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A Gamified Instruction in Teaching Physical Education: A Meta-Synthesis

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Abstract

Aim/Purpose: This study aimed to synthesize findings from 14 qualitative and mixed-methods studies to provide a comprehensive understanding of gamification's impact on physical education (PE). By identifying key themes, benefits, and challenges, this research offers insights into optimizing gamification strategies for effective PE instruction.

Introduction/Background: Gamified instruction has emerged as a transformative educational tool, leveraging game mechanics like rewards, challenges, leaderboards, and feedback loops to enhance engagement and motivation. In PE, gamification offers unique opportunities to address traditional challenges by creating dynamic and interactive learning environments. The integration of gamification in PE is aligned with contemporary pedagogical approaches emphasizing student-centered learning and active participation. Research has shown that gamified strategies can significantly enhance students' enthusiasm, encourage teamwork, and improve physical performance. Despite these advantages, challenges such as increased teacher workload and the need for well-planned implementation strategies remain. This study has synthesized existing research to provide a holistic understanding of gamification's effects in PE, helping educators and policymakers to navigate its complexities while maximizing its benefits.

Methodology: This study employed a meta-synthesis approach to integrate findings from 14 prior qualitative and mixed-methods studies on gamification in physical education (PE). A PRISMA diagram was used to systematically summarize the selection process, ensuring transparency and rigor in the inclusion of studies. To assess the quality and reliability of the selected studies, the Critical Appraisal Skills Programme (CASP) was applied. Content analysis was then conducted to identify recurring themes, allowing for a structured synthesis of the data. Through this method, the study provides a comprehensive overview of gamification's impact on PE, highlighting both its benefits and challenges. Using Publish or Perish software, Google Scholar, Semantic Scholar, and Crossref, some academic publications connected to gamification in teaching and learning physical education were found in an electronic database for scholarly research. All research published from 2020 to 2024 that was pertinent to using gamification in teaching and learning physical education was downloaded and examined. Further, the descriptors or keywords entered into the software were qualitative, basic education, gamification, and physical education.

Findings: The five primary themes that emerged from the content analysis were that gamification:
1. *Increases Student Enthusiasm and Engagement*. Gamification significantly boosted student motivation by incorporating elements such as competition, rewards, and game-like scenarios, making PE classes more engaging and dynamic.
2. *Encourages Teamwork and Meaningful Learning*. Studies highlighted that gamified PE promoted collaborative learning, enhanced peer interaction, and helped students develop essential social and teamwork skills.
3. *Improves Physical Performance*. Gamification positively influenced students' physical activity levels, leading to measurable improvements in endurance, coordination, and overall fitness.

4. *Adds to Instructors' Workload and Preparation*. Implementing gamified strategies requires resource management, extensive planning, and continuous monitoring, increasing demands on teachers.
5. *Implementing Challenges*. Educators faced difficulties in balancing intrinsic and extrinsic motivation, ensuring inclusivity, and maintaining engagement without overemphasizing competition.
6. *Transforms Teaching and Learning Physical Education through Gamification While Navigating Its Complexities* emerged as a meta-theme. Gamification significantly boosted student motivation and participation by incorporating rewards, challenges, and teamwork, aligning with modern pedagogical approaches. However, challenges such as increased teacher preparation and resource demands highlighted the need for strategic planning.

Contribution/Impact on Society: This study contributes to the existing body of knowledge on gamification by synthesizing qualitative and mixed-methods research findings to offer a broader perspective on its application in PE. The results emphasized that gamification is not merely a novel instructional approach, but a transformative strategy that can enhance student engagement and learning outcomes. Additionally, by fostering increased participation in physical activities, gamification contributes to broader public health goals by promoting lifelong physical activity habits among students. These insights are valuable for educators, curriculum designers, and policymakers aiming to optimize PE instruction through innovative and research-based strategies.

Recommendations: These include aligning gamified strategies with curricular goals, training teachers, and balancing extrinsic and intrinsic motivators. In this manner, gamification can create dynamic and inclusive PE environments, fostering meaningful learning and lifelong physical activity. Future research should explore its long-term impacts and how to optimize implementation to maximize benefits.

