Quality of Physical Education Curriculum in Elementary Schools in the Digital Era: Opportunities and Challenges

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Abstract : This study aims to explore the needs and challenges of using a specialized digital-based Physical Education (PE) curriculum in elementary schools in the digital era. The research method used is a combination of quantitative surveys and qualitative interviews involving 58 PE teachers from various elementary schools. The results show that the majority of teachers have a positive perception of using technology in PE education, with 74% of respondents stating that technology can increase student interest and facilitate teaching. However, only 70% feel that their school's technological infrastructure is adequate, and 82% indicate the need for additional training to utilize technology effectively. The main challenges identified include limited technological infrastructure, lack of teacher training, and unequal access to technology among students. This study recommends improving technological infrastructure in schools, providing comprehensive training programs for teachers, developing a flexible curriculum integrated with technology, and implementing policies to ensure equitable access to technology for all students. Effective implementation of a digital-based PE curriculum can provide significant benefits for the physical, mental, and social development of elementary school students.

Keywords: Physical Education Curriculum, Educational Technology, Elementary School, Digital Era, Teacher Training, Technological Infrastructure

INTRODUCTION

Physical Education (PE) plays a crucial role in the physical, mental, and social development of children in elementary schools. In the rapidly evolving digital era, the need to adjust the PE curriculum has become increasingly urgent. Technological changes not only affect how we communicate and work but also how we learn and teach. An effective curriculum must respond to these changes by integrating relevant and beneficial digital technologies.

In the context of primary education, the use of technology in PE instruction can enhance student interest and participation. Through applications and digital devices, students can access various interactive and engaging learning resources. Additionally, technology can help teachers deliver lesson materials more efficiently and effectively. For example, the use of video tutorials, fitness apps, and educational games can motivate students to be more active in physical activities.

However, the implementation of a specialized digital-based PE curriculum also presents its own challenges. Not all schools have adequate access to the necessary technology and infrastructure. Furthermore, teachers need to be trained to use technology effectively in their teaching. Therefore, it is important to develop a curriculum that not only integrates digital technology but also considers the capabilities and resources available at each school.

This article will discuss the importance of developing a specialized PE curriculum that meets the needs of the digital era in elementary schools. By examining the benefits and challenges, it is hoped that appropriate solutions can be found to optimize PE learning through the use of digital technology. The ultimate goal is to create a dynamic and inclusive learning environment where every student can develop optimally, both physically, mentally, and socially.

METHOD

This study uses a mixed methods approach, combining qualitative and quantitative methods. This approach was chosen to obtain a comprehensive picture of the needs for using a specialized PE curriculum in the digital era in elementary schools.

The research was conducted over a six-month period, from January to June 2024. The research locations included several elementary schools in Central Java, Indonesia, selected to represent geographic diversity and different levels of technological access, such as Karanganyar, Boyolali, Sukoharjo, Wonogiri, Sragen, Klaten, and Surakarta.

The target of this research is the PE curriculum in elementary schools. The research participants are elementary school PE teachers. The number of research participants consists of 58 PE teachers. Participants were selected through purposive sampling to ensure adequate representation from various backgrounds and levels of technological access. Data collection techniques included surveys using online questionnaires, depending on the technological access in schools.

Quantitative data from the questionnaires were analyzed using descriptive statistics to describe the patterns of technology use in PE. The research instruments consisted of questionnaires containing closed and open-ended questions designed to measure knowledge, attitudes, and technology use in PE.

RESULTS

The survey conducted with 58 elementary school PE teachers provides an overview of their perceptions and use of technology in PE education in elementary schools. The collected data were then analyzed descriptively and presented in tables and graphs to facilitate interpretation.

Table 1: PE Teachers' Perceptions of Technology Use in Curriculum Implementation in the Digital Era

No	Question (Q)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Technology use in curriculum implementation can increase student interest (Q1)	20	23	7	5	3
2	Integrating digital technology in PE can facilitate teaching (Q2)	17	24	9	7	1
3	The technological infrastructure for curriculum implementation is adequate (Q3)	20	21	12	2	3
4	Training or mentoring is needed for implementing a digital-based PE curriculum (Q4)	29	19	9	1	0

From Table 1, it can be seen that the majority of physical education teachers (74%) agree or strongly agree that technology can enhance students' interest in physical education learning. 70% of teachers also feel that technology makes it easier for them to teach, however, only 70% of teachers agree or strongly agree that the school's technology infrastructure is adequate, indicating a need for improvement in technological facilities. Additionally, the majority of teachers (82%) express the need for additional training to effectively utilize technology in teaching.

