



Improving Physical Education Learning Experience through Teaching Game for Understanding Approach: A Systematic Review

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Abstract

Objectives. The objective of this study was to systematically review the research development of TGfU in physical education, identify its impacts on learning outcomes, examine the integration of TGfU with other pedagogical approaches, and explore challenges encountered during its implementation.

Materials and Methods. This study followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines and conducted thematic analysis. Research data were sourced from five databases: SCOPUS, ERIC, IEEE Xplore, Springer, and EBSCO. Additionally, 10 highly cited articles were included for an in-depth literature review. Keyword analysis was performed using VOSviewer to map thematic trends.

Results. The findings indicate that TGfU enhances students' cognitive, psychomotor, and affective learning domains by fostering motivation, decision-making, and game performance. The integration of TGfU with other models, such as the Sport Education Model (SEM) and the Activist Approach, has expanded its effectiveness and inclusivity. Despite these benefits, challenges in implementation, such as teacher preparedness, curriculum flexibility and institutional constraints, have been identified as barriers that must be addressed for optimal application.

Conclusions. TGfU has demonstrated a positive impact on the quality and effectiveness of physical education by promoting varied, engaging, and student-centered learning experiences. While the approach continues to evolve and integrate with other educational models, addressing practical challenges will be critical for sustaining its benefits and expanding its adoption across diverse educational contexts.

Keywords: physical education, student-centered learning, TGFU, pedagogical innovation, systematic review.

Introduction

Physical education plays a critical role in fostering students' physical, mental, and social development (Bamta et al., 2023). Despite its importance, the delivery of physical education content in schools often remains dominated by traditional, teacher-centered methods (Zhang & Zhang, 2022). These approaches typically utilize little innovation or pedagogical adaptation (Jiang, 2021). Another common practice is repetitive skill drilling, where students are

expected to master movements through constant repetition (Chang et al., 2020). While familiar, such methods tend to limit student engagement and personal development (Perlman, 2012). Teacher-centered strategies place authority entirely in the hands of the instructor, potentially creating rigid and uninspiring learning environments that fail to maximize students' capabilities (Standal & Bratten, 2021).

In response to these limitations, an innovative and student-centered instructional model called Teaching Games for Understanding (TGfU) has emerged as a promising alternative in physical education (Sumarno et al., 2022). Prior to TGfU, instruction typically followed a sequence of brief theoretical input, repetitive practice, and game application (Papagiannopoulos et al., 2023). However, this often led to disengagement among students, who were more likely to be passive observers than active participants

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(Fariduddin, 2017). Undermining the very goals of physical education, such as enhancing students' physical potential.

TGfU shifts the learning paradigm by immersing students in meaningful game-based learning contexts that promote active participation, strategic thinking, and deeper understanding. Research has consistently shown that TGfU positively influences students' cognitive, psychomotor, and affective domains, making it a holistic approach suited to the demands of 21st-century education. By emphasizing understanding and decision-making through play, TGfU empowers students to take ownership of their learning, fosters motivation, and nurtures both physical and social skills.

This systematic review aims to critically examine existing research on the application of TGfU in physical education. It seeks to explore the evolution, impact, and current trends surrounding TGfU while identifying gaps and future directions for research. By doing so, this study provides educators, researchers, and educational stakeholders with an evidence-based foundation to consider TGfU as an effective pedagogical strategy. It enhances students' learning experience and physical education quality in modern classrooms.

Materials and Methods

Study Design

This systematic review study adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to ensure the data identification process was transparent and credible. Thematic analysis was also conducted in this study through the results of the research data obtained to provide a comprehensive understanding. A literature review based on the most cited articles was also conducted to provide additional insight into previous studies. Through a transparent identification process, equipped with in-depth thematic analysis, and literature review related to previous research, this systematic review research will provide a holistic understanding for other researchers.

Study Procedure

This systematic review research uses five databases as its research data source. These databases are SCOPUS, ERIC, IEEE Xplore, Springer, and EBSCO. The data identification process was carried out on April 23, 2025 using the keywords "Teaching Games for Understanding" OR "TGfU" AND "Physical Education". The identification results in each database will be exported into RIS files. Then, the RIS files in each database will be imported into the citation software, namely Mendeley, with the aim of ensuring that each research data has keywords. This is so that when the keyword analysis process can run well without any obstacles.

The process of identifying research data, of course, has inclusion and exclusion criteria so that the selected data is in accordance with the research topics taken in this systematic review research. The inclusion criteria were research documents that were published in the form of articles and discussed TGfU in physical education. Meanwhile, the exclusion criteria were the opposite of the inclusion criteria,

namely research documents that were published not in the form of articles and did not discuss TGfU in physical education.