Research Limitation: Despite its comprehensive approach, this study had certain limitations. First, it relied on previously conducted qualitative and mixed-methods studies, which may have methodological variations affecting the synthesis. Additionally, the scope of the study was constrained by the number of available high-quality research articles on gamification in PE. The findings predominantly focused on short-term impacts, leaving the long-term effects of gamification in PE largely unexplored. Finally, factors such as variations in educational settings, teacher expertise, and student demographics may influence the generalizability of the results.

Future Research: Future research should focus on exploring the long-term impacts of gamification in physical education, particularly its effects on students' sustained engagement and physical activity habits beyond the classroom. Comparative studies that evaluate gamified instruction against traditional methods could provide stronger evidence of its effectiveness. Additionally, research on the role of emerging technologies, such as virtual reality and mobile applications, in enhancing gamified experiences would be valuable. Investigating the challenges teachers face in implementing gamification, including resource availability and professional development needs, can help refine best practices. Finally, studies should explore how gamification can be adapted for diverse student populations to ensure inclusivity and equitable learning opportunities.

Keywords: *Gamification, gamified instruction, meta-synthesis, physical education, review*

Introduction and Rationale

Physical Education (PE) has often been undervalued compared to other academic subjects, yet research highlights its critical role in fostering a well-rounded education (Dollaway et al., 2024). Physical Education contributes significantly to students' physical, mental, and social development by promoting health, motor skills, and lifelong fitness habits. In an age marked by sedentary lifestyles and digital distractions, physical activity within PE classes encourages active participation and healthy living. However, traditional PE programs face persistent challenges, such as low student engagement, varying levels of fitness, and lack of enthusiasm, emphasizing the need for innovative strategies to make PE more inclusive and effective (Liușnea, 2018).

Gamified instruction is an educational approach that integrates game mechanics such as rewards, challenges, leaderboards, and feedback loops, into the learning process to enhance engagement and motivation. Unlike traditional gameplay, gamification applies these elements to instructional activities to create an interactive and goal-oriented learning environment. In physical education (PE), this approach helps to address common challenges by fostering intrinsic motivation, perseverance, teamwork, and enjoyment, which are crucial for successful PE programs (Pérez-Muñoz et al., 2022). For example, teachers can use point-based systems where students earn badges for completing fitness challenges, or leaderboards to encourage friendly competition in endurance exercises. Studies by Melero-Cañas et al. (2021) and Angco (2023) have demonstrated how gamification enhances student participation and aids experiential learning by integrating structured game elements into instruction. By incorporating features such as competition, immediate feedback, and progressive challenges, gamification transforms physical activities into enjoyable experiences that encourage consistent participation, skill development, and adoption of active, healthy lifestyles (Hellín et al., 2023).

Gamification is aligned with contemporary pedagogical trends by prioritizing student-centered and interactive learning, addressing educational needs in the digital age (Arufe-Giráldez et al., 2022). It creates an engaging environment for students to actively develop motor and cognitive skills essential for lifelong physical activity. Findings by El-Tanahi et al. (2024) have validated gamification's efficacy in PE classes, revealing increased motivation, engagement, and skill development among students. However, research on gamification in PE has remained fragmented, often focusing on isolated case studies or specific game elements without a comprehensive understanding of its overall impact.

This gap underscores the need for a meta-synthesis study to consolidate findings, identify patterns, and develop a structured framework for effectively integrating gamification in PE. By synthesizing qualitative research from various journals, this study aimed to generate actionable insights that can inform pedagogical strategies, curriculum design, and instructional methods. Specifically, this synthesis provides evidence-based guidelines for implementing gamified instruction in general PE classrooms, ensuring that educators can leverage game mechanics to enhance student engagement, motivation, and skill development. By addressing gaps in traditional PE programs, gamified instruction is aligned with broader educational trends emphasizing 21st-century skills such as collaboration, creativity, and adaptability. Furthermore, it supports global initiatives to improve physical and mental well-being through education, ensuring inclusivity and accessibility for students of all fitness levels.

