



# Unveiling the digital gym: A phenomenological dive into online physical education pedagogy

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## ABSTRACT

**Background:** The COVID-19 pandemic necessitated a rapid shift to online learning, posing significant challenges for traditionally hands-on subjects like Physical Education (PE). Limited student engagement, digital accessibility issues, and the need for pedagogical adaptation became major concerns for PE instructors.

**Objectives:** This study aims to explore the lived experiences of PE instructors in adapting to online instruction, identifying the strategies, challenges, and innovations they employed to maintain instructional effectiveness.

**Methods:** A qualitative research design utilizing Interpretative Phenomenological Analysis (IPA) was adopted to gain deep insights into instructors' experiences. Purposive sampling was used to select seven PE instructors from urban and rural institutions, ensuring diverse teaching contexts. Data were collected through semi-structured interviews, and thematic analysis was conducted to identify key adaptation strategies.

**Results:** Five major themes emerged from the findings: (1) Adaptation to Online Instruction, where instructors restructured their teaching approaches to accommodate digital platforms; (2) Effective Use of Digital Tools, emphasizing the role of online resources in enhancing instructional delivery; (3) Innovative Approaches to Engagement, detailing gamification techniques and interactive pedagogies; (4) Equitable Access Strategies, addressing disparities in internet connectivity and learning resources; and (5) Assessment of Success and Progress, highlighting novel evaluation methods tailored for online PE instruction. These themes collectively form the "Navigating Instructional Delivery Through Innovation, Technology, Engagement, and Equity" framework.

**Conclusions:** The study provides valuable insights into how PE instructors have innovatively adapted to online learning, ensuring student engagement and equitable access to education. The findings offer implications for policy-making, teacher training programs, and the future integration of technology in PE instruction. Future research should explore student perspectives and the long-term impact of digital PE on learning outcomes.

**Keywords:** adaptive pedagogy, digital learning, online physical education, PE instruction strategies, student engagement.

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## INTRODUCTION

Physical Education (PE) instruction has significantly transformed since the COVID-19 pandemic. Traditional PE teaching methods faced unprecedented challenges as educators were compelled to transition rapidly to online instruction due to school closures (Varea & González-Calvo, 2021). As the post-pandemic educational landscape continues to evolve, analyzing these challenges and the resulting adaptations in online PE instruction is essential.

In the Philippine context, the transition to online teaching presented serious challenges, especially in subjects like PE, which are dependent on physical interaction and hands-on learning (Thomas & Stratton, 2021). Research shows that Filipino teachers had difficulty getting students to participate in physical activities due to limited space, lack of equipment at home, and digital disparities (Aguinaldo, 2021; Tanucan, Hernani, & Diano, 2021). The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2021) suggests that online studies resulted in decreased participation of students in physical exercise, with student participation declining by 30% compared to their pre-pandemic status. Likewise, as per a report by the World Health Organization (2022), excessive screen uses and sedentary behavior improved among students internationally, adding fuel to health woes. The information points towards questioning how PE educators adjusted to allow students to participate.

Filipino educators implemented various digital tools and pedagogical strategies to address these challenges. Research by Francisco & Nuqui (2020) documented the use of Facebook groups, YouTube tutorials, and Google Classroom in facilitating PE lessons, enabling students to participate asynchronously at their own pace. To bridge the digital divide, the Department of Education (DepEd) introduced modular distance learning and blended learning approaches (DepEd Order No. 012, s. 2020). Moreover, instructors incorporated interactive methods like polls, breakout rooms, and immediate feedback during synchronous sessions to ensure student participation (González-Calvo et al., 2022). Assessing student performance in an online environment also necessitates creativity, and wearable fitness devices and video submissions were used for evaluation (Cox et al., 2025; Brown & Jones, 2022).

At the international level, the pandemic has interfered with education systems, including PE programs. Research has shown that schools across the globe are experiencing challenges in transferring PE curricula to online versions because of poor access to sporting facilities and digital divides (Yu & Jee, 2020; Gonzales, 2020). According to a report by UNESCO (2021), 45% of students globally did not have access to the right resources to engage in online PE, highlighting the digital learning inequities. The disparities led to unequal student participation levels, depending on household conditions and socioeconomics.