After all data is checked for keywords through Mendeley as previously explained, the results of the check will be exported back into the RIS file. The results of this export will then be imported into the Publish or Pearish software to carry out the screening process of research documents with the same title and not published in the form of articles. In addition, researchers also ensured that the articles that passed the screening process had topics relevant to this systematic review research.

The results of the screening of research data through the Publish or Pearish software will be exported back into RIS form. Then, the RIS file will be imported into the keyword analysis software, VosViewer. This keyword analysis process uses a fractional counting method or a keyword analysis method that really focuses on the keywords in each article in the RIS file. Through this, the risk of bias can be minimized, because if using the full counting method, the analysis will focus on authors that often appear, not keywords that often appear or are used.

On the other hand, the selection of articles with the most citations, based on the screening results in the Publish or Pearish software, was carried out with the aim of serving as data for literature review. The process of identifying and selecting the articles with the most citations involved five researchers to make the process more efficient. Thus, the results obtained can be maximized and minimize the occurrence of human error.

Results

Figure 1 illustrates the research data screening process based on the PRISMA framework, which includes four main phases: identification, screening, eligibility, and inclusion. A total of 430 documents were initially identified from five major databases (SCOPUS, ERIC, PubMed, IEEE Xplore, and Springer). During the screening phase, 136 documents were excluded because they were not published in article form these included 87 conference papers, 7 books, 11 book chapters, 27 citation-only entries, and 4 notes. Of the remaining 294 documents deemed eligible due to their article

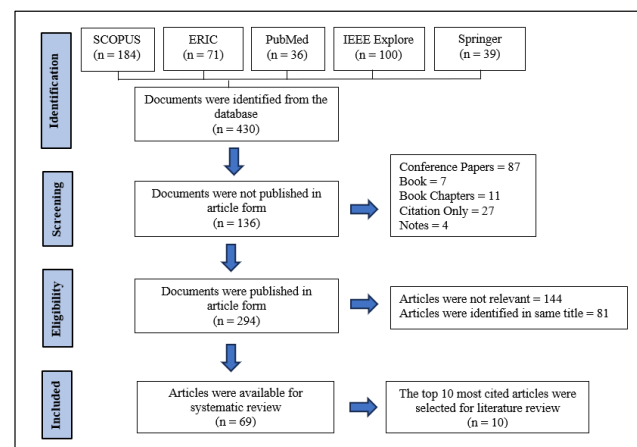


Fig. 1. Research Data Screening Process

format, 144 were excluded for being irrelevant to the TGfU topic, and 81 were duplicates with the same titles. As a result, 69 articles were included in the final systematic review, and an additional 10 highly cited articles were selected for an in-depth literature review.

Research Databases

Table 1 provides a summary of the research databases used in this systematic review, highlighting the number of papers retrieved, total citations, average citations per year, and H-Index from each source. SCOPUS contributed the highest number of papers (184) and citations (4446), with a high citation rate (171.00 per year) and the highest H-Index (34), indicating strong academic impact. ERIC followed with 71 papers and 2363 citations, while Springer contributed 39 papers but showed no citation data, possibly due to indexing issues. IEEE Xplore provided 100 papers with a relatively low citation count (126) and H-Index of 3. PubMed contributed 36 papers with 404 citations and a moderate average citation rate. Overall, 430 papers were gathered from these five databases, resulting in a total of 7339 citations and an average citation rate of 287.36 per year, illustrating the robust academic foundation of the literature included in this review.

Table 1. Research Databases

Source	Paper	Cites	Cites/Year	H-Index
SCOPUS	184	4446	171.00	34
ERIC	71	2363	94.52	24
Springer	39	0	0	0
IEEE Xplore	100	126	6.30	3
PubMed	36	404	15.54	8
Total	430	7339	287.36	-

Research Publication and Development

Figure 2 illustrates the development of research publications on the Teaching Games for Understanding (TGfU) approach in physical education from 1999 to 2025. The graph shows a gradual increase in publication frequency over time, with sporadic growth between 1999 and 2017, followed by a significant upward trend beginning in 2018. The peak occurred in 2021, with 11 publications in that year, indicating heightened academic interest in TGfU during this period. Although there was a slight decline in subsequent

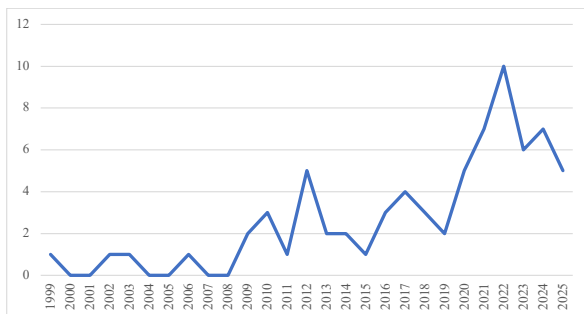


Fig. 2. Research Development

years, the overall trend reflects a growing recognition of TGfU as a relevant and impactful approach in physical education research. This suggests that TGfU is gaining momentum as a subject of scholarly attention and practical application.

