

Exploring physical education teachers' experiences with incorporating technology into instruction

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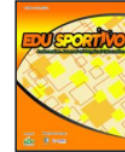
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Exploring physical education teachers' experiences with incorporating technology into instruction

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ABSTRACT

Keeping up with evolving concepts and teaching new knowledge require individuals to adapt to 21st century abilities in order to be future-ready and versatile in keeping up with the trends of an ever-changing educational landscape. Technology integration is a huge assist in offering meaningful and creative quality education services. The purpose of this study is to acquire an in-depth understanding of physical education teachers' experiences with integrating ICT into lesson delivery. The study utilized qualitative study which employs a phenomenological approach. Purposive sampling was utilized in the study to fulfil the study's purpose of answering research concerns where 7 physical education teachers participated in the study. Codes and themes were used in the study. Three themes emerged in the study: dynamic teaching and learning experiences, lack of access, and health problems. This study intends to highlight the significance of adopting and integrating technology into the current teaching and learning process, which highlights the significance of teaching of physical education teachers' with showcasing the technical capabilities and skills. Additionally, by incorporating ICT, the study will highlight its beneficial outcomes and serves as a strategy will be developed to deal with the difficulties instructors have faced by creating policies for improving teachers' technological skills as a result of these difficulties. The use of ICT to give instruction in physical education classes will highlight the study's beneficial effects. Every physical education teacher who uses ICT to give lessons in concepts, principles, and teaching and learning will benefit from the clarity this study will bring.

Keywords: Dynamic learning; ICT integration; learning experiences; physical education; teaching and learning

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INTRODUCTION

The dynamism of the teaching and learning process profoundly influences both educators and students, opening avenues for meaningful experiences. Mai's (2020) study emphasises the benefits of collaborative learning through watching instructional videos, enhancing student learning, motivation, and self-evaluation skills. Furthermore, the efficacy of technology in teaching positively correlates with student learning outcomes (Ekici et al., 2023), underscoring technology's pivotal role in the educational landscape (Culajara, 2023). As education becomes the great equaliser, acquiring 21st-century skills is crucial for students to thrive in contemporary society.

Integration of Information and Communication Technology (ICT) serves as a catalyst for upgrading instructional methods, ensuring they align with the demands of 21st-century skills. Richardson et al. (2020) highlight the value of innovative educational

techniques in creating meaningful learning experiences. According to [Kulkarni \(2019\)](#), technology makes it possible to tailor pedagogical strategies for particular students, providing individualized learning experiences in line with their unique profiles.

The role of technology in physical education is paramount, enhancing the clarity and effectiveness of instruction delivery ([Williamson et al., 2020](#)). Recognising the continuous evolution in education, physical education teachers are urged to be inventive and imaginative in both instructional methods and technological skill-building ([Ghory and Ghafory, 2021](#)). The incorporation of technology not only addresses individual variations but also significantly impacts the teaching and learning processes ([Mdhlalose & Mlambo, 2023](#); [Radebe et al., 2023](#)).

However, the increasing reliance on technology requires educators to stay receptive to updated instructional methods, acknowledging the continuous nature of change. The rising body of research illustrates the transformative effect of technology on how students acquire knowledge and interact with their classes ([Slade et al., 2019](#)). In this context, the integration of technology becomes instrumental in improving learning performance and job satisfaction for both students and teachers ([Baccin et al., 2020](#)).

While the benefits of technology in education are evident, it is essential to recognise the challenges teachers face in adapting to and incorporating these innovative tools into their instructional practices. The study by [Otukile-Mongwaketse et al. \(2016\)](#) emphasises the effort and time required to learn various online resources for classroom instruction. Nevertheless, the adoption of videos as an instructional method has proven to be well-received by teachers, easing engagement and offering flexibility in scheduling learning opportunities ([Urquiza-Fuentes et al., 2015](#)).

As we navigate this digital age, the role of teachers becomes pivotal in crafting meaningful learning experiences. [Potvin et al. \(2021\)](#) stress the ownership of learning materials through technology integration, highlighting the educator's critical role in adapting to the changing educational landscape. Recognising the transformative potential of technology, [Baydar \(2022\)](#) underscores the need for educators to embrace change and innovate in response to the evolving nature of technology.

