outcomes.
Sample 22	Challenges in execution and lack of understanding regarding the PjBL model	None
Sample 23	Limited understanding about PjBL model	None
Sample 24	A very short learning duration	Materials needed to teach
Sample 25	Having no ideas about PjBL model	Nothing to do related to PjBL
Sample 26	Inadequate facilities and infrastructures	To enhance collaboration among students in solving problems using their cognition and skills
Sample 27	To enhance collaboration among students in solving problems using their knowledge and skills	Our school is a "driving school" implementing the Merdeka Curriculum, where student outcomes are project-based. Project-based learning unconsciously shapes students to become more critical, creative, and communicative, fostering effective collaboration with peers and teachers.
Sample 28	The need for specific training for students lacking basic techniques or foundational knowledge in a sport requires step-by-step guidance.	Active learning process

a percentage of 93 %. Based on this assessment, PE teachers' conceptual understanding of the PjBL model across various school levels falls into the "very excellent" category. Answer to question 2 shows how the PjBL model is being used in PE classes. It has a mean score of 2.46, a standard deviation of 0.69, and an overall percentage of 82 %. This indicates

that PE teachers have not fully implemented the PjBL model across various school levels. Question 3 reveals that various school levels have not fully applied the PjBL model to the "large ball" material. The percentage for Q_3 stands at 68 %, with an average score of 2.04 and an SD of 0.84.

Challenges of PE Teachers in applying PjBL Model

PjBL learning model dealt with a lot of problems, such as inadequate acilities and infrastructure found from 9 of the 28 samples 1, 3, 5, 7, 8, 16, 17, 20, and 26. These constraints include a lack of facilities such as technological devices, suitable spaces, and other infrastructure needed to support the implementation of PjBL. In addition, a lack of understanding of the concept and application of PjBL is also a significant problem, reflected in several respondents, such as samples 2, 10, 13, 19, 22, 23, and 25. This reflects the need for training and guidance for teachers so they could understand and apply the learning model. Time constraints are also a challenge, either due to limited learning time, as in sample 24, or because the PjBL process takes a considerable amount of time, as in samples 12 and 21. Geographical factors, such as schools located in remote areas, exacerbate these time constraints. Another challenge is the presence of passive students or difficulties to direct students, as seen in samples 14 and 20. This requires a more effective approach to engage students in the learning process.

Discussion

Most of the understanding and application of the project-based learning (PjBL) model by PE teachers at various school levels show excellent results. This suggests that traditional teaching models no longer limit learning processes. Adding project-based learning models to constructivist education could facilitate students learn in the 21st century by giving them real-world examples in the form of projects (Estrada Oliver et al., 2020). The PjBL model encourages students to investigate and collaborate in developing and creating projects that reflect their knowledge (Bell, 2010).

However, PE teachers encountered challenges in implementing the PjBL model thus requiring special attention. Most research samples show that limited time, space, and facilities are big problems when trying to create different teaching models, such as PjBL (Simonton et al., 2021). Because of these problems, the learning model needs to change and fit the school setting while keeping the main parts of PjBL, such focusing on the studenst, allowing them explore issues in projects, learning in small groups, focusing on mastery, and choosing useful content for the students (Liu et al., 2010; Simonton et al., 2021; Webster et al., 2011).

Learning models serve as the foundation for educators to prepare teaching activities (Muthmainnah et al., 2022). They can act as tools to enhance students' abilities during the learning process (Haerullah & Hasan, 2017). As its name suggests, a learning model helps with learning by having specific features that make sense, such as naming, logical sequencing, organization, and meeting the learner's needs. It is a guideline for planning classroom- or tutorial-based learning (Trianto, 2007). Furthermore, learning models systematically outline the achievement of learning objectives, helping students reach specific goals within a structured framework.

The PjBL model offers detailed, comprehensive, and challenging learning experiences, with the project target being a product or creation. This contrasts with traditional learning models, which prioritize achieving short-term curriculum targets in a rapid and straightforward manner. Project-based learning uses problems to gather and integrate new knowledge based on real-life experiences through concrete activities. (Haerullah & Hasan, 2017) designed the PjBL model to address complex issues through investigation and understanding.