Physical education is still as vital to students' health as ever, especially at a time when there has been a global health crisis. Lockdowns and extended isolation have worsened physical and mental well-being, thus the need to ensure fitness and active living (World Health Organization, 2022). Consequently, PE teachers had to embrace innovative pedagogical approaches combining digital literacy, instructional design, and online communication skills. Research indicates that teachers used fitness apps, wearable devices, and digital platforms like Zoom, Google Classroom, and Microsoft Teams to effectively teach PE (Casey et al., 2020). Lesson plans also

integrate multimedia features, such as videos, animations, and quizzes, to maintain student engagement (Bailey & DiPerna, 2021).

However, online PE instruction presents unique challenges. As compared to other academic courses, PE is highly dependent on functional activities and movement, which cannot be easily imitated in online classrooms. Literature points to the compromised interaction between learners and instructors, thereby complicating participation and engagement (Yu & Jee, 2020). In response to this, gamification strategies, peer-to-peer collaboration, and flipped classroom strategies have been adapted in the teaching of PE to boost learner motivation (Freeman et al., 2020; Pedersen & Ceciliani, 2021).

In the Philippines, institutions such as LORMA Colleges and Don Mariano Marcos Memorial State University – Open University System (DMMMSU-OUS) adopted adaptive measures to continue PE instruction. LORMA Colleges still offer online classes because of classroom deficiencies, while DMMMSU-OUS utilizes a mix of group-paced and self-paced learning, with both synchronous and asynchronous instruction. Even with these initiatives, teachers continue to struggle with student motivation, resource constraints, and the adaptation of physical education pedagogy to online environments.

This research fills an essential gap in the literature by examining the lived experiences of PE teachers adapting to online instruction. Existing research has largely been quantitative, examining online participation in PE without leaving a gap in the understanding of educators' views on instructional adaptation. In contrast to earlier research, the current study utilizes a phenomenological design to explore the subtle realities of online PE pedagogy. Through the investigation of how teachers have adapted their teaching approaches to ensure student engagement and learning achievement, this research adds useful insights to the ongoing debate regarding virtual PE teaching.

Additionally, the research provides practical contributions by delineating strategies for institutions, policymakers, and educators to enhance the delivery of online PE. Results can be used to inform teacher education programs, curriculum design, and technology integration models to advance the teaching of online PE. This research complements the current push toward equitable and effective physical education in the post-pandemic period by offering a map for best virtual PE instruction practices.

Several operative terms are defined to determine the study context. '*Challenges*' are the challenges teachers and students encounter in transforming PE lessons to the digital environment, such as sustaining interest, guaranteeing technological access, and adjusting pedagogical approaches (Kirk, 2021). '*Adaptations*' are the new teaching approaches, digital content, and participation methods teachers implement to address challenges (Lugueti & Oliver, 2021). '*Online Instruction*' refers to the use of web-based settings, such as learning management systems and virtual classrooms (Zhu & Ennis, 2021), in instruction and learning. '*PE pedagogy*' encompasses the principles, practices, and methods of teaching physical education, emphasizing physical activity (Reed & Phillips, 2021; Soriano & Tan, 2022) and student well-being. The '*post-pandemic period*' signifies the ongoing adjustments to online learning following the COVID-19 crisis. Additionally, the study introduces the concept of the '*digital gym*,' a virtual space where students engage in physical activities.

This study's research problem centers on understanding how PE instructors have adapted their instructional delivery for online learning. The primary research question is: What adaptations are the PE instructors involved in teaching PE online and instructional delivery? The study investigates instructional modifications, technology integration, student engagement strategies, and equitable access initiatives by exploring this question. Through a phenomenological lens, this study seeks to develop a richer understanding of teachers' experiences with online PE teaching. The research results will be used for policy development, curriculum design, and the promotion of cutting-edge pedagogical strategies, ultimately enhancing the quality and accessibility of online PE learning.

## METHODS

### Study Design and Participants

This study employed a qualitative approach, specifically the Interpretative Phenomenological Analysis (IPA) developed by [Smith & Larkin \(2009\)](#). This form of IPA emphasized an in-depth exploration of how individuals interpreted their social and personal experiences.

IPA was chosen for this study as it centered on understanding physical education instructors' lived experiences and perspectives in the post-pandemic era. Considering the specific conditions and viewpoints of the participants, this approach allowed for a comprehensive analysis of the challenges and adjustments related to online physical education instruction. By prioritizing participants' insights and experiences, the study aimed to provide valuable information for improving online physical education training.