The implications of this study are wide-ranging. For educators, it provides a practical guide to designing and implementing gamified PE programs that enhance participation, motivation, and performance. For students, gamification creates a more enjoyable and engaging experience, fostering positive attitudes toward physical activity. Academically, this study contributes to the growing knowledge of innovative teaching practices, laying a foundation for future research in gamified education. By synthesizing existing literature, this meta-synthesis aims to advance effective PE, creating a healthier and more active generation equipped to meet the challenges of the modern world.

Methodology

Research Design

This study employed meta-synthesis to integrate findings from several qualitative and mixed-methods studies. This meta-synthesis aimed to provide a comprehensive understanding of the use of gamified instruction in teaching physical education by conducting a systematic review of previous studies and integrating qualitative research findings into their major themes.

Search Strategy

Using Publish or Perish software, Google Scholar, Semantic Scholar, and Crossref, academic publications connected to gamification in teaching and learning physical education were found in an electronic database for scholarly research. All research published between 2020 and 2024 that was pertinent to using gamification in teaching and learning physical education were downloaded and examined. Further, the descriptors or keywords entered into the software were *qualitative*, *basic*

education, *gamification*, and *physical education*. These keywords were selected to draw out relevant articles. A flow diagram using PRISMA 2020 was then utilized to sort the screened data.

Inclusion and Exclusion Criteria

Inclusion and exclusion criteria provide a basis upon which a reviewer may draw valid and reliable conclusions. Included studies were selected based on the following inclusion criteria protocol: (a) must include studies related to the use of gamification; (b) must utilize a qualitative design; (c) must be written in English; (d) must be published from 2020 to 2024; and (e) must qualify using the Critical Appraisal Skills Programme (CASP). Selected papers were screened using the set inclusion criteria.

Data Analysis

Emerging themes were identified using the thematic analysis approach outlined by Clarke and Braun (2013), a qualitative data analysis technique that involves systematically examining patterns within the data. This process begins with data familiarization, where the collected responses are read multiple times to gain an overall understanding. Next, initial codes are generated by identifying meaningful segments of text relevant to the research objectives. These codes are then grouped into potential themes based on recurring patterns and conceptual similarities. Themes were further reviewed and refined to ensure coherence and distinctiveness, followed by their final definition and naming. This structured approach allowed for a comprehensive and rigorous analysis, ensuring that the identified themes accurately represented the participants' perspectives.

There were three (3) stages in the research paper selection using the PRISMA Flow Diagram 2020. The three stages were the following: Identification, Screening, and Included. In the identification stage, 200 studies were registered in Google Scholar and 617 studies were registered in the Crossref database. Four hundred forty-one (441) were registered in the Semantic Scholar database, totaling 1,258 studies in the initial screening using Publish or Perish software.

The teaching and learning experiences using gamification in teaching physical education were used to generate initial codes from the 14 studies included in the meta-synthesis. Table 1 reflects the study's title and corresponding authors with the generated codes used for thematic analysis.