Figure 3 illustrates the citation development of research related to Teaching Games for Understanding (TGfU) in physical education from 1999 to 2025. The graph reveals fluctuating citation patterns, with noticeable spikes in 2001, 2011, 2013, 2015, 2017, and a peak in 2019, which recorded the highest number of citations at over 200. This indicates that research published in or before those years received significant scholarly attention. After 2019, the number of citations shows a declining trend, particularly in 2023–2025, likely due to the recency of publications in those years, which typically have had less time to accumulate citations. Overall, the figure highlights that TGfU has experienced periods of high academic impact, particularly in the last decade, confirming its growing influence in physical education research.

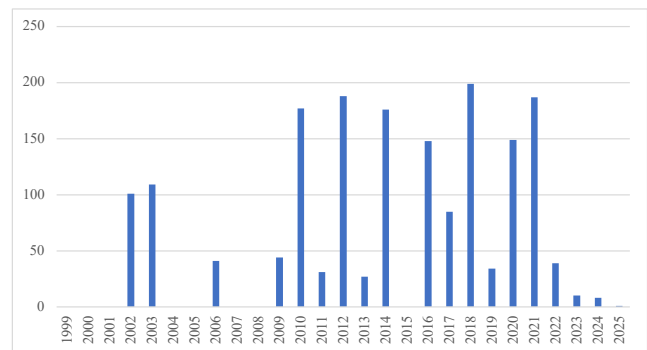


Fig. 3. Citation Development

Research Keywords Analysis

Table 3 highlights the most frequently used research keywords associated with Teaching Games for Understanding (TGfU) in the context of physical education. The keyword “Physical Education” is the most dominant, appearing 77 times and accumulating the highest number of total citations (2042), indicating its foundational role in the literature. “Teaching Games for Understanding” itself is cited 752 times across 36 occurrences, reflecting strong interest and relevance in academic discussions. Other significant keywords include “Teaching,” “Sport,” “Male,” and “Female,” each of which also received high citation counts, suggesting diverse perspectives including instructional strategies and gender considerations. Additionally, keywords such as “Motivation,” “Learning,” and “Student” emphasize the learner-centered focus of TGfU. Collectively, these keywords underline the multifaceted nature of TGfU research, which blends pedagogical theory, learner outcomes, and demographic factors to enhance the understanding and application of physical education.

Figure 3 displays a keyword co-occurrence network map generated using VOSviewer, illustrating the relationships and clustering of research topics related to Teaching Games for Understanding (TGfU) in physical education. The visualization reveals key clusters of terms, with “physical education” and “teaching games for understanding” positioned as central nodes, indicating their strong

Table 3. Research Keywords of TGfU in Physical Education

Keywords	f	Total cited	Average Cited
Physical Education	77	2042	1059.50
Teaching Games for Understanding	36	752	394.00
Teaching	27	576	301.50
Sport	18	472	245.00
Male	15	473	244.00
Female	15	473	244.00
Physical Education and Training	14	424	219.00
Motivation	12	317	164.50
Learning	12	302	157.00
Student	11	319	165.00
Total	237	6150	3193.50

connectivity and frequency of appearance in the literature. Other frequently co-occurring keywords include “game-based learning,” “tactical knowledge,” “student motivation,” and “pedagogical model,” reflecting the multidimensional focus of TGfU research encompassing instructional strategies, learning outcomes, and psychological factors. The color gradient from blue to yellow represents the average year of publication, showing the evolution of research trends over time. Newer research areas appear in yellow, suggesting growing interest in student-centered learning approaches and performance analysis in recent years. This figure highlights how TGfU research has developed into interconnected thematic areas and continues to evolve to address contemporary educational priorities.