Purposive sampling was utilized to select participants with direct experience teaching PE in an online or hybrid format. Seven college PE instructors from urban and rural institutions were selected to ensure a diverse representation of teaching contexts. The number of participants was deemed sufficient based on IPA standards, where smaller sample sizes allow for in-depth exploration. To enable a thorough micro-level analysis of the participants' stories, IPA studies typically involve a small number of participants (two to ten) ([Peat et al., 2019](#)). Inclusion criteria ensured participants were active online PE instructors with at least one year of virtual teaching experience, while exclusion criteria involved teachers who lacked firsthand expertise in teaching physical education online. Furthermore, anyone who could not adequately express their viewpoints or experiences because of language challenges or other constraints was considered ineligible.

### Ethical approval statement

The study received approval from the ethical committee at the Saint Louis College with the assigned approval number ES/774/2024.

### Research Instruments

The researcher used a semi-structured interview guide to collect data. To generate the a priori codes, the interview guide was developed using the notion layers of human experience. Before the in-person or face-to-face one-on-one interview took place, the interview questions were given to the ethics board for approval after being presented to the reading committee members. After collecting all the responses, the coding method was used to analyze the results.

Additionally, the interview questions were designed to address the primary study issue, which focused on PE teachers' opinions regarding the modifications made to give online instruction. All of the participants had encountered the phenomena of more prosperous and more substantive responses to probing inquiries.

A two-step procedure was used to validate the interview guide. The reading committee first examined and commented on it to ensure the questions were pertinent and understandable. To ensure the instrument complied with ethical guidelines for research, it was also submitted to the ethics board for approval. This procedure ensured that the questions accurately gathered the information required to support the study's goals. Sample interview questions are "Can you describe any significant changes or adjustments you have made to your teaching strategies online recently?" and "How did you integrate digital resources into your teaching practices? Could you provide examples of specific digital tools or platforms you have used and their effects on your students' learning experiences?"

### **Data Analysis**

Data were analyzed through IPA's sequential process: re-reading and reading transcripts, making observations, creating emergent themes, and pinpointing patterns across cases. The final themes were checked through participants' feedback to achieve accuracy and credibility.

#### ***Reflexivity***

Being a Physical Education (PE) teacher myself, my personal and professional experiences naturally influenced my knowledge of the challenges and adaptations that come with teaching PE online. Aware of the possibility of bias from my dual roles as researcher and practitioner, I used several strategies to counteract its effect and ascertain the validity of the research outcomes.

To begin with, we practiced reflexively on an ongoing basis throughout the research process. This entailed keeping a reflective journal to record our assumptions, thoughts, and possible biases during data collection and analysis. Periodic self-reflection enabled us to keep abreast of how our experience might shape the interpretation of participants' narratives and to put aside personal assumptions when analyzing data deliberately.

Second, we followed the rules of Interpretative Phenomenological Analysis (IPA) explicitly, which involves providing voice to participants' lived experiences. The account of each participant was interpreted separately with an open and impartial attitude prior to case pattern identification. The idiographic strategy ensured that interpretations were rooted in participants' words and not our own.

Third, member checking was done by taking the interpreted themes and meanings back to participants for verification. This procedure guaranteed that the results truly represented their experiences and reduced the likelihood of misinterpretation. Participants were also invited to comment on the analysis, adding to the validity of the results. Finally, we asked for comments from our research adviser and panel members at the analysis and discussion stages. Their critical comments offered an external check on our interpretations, allowing us to identify and eliminate potential biases.

Through incorporating these reflexivity strategies, we ensured that our position as a researcher was one of cautious interpretation instead of imposition, enabling participants' experiences to inform the findings organically.

## RESULTS

### Main Theme 1: Adaptation to Online Instruction

The shift to online teaching necessitated learners to reframe their conventional teaching methods to suit the virtual learning environment. Participant 1 transitioned from real-time teaching to recorded instructional videos that enabled students to learn on their own. Participant 1 shared, *"I transitioned from traditional instruction to incorporating demonstration videos that I pre-recorded so students can practice independently."* This method ensured students were able to review lessons at will, such that they practiced and sharpened their skills free from the intimidation of live lessons. Participant 3 took the modular method of providing weekly lesson plans with levels of difficulty variation to meet different fitness levels among students. Participant 3 explained, *"I shifted to a modular, flexible approach, providing weekly plans with options for varied difficulty levels to keep all students engaged."* These adaptations illustrate how PE instructors creatively preserved instructional quality despite the constraints of virtual settings.