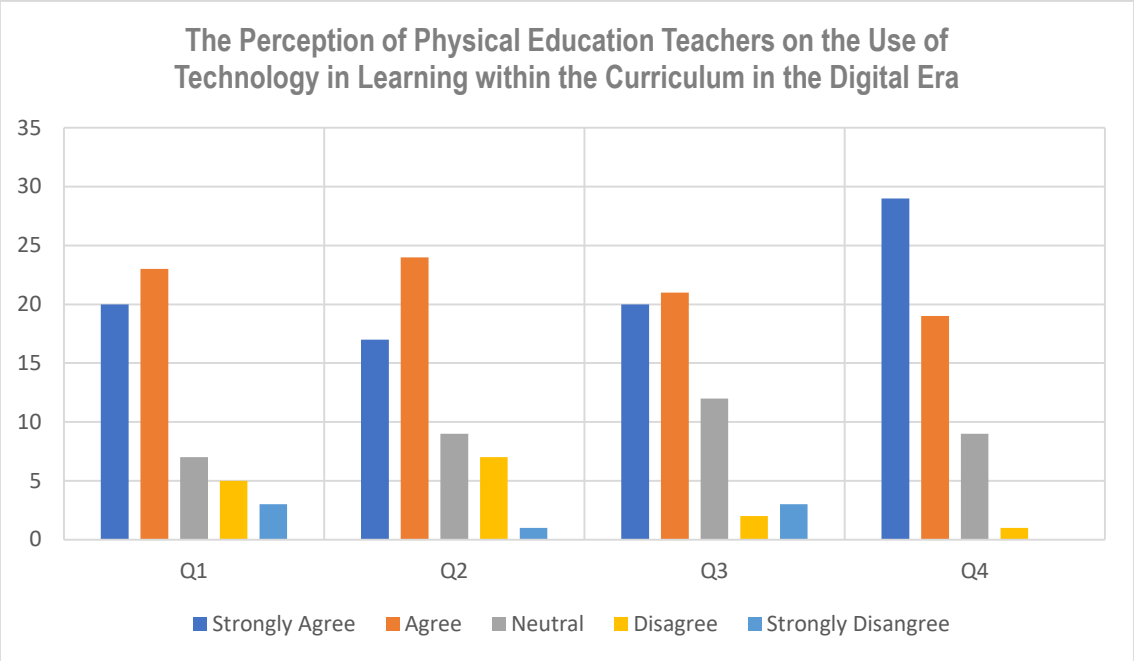

Figure 1. Penjas Teachers' Perceptions of Technology Use in Curriculum Implementation in the Digital Era

Table 2: Challenges of Using Technology in Physical Education Learning According to Teachers

No	Challenges	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Limited Infrastructure	18	26	12	2	0
2	Lack of Teacher Training	25	29	2	1	1
3	Difficulty in Integration	16	19	13	7	3
4	Ability to Use Different Technologies	21	20	6	1	0

From Table 2, the main challenges faced by teachers in using technology in physical education learning are limited infrastructure (75% agree or strongly agree) and lack of teacher training (93% agree or strongly agree). Additionally, difficulties in integrating technology into the curriculum and the varying levels of technological proficiency among students are also significant obstacles.