While existing literature underscores the transformative potential of technology in education, a noticeable research gap persists in understanding the specific strategies and best practices for effectively implementing ICT within the context of physical education. The experiences of physical education teachers in navigating this integration remain underexplored. This study aims to bridge this void by delving into the positive effects, challenges, and potential enhancement programmes related to ICT integration for physical education teachers. Through addressing these specific questions, the research seeks to provide nuanced insights that can inform educators, curriculum implementers, and school leaders about fostering innovation and creativity in their instructional approaches. By offering a comprehensive understanding of the experiences of physical education teachers, the study aims to contribute to the ongoing discourse on effective technology integration in the educational landscape.

In conclusion, this study aimed to explore the experiences of physical education teachers as they navigate the integration of technology into their instructional practices. Through addressing specific questions related to the positive effects, challenges, and enhancement programmes associated with ICT integration, the study seeks to provide valuable insights for educators, curriculum implementers, and school leaders. By embracing the grit towards innovation, teachers can effectively complement traditional teaching methods with technology, ultimately enhancing the quality of education services.

1 METHOD

The study used a qualitative research design employing a phenomenological approach. As asserted by Ruggiero and Mong (2015), in acquiring an in-depth understanding of the experiences of the participants, acknowledging the phenomena was a great help in understanding the purpose. Purposive sampling was used in the study to choose the participants. Teachers who solely used ICT to deliver instruction were the participants in the study. It consisted of 7 physical education teachers. Codes and themes were used in the study to transcribe the gathered data. Through focus group discussion, observation, and analyzing the responses, the researcher able to acquire an in-depth understanding of teachers' experiences in adapting the 21st-century skills in learning and teaching.

Participants and Sampling

The study used physical education teachers as participants. Purposive sampling was used in the study, where PE teachers solely used ICT integration in delivering instruction. Purposive sampling was employed to select participants, and semi-structured conversations were conducted where the responses that were acquired served as data in the study. This sampling was a non-probability approach used to attain the objectives of the study (Campbell et al., 2020). The participants in this research were physical education teachers with experience integrating technology into the delivery of instruction in PE programs. The participants were chosen based on their competence and practices in instruction delivery and their willingness to participate in the study.

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Table 1. Profile Data of the Participants

Codes of Participants	Gender	Years in Service	Teaching Position
T1	M	14	Teacher III
T2	M	9	Teacher I
T3	F	6	Teacher III
T4	F	15	Teacher II
T5	F	5	Teacher I
T6	F	5	Teacher III
T7	F	1	Teacher I

The data highlights the profile data of the participants in the study. The participants were composed of two (2) male PE teachers and three (3) female PE teachers. T1 and T3 have the highest teaching position among the participants. T4 has the longest year in service at 15 years while T2 at 9 years in service as a teacher, T3 and T5 with 6 years in service while T1 has 14 years in service. The study used purposive sampling in choosing the participants, as reiterated by Campbell et al. (2020), which stated that sampling was used to set the criteria and guidelines for choosing participants in the study that would attain the objective of the paper.

Instrument

The study used an open-ended interview guide to acquire the participants' responses to attain the objectives of the study. The interview guide was validated by three (3) specialists in terms of substance and validity in addressing the research questions where it was conducted through a focus group discussion. This approach was utilized to provide researchers with a wide overview of the study to be undertaken and to allow participants to share their experiences by answering the interview guide.

3 Data Gathering and Analysis

The study used focus group discussion to gather responses, where interviews with open-ended questions were utilized. This data collection technique provides an in-depth

understanding of the teachers' experiences with technology integration in physical education programs. As a result, this method was employed to analyse the phenomenon (Mishra, 2016). Codes and themes were transcribed in the study, where responses were analyzed. The responses of the participants allow and provide the researchers with an in-depth understanding of their instructional delivery strategies using technological integration. Researchers transcribed and coded replies obtained from participants to enable them to have groupings of words of responses and a more in-depth comprehension of their experiences, resulting in superordinate themes of the study.

Ethical Considerations

The researchers informed the participants that the information they provided would be kept strictly confidential and with the highest respect. The researchers conducted the study with ethics and integrity in mind. Following the rules and processes for conducting the study, the researchers asked what should be addressed and provided each participant with a consent form. All collected data, particularly personal information, will be kept private and secret.

RESULTS AND DISCUSSION

As education evolves, learning becomes more engaging and complex. Students start to get more involved in their studies. They take part more in class and ask difficult questions of teachers in order to become more knowledgeable about the lesson.