Participants also indicated how they had adjusted their training methods to accommodate the needs of students in non-conventional learning environments. Participant 4, for instance, restructured physical activities to fit the available space at home by focusing on bodyweight exercises and those that required minimal equipment. This adjustment addressed logistics and allowed the students to engage in physical training easily in their setting. The ability of the participants to personalize their instruction is a manifestation of their resiliency and innovativeness in overcoming challenges encountered in web-based PE teaching.

### Main Theme 2: Effective Use of Digital Tools

The participants made the most out of digital platforms in enabling online learning. Participant 1 utilized tools such as Google Classroom and Flipgrid to distribute materials and provide space for peer interaction. Flipgrid, in particular, allowed students to showcase their skills through video submissions and engage with one another's work, building a community within the virtual space. Participant 1 shared, *"Google Classroom has been crucial for posting assignments and sharing resources. I also use Flipgrid for video submissions, which has allowed students to showcase their skills and watch each other's work."* This method opened up possibilities for peer learning and collaboration, with a sense of belonging among the students. Participant 4 integrated Padlet into lesson planning so that students could record their activities and reflections interactively. Participant 4 noted, *"Padlet is my go-to for interactive lesson plans. Students can add their reflections or links to their activity logs, making it easy to track and support their learning journey."* This allowed the educator to keep track of students' progress and engage meaningfully during the course.

Along with interactive sites, pre-curated digital content supplemented student learning. Participant 3 designed a playlist of YouTube videos correlated to the curriculum, giving students a trusted resource that they could return to at any time. This method gave students autonomy over learning, providing flexibility and convenience. These instances highlight the participants' capacity to utilize technology for delivering content and for promoting active engagement and collaboration within an online learning environment.

### **Main Theme 3: Innovative Approaches to Engagement**

Participants used innovative techniques to keep the students interested and motivated in the online environment. Participant 1 implemented in-home obstacle courses with household items, turning physical education into a play mode and an enjoyable experience. As stated, *"I have developed at-home obstacle courses where students use common household items to create a course and time themselves. This adds a fun, competitive element that they enjoy."* This game-like strategy prompted the students to engage actively, along with introducing an aspect of competition that motivated them. Likewise, Participant 2 utilized weekly challenges like "most steps" or "best push-ups," wherein the students would post videos or photos to attest their efforts. *"Weekly challenges keep them motivated—they are eager to top each other's performance,"* Participant 2 clarified, highlighting the gamification aspect of keeping students engaged. These challenges fostered a spirit of excitement and friendly competition among students, promoting long-term engagement.

Another creative strategy was incorporating family participation in PE exercises. Participant 3 motivated students to engage their siblings or parents as exercise partners, stating, *"I encourage family involvement by assigning activities where students need a partner. They involve their siblings or parents, fostering a supportive home environment for exercise."* This strategy enhanced student participation and strengthened family bonds, turning PE activities into shared experiences. Participant 3 also reflected, *"It is heartwarming to see students share their videos with family members cheering them on or participating themselves. It creates a positive and encouraging atmosphere at home."* These innovative modifications illustrate how participants extended beyond conventional teaching strategies to foster interaction and community in the online classroom.

### **Main Theme 4: Equitable Access Strategies**

Providing equal access to online PE teaching was of utmost concern to participants. Participant 1 bridged the digital divide by developing downloadable materials that students with poor internet connectivity could use offline. Participant 1 indicated, *"Lack of reliable internet has been a common issue. I adapted by making offline resources that do not require a constant connection, which helped students stay on track."* This effort had all students at par despite connectivity issues, representing an inclusive response to teaching. As such, Participant 4 reconfigured activities to suit students who had inadequate space at home, ensuring they used exercises that needed minimal space or equipment, for example, bodyweight exercises. *"Some activities were tough to implement, so I redesigned them to be space-efficient,"* Participant 4 explained. Such modifications indicate that the instructors prioritized inclusiveness, making the exercises accessible for all students despite their situation.

These strategies reflect a strong dedication to eliminating participation obstacles and allowing all students to participate meaningfully in online PE classes. Through their focus on inclusivity, participants demonstrated an awareness of their students' diverse situations and an ability to adapt their teaching approaches to create equal opportunities for learning and growth.