Figure 1 *Search Strategy Using PRISMA*

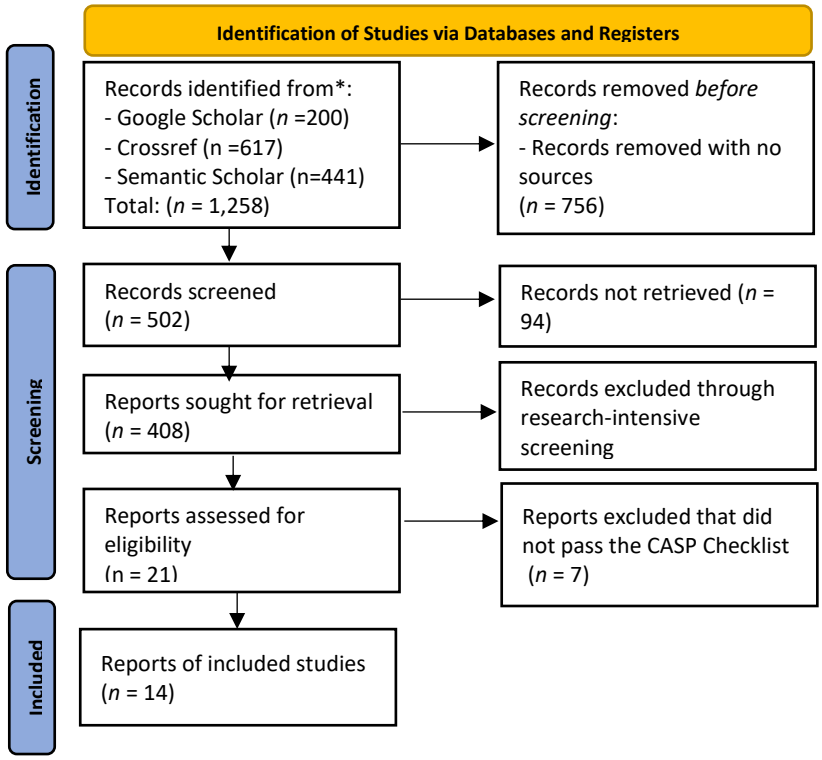

Table 1 *Studies Highlighting the Use of Gamification in Teaching Physical Education*

Article No.	Author/s and Year Published	Setting	Generated Initial Codes on the Use of Gamification in Teaching Physical Education
1	Ferriz-Valero et al. (2020)	Spain	• Gamified implementation beneficial for academic performance • Gamification is an innovative approach
2	Cheung and Ng (2021)	Hong Kong	• Student learning is influenced by content of the game • Gamification an effective tool for learning experiences
3	Becerra-Fernández (2022)	Spain	• Improves the teaching and learning process • Improves participation and physical activity levels
4	Marcaida et al. (2022)	Philippines	• Gamification promotes positive competitiveness • Online gamification is sometimes a problem to due slow Internet connection • Gamification increases classroom engagement • Gamification increases students' motivation • Meaningful learning comprehension
5	Mendes et al. (2022)	Brazil	• The association of gamified actions to digital technologies boosted education development in digital culture • Understanding gamification process more broadly • Beyond competition systems between individuals and teams • The association between gamification and ICT can promote training for and with digital culture
6	Soriano-Pascual et al. (2022)	Spain	• Cooperative work was promoted • Students are involved in the learning process Students positively evaluate classroom social relationships • Gamification is currently one of the most interesting methodologies for achieving a high degree of student commitment, as well as students' success
7	Camacho-Sánchez et al. (2023)	Spain	• Gamification is a significant learning method due to their impact on student motivation and academic performance • Gamification can be effective at the university level
8	Flores-Aguilar et al. (2023)	Spain	• Gamification a framework promoting transformative learning • Gamification increased motivation in the subject • Boredom and tiring • The implementation of a gamified subject significantly increased the teacher's workload
9	Montiel-Ruiz et al. (2023)	Spain	• Use of gamification promotes physical activity • Gamification as an active methodology
10	Sotos-Martínez et al. (2023)	Spain	• No changes in extrinsic motivation, but positive changes in intrinsic motivation
11	Zhao and Luh (2023)	China	• Useful tool for teaching and learning • Introduces a better process tracking and feedback mechanism
12	El-Tanahi et al. (2024)		• The effectiveness of gamification in enhancing physical education and several skills and behaviors • Gamification significantly affects students' skills and abilities and brings about positive outcomes • Needs careful consideration when making it appear neutral but not trivial and boring
13	Fernández-Vázquez et al. (2024)	Spain	• Gamification techniques are effective in reducing perceived effort in physical education programs • More competent • Improvement in motor skills
14	Ferraz et al. (2024)	Portugal	• Including gamification in PE classes increases motivation • Gamification strategies seem to be valid and efficient • Gamification is a good tool

Results

The use of gamification in teaching physical education was used to generate initial codes highlighting the 14 studies considered in the meta-synthesis. As shown in Table 1, the initial codes for using gamification in teaching physical education were generated to search for themes. The general

codes were analyzed using the thematic analysis approach, out of which emerged four themes and one meta-theme. The themes generated were the following: gamification (1) enhances student engagement and motivation; (2) fosters collaboration and meaningful learning; (3) enhances physical performance; (4) increases teacher workloads and preparation. Meta theme 5 deals with implementation complexity. Gamification transforms teaching and learning physical education while navigating its complexities.