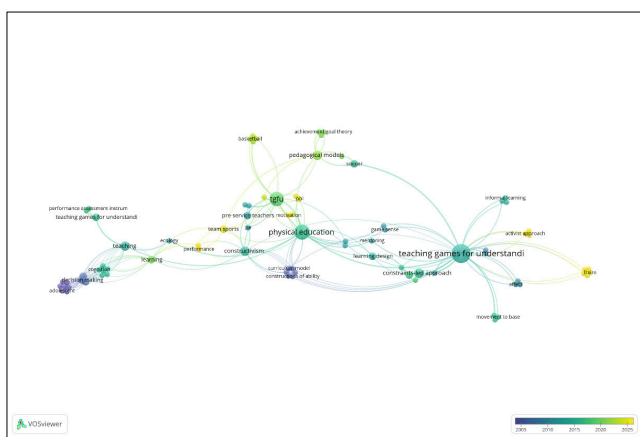


Fig. 4. Keywords Analysis

Research Subject Area

Table 4 presents the distribution of research on Teaching Games for Understanding (TGfU) across various academic subject areas, along with their corresponding citation metrics. The majority of TGfU-related studies are concentrated in the fields of Social Sciences (112 studies, 3374 citations), Health Professions (111 studies, 3203 citations), and Medicine (106 studies, 3288 citations), reflecting the interdisciplinary nature of TGfU research that spans education, health, and physical activity domains. Other areas such as Environmental Science, Biochemistry, Psychology, and Computer Science

show minor contributions, indicating emerging but less established links to TGfU. The relatively low citation and frequency in fields like Business or Energy further emphasize that TGfU research is primarily grounded in education and health contexts. In total, 361 studies were cited 10,516 times, highlighting both the depth and breadth of TGfU’s academic relevance across diverse disciplines.

Table 4. Research Subject Area

Subject Area	f	Total cited	Average Cited
Social Sciences	112	3374	1743.00
Health Professions	111	3203	1657.00
Medicine	106	3288	1697.00
Environmental Science	7	160	83.50
Biochemistry, Genetics, and Molecular Biology	7	176	91.50
Psychology	6	68	37.00
Computer Science	4	65	34.50
Multidisciplinary	3	109	56.00
Energy	3	65	34.00
Bussiness, Management, and Accounting	2	8	5.00
Total	361	10516	5438.50

Research Affiliation

Table 5 summarizes the institutional affiliations contributing to research on Teaching Games for Understanding (TGfU), along with their corresponding frequency and citation metrics. The table highlights those institutions such as Universidad Rey Juan Carlos, Universidad de Extremadura, and Universidad de Castilla-La Mancha are among the most active contributors from Spain. Nanyang Technological University and the University of Limerick, despite having fewer publications (six each), stand out with the highest average citations per study 300.5 and 279 respectively demonstrating the high impact and quality of their research. Other notable contributors include the Chinese University of Hong Kong, Ohio University, and the University of British Columbia. Meanwhile, Universitas Negeri Yogyakarta is the only Indonesian institution listed, showing emerging contributions to TGfU research despite having the lowest average citations. In total, these ten institutions produced 74 studies with a combined 2,709 citations, emphasizing the global and collaborative nature of TGfU research across diverse educational and cultural contexts.

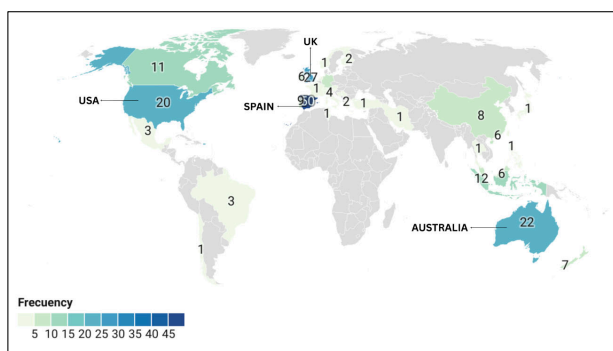
Figure 4 provides information on how different countries are involved in TGfU research in physical education. The data presented shows that research development has not been evenly distributed across continents. There are only a few countries in Europe and Asia that contribute to TGfU research in physical education. Spain appears to dominate with a total of 50 publications. This is in line with its dominance in the affiliation table in the previous table 5. The top four universities from Spain dominate the number of studies and the number of citations. This data proves

Table 5. Research Affiliation

Affiliation	f	Total cited	Average Cited
Universidad Rey Juan Carlos	12	367	189.50
Universidad de Extremadura	9	252	130.50
Universidad de Castilla-La Mancha	8	127	67.50
Universidad Católica de Murcia	8	264	136.00
Chinese University of Hong Kong	7	110	58.50
Nanyang Technological University	6	595	300.50
University of Limerick	6	552	279.00
The University of British Columbia	6	87	46.50
Ohio University	6	323	164.50
Universitas Negeri Yogyakarta	6	32	19.00
Total	74	2709	1391.50

the seriousness of Spain in developing the TGfU learning approach for physical education, not only for its country but for other countries as well.