### **Main Theme 5: Assessment of Success and Progress**

Participants measured the effectiveness of their teaching methods through innovative assessment methods. Participant 2 used student feedback forms to gauge the effectiveness of her lessons and areas she needed to improve on. *"Feedback forms help me assess what works. When engagement and participation rise, I see that as a success indicator."* Participant 2 stated. This reflective practice helped her to modify the

instruction to be appropriate for the needs of her students. Further, Participant 1 applied student progress monitoring via self-assessment and video postings to monitor how students are performing with a focus on individual goal-setting and improving skills since, as they justified, "*I measure success through student reflections and progress in their personal goals, as well as an improvement in skill execution based on video submissions.*". These strategies placed students in charge of learning while providing educators with valuable insights into their growth.

Participant 3 suggested commitment journals whereby students monitored their daily exercises and reflected on their progress. "*Getting students to participate consistently was challenging, so I introduced commitment journals where they record their daily activities. It has increased their engagement,*" she explained. His approach promoted regularity in participation and enhanced the understanding of the significance of physical activity. Participants successfully monitored learner participation and learning achievements by merging qualitative and quantitative assessments to ensure that their modifications were effective and meaningful.

### **Final Theme: "Navigating Instructional Delivery Through Innovation, Technology, Engagement, and Equity"**

The rapid transition to online learning at the height of the COVID-19 pandemic was akin to flying into unfamiliar territory for Physical Education (PE) teachers. Ponder a gymnasium where the walls have disappeared, and the soft whir of computers fills the space in place of the usual ball bounces and cheering students. But PE teachers managed to put life into their online classrooms amidst this silence. Their adaptation story is a testament to resilience, creativity, and unshakeable dedication to engaging students. It started with a flash of imagination. Participant 1, for example, saw the drawback of live classes and switched to pre-recorded demonstration videos. "*I transitioned from traditional instruction to incorporating demonstration videos that I pre-recorded, so students can practice on their own time,*" they shared. This strategy was not merely a workaround but a breakthrough—an embodiment of Everett Rogers' Diffusion of Innovations Theory (1962), which explains how new ideas spread and transform practices. By offering flexibility, Participant 1 ensured that every student, regardless of schedule or connectivity, could engage in physical activities without barriers.

Similarly, Participant 4 transformed home space into interactive playgrounds as well. By developing creative scavenger hunts, students incorporated physical activity with problem-solving and transformed everyday items into movement tools and toys. This is consistent with Albert Bandura's Social Learning Theory (1977), where students learn to do and learn by observing, even at a distance. These creative solutions opened doors to new, lively methods of instruction in PE beyond the walls of the gymnasium. Innovation, though, was not enough—technology proved to be the bridge that transported these creative ideas into the students' homes. Participant 2 tapped into the potential of Zoom breakout rooms and designed small spaces where students were able to work on exercises together. "*Students use breakout rooms to practice exercises in pairs and then demonstrate their progress in the main room,*" they explained. This approach is aligned with the Osgood-Schramm Model of Communication (1954), which prioritizes two-way interaction, essential for understanding and engagement.

Likewise, Participant 7 effectively utilized Edpuzzle to insert interactive questions into videos, turning passive viewing into active learning. Every click and reply pulled

students further into the lesson, solidifying main ideas and rendering learning visual and active. This blending of pedagogy and technology revitalized online PE, closing gaps that had seemed impossible to overcome (Yoon & Kim, 2021). More than tools, however, required engagement—heart. Participant 3 brought in commitment journals, asking students to write about their daily activities. This easy but insightful approach drew from Martin Heidegger's *Hermeneutic Inquiry* (1962) as students reflected upon their own fitness experiences, imparting personal meaning to each action. The journal was as much a mirror to their growth as it was a record.

While that was occurring, Participant 6 sparked joy and energy with virtual dance challenges. "*Students choreograph simple moves and share them with the class,*" they recounted, creating a space where movement met self-expression. These challenges echoed Bandura's Social Learning Theory, fostering community and shared enthusiasm despite physical distance. Students reclaimed their role as active learners through every recorded dance and documented goal. However, innovation and engagement meant little without equity. Participant 1, recognizing the digital divide, provided downloadable resources to reach students with limited internet access. "*I adapted by making downloadable resources that do not require a constant connection,*" they reflected. This action aligns seamlessly with Bronfenbrenner's Ecological Systems Theory (1979), acknowledging how environmental factors like home resources impact learning. Such thoughtful adaptations ensured that no student was left behind.