Theme 1: Enhances Student Engagement and Motivation

Gamification offers a transformative approach to traditional teaching models by significantly enhancing student engagement and motivation. Educational gamification involves transferring the mechanics of games to educational activities to alter behavior. As a result, it produces engaging and captivating pedagogic experiences that boost students' motivation, dedication, and comprehension of subject matter or the pleasure of educational activities themselves (Fernandez-Rio et al., 2020). Likewise, Arufe-Giráldez (2022) highlighted that gamified learning environments, particularly those utilizing a futuristic, transmedia narrative, foster active participation, teamwork, and intrinsic motivation. By integrating advanced hi-tech tools, these environments provide immersive, interactive learning experiences, shifting the focus from rote memorization to experiential learning. This makes education more relevant and engaging, particularly for digitally savvy learners. Another study found that gamification is one of the most interesting methodologies for achieving a high degree of student commitment and success. This is because students are immersed and focused on something specific, and this process enhances their enjoyment (Soriano-Pascual et al., 2022).

Engagement, defined as students' active participation, focus, and enthusiasm during learning (Poondej & Lerdpornkulrat, 2016), is pivotal in gamification's success. Cents-Boonstra et al. (2020) emphasized that fulfilling students' psychological needs such as autonomy, competence, and relatedness, directly fosters motivation and engagement. Gamified elements like leaderboards and customizable avatars align with Self-Determination Theory by offering autonomy in participating to students, a sense of competence through achievable goals, and relatedness through team-based activities. Teachers who integrate these elements effectively create structured, gamified experiences that encourage exploration and experimentation. Conversely, lessons lacking clear goals or engaging activities risk disengaging students. Gamification thus provides a framework for balancing enthusiasm, guidance, and student autonomy, ensuring sustained engagement over time.

Active learning strategies, such as case-based learning, further illustrate principles aligned with gamification. Raza et al. (2020) demonstrated that case-based learning enhances behavioral, emotional, cognitive, and agentic engagement. Similarly, gamification uses real-world scenarios and problem-solving tasks to captivate students' attention and foster critical thinking. Educators can deepen engagement and make learning more interactive by incorporating gamified scenarios into case-based approaches—such as awarding points for solution development or providing immediate feedback. Notably, agentic engagement, where students take ownership of their learning, mirrors gamified environments where students actively shape their experience through choices and strategy.

Gamified elements like virtual currency (VC) also play a crucial role in sustaining student interest. Dicheva et al. (2023) found that VC, points, badges, and leaderboards increase participation and out-of-class practice. These elements transform routine tasks into engaging challenges, encouraging consistent effort. However, their findings suggest that while gamification effectively boosts short-term engagement, its long-term effects on intrinsic motivation and academic performance are more nuanced. Educators can enhance these outcomes by combining VC with strategies promoting deeper learning, such as reflective activities or collaborative tasks, ensuring that gamified tools contribute to engagement and skill development.

The challenges of online education, amplified during the COVID-19 pandemic, have also highlighted gamification's potential to enhance engagement. Kang and Zhang (2020) emphasized that forum-based online teaching methods, which break assignments into incremental tasks, mirror gamified approaches by offering rewards for completing stages and fostering competition. Adding gamified

elements, such as badges for participation or leaderboards for submission quality, can amplify the effectiveness of such strategies. These tools reduce procrastination and plagiarism, as well as encouraging active participation, ultimately improving learning outcomes. By integrating gamification into online platforms, educators create environments in which students may stay motivated despite the challenges of remote learning.

