

## **Systematic Review of Game-Based Football Learning for School Students**

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**A.** Conception and design of the study; **B.** Acquisition of data;  
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### **ABSTRACT**

This systematic review explores the impact of game-based learning (GBL) methods on football instruction for school students, drawing on 12 peer-reviewed articles published between 2014 and 2024. The review follows PRISMA guidelines and focuses on five key domains: technical skill development, tactical understanding, motivation, physical fitness, and pedagogical implications. The studies reviewed employed models such as Teaching Games for Understanding (TGfU), Small-Sided Games (SSG), and hybrid approaches in primary and secondary school settings. Quantitative findings revealed that GBL significantly improved technical football skills in 83% of the studies. For instance, in a study by Zhai et al. (2023), students participating in SSG-based training improved their passing accuracy by 19% and dribbling performance by 14% over six weeks. In terms of tactical cognition, 75% of the articles reported increased decision-making ability, with García-Ceberino et al. (2020) noting a 23% gain in tactical awareness among middle school students using the TGfU model. Furthermore, 9 out of 12 studies indicated a notable increase in student motivation and engagement. Gil-Arias et al. (2017) recorded a 22% rise in self-reported motivation scores in GBL classrooms. Physical fitness metrics also improved, with studies documenting gains in aerobic capacity and agility. Overall, GBL fosters a student-centred learning environment that enhances cognitive, physical, and affective outcomes in football education. The review underscores the need for structured implementation and further longitudinal research to ensure sustainability and efficacy in diverse educational contexts.

**Keywords** : Game-Based Learning; Football Education; TGfU; Physical Education; School Students.

## **INTRODUCTION**

Football, as one of the most widely played sports globally, holds significant cultural, educational, and physical value for school-age children. Recognized for its capacity to develop not only physical fitness but also social interaction, cognitive function, and teamwork, football has long been embedded in physical education (PE) curricula worldwide (Bailey et al., 2013; FIFA, 2022). The integration of sports into educational settings is aligned with the goals of holistic development among students, particularly as education systems evolve toward 21st-century competencies that emphasize collaboration, creativity, and problem-solving (Light & Harvey, 2019).

Game-based learning (GBL) has emerged as a progressive pedagogical model within PE, shifting the focus from drill-based instruction to more engaging, tactical, and student-centered activities. GBL enables learners to understand not just the technical execution of a skill but also the contextual decision-making inherent in gameplay situations (Tan et al., 2012; Memmert & Harvey, 2018). Through the use of modified games, teachers can present sport-specific skills in meaningful contexts that mirror real game scenarios.

Football-specific game-based learning approaches such as Teaching Games for Understanding (TGfU), Game Sense, and Play Practice have garnered attention for their ability to enhance tactical awareness, decision-making, and motivation among school students (Harvey & Jarrett, 2014; Pill et al., 2020). These approaches leverage principles from constructivist learning theory and non-linear pedagogy, emphasizing active exploration, social interaction, and adaptive learning environments.

Several studies have demonstrated the effectiveness of TGfU and similar frameworks in enhancing students' engagement and physical literacy in football-based lessons (Oslin & Mitchell, 2006; Lee et al., 2021). For example, game-centered instruction in football has been shown to improve tactical knowledge, enjoyment, and team collaboration among primary and secondary school students (Duarte et al., 2019; Serra-Olivares et al., 2016). Furthermore, incorporating modified rules, scaled equipment, and differentiated roles enables inclusive participation and developmentally appropriate challenges (Clemente et al., 2021).

Despite these advances, the implementation of game-based football learning varies widely across educational contexts. Factors such as teacher training, curriculum mandates, class size, and resource availability influence how effectively game-based strategies are delivered (Tan, Chow, & Davids, 2012). Consequently, there is a need to systematically review and synthesize the growing body of literature on this topic, to guide future pedagogical practices and research.

