

Exploring The Digital Innovation Lived Experiences of Physical Education Teachers in Fostering Global Engagement

MARIA LYRA L. GERONIMO

ORCID # 0009-0006-4016-4693

University of Perpetual Help System-DALTA
Las Piñas City, Philippines

DR. JOSEPHINE P. DASIG

ORCID # 0009-0001-5280-7242

University of Perpetual Help System-DALTA
Las Piñas City, Philippines

Abstract — The study utilized a phenomenological research design to gain a deeper understanding of the experiences of Physical Education teachers who were members of the International Association for Physical Education and Sports. This research approach, based on the phenomenological principles of Max Van Manen (1990), focused on exploring the lived experiences of these educators as they integrated digital innovations into their teaching methods across various platforms to promote global engagement. Data collection methods included in-depth interviews, audio recordings, and note-taking, which provided comprehensive insights into the teachers' practices and challenges. The study involved ten participants: two Physical Education teachers from Australia and the Philippines and one teacher from Canada, China, Egypt, India, Indonesia, and Thailand. The findings revealed that digital tools—such as video analysis, fitness applications, and learning management systems like Microsoft Teams and Google Classroom—had a transformative impact on the delivery of physical education. Teachers reported increased interactivity, engagement, and opportunities for global collaboration with peers worldwide. However, they also faced challenges, including internet connectivity issues, varying levels of technological proficiency, and the need to balance digital activities with physical movement. Key themes from the study emphasized the importance of continuous professional development, the enhancement of teaching strategies through digital tools, and the significance of global engagement in advancing physical education. The research highlighted the crucial role of digital literacy and innovation in modern physical education and suggested that future advancements, such as virtual reality and movement analysis tools, could further enhance teaching practices. Geronimo's Framework for Integrating Digital Tools in Physical Education stressed the importance of creating a comprehensive digital literacy curriculum, ensuring equitable access to technology, and incorporating wearable technology into physical education. Professional development for educators was identified as essential for effectively utilizing these tools to improve student performance and tailor activities. Moreover, the framework advocated for policy guidelines to support the ethical use of digital tools and global collaboration platforms that enriched learning through diverse physical education practices. This research provided valuable insights for educators, policymakers, and educational institutions regarding the intersection of digital technology and physical education.

Keywords — Digital Innovation, Digital Literacy, Educational Technology, Global Collaboration, Global Engagement, Physical Movement

I. Introduction

Switching from online classes to face-to-face sessions has brought some significant changes to Physical Education teachers here in the Philippines (Tagare, 2023); The transition to distance teaching and learning during the COVID-19 pandemic presented significant challenges for both instructors and students. (Lapitan et al., 2021). The shift to digital platforms has also helped address immediate logistical challenges. However, it has also created opportunities for global engagement, improving the learning of knowledge, skills, behaviour, and attitudes essential for a well-rounded education. Digital technologies, like video analysis and machine learning tools developed by Chan (2021), have transformed the delivery of physical education. This allows for real-time performance assessments and immediate feedback, which is crucial for student skill development. This advancement reflects a move towards a more knowledge-driven approach to physical education, where data-driven insights enable a deeper understanding of student performance.

The main issues include the need for physical Interaction, the difficulty in assessing performance and providing real-time feedback, and the challenge of engaging students with limited space, resources, and time. Furthermore, there is a need for digital platforms that can offer a variety of physical activities, including guided workouts, dance routines, and group challenges, which can cater to different interests and fitness levels while promoting physical health and wellness. The study by Stoian et al., 2022 indicates that students prefer support from teachers in using electronic educational resources, access to online education platforms, more accessible and personalized communication with teachers, and opportunities for collaboration with peers on joint projects. The findings suggest that stakeholders should strive to find a balance between face-to-face and digital education to ensure the sustainability of education in the future.

A study by Baxter and Chung (2022) showed that online platforms can effectively deliver physical education (PE) instruction to students in remote areas. This approach helps sustain engagement and activity levels that are comparable to traditional settings. It extends the reach of quality PE instruction, promoting inclusivity and equity in global education. The readiness of teachers to engage with e-learning varies. Younger educators or those more familiar with digital tools tend to be more adaptable (Polat et al., 2022). This emphasizes the importance of continuous professional development to improve educators' digital literacy skills, ensuring they are prepared for the challenges of modern educational settings.. Mobile apps that track physical activity and provide personalized feedback, as investigated by Tan and Ng (2021), promote active participation and individualized learning experiences. These technologies support the development of behavioural skills in students, encouraging self-monitoring and responsibility for personal health.