Finally, teacher beliefs and practices are critical in successfully implementing gamification. Berger and Lauermann (2021) explored how teachers' motivational beliefs influence their teaching strategies, including autonomy-supportive practices. Gamified teaching is aligned with these practices by encouraging independence through choice-based tasks and self-paced challenges. When teachers integrate gamified elements that are aligned with their motivational beliefs, such as offering structured opportunities for students to collaborate or experiment, they foster emotional, behavioral, and cognitive engagement. However, ensuring alignment between teacher intentions and student experiences is crucial for maximizing the impact of gamified strategies. Misalignment—such as poorly explained gamified rules or insufficient feedback—can undermine the benefits of gamification, emphasizing the need for clear and well-structured implementations.

Lastly, gamification provides a powerful framework for enhancing student engagement and motivation by integrating interactive, goal-oriented, and collaborative elements into the learning process. By aligning gamified strategies with established theories like Self-Determination Theory, active learning methods, and teacher-driven practices, educators can create meaningful and engaging experiences that foster immediate participation and long-term academic success.

Theme 2: Fosters Collaboration and Meaningful Learning

Gamification enhances collaborative learning environments by incorporating game-based strategies promoting teamwork and meaningful student engagement. In physical education (PE), where teamwork and collaboration are essential, gamification aligns seamlessly with other active methodologies, such as cooperative learning, service learning, and adventure education (Hastie & Casey, 2014; Lindgren & Barker, 2019). These methodologies foster environments where students actively engage with peers to achieve shared goals, develop problem-solving skills, and apply learning in practical contexts. Fernandez-Rio et al. (2020), along with Chiva-Bartoll and Fernández-Rio (2022), have underscored the synergy between gamification and these pedagogical models, emphasizing their positive impact on student collaboration and meaningful learning.

Collaboration is a cornerstone of learning in PE, where students work together to improve physical fitness, build confidence, and develop social skills. Eze (2023) highlighted the intrinsic motivational benefits of collaborative learning, particularly in college-level PE classes. Students often select partners based on trust or complementary skill levels, creating a supportive environment where mutual encouragement enhances learning outcomes. Brinkley et al. (2017) noted that cooperative activities improve students' self-esteem and social cognition, both critical for fostering a sense of community within the classroom.

Gamification builds on these principles by integrating elements that encourage interaction and teamwork. Features like team-based challenges, group rewards, and cooperative tasks mirror the dynamics of social interdependence theory, a foundational framework for cooperative learning in PE (Sharan, 2015). Casey and Goodyear (2015) argued that the social interdependence fostered through such gamified approaches enables students to achieve shared goals while appreciating the value of diverse contributions from their peers. For example, team-based competitions within gamified PE classes can motivate students to strategize collaboratively, emphasizing individual and group accountability.

Inclusivity and accessibility are central to meaningful learning experiences in gamified PE settings. Morrison and Gleddie (2019) outlined best practices for inclusive physical education, such as fostering open communication, setting clear expectations, and planning for success. These practices are aligned with gamification's capacity to accommodate diverse learner needs. By offering customizable challenges and differentiated tasks, gamified environments ensure that all students can contribute

meaningfully, regardless of their athletic ability or prior experience. Furthermore, as Zach (2020) discussed, co-teaching strategies amplify gamification's benefits. Collaboration between veteran and student teachers introduces a blend of innovation and experience, enriching the learning environment, and ensuring that gamified activities remain dynamic and effective.

In addition to promoting teamwork, gamification supports reciprocal learning, where students and educators benefit from collaborative processes. Team challenges in gamified classrooms encourage students to share knowledge, negotiate roles, and reflect on their collective performance. Teachers play a facilitative role, guiding students to develop critical skills such as empathy, communication, and problem-solving. These experiences contribute to meaningful learning, defined by its relevance, applicability, and impact on students' personal and academic growth.

Gamification fosters collaboration and meaningful learning by leveraging team-based strategies and inclusive practices that are aligned with well-established cooperative learning methodologies. By integrating elements emphasizing teamwork, inclusivity, and shared responsibility, gamified PE environments allow students to develop individual and social competencies. These experiences enhance immediate learning outcomes and equip students with skills essential for lifelong collaboration and personal development.