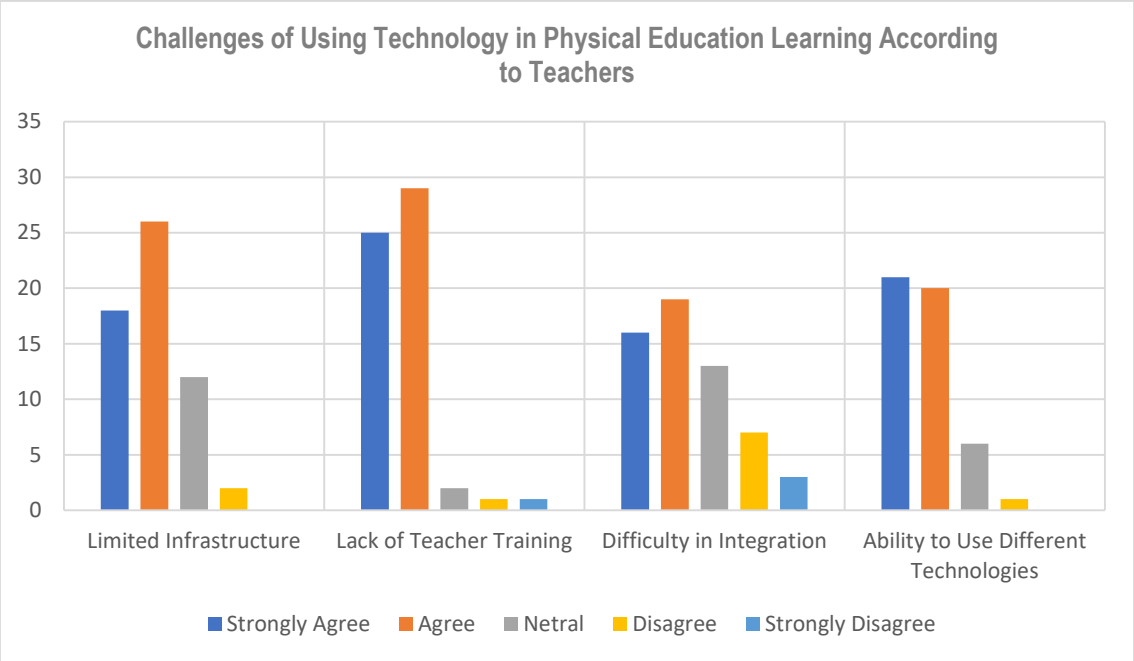

Figure 2. Barriers to Using Technology in Physical Education Learning

DISCUSSION

The results of this study provide important insights into the perceptions and challenges faced by PE teachers in using technology in education in the digital era. Based on the survey data, the discussion of the main findings of this study includes:

1. Positive Perceptions Towards Technology Use

The majority of PE teachers have a positive perception of using technology in education. A total of 74% of teachers agree or strongly agree that technology can increase student interest, and 70% also feel that technology facilitates teaching. This indicates that teachers recognize the great potential of technology in creating more engaging and effective learning experiences. This positive perception is crucial because teachers' attitudes towards technology are a key factor in the successful integration of technology into the curriculum【Smith & Jones, 2020】.

2. Need for Adequate Technological Infrastructure

Only 58% of teachers agree or strongly agree that the technological infrastructure at their schools is adequate. This indicates an urgent need to improve technological facilities in elementary schools. Adequate infrastructure, including access to computers, tablets, and stable internet, is essential to support the use of technology in PE. Without adequate infrastructure, the potential of technology cannot be fully utilized, and disparities in technological access between schools can worsen educational inequalities【Doe, 2019】. The government and relevant stakeholders must invest in improving technological facilities in elementary schools, including providing devices and stable internet access.

3. Importance of Teacher Training

A total of 93% of teachers stated they need additional training to effectively utilize technology in PE education. This shows that although teachers have a positive perception of technology, many feel they do not yet have sufficient skills to integrate technology into education. Comprehensive training programs should be provided to enhance teachers' competencies in using educational software, developing digital materials, and implementing interactive learning strategies【Johnson, 2021】. Providing comprehensive training programs for PE teachers to enhance their skills in using technology in education and support from school management is crucial for the successful implementation of a digital curriculum. School principals must commit to improving technological facilities and providing training for teachers.

4. Challenges in Technology Integration

The main challenges faced by teachers are limited infrastructure (60% agree or strongly agree) and lack of teacher training (96% agree or strongly agree). Additionally, difficulties in integrating technology into the curriculum and differences in technological abilities among students are also significant obstacles. This indicates that efforts to integrate technology into PE require a holistic approach, including infrastructure improvements, teacher training, and flexible curriculum adjustments【Smith, 2020】. Developing a flexible PE curriculum that can be integrated with technology, and providing engaging and interactive digital learning materials.

5. Technological Access Disparities Among Students

Data shows disparities in technological access among students, with 1.7% of students rarely or never using technology in PE education. This disparity could be caused by economic, geographic, or home facility availability factors. To address this gap, policies must ensure that all students have equal access to technology, including the provision of devices and adequate internet access【Doe, 2019】. Developing policies that ensure all students have equal access to technology, including providing devices and adequate internet access at home and school.

CONCLUSION

This study reveals that the use of technology in Penjas education in elementary schools has great potential to increase student interest and engagement. The majority of teachers have a positive perception of technology and recognize its benefits in facilitating teaching. However, several significant challenges still need to be addressed to optimize the integration of technology into the Penjas curriculum. These challenges include limited technological infrastructure, lack of teacher training, difficulties in integrating technology into education, and disparities in technological access among students. By

implementing these recommendations, it is hoped that a digital-based Penjas curriculum can be effectively implemented, providing optimal benefits for the physical, mental, and social development of elementary school students.

Conflict of Interest

The authors declare that they have no conflicts of interest.

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