Asian countries such as China only contributed 8 research documents. However, universities in China show a significant role through the number of citations shown in Table 5. Although still inferior to the number of citations from other universities, this still shows that China is able to represent countries in Asia through this research. The development of the education system and technology in China is one of the foundations of the excellence shown by the country. The data presentation shown in figure 4 does not show that there is an expansive and comprehensive development. TGfU research still needs to be conducted to holistically review the learning approach, especially in physical education.

**Fig. 5.** Countries Contributed

Literature Review

The literature review conducted in this study is based on the most citations every 2 years from 1999 to 2025. As many as 13 articles have been identified with the most citations, and have been reviewed through table 6. Based on the results of the literature review, the Teaching Games for Understanding (TGfU) approach effectively improves the learning process related to sports games in physical education. Research by Tan, Chow, and Davids (2012), states that TGfU is feasible

in the physical education learning process. This is reinforced by Light & Fawns, (2003) and Morales-Belando et al. (2018) through their research results which explain that TGfU has a significant positive effect on all aspects of physical education. These aspects include cognitive, motor, and affective aspects.

The implementation of TGfU in physical education is also proven to have an influence on students' psychology. This is evidenced through several studies that explain that TGfU is able to increase motivation, comfort, and decision-making. Research by Turner and Martinek, (1999), Morales-Belando et al. (2018), Gil-Arias, Claver, Práxedes, Villar, and Harvey (2020), and Batez, Petrušič, Bogataj, and Trajković, (2021), prove this statement.

According to Butler (2006), the application of TGfU in physical education can create a more democratic learning atmosphere. In addition, TGfU research integrated with the Sport Education Model (SEM) Pan, Huang, and Hsu (2023) and the Activist Approach Seldas and García López, (2025), effectively increased female students' engagement and provided better learning outcomes.

The majority of TGfU research in physical education shows positive impacts for both students and teachers. On the other hand, challenges in implementing this approach also need to be considered. Research by Holt, Streat, and Bengoechea (2002) and Nathan (2016), showed less significant results and suggested that the implementation needs to pay more attention to cognitive, affective, decision-making, and skill execution aspects. According to Díaz-Cueto, Hernández-Álvarez, and Castejón (2010), the implementation of TGfU in physical education does provide its own challenges for teachers, especially during the initial and implementation stages. Based on this, research by Stolz and Pill (2014) emphasized that TGfU may have little or no impact on the learning process.

Some results showed that the implementation of TGfU still needs to be optimized. Nonetheless, the majority of studies show how TGfU can contribute well to the physical education learning process. This certainly proves the significant role of TGfU in developing and innovating physical education learning. As a result, students are able to experience a meaningful learning process and maximize their learning outcomes.

Discussion

Teaching Games for Understanding (TGfU) research in physical education has shown significant progress over the past two decades. The findings of this systematic review demonstrate that TGfU not only enriches students' learning experiences but also addresses diverse learning domains cognitive, psychomotor, and affective. The evolution of TGfU research reflects the adaptability and relevance of this pedagogical model, which continues to shape innovative practices in physical education. This discussion elaborates on three key dimensions identified through the research synthesis: learning enhancement using TGfU, hybridization with other approaches, and the challenges of TGfU implementation.

Learning Enhancement Utilizing TGfU Approach

The physical education learning process cannot be separated from the teacher's role in managing or organizing