Positive effects of the integration of ICT in delivering instructions

Table 2. Thematic results in the positive effects of ICT integration in the delivering of instruction

Superordinate Themes	Statements
Dynamic Teaching and Learning Experience	<i>T1: It will be easier to believe with the integration of technology such as a laptop, printed materials, and presentations such as video-based or mobile applications, and students will have a more dynamic learning experience because they have different ways of understanding the lesson through technology-based learning.</i>
	<i>T2: Using technology in teaching and learning such as ICT or software in student learning is a manner that each student's perceptions of learning are different because there are also social medias that are used to help them learn better such as video-based instructions.</i>
	<i>T3: Teaching with technology is a great way for teachers to facilitate the delivery of learning and the production of instructional materials that will supplement the competences required. Just like in PE, there are technology-based tasks that kids must complete while battling away from the norm. Its beneficial impact is that it facilitates the transmission of instructions.</i>
	<i>T4: Since you have prepared learning materials and can directly send an email or provide copies to students, using technology to teach and facilitate learning is easier.</i>
	<i>T5: There is more engagement in students due to technology integration since there are videos, images, and enhanced hands-on activities and learning because there are other students whose pacing of learning is through technology integration due to its easy access.</i>
	<i>T6: Using technology in delivering instructions make an easy access and way in preparing lessons in the class.</i>
	<i>T7: It offers a variety of learning opportunities such as different gam-based learning, independent learning and integration of technology-based learning.</i>

Physical education video courses and materials are an excellent strategy for promoting physical and health education reform in schools (Tan & Chen, 2021). To realize the goals, teachers must be capacitated and strengthened in order to broaden their horizons in personal and professional development. Teachers used technology to improve classroom instruction (Liu, 2016). In response to the new world of teaching, the school aspires to value the releasing and fostering of every teacher's talent and knowledge so that instruction to every student is more effective and learning outcomes are maintained. Technology is a crucial element of our everyday existence and students in contemporary public schools are considered digital natives where technological tools are available in classrooms and there are several both internal and external factors that affect the proper use of technology in classrooms (Dzansi & Amedzo, 2017).

Thus, as the prime movers and change agents, teachers must inculcate the inherent capabilities to strengthen their faith in their principles—to teach. As reiterated by Ruggiero and Mong (2015) professional development empowers teachers to learn about technology. As mentioned by T1:

“...It will be easier to believe with the integration of technology such as a laptop, printed materials, and presentations such as video-based or mobile applications, and students will have a more dynamic learning experience because they have different ways of understanding the lesson through technology-based learning...”

According to Byun and Joung (2018), teachers' motivation is a critical component for effective technology integration in the classroom, particularly during the early stages of instructional innovation. Student-centered teaching combines instructional practices that allow students to engage in more independent learning (Parker et al., 2019; Zhang & Zhang, 2019). ICT integration according to Zhang and Zhang (2019), increases students' motor abilities and is one of the most valuable and efficient uses of digital video and self-modelling in physical education. Physical educators are recognising the benefits of incorporating videos and digital technologies to supplement lesson delivery (Zhou et al., 2022). With teacher endeavours in delivering instruction, ICT integration unlocks students' innate talents through analysis and understanding via digital and online avenues, allowing them to adapt to the 21st century skills required. T2 has added:

“...Using technology in teaching and learning such as ICT or software in student learning is a manner that each student's perceptions of learning are different because there are also social medias that are used to help them learn better such as video-based instructions...”

According to Varea et al. (2020), technologies have the potential to enhance instruction in educational delivery. Teachers have to be prepared to adjust to continuously evolving technological advances, demonstrate ease with multitasking students, and be willing to explore technology-rich instructional and educational settings (Hartman et al., 2019). Through the integration of ICT in delivery instructions (Dzansi & Amedzo, 2017), transforming how students learn, teachers teach, and support personnel work. Integration of ICT in teaching aided in enhancing the level of education by equipping the teacher to improve its professional competences and skills with the goal of competing in the classroom (Wyant & Baek, 2019). As shared by T3 and T4:

“...Teaching with technology is a great way for teachers to facilitate the delivery of learning and the production of instructional materials that will supplement the

competences required. Just like in PE, there are technology-based tasks that kids must complete while battling away from the norm. Its beneficial impact is that it facilitates the transmission of instructions...".

"...Since you have prepared learning materials and can directly send an email or provide copies to students, using technology to teach and facilitate learning is easier...".