The primary goal of the project-based learning model is to focus students on developing solutions to complex problems. This requires investigation, understanding through inquiry, and guidance in collaborative projects integrated into curriculum materials (Purnomo et al., 2022). This allows students to design content using experimental and collaborative methods, fostering meaningful learning experiences. The most critical component in teaching and learning activities is the inclusion of well-structured learning models that align with PE objectives and student learning outcomes. It is essential to design learning models that suit the characteristics, needs, and demands of the times, ensuring systematic application and development (Prasrihamni et al., 2022).

Generational changes and the demands of the times pose annual challenges requiring specific skills for PE teachers to optimize student potential. The implementation of meaningful learning models must encompass intellectual, character, and physical aspects. Various studies highlight that PjBL is an effective methodology for teaching children to solve real-world problems by encouraging active participation in learning processes (Borroni et al., 2021). Systematically, PjBL models are very helpful for teaching physical education at all levels of schooling (Carrera Moreno, 2016; Coyne et al., 2016; Gubacs, 2004; Hastie et al., 2017). They facilitate students develop personal values, skills, teamwork, and motivation, among other things (Ramírez et al., 2017). For future development, providing PE teachers with training in instructional PjBL skills is critical, as research findings reveal that many PE teachers lack knowledge and understanding of the PjBL model.

Conclusions

Despite PE teachers having positive perceptions of the implementation of the project-based learning (PjBL) model, several challenges hinder its application. At the elementary school level, teachers' perceptions of PjBL fall into the "very excellent" category with a percentage of 82%, while at the middle and high school levels, perceptions are categorized as "excellent," with percentages of 78% and 75%, respectively. Teachers' understanding of the PjBL concept is excellent, with 93% indicating a high level of comprehension. However, the application and execution of this model remain limited, particularly in certain subjects, such as team sports, where the implementation rate is 68%. Primary obstacles in applying PjBL include limited facilities and infrastructure, insufficient teacher understanding of the model implementation, and inadequate time to carry out projects optimally. Geographical factors also pose challenges, especially for schools in remote areas. Another issue is the difficulty of engaging students, who are sometimes passive or challenging to direct. To enhance the effectiveness of PjBL implementation, providing additional training for teachers, improving facilities and infrastructure, and making adjustments to time management in the learning process are important.

Conflict of Interest

The authors declare that they have no conflicts interests.

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Погляд вчителів фізичного виховання: Труднощі в рамках використання моделі методу проєктів в навчанні

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Авторський вклад: A – дизайн дослідження; B – збір даних; C – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 7 с., 3 табл., 34 джерела.

Історія питання. Фізичне виховання (ФВ) в Індонезії стикається із проблемами оптимізації навчання, ґрунтуючись на прогресі та розвитку епохи. Труднощі також спостерігаються через впровадження моделі навчання з використанням проєктів (НВП, метод проєктів в навчанні).

Мета дослідження. Це дослідження мало на меті описати перспективи та виклики, що постають перед вчителями фізичного виховання у процесі впровадження моделі НВП на різних рівнях освіти.

Матеріали та методи. У цьому дослідженні застосовано описовий кількісний підхід із використанням інструментів для проведення структурованого та неструктурованого анкетування, в якому взяли участь 28 вчителів фізичного виховання, які викладають у початковій, середній та старшій школі.

Результати. Результати дослідження показали, що перспективи вчителів фізичного виховання щодо використання моделі НВП на рівні початкової школи отримали оцінку 82 %, тоді як у середній та старшій школі — 78 % та 75 % відповідно. За показниками розуміння, впровадження та реалізації моделі НВП у першому, другому та третьому кварталах результати становили 93 %, 82 % та 68 % відповідно. Водночас, серед проблем, з якими зіткнулися вчителі фізичної культури під час впровадження моделі НВП є обмеженість можливостей та інфраструктури, відсутність у вчителів чіткого розуміння щодо впровадження моделі, а також недостатній час для реалізації проєктів. Географічні фактори також становили проблему, особливо для шкіл у віддалених районах.

Висновки. Підсумовуючи, можна зазначити, що перспективи використання моделі НВП вчителями фізичного виховання загалом досить ефективні, проте досі спостерігаються численні проблеми, через які досвід, набутий в рамках впровадження моделі НВП, не може бути належним чином засвоєний учнями.

Ключові слова: навчання з використанням проєктів, фізичне виховання, вчитель, модель навчання.

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