Table 6. Literature Review

Author	Years	Research Purposes	Study Design	Results
(Turner & Martinek, 1999)	1999-2000	To evaluate the efficacy of the games for understanding model by contrasting it with a technique-based instructional approach and a control group.	Experimental Study	The games for understanding group achieved markedly superior scores in passing decision-making compared to both the technique and control groups during post-test playtime, and considerably outperformed the control group in declarative and procedural knowledge.
(Holt et al., 2002)	2001-2002	To evaluate TGfU research, to propose an enhanced TGfU model, and to provide new directions for future study and practice.	Thematical Analysis	While numerous inquiries on the efficacy of diverse approaches to games teaching exist, we assert that the ongoing engagement of learners in games throughout their lives is of utmost significance. We urge researchers to reflect on the development of the TGfU model and to engage in the progression forward, taking into account learners from behavioral, cognitive, and affective viewpoints.
(Light & Fawns, 2003)	2003-2004	This paper utilizes phenomenology, educational philosophy, and contemporary cognitive research to contest the objectivist dichotomy of mind and body that has historically influenced physical education pedagogy. We propose that employing a TGfU strategy in gaming instruction provides educators with an effective method to deliver a comprehensive learning experience for students focused on the physical aspect.	Literature Review	Games taught in physical education with TGfU facilitate an educational dialogue wherein the intellect, articulated through speech, and the physique, demonstrated through action, represent the quintessential holistic learning experience that concurrently addresses cognitive, affective, social, and physical development.
(Butler, 2006)	2005-2006	To examine the TGfU curriculum paradigm (utilizing Inventing Games) in further detail, with particular focus on how it delineates student capability.	Thematical Analysis	TGfU provides a more comprehensive perspective on ability in physical education by utilizing many value orientations. The TGfU approach facilitates the instruction of democracy in educational settings, since it empowers both educators and students while encouraging them to challenge the status quo (ecological integration).
	2007-2008	-	-	-
(Díaz-Cueto et al., 2010)	2009-2010	To comprehend the opinions of in-service Physical Education (PE) educators regarding the implementation of Teaching Games for Understanding (TGfU) in sports instruction	Survey Study	The challenges faced by physical education instructors in the preparation and execution of Teaching Games for Understanding (TGfU). During the preliminary phase of TGfU implementation, educators expressed emotions of fear, leading them to question their pedagogical competence and knowledge. They additionally reported experiencing anxiousness and fatigue.
(Tan et al., 2012)	2011-2012	To offer insights that enhance our comprehension of the potential processes behind the educational principles of TGfU in gaming instruction.	Thematical Analysis	Research findings from the motor learning literature can offer a robust theoretical foundation to validate the efficacy of the four principal pedagogical principles of the TGfU model and can enhance understanding of the potential processes involved in TGfU within games instruction.

Table 6 (continued)

Author	Years	Research Purposes	Study Design	Results
(Stolz & Pill, 2014)	2013-2014	To evaluate and reassess TGfU and examine its pertinence to games and sports instruction in physical education This study delineates two aspects of the TGfU proposition: (1) the foundation for the conceptualization of TGfU; (2) promotion of TGfU as refined variations.	Literature Review	Making conclusive assertions regarding the success of a TGfU method is tricky, as the rhetorical generalizations present in the literature from the preceding historical overview of TGfU may offer little or no utility to practitioners. They possess no significance to the 'natural environment' of each practitioner.
(Nathan, 2016)	2015-2016	To study the effects of a revised model of TGfU in comparison to the Skill Drill Technical (SDT) model on the acquisition of movement skills in badminton	Comparative Study	The study revealed a notable enhancement in base movement during doubles play after the TGfU intervention, although decision-making and skill execution exhibited no significant alteration. Educator observations highlighted the significance of mini games in enhancing student involvement and cultivating favorable attitudes toward both victory and defeat. Nevertheless, several educators indicated difficulties in executing TGfU owing to pupils' requirement for tactical direction.
(Morales-Belando et al., 2018)	2017-2018	To ascertain if students exhibited enhancements in performance and adherence metrics following the implementation of a coherent TGfU unit.	Experimental Study	Students exhibited enhancements in decision-making, technical execution, coverage, support, game performance, engagement, enjoyment, perceived competence, and intention to engage in physical activity following the deployment of the TGfU unit. The students and the instructor observed enhancements in all analyzed variables as a result of the intervention.
(Gil-Arias, Claver, et al., 2020)	2019-2020	To examine the effects of a hybrid teaching model combining games for understanding (TGfU) and sport education (SE) in physical education on autonomy support, perceived motivational climate, enjoyment, and perceived competence, relative to a unit conducted through a conventional direct instruction approach.	Experimental Study	The findings provide preliminary evidence that a teacher's implementation of a hybrid TGfU/SE unit can foster student accountability and independent decision-making, resulting in increased enjoyment and perceived competence relative to physical education lessons conducted through a conventional direct instruction model.
(Batez et al., 2021)	2021-2022	To examine the impact of the Teaching Games for Understanding (TGfU) model applied in physical education classes on volleyball skills and enjoyment among secondary school students.	Experimental Study	Both instructional techniques, TGfU and the traditional approach, significantly improved volleyball abilities in controlled environments. The TGfU framework is advocated for its superior enhancement of student enjoyment and intrinsic motivation, both of which are vital for learning.
(Pan et al., 2023)	2023-2024	To analyze the disparity in learning outcomes between the TGfU-SEM and the TGfU model for students' learning motivation, sports enjoyment, responsibility, and game performance.	Comparative Study	The TGfU-SEM exhibited more favorable learning outcomes for students' motivation, pleasure of sports, sense of responsibility, and game performance compared to the TGfU model.