While individual studies have explored the benefits of game-based approaches in school football settings, the literature remains fragmented. There is a lack of consolidated evidence that evaluates the overall effectiveness, challenges, and pedagogical design of football learning through games. Questions arise concerning the most effective types of games, age-appropriate modifications, gender inclusivity, assessment methods, and long-term skill retention (Jarrett & Harvey, 2016).

Moreover, discrepancies exist in how "game-based learning" is operationalized. Some studies use the term to describe loosely structured play, while others adhere to formal models such as TGfU. This inconsistency presents a challenge for teachers, curriculum designers, and policymakers seeking to implement evidence-informed strategies (Pill & SueSee, 2021). A systematic synthesis of findings is needed to clarify definitions, evaluate impact, and highlight best practices in school-based football learning.

Although game-based learning has been well-documented in the context of general physical education, specific reviews targeting football in school settings are notably absent. Prior reviews often combine various team sports, thereby obscuring sport-specific insights (Kirk, 2010; Harvey & Jarrett, 2014). Additionally, there is limited focus on how game-based approaches align with national education goals, such as competency-based learning or inclusive education frameworks in different countries, particularly in developing contexts (Light et al., 2015).

Most existing studies also emphasize short-term outcomes, such as immediate skill acquisition or student enjoyment, without addressing longitudinal impacts on motivation, physical activity levels, or lifelong sports participation (Evans et al., 2020). Furthermore, the



diversity of methodological designs, ranging from qualitative case studies to quasi-experimental trials, necessitates a structured evaluation to compare outcomes systematically.

This study offers a systematic review specifically on game-based football learning for school students, filling a critical void in the literature. Unlike general sport pedagogy reviews, this research narrows its scope to football, enabling a deeper analysis of pedagogical models, instructional practices, and learner outcomes within this sport. The novelty of this research lies in:

1. Synthesizing empirical findings exclusively on football-based GBL in school settings;
2. Evaluating pedagogical effectiveness based on student age, learning outcomes, and game design;
3. Identifying enablers and barriers to implementation across different educational contexts;
4. Proposing an evidence-based framework to guide teachers and curriculum developers in optimizing football instruction through game-based learning.

By integrating studies across various countries and school levels, this systematic review aims to provide comprehensive and practical insights for educators, researchers, and policymakers.

To address the fragmented state of knowledge surrounding game-based football education for school students, this systematic review critically analyzes peer-reviewed articles published over the past decade. Guided by PRISMA methodology, this review aims to:

1. Classify the types of game-based learning models used in football education;
2. Evaluate the effectiveness of these models in improving student engagement, tactical awareness, motor skills, and enjoyment;
3. Examine contextual variables such as age, gender, class size, and teacher expertise;
4. Identify best practices and pedagogical recommendations for future application.

By consolidating and analyzing global evidence, this review will contribute to a more cohesive understanding of how football can be taught effectively through games in school contexts. It aims to empower educators with practical insights and contribute to the ongoing evolution of PE pedagogy toward more student-centred and contextually relevant methods.

## **METHODS**

This research employed a systematic review design, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Page et al., 2021). The aim was to synthesize and evaluate empirical studies related to game-based learning (GBL) approaches in football education for school students. A systematic review is considered the most appropriate method for summarizing findings across a wide body of literature, allowing for the identification of trends, gaps, and the effectiveness of pedagogical strategies in physical education (García-Ceberino et al., 2020; Gråstén & Yli-Piipari, 2020).

This review incorporated both qualitative and quantitative studies that examined GBL interventions, outcomes related to football skills, motivation, teamwork, and cognitive development among students aged 7–18 years. The study focused on peer-reviewed articles published in English or Bahasa Indonesia from 2013 to 2023.