Participant 4 also adapted to the limitations of home settings by restructuring training to incorporate bodyweight exercises that needed little space. This inclusive approach mirrors Chester Barnard's Acceptance Theory of Authority (1938), fostering student buy-in and participation by acknowledging and addressing their realities. As their stories unfold, it becomes clear that these instructors did not just adapt—they transformed. Their strategies seamlessly intertwine with foundational theories. Innovation mirrors the Diffusion of Innovations; integration of technology upholds the Osgood-Schramm Model; participation reverberates with Social Learning and Self-Determination theories (Zhang & Chen, 2021), and equity approaches resonate with Ecological Systems Theory. These are not abstract constructs but living and breathing components of the daily practices of the teachers.

To answer the research question directly, what adaptations do PE instructors have in teaching PE online and instructional delivery? The response is rich and multifaceted. PE instructors reimaged their teaching through innovative designs, harnessed technology as a tool for connection, engaged students with creative and interactive activities, and prioritized equitable access to ensure no learner was left behind (Rosen & Salter, 2020).

Through these adaptations, PE instructors did not just transfer lessons online—they transformed them. Their stories serve as blueprints for future educators, reminding us that teaching is as much about heart as it is about strategy. In every video, challenge, and journal entry, these instructors carved out spaces where students could move, learn, and grow—proving that even in a digital gym, the human spirit remains the most powerful educational force.

The theoretical model "Navigating Instructional Delivery Through Innovation, Technology, Engagement, and Equity" summarizes the dynamic flexing of Physical Education (PE) teachers' responses to the demands of online pedagogy (Martin & Bush, 2020; Meyer, Czerwienski, & Tatum, 2020). The PE teachers' experiences and adaptive mechanisms in shifting to online teaching form the crux of this model. The

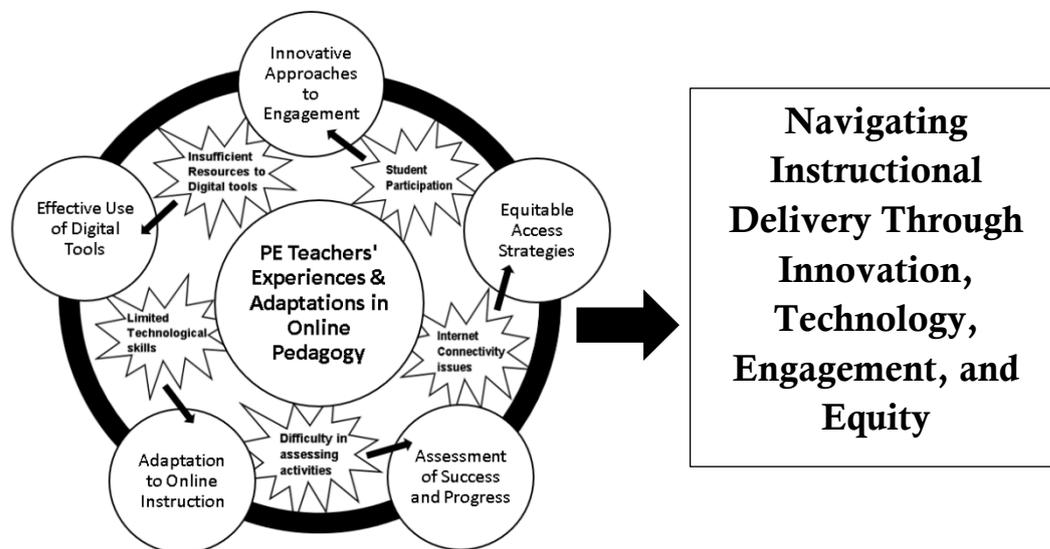
nexus of this model is how teachers negotiated the intricacies of online pedagogy through adaptability and resilience.

Surrounding this center are five major issues that arose during the transition to online PE teaching: student engagement, connectivity problems with the internet, challenges in measuring activities, poor technological competence, and lack of access to technology tools and materials. These issues are symbolically depicted in a virus-like structure. The virus-like shape symbolically conveys how these issues are ubiquitous and interlinked and can affect the flow of instruction. Each challenge emanates from the core, representing how these challenges have a direct effect on teachers' instructional delivery and student participation. Arrows project outward from the core (PE teachers' experiences) to the five challenges, indicating how these challenges emanate from and affect the teachers' instructional methods.