Table 6 (continued)

Author	Years	Research Purposes	Study Design	Results
(Seldas & García López, 2025)	2025	To develop and execute a successful hybridization of two pedagogical models that would effectively address gender-related obstacles to game participation.	Mix-Method Study - Exploratory Sequential Design	The girls' engagement in the game was significantly enhanced as a result of the group's collaborative efforts to adjust our actions, which enabled them to participate more actively.

students. The organization of these students has an influence on the running of teaching and learning activities between students and teachers. Physical education teachers will not be able to control all students, and create a truly conducive learning atmosphere (Sosunovsky & Radaeva, 2022). This statement applies if the learning process is carried out in the lower grades or in elementary school students and after. Students will always have activities that are done outside of the teacher's instructions, such as playing alone, talking to friends around them, or others. This phenomenon often occurs in the physical education learning process, and it is called non-engagement learning activities (Leo et al., 2020).

This non-engagement learning activity is caused by the teacher's lack of attention to students in the learning process. The use of inappropriate approaches is also a cause of these activities. A teacher-focused learning approach makes students feel bored and saturated, so that the focus of their attention will move to something other than the teacher. Such conventional approaches must begin to be minimized and physical education teachers must be able to adapt through a more modern approach, for example through Teaching Games for Understanding (TGfU).

The TGfU approach has proven effective in promoting holistic student development by integrating decision-making, tactical awareness, and technical skill acquisition within meaningful game contexts. Numerous studies, including those by Light & Fawns (2003) and Morales-Belando et al. (2018), affirm that TGfU enhances not only physical abilities but also fosters cognitive and social learning outcomes. Students involved in TGfU-based instruction consistently demonstrate improved engagement, motivation, and enjoyment factors essential for sustained participation in physical activity (Batez et al., 2021).

Additionally, TGfU promotes student-centered learning environments that encourage autonomy and accountability (Butler, 2006). By situating learning within game scenarios, students gain a deeper understanding of gameplay concepts and develop transferable skills applicable beyond physical education settings. The literature review further confirms that TGfU facilitates improvements in tactical knowledge, decision-making, and peer collaboration, thereby aligning with the objectives of modern, competency-based education.

Hybridization TGfU with Others Learning Approach

The use of methods or approaches in the physical education learning process needs to be determined before the learning process is carried out (Kermarrec et al., 2022). Determining the approach involves a teacher with the data he has based on environmental conditions and student characteristics. Physical education teachers cannot only apply one approach (Gil-Arias, Diloy-Peña, et al., 2020).

The difference in student characteristics is one of the reasons the implementation of the learning approach is not enough. Physical education teachers can do a combination or collaboration of two learning approaches. This aims to provide a differentiated physical education learning process. This differentiated learning is able to adjust the learning process based on the different characteristics of these students.

A notable trend in recent TGfU research is the integration of TGfU with complementary pedagogical models to maximize learning outcomes. Hybrid models, such as TGfU combined with the Sport Education Model (SEM), have yielded enhanced student motivation, responsibility, and performance (Pan, Huang, & Hsu, 2023). This hybridization addresses the diverse needs of learners and provides a more comprehensive educational experience.

Moreover, studies have shown that blending TGfU with the Activist Approach has successfully increased engagement among traditionally underrepresented groups, such as female students (Seldas & García López, 2025). Such integrations extend the reach and inclusivity of TGfU, enabling educators to address gender disparities and foster equitable learning environments. The flexibility of TGfU in adapting to various instructional contexts underscores its strength as a foundation for innovative teaching strategies.

Challenges from TGfU Implementation

Despite its advantages, TGfU implementation is not without challenges. Teachers often face difficulties during the initial adoption phases, including uncertainties about pedagogical competence and apprehensions about altering established instructional practices (Díaz-Cueto et al., 2010). Some studies, such as those by Holt et al. (2002) and Nathan (2016), report mixed outcomes, particularly regarding the consistency of cognitive and skill-related improvements.

Other barriers include the need for substantial teacher training and the requirement for flexible curricula that can accommodate the dynamic nature of TGfU. Teachers must develop skills in designing game-based learning experiences and in facilitating student inquiry and reflection practices that may be unfamiliar to those accustomed to traditional, teacher-centered approaches (Stolz & Pill, 2014). Furthermore, institutional constraints, such as rigid assessment frameworks and limited instructional time, can hinder the effective application of TGfU.