Theme 3: Enhancement of Physical Performance

Game-based elements such as rewards, challenges, and interactive activities enhance physical fitness while fostering sustained engagement in PE courses. Studies like Eriksen et al. (2020) have emphasized the strong association between regular exercise and improved mental health outcomes, with frequent physical activity significantly reducing psychological distress, depression, and suicidality. By integrating gamified elements, physical education can make consistent exercise more enjoyable and achievable, addressing the barriers that prevent students from regular participation.

Similarly, the findings of Bonanni et al. (2022) on the neuroprotective effects of physical activity such as boosting neurotrophins suggest that gamified exercises can play a vital role in enhancing cognitive functions. Structured activities like virtual reality sports or app-based fitness games can simulate real-world physical challenges while stimulating brain function, improving memory, and promoting adaptability. Moreover, research by Blomstrand et al. (2023) highlighted the positive effects of chronic exercise on cognitive functions in older adults. These findings further reinforced that sustained physical engagement—enhanced by gamified instruction—can benefit all age groups. The structured yet enjoyable nature of gamification can encourage students to participate regularly, ensuring long-term benefits to overall cognition, executive function, and memory.

Gamified instruction also has the flexibility to integrate creative approaches, such as those identified by Herbert et al. (2020)**,** where even short-term aerobic interventions yield improvements in mental health and stress reduction. This reinforces the notion that quick, engaging fitness games within physical education curricula can yield substantial gains in physical and emotional well-being.

Lastly, the comparison by Tanucan et al. (2022) between housework-based exercise and conventional exercise highlighted the adaptability of gamified instruction. Combining the accessibility of the former with the structure and efficacy of the latter through gamified tasks can optimize health-related fitness in adolescents. For instance, fitness games can incorporate household or practical movements into competitive scenarios, increasing accessibility while maintaining the effectiveness of traditional exercises. Gamified instruction offers an innovative approach to achieving fitness goals. By incorporating game mechanics into physical education, educators can enhance students' physical performance, mental health, and cognitive abilities sustainably and engagingly.

Theme 4: Increases Teachers' Workload and Preparation

The increasing demands on teachers have significantly raised their workloads in recent years. Teachers are now required to manage an expanding array of responsibilities, including administrative tasks, lesson planning, grading, and adapting to new educational standards. This growing workload often extends beyond classroom hours, leaving limited time for personal and professional

development. Teaching requires a broad spectrum of knowledge and skills, and achieving mastery takes considerable effort (Admiraal, 2022). Teachers have expressed that gamified processes increase their workloads (Arufe-Giráldez, 2022).

In Physical Education, integrating modern teaching methods such as gamification—the use of game design elements in non-game contexts—adds another layer of complexity to teachers' responsibilities. While gamification fosters student engagement and enhances learning outcomes, it necessitates meticulous planning and preparation. Teachers must design interactive activities, establish rules, monitor progress, and assess students effectively, which increases their workloads.

Dimensions of teacher well-being include subjective, physical, and mental health. A shift in defining well-being from mere life satisfaction to a holistic view of purposeful functioning (Pronk et al., 2021) has underscored the need to balance innovative teaching methods with teachers' mental health. Gamification, while effective, requires teachers to invest time in creating and customizing activities that align with curricular goals and students' needs.

Moreover, the Job Demands-Resources theoretical framework has identified heavy workloads as significant job demands contributing to teacher burnout (Jomuad et al., 2021). The introduction of gamification in PE teaching can intensify this burden if not supported by adequate resources, such as training or technological tools. Teachers must learn to incorporate gamified elements like leaderboards, point systems, or challenges into lessons while ensuring these activities are aligned with physical education standards and learning outcomes.

Despite these challenges, studies reveal a paradox: even when teachers are overwhelmed with roles and responsibilities, they often maintain positive evaluations and deliver satisfactory teaching outcomes (Tarraya, 2023). This resilience reflects their dedication and adaptability, especially in PE, where gamified approaches enhance student motivation, foster teamwork, and encourage active participation. Teachers also gain valuable professional experience from these practices, developing critical thinking, leadership, and innovative teaching strategies.