On the other side, arrows move from the exterior strategic layer inwards towards the center, indicating how putting strategies into action specifically counteracts and addresses these challenges, strengthening and enhancing teaching habits. An outer layer of five strategic responses encircles these challenges that PE teachers adopted to surmount these challenges. These strategies encompass innovative methods of student engagement, equitable access strategies, functional measurement of student success and progress, online instruction adaptation, and effective use of digital tools. This outer ring acts as a buffer shield, countering the disruptive quality of the challenges. The strategic responses are linked together, constituting an integrated framework that facilitates and enhances instructional delivery. The arrows linking these tactics to the challenges and the core highlight the ongoing, dynamic conversation among identifying challenges and using solutions.

The conversation between the core, challenges, and strategies then results in the desired outcome: effective navigation of instructional delivery via innovation, technology, engagement, and equity. This process is indicative of how PE teachers translated adversity into pedagogical development and innovation opportunities. The structure of the framework reflects the constant, dynamic process of responding to educational challenges with adaptive and proactive measures, making sure that high-quality online PE instruction is delivered.

In summary, the model not only depicts the challenges and strategies of PE teachers but also highlights the adaptive pedagogical change journey. The virus-like representation of challenges and the strategic responses contained within illustrate online Physical Education pedagogy's sophisticated but accessible terrain. The directional arrows represent the ongoing cycle of feedback between challenges, strategic responses, and teaching enhancement.



**Figure 1.** Model of Navigating Instructional Delivery Through Innovation, Technology, Engagement and Equity

## DISCUSSION

The results of the study show that PE teachers employed the challenges of online instruction in a resilient and creative manner. Adaptation to Online Instruction as a core approach, where instructors transformed conventional procedures to fit into digital media, was a pattern that emerged. This involved recording pre-recorded videos and unit plans, making it possible for students to self-pace in learning—an undertaking consistent with Universal Design for Learning (UDL) principles. These changes can be explained by the diffusion of innovations theory (Rogers & Williams, 1983), since teachers serve as change agents in embracing and sharing digital pedagogical approaches.

Digital technologies were instrumental in filling gaps between student engagement and content delivery. Google Classroom and Flipgrid enabled interactive learning, while Padlet ensured ongoing communication and feedback (Smith, 2020). These technologies maintained learning continuity and created a sense of virtual community among students. The incorporation of digital technologies was a reflection of the social learning theory (Bandura, 1977), where students performed observational learning and peer interaction using virtual media. Creative engagement strategies also reflected the instructors' innovative approaches. Gamified challenges and family-based activities introduced dimensions of play and collaboration that engaged students to work actively (Ramos & Delos Santos, 2021). These strategies also align with the Self-Determination Theory (Deci & Ryan, 1985), which emphasizes the significance of intrinsic motivation in learning.

Equity became a prominent theme, an indicator of the trainers' dedication to inclusivity. Through the production of offline resources and re-engineering exercises for small spaces, participants tackled disparities presented by environmental and technological barriers (Udermann & Wetherbee, 2022). These processes underscore the need for flexible pedagogies in varied learning environments. Ecological Systems Theory (Bronfenbrenner, 1979) offers an applicable framework, highlighting how differing environmental systems (e.g., home environments, access to technology, institutional rules) impact learners' learning conditions in online PE.

Methods of assessment were transformed to address the needs of virtual learning environments. Self-assessment, video submission, and commitment journals allowed instructors to track progress and promote student accountability. Such innovative methods are supported by formative assessment principles that prioritize continuous feedback and individual goal-setting. Similar results have been seen in other digital PE instruction studies, wherein instructors used video-based feedback and independent learning evaluations to increase student interest and proficiency (da Costa et al., 2022; Mercier et al., 2021). This study validates earlier work regarding the success of technology-facilitated formative assessment and underscores the importance of future investigation into the long-term effectiveness of such procedures.

The overarching model, "Navigating Instructional Delivery Through Innovation, Technology, Engagement, and Equity," summarizes teachers' interrelated strategies. This model highlights the revolutionary power of incorporating flexibility, creativity, and inclusivity in online PE teaching (Razon & Ko, 2022). It provides a roadmap for future practice, highlighting the necessity of adaptability in overcoming the challenges of online teaching.