Teachers were the key players in the process of incorporating technology into their lesson plans since they were responsible of creating digital content and other resources to assist their pedagogic activities (Arifianto et al., 2021). Thus, improvements in students' learning affects through integration of technology, increasing use of technology into instructional design, and a positive attitude toward the incorporation of technology in learning and teaching instruction (Rehmat & Bailey, 2014). Experiential and meaningful coaching experiences such as hands-on exercises which were thought to be helpful for teacher technology integration (Liao et al., 2021). Added by T5:

"...There is more engagement in students due to technology integration since there are videos, images, and enhanced hands-on activities and learning because there are other students whose pacing of learning is through technology integration due to its easy access...".

As reiterated by Wyant and Baek (2019), with the rise of digital learning and digitization, an array of technological methods and tools have developed, permitting teachers to enhance students' experiences in school. Moreover, learning occurs through experiences in which the student participates enthusiastically and connects and collaborates with others (Hartt et al., 2020). With these, scaffolding and collaborative activities enable students to acquire understanding and have a meaningful journey of learning. Previous studies have looked into design principles and instructional approaches to increase student video-based learning (Dodson et al., 2018). As added by T6 and T7:

"Using technology in delivering instructions make an easy access and way in preparing lessons in the class".

"It offers a variety of learning opportunities such as different gam-based learning, independent learning and integration of technology-based learning."

2
Students gain more knowledge, understanding, and skills in the videos, as this was reinforced by Mast et al. (2015) finding that learning nowadays requires the inclusion of video-based learning to grasp an in-depth knowledge of the material. Thus, the integration of ICT proved to be a powerful tool for improving students' learning outcomes. It implies that students believed that incorporating ICT into the learning environment was incredibly successful in increasing learning outcomes and enriching classroom teaching. Technology is now widely used in the learning processes of students. Integration of ICT as a key instrument in learning and how students acquire knowledge and abilities that include objectives, skills that students must learn, and tasks that must be performed.

Challenges experienced by the PE teachers in delivering instruction with the ICT integration

Table 3. Thematic results in the challenges experienced in integration of ICT

Superordinate Themes	Statements
Lack of Access	T1: There are students who do not have access to the prepared integration of technology in the teaching and learning process.
	T2: The convenience and access of students in the technology
	T3: Sometimes the devices used by students are outdated and the learning materials in their devices are not compatible.
Health Problems	T4: sometimes the students do not easily understand the lesson or prepared digitized materials because of their eye diseases or blurred vision.
	T5: There is a problem in delivering instructions when students do not have a device, or they cannot use the learning materials needed for the lesson.
	T6: Overused of technology in preparing lessons make my eyes blurry.
	T7: Using technology in a long span of time affects my mindset and health. (like having migraine, blurred visions and back pains).

Teachers showed consistent views of technological barriers, a significant amount of confidence in employing technology, as well as consistent beliefs about the value of using technology as an instructional tool (Chaaban & Ellili-Cherif, 2017). Numerous advantages have resulted from technological advancements and enhancements that operate, manage, and teach, and it has a positive impact on the growth of an ever-changing environment (Lindner & Schwab, 2020). As accessible learning material was one of the flagship programs of the education, integrating ICT in the delivering instructions must be accompanied with vision of future in reaching the needs of the students. As shared by T1:

"...There are students who do not have access to the prepared integration of technology in the teaching and learning process..."

As Widyaningrum et al. (2020) note, technology plays an important role in the delivery of instruction. Consequently, Harandi (2015) indicates that not owning a laptop is negatively connected with overall performance. The development and expanding widespread adoption of integrating ICT is one of the most significant societal and technological developments of the 21st century (Aquino, 2022). As shared by T2:

"...The convenience and access of students in the technology..."

ICT integration has the value to the educational agent and their function in modifying the teaching-learning process (Hernandez, 2017). However, the greatest difficulty confronting the incorporation of ICT integration into the instructional process in school was due to lack of devices (Mwanda et al., 2017). As shared by T3:

"...Sometimes the devices used by students are outdated and the learning materials in their devices are not compatible..."

Moreover, it necessitates in overcoming the hurdles that impede successful integration of ICT used in public schools (Salam et al., 2018). Thus, recognition of challenges in the integration of ICT can aid in improving the quality of education and policy development (Seidel et al., 2013). The most significant barrier to technology integration was a lack of adequate computers/hardware, which was followed by time limitations in the creation

and execution of lesson plans that utilize technology (Pittman & Gaines, 2015). Thus Mai (2020), the capability and importance of technology can be helpful in the process of instruction and learning. As mentioned by T4:

"...sometimes the students do not easily understand the lesson or prepared digitized materials because of their eye diseases or blurred vision".