Introducing immersive technologies like virtual reality (VR) has further enriched the PE curriculum by making it more appealing and engaging for students who might otherwise show little interest in traditional PE settings (Hill & Torres, 2021; Reyes & Garcia, 2022). Such technologies enhance motivation and participation and improve students' understanding of complex sports techniques, offering a more interactive and engaging learning experience.

Addressing the digital divide, as Lopez and Kumar (2023) did with their development of a low-bandwidth mobile app, ensures that advancements in PE are accessible to all students, regardless of their internet access. This approach is crucial for fostering equitable educational opportunities, a fundamental aspect of global engagement.

This qualitative phenomenological study seeks to deepen understanding by exploring the diverse experiences of PE teachers globally, focusing mainly on those within the International Association in Physical Education and Sports. By examining these varied experiences, the research aims to develop innovative, adaptable teaching modalities to overcome the unique challenges of both online and traditional settings. The study will address critical barriers such as technology access, student motivation, space constraints, and the need for personalization in PE curricula. Through global engagement and collaboration, this research will contribute to developing PE programs that meet diverse needs and enhance the learning of skills, behaviours, and attitudes essential for comprehensive physical education to ensure that the benefits of staying active and healthy are universally accessible, irrespective of the learning environment online or face-to-face.

The diversity in applying and integrating digital technology in PE across these countries highlights a significant research gap. More comprehensive, comparative information must be provided on how PE teachers adopt and adapt digital innovations globally in varied educational and cultural contexts. By gathering insights from PE teachers across these countries within the International Association of Physical Education and Sports framework, the study aims to address this gap, enhance understanding of global PE practices, and contribute to a more nuanced view of how digital technology can enrich physical education worldwide.

LITERATURE REVIEW

Physical education (PE) has undergone a significant transformation in recent years by incorporating digital technologies. This has dramatically improved teaching methods and student engagement. Chan's 2021 research on video analysis and machine learning demonstrates this shift, allowing real-time performance assessments and providing instant feedback essential for skill development. Similarly, in 2022, Baxter and Chung showed that structured online PE programs can maintain physical activity levels comparable to traditional in-person classes, benefiting students in remote locations.

Polat et al. (2022) developed a measure of e-learning readiness among K-12 teachers by expanding on digital innovation. They found that younger teachers or those familiar with digital tools are better prepared for online teaching. This readiness is vital as it influences the approach to

digital education and its effectiveness. Mobile technology also plays a crucial role in modern PE. Tan and Ng (2021) found that mobile apps can significantly enhance student engagement by providing personalized feedback and tracking physical activities. This personalization is echoed in Patel et al.'s (2024) development of an adaptive learning system that uses machine learning to tailor activities to individual student performance, optimizing learning outcomes and physical development.

Immersive technologies such as virtual reality (VR) have also made significant strides in PE. Studies by Hill and Torres (2021) and Reyes and Garcia (2022) demonstrate how VR can increase motivation and participation, particularly among students less interested in traditional PE. Augmented reality (AR) further enhances this by allowing physical activities in confined spaces, as shown in studies by Smith and Lopez (2022) and Gomez and Fernandez (2022), making PE more accessible and engaging.

On the pedagogical side, the integration of digital tools is reshaping the delivery and assessment of PE. Smith and Johnson (2021) highlighted the growing use of interactive apps and virtual reality simulations to address challenges associated with remote learning and limited physical resources. Rodriguez and Martinez (2023) and Digón-Regueiro et al. (2023) discussed the benefits of digital assessment tools that facilitate timely, personalized feedback, enhancing the educational process and supporting teacher and student growth in digital competencies.

Moreover, Fernandez and Patel (2022) proposed low-bandwidth content delivery models to make digital PE lessons accessible to students in areas with limited internet connectivity, ensuring a broader reach of PE programs globally.

The integration of digital technologies in PE supports innovative teaching practices and fosters global engagement, as evidenced by international collaborations in developing new educational tools and methodologies. As digital tools evolve, they promise to democratize access to quality education further and tailor learning experiences to meet diverse student needs, marking a significant step forward in the global education landscape.