Limitations and Recommendation

The research results presented in this study, of course, have several limitations in the research process. Some of the limitations in this study are that this research is only

limited to research data in the form of articles. This of course allows for a bias in the research. Research related to TGfU in physical education is not always published in the form of articles, but can also be in the form of conference papers or the final project of a student, such as a thesis. Then, the data presented in table 3 to table 5 and the data in figure 4, are the results of identification on the SCOPUS website page. This is because only on the SCOPUS website these data can be screened properly and accurately. Furthermore, the selection of articles for literature review is based on the most citations. This selection is of course also able to cause bias in research, because the number of citations is not able to represent the quality of a study. As we all know, there are several cases in research related to self-citation.

The researcher suggested for future research to expand the research data to be used, such as conference articles or scientific research results from thesis. Optimization of journal websites can also be done so that screening related to keywords, affiliations, countries, and subject areas does not only depend on the SCOPUS website. Article rating can also be applied as a sign of the quality of the article, so that when there is research related to literature reviews or systematic reviews, it can facilitate the process of identifying and screening research data. Through updates made in the future, it will certainly increase the quality of the research. Thus, the research results obtained will also be maximized without the possibility of bias in the research.

Conclusions

The current physical education learning process has evolved through the modernization of the learning approach. The transition from teacher-centered learning to student-centered learning is one of the characteristics of this development. Teaching Games for Understanding (TGfU) in physical education has evolved and continued to adjust since the 1990s until the digitalization era as it is today. TGfU, which initially focused only on the social and emotional aspects of a student, has now begun to pay attention to other aspects in physical education.

This study concludes that over the past few years, TGfU has begun to pay attention to the cognitive and psychomotor aspects of students. The integration of TGfU with other learning approaches can also have a positive influence on the physical education learning process. The integration provides opportunities for female students to be more involved or active when physical education is conducted.

On the other hand, the application of TGfU in physical education still needs to be re-evaluated. The emergence of challenges during the implementation process has a significant negative impact on physical education teachers. Physical education teachers need to improvise their pedagogical skills so that the challenges that arise can produce a solution. The role of the physical education teacher facilitator is very important in the process of pedagogical improvisation. Through this, TGfU will be able to be optimally realized in physical education. TGfU will have a significant positive impact on both the students and the teachers themselves. Thus, the generalization process will be very likely to be implemented, so that physical education teachers will be more professional and students will get a more meaningful learning experience.

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Conflict of Interest

The author was declared there is no conflict of interest.

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Поліпшення досвіду навчання у фізичному вихованні через використання методики навчальної гри для тренування розуміння: Систематичний огляд

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; Е – збір коштів

Реферат. Стаття: 11 с., 6 табл., 5 рис., 27 джерел.

Мета дослідження. Метою цього дослідження було систематично проаналізувати розвиток досліджень щодо застосування методики навчальної гри для тренування розуміння (Teaching Game for Understanding Approach, TGfU) у

фізичному вихованні, визначити її вплив на результати навчання, дослідити інтеграцію TGfU з іншими педагогічними підходами та розглянути труднощі, що виникають під час впровадження зазначеної методики.

Матеріали та методи. Це дослідження проводилося відповідно до рекомендацій «Переважні елементи звітності для систематичних оглядів та метааналізів» (PRISMA) та включало тематичний аналіз. Дослідницькі дані було отримано з п'яти наукометричних баз даних: SCOPUS, ERIC, IEEE Xplore, Springer та EBSCO. Крім того, для поглибленого огляду літератури було включено 10 статей, що мають високу цитованість. Аналіз ключових слів проведено за допомогою програмного забезпечення VOSviewer з метою мапування тематичних тенденцій.

Результати. Результати показують, що TGfU покращує когнітивні, психомоторні та афективні сфери навчання учнів, сприяючи мотивації, ухваленню рішень та ігровій результативності. Інтеграція TGfU з іншими моделями, як-от модель спортивного виховання (SEM) та активістський підхід, розширила її ефективність та інклюзивність. Незважаючи на вказані переваги, визначено низку проблем у впровадженні, які необхідно вирішити для оптимального застосування, зокрема підготовленість викладачів, гнучкість навчальної програми та інституційні обмеження.

Висновки. Методика TGfU продемонструвала позитивний вплив на якість та ефективність фізичного виховання, сприяючи створенню різноманітних, залучаючих та учнецентричних навчальних досвідів. Попри постійний розвиток та інтеграцію зазначеного підходу з іншими освітніми моделями, розв'язання практичних проблем матиме вирішальне значення для збереження переваг та розширення застосування цієї методики у різних освітніх контекстах.

Ключові слова: фізичне виховання, учнецентричне навчання, TGfU, педагогічні інновації, систематичний огляд.

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