However, the heavy workloads associated with gamification underscore the importance of teacher induction and support systems. New teachers, in particular, face challenges transitioning from pre-service to in-service roles, often demonstrating lower self-efficacy and higher attrition rates (Reeves et al., 2022). Targeted training in gamification strategies during teacher education programs could ease this transition, equipping teachers with tools to manage workloads more effectively while maintaining high-quality instruction. By providing professional development opportunities, peer collaboration, and resource support, teachers can harness the benefits of gamification without compromising their well-being or instructional quality.

Theme 5: Complexities in Implementation

Even though the idea of gamification is becoming more popular, some issues still exist with categorizing it and its components. Schöbel et al. (2020) found that reducing complexity, finding commonalities between items, and comprehending object relationships were all part of classification processes. This challenge is further compounded by an epistemological problem inherent in gamification: the transversality of games. Gamification often faces limits in preserving playfulness, and describing these limits is difficult without an interpretive model that explains the transition between games and gamification. A systemic game–gamification model, rooted in structural functionalist and systemic perspectives, has been proposed to address this complexity. This model aids in understanding the phenomenon of gamification by interpreting it as a social reality within a framework of complexity. However, a significant risk arises when gamification isolates certain elements, such as competitive systems, which may not belong to games. This selective emphasis can lead to a phenomenon akin to "sportification", analogous to transforming games into sports, further complicating the categorization and implementation of gamification (González-González & Navarro-Adelantado, 2021).

Meta-Theme: Transforming Teaching and Learning Physical Education through Gamification While Navigating Its Complexities

By incorporating game-based components into instructional strategies, gamification is changing traditional classroom settings into dynamic, interactive learning environments, thereby modernizing education. This strategy encourages active participation and continuous interest in learning by enhancing student motivation and engagement through leaderboards, challenges, and incentives. Research shows that giving students practical experience navigating real-world situations effectively enhances knowledge retention and problem-solving abilities. Blooket and Kahoot, for example, provide immersive learning environments where students are inspired, and acquire the critical thinking and teamwork skills necessary for lifelong learning (Chandlier, 2024). However, there are challenges associated with gamification of which teachers must be aware. Maintaining a balance between extrinsic and intrinsic motivation is a major problem; relying too much on outside incentives, like badges or points, can overwhelm the inherent delight of learning, because not all students have equal access to the required technology resources, and accessibility problems continue to exist. Furthermore, poorly structured exercises can cause cognitive overload and divert students' attention from learning objectives. To ensure that all students gain from this creative approach, addressing these issues calls for careful game design, prioritizing instructional material, and distributing resources fairly (Baah et al., 2024).

Educators must embrace pedagogical alignment, inclusion, and relevance to successfully implement gamification in teaching and learning. Better connections between learning experiences and curricular goals may be made by using customizable game forms, increasing their effect and relevance. New technologies like artificial intelligence and virtual reality provide sophisticated tools for developing individualized, immersive learning environments. Additionally, by taking on a facilitative teaching role, teachers can lead students through gamified experiences, encouraging greater participation and ensuring that the process's main focus is on the learning objectives (Exemplary Teaching Practices, 2024).

Conclusion and Recommendations

This meta-synthesis highlighted the transformative role of gamification in Physical Education (PE), demonstrating its potential to enhance student engagement, foster collaboration, and improve physical performance through interactive and meaningful learning experiences. By incorporating game-based elements such as rewards, challenges, and teamwork, educators can address traditional barriers in PE while aligning with contemporary pedagogical approaches. However, the study also identified key challenges, including increased teacher workloads and difficulties in implementation, underscoring the need for careful planning and resource allocation.

To maximize the benefits of gamification in PE, it is recommended that educators adopt a strategic and well-structured approach. This includes aligning gamified strategies with curricular goals, integrating professional development programs regarding game design and technology use, and implementing phased adoption to ease transitions. Additionally, schools should provide adequate resources and support mechanisms to help educators manage workload concerns effectively.

Future research could explore the long-term effects of gamification on student motivation, performance, and overall physical activity habits. Investigating its impact across different age groups and educational settings, as well as identifying best practices for overcoming implementation challenges, would further contribute to developing dynamic, inclusive, and effective PE learning environments.

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