Sometimes with the excessive effort and time that teachers put into developing and conceptualizing learning materials in the delivery of instruction they also experience health problems such as blurred vision or too much screen time. Hence, Pittman and Gaines (2015) found that despite their passion, teachers were found to be unmotivated to integrate technology into their instruction due to a lack of capacity-building support. According to the study by Drajadi et al. (2018), a lack of training, competency, and adequate devices affects the delivery of instruction in the integration of ICT. Moreover, lack of ICT technical support and access to ICTs is due to poor school infrastructure, software, and programmes to be used in teaching integration (Franco-Mariscal et al., 2016). Added by T5:

"...There is a problem in delivering instructions when students do not have a device, or they cannot use the learning materials needed for the lesson..."

As a result, Tugrul (2012) found that researching the concerns and challenges associated with ICT use in learning and instruction can assist teachers in overcoming challenges and becoming effective technology users. Consequently, integration technology affects health problems in teachers deliver of instruction. As mentioned by T6 and T7:

"Overused of technology in preparing lessons make my eyes blurry".

"Using technology in a long span of time affects my mindset and health. (like having migraine, blurred visions and back pains)".

Technology is crucial to students' learning and might affects one health. For both teachers and students, the shift to a technology-based learning environment presents obstacles. It also has a number of negative effects on physical health, yet education must continue in order to have greater opportunities. This study tries to pinpoint the harmful consequences on teachers' physical health that should not be disregarded. Teachers experienced a variety of obstacles and difficulties throughout the educational transition; as a result, researchers are encouraged to find solutions for this study with the aim of detecting the impacts of mobile learning on students' physical health in order to develop a program for promoting and upskilling teachers' technological capability in adapting to the 21st century skill.

Enhancement Program in Upskilling Teachers Technological Capability

Innovative approach should be emphasized on the 21st century skills. Becoming technology capable and skilled could be beneficial into the teaching and learning process. As progression is a never-ending tool in delivering instruction, adoption on the integration of ICT could be timely, relevant and beneficial to the students' study habit as watching video could be offered as self-paced learning. Chakraborty and Nafukho (2014)

reiterated that engagement of students must be acquired through student-centred focus, where teachers have the liberty to unlock and unleash students creativity through varied teaching strategies (Khalil & Elkhider, 2016).

Upskilling teacher's competency in delivering instruction must be prioritized and valued to keep up with the changes happening in delivering instructions. Focusing on the pedagogy and content delivery, teachers must improve their teaching competency while uplifting their technology capabilities. Recognizing the elements and factors in delivering curriculum through thorough planning and strategic system. Teachers must be involved in systematic planning and become strategic visionaries in delivering instructions to the students. Hence, through continuous professional development and personal growth programs, projects and activities, this could address the nitty-gritty in developing and improving teachers technological competency. Valuing the importance of keeping up with the changes happening in the educational system, must be abide and prioritized in order to adapt and as an excellent tool for conveying instructions and fostering wide learning in many ideas in Physical Education.

CONCLUSION

Analysing the various responses and experiences of participants, this study provides a basis for future researchers to identify patterns in the education system, especially in the context of instructional delivery. In particular, the focus of the research was on teachers' experiences of integrating technology, revealing significant challenges such as the dynamics of the teaching and learning experience, access limitations, and health issues. This emphasis highlights the importance of teachers' readiness to continuously develop their technical skills, facing constant changes in the educational landscape, with passion and enthusiasm for adopting technology as a means of delivering instruction.

This study highlights the challenges teachers face in delivering instruction through technology integration, with three main themes emerging: dynamic teaching and learning experiences, limited access, and health concerns. In an era of ever-changing education, this demonstrates the need for teachers to demonstrate readiness by expanding their technical competencies, continuously improving teaching skills, and aligning teaching methods with innovation and uniqueness through the use of technology. Enthusiasm about adopting technology as an instruction delivery tool is key to educators' success.

While providing valuable insights, this study has limitations, including a sample that may not fully reflect the overall population of physical education teachers. Therefore, generalisations of the findings should be done with caution. Contextual factors that may influence technology integration were also not fully revealed due to scope and time restrictions. For future research, it is recommended to expand the sample and consider additional variables, such as the level of teaching experience. This study contributes to the understanding of physical education teachers' challenges and experiences in adopting technology and provides a foundation for the development of improvement programmes. By identifying barriers and providing practical recommendations, it is hoped that this study can support practitioners, policymakers, and researchers in advancing the effectiveness of technology integration in physical education.

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CONFLICT OF INTEREST

The authors state no conflict of interest.

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