The results of this study offer worthwhile lessons to educators, policymakers, and institutional leaders in reimagining the future of online PE. To maximize the impact of digital PE teaching, the following pragmatic suggestions are offered:

1. PE Instructors Training in Digital Pedagogy – Professional development programs should be created and implemented by institutions that empower PE instructors with digital teaching competencies. This would involve video-based instruction training, online engagement strategies training, and virtual assessment training.

2. Integration of Gamification and AI Tools in Online PE – The future PE curriculum must include gamification approaches and AI-based tools for improving student engagement and tailoring learning experiences. Performance monitoring through AI-driven tools can enable teachers to give specific feedback, which would result in improved learning outcomes.

3. Policy Proposals for Bridging the Digital Divide – Policymakers must adopt steps to facilitate fair access to digital PE resources. This involves offering subsidized access to the internet for underprivileged students, ensuring the provision of offline learning resources, and adopting hybrid models of learning that support different technological constraints.

4. Institutional Support for Mental and Physical Wellness – Due to the difficulties of online learning, institutions must formulate policies that incorporate mental and physical wellness programs in online PE classes. This could include collaborations with health experts and community-based programs to promote well-rounded student development.

In summary, the study shows the resilience of PE teachers in coping with the sudden transition to online instruction. Through the use of technology, encouraging engagement, and ensuring equity, they provided continuity and quality of instruction. Future studies are needed to investigate the long-term effects of the adaptations on student performance and how to incorporate mental well-being into online PE pedagogy. That said, it should be noted that limitations exist in this study. To begin with, the small participant sample size of seven may not completely reflect the diverse experiences of all PE instructors. Second, the research only explored the

views of instructors, skipping student views in response, which would give a complete picture of PE instruction in an online platform.

Finally, the results largely resonate with PE on the collegiate level and do not necessarily represent or apply to K-12 levels or even informal learning platforms. Being aware of these shortfalls can drive subsequent studies in online PE pedagogy in the direction of wholeness.

### **Limitations of the study**

Nonetheless, the present study has several limitations, for instance, the fact that only seven PE teachers participated in it, which, while adequate for an IPA method, still confines the generalizability of results to a larger population. This study focused on the PE instructors' perspective without considering students' views regarding the effectiveness of online teaching methods. Students' perspectives may provide a more comprehensive understanding of their learning experience. The timing of data collection was after the pandemic transition, which may have affected the results as some schools have returned to face-to-face or hybrid learning, changing the dynamics of online PE teaching. This study was conducted in the context of higher education in the Philippines, so the results may not fully apply to primary and secondary education or other countries with different digital infrastructures.

## **CONCLUSIONS**

This research illuminates the adaptive measures that Physical Education (PE) teachers take to cope with the challenges of online teaching. The results highlight the critical role of flexibility, creativity, and technology in promoting student engagement and maintaining the continuity of effective teaching in the face of obstacles like technological limitations and resource shortages. Teachers effectively established inclusive and interactive learning environments by utilizing pre-recorded videos, interactive platforms, and creative instructional strategies.

One of the most important contributions of this research is its delving into adaptive online PE pedagogical approaches, which fills an important void in research to date, where the majority has concentrated on conventional classroom-based PE teaching. It points out the dynamic nature of online PE pedagogy and the need for ongoing professional development and institutional assistance to prepare educators with the competency and capabilities necessary for successful online instruction.

The practical application of these results indicates that institutions need to invest in accessible digital content, customized training programs, and fair learning solutions to equip instructors and students in the online PE environment. Future studies should also investigate the long-term effects of these adaptations on student learning outcomes, motivation, and levels of physical activity. Exploring the scalability and sustainability of these strategies in a range of educational contexts will add to their applicability.

Though this research is valuable, its limitations should be recognized. The sample was restricted to a particular group of instructors and institutions, possibly confining the findings' generalizability. Only PE instructors were examined in this study so that future studies would have the scope to research students' experiences, such as the obstacles, incentives, and efficacy of online methods of teaching from their point of view.

Finally, this study adds to the current literature on adaptive pedagogical practices, highlighting the adaptability and creativity of PE teachers in conceptualizing physical education for the modern era.

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## DATA AVAILABILITY

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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## CONFLICT OF INTEREST

The author hereby declares that this research is free from conflicts of interest with any party.

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