In contrast to the preceding literature, this study stands out for its focus on exploring the digital innovation of lived experiences of physical education teachers in the International Association of Physical Education and Sports for fostering global engagement.

STATEMENT OF THE PROBLEM

The research aimed to determine the digital innovations and lived experiences of selected physical education teachers in fostering global engagement.

Specifically, the study sought to answer the following:

1. How do the co-participants describe their digital innovation experiences as physical education teachers in fostering global engagement?

2. What meanings can be formulated from the significant experiences shared by the co-participants?
3. What themes emerged from the formulated meanings?
4. Based on the findings of the study, what may be proposed?

II. Methodology

The study employed a phenomenological research design to thoroughly examine the experiences of Physical Education teachers who are members of the International Association for Physical Education and Sports. This approach was informed by the work of Max van Manen (1990), a recognized expert in phenomenology, aiming to understand the genuine experiences of these teachers as they navigated various teaching platforms. Data collection involved conducting structured interviews, recording audio, and taking detailed notes to ensure the accuracy of the information gathered. Before each interview, the researcher followed ethical standards by obtaining explicit permission from the participants to record the session, asking, "May I have your permission to record this session?" An interview guide was developed and refined based on constructive feedback from three qualified graduate school professors, ensuring it was well-aligned with and enriched the understanding of the teachers' experiences in physical education.

III. Results and Discussion

This study determined selected physical education teachers' digital innovations and lived experiences in fostering global engagement.

1. The findings reveal that digital innovations significantly enhance teaching practices in physical education by fostering global engagement and improving student interaction. Participants from various countries shared their experiences integrating digital tools like Microsoft Office, fitness apps, VR, and online platforms into their teaching. These tools have proven effective in making lessons interactive, engaging, and globally connected, allowing teachers to share ideas and collaborate internationally. However, challenges like internet connectivity issues, limited device access, and the steep learning curve for new technologies were common. Teachers emphasized continuous learning, professional development, and balancing digital and traditional methods. They also highlighted the importance of institutional and government support in addressing logistical barriers, ensuring equitable access, and maximizing the potential of digital innovations in physical education. Educators anticipate integrating augmented reality and virtual reality to enhance global collaboration and innovative learning experiences.

2. The findings reveal that the co-participant's significant experiences with digital innovations in physical education reflect enhanced engagement, global connectivity, challenges of integration, and the importance of balancing technology with traditional methods. Digital tools such as fitness apps, virtual reality, and learning management systems have captured students' interest, making lessons more interactive and enjoyable. Global collaborations and professional development through digital platforms have enriched teaching practices and fostered international connections. However, challenges like internet connectivity issues, limited device access, and balancing digital activities with physical movement persist. Participants emphasized the importance of continuous learning, administrative support, and experimenting with emerging technologies like augmented reality and virtual reality. While digital tools are transforming teaching methods, maintaining a balance with traditional approaches is crucial to ensure holistic learning experiences that preserve the essence of physical education.
3. The themes that emerged from the co-participant's experiences highlight the transformative role of digital tools in physical education through Technological Advancement and Integration, Professional Development and Global Networking, and the Challenges and Balancing Act of implementation. Integrating digital tools like fitness trackers, virtual reality, and interactive platforms has enhanced student engagement and made lessons more dynamic and personalized. Professional development and global networking enable educators to share strategies, learn from diverse perspectives, and continuously adapt to technological advancements. However, challenges like limited technological access, technical issues, and the need to balance digital tools with traditional methods persist. Educators emphasize the importance of maintaining the core values of physical education—active participation and teamwork—while leveraging digital tools to enrich the learning experience. These themes reflect a commitment to innovation, collaboration, and adaptability in the evolving education landscape.
4. The Geronimo Framework addresses the evolving demands of education by integrating technological advancements into physical education while preserving its core values of physical activity, teamwork, and holistic well-being. It emphasizes the thoughtful incorporation of digital tools to make lessons interactive, personalized, and immersive without compromising students' health and physical engagement. Recognizing the need for continuous professional development and global networking, the framework supports educators in adopting innovative practices and sharing diverse perspectives through international collaboration. While acknowledging challenges like equitable access and digital distractions, the framework proposes strategic solutions to balance traditional and digital approaches, ensuring all students benefit equally. Ultimately, the Geronimo Framework envisions a future-ready physical education curriculum that harmonizes technology with traditional methods, fostering global engagement and inspiring lifelong appreciation for physical activity.

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