A comprehensive search of electronic databases was conducted in January–March 2025. The databases included Scopus, Web of Science, PubMed, ScienceDirect, ERIC, and Garuda (Garba Rujukan Digital Indonesia). The search terms were constructed using

Boolean operators to optimize relevance and coverage. The primary search string used was: ("game-based learning" OR "GBL" OR "teaching games for understanding" OR "TGfU" OR "small-sided games" OR "sports education model") AND ("football" OR "soccer") AND ("school students" OR "children" OR "adolescents" OR "pupils") AND ("learning" OR "instruction" OR "pedagogy")

Filters were applied to restrict the search to studies published between January 2013 and December 2023, in peer-reviewed journals. Duplicate studies were removed using Zotero reference manager, and references were exported to a data extraction form in Microsoft Excel.

The inclusion and exclusion criteria were developed based on the PICOS framework (Population, Intervention, Comparison, Outcomes, and Study design). These criteria ensured that only relevant and high-quality studies were selected for synthesis.

#### Inclusion Criteria:

1. Studies focusing on school-aged students (elementary to senior high school, ages 7–18).
2. Research implementing game-based learning strategies in football/soccer.
3. Studies report learning outcomes, such as technical skills, tactical understanding, motivation, or social-emotional development.
4. Peer-reviewed articles published in English or Bahasa Indonesia.
5. Articles published in reputable national journals or Scopus-indexed journals between 2013 and 2023.

#### Exclusion Criteria:

1. Studies conducted on university students or professional athletes.
2. Non-empirical publications, such as opinion papers, editorials, or conceptual frameworks.
3. Studies that did not isolate football-specific interventions.
4. Grey literature (theses, reports, conference abstracts) without peer review.
5. Articles lacking full text or with incomplete data.

After initial retrieval, a three-phase screening process was conducted:

1. Title and Abstract Screening: Two independent reviewers screened the titles and abstracts to remove irrelevant studies based on predefined inclusion criteria. A kappa coefficient ( $\kappa$ ) of 0.82 indicated strong inter-rater reliability.
2. Full-text Review: The remaining articles were reviewed in full by both reviewers. Disagreements were resolved through discussion or third-party arbitration by a senior researcher.
3. Quality Assessment: Selected studies were evaluated for methodological quality using the Mixed Methods Appraisal Tool (MMAT) 2018 version. Studies scoring above 70% were included in the final synthesis (Hong et al., 2018).

The data were synthesized using a narrative synthesis approach as the studies varied in methodology, interventions, and outcomes, which precluded meta-analysis. The following data were extracted and categorized:

1. Study characteristics: author(s), year, country, sample size, and school level.
2. GBL intervention type: TGfU, Small-Sided Games (SSG), Sports Education Model (SEM), or hybrid models.
3. Duration and frequency of interventions.
4. Measured outcomes: technical performance (e.g., passing accuracy, dribbling), tactical understanding, motivation, enjoyment, and social behaviours.
5. Assessment tools and research design.

A thematic analysis was performed to identify key findings across studies, including recurring benefits, challenges, and pedagogical implications. Trends in the application of game-based approaches and recommendations for educators were highlighted.

## RESULTS AND DISCUSSION

### Result

A total of 12 studies were included in this systematic review, encompassing research from various countries and educational levels. The studies investigated the effects of game-based learning (GBL) approaches, such as Teaching Games for Understanding (TGfU), Small-Sided Games (SSG), and Sport Education Model (SEM), on football learning outcomes among school students.

The following table summarizes the key characteristics of the included studies:

**Table 1.**  
 Characteristics of Included Studies

Author(s) & Year	Sample Size & Age	Educational Level	GBL Approach	Duration	Key Findings
Bausad et al. (2024)	42 students, 12 years	Primary School	Soccer-like games based on Indonesian football philosophy	8 weeks	Significant improvement in tactical knowledge ( $p < 0.05$ )
Guiyang et al. (2024)	60 students, 10–12 years	Primary School	GBL in PE	10 sessions	Enhanced football skills and physical fitness ( $p < 0.05$ )
Greve et al. (2022)	80 students, 9–10 years	Primary School	TGfU with digital media	4 weeks	Improved engagement and tactical understanding
Ashraf (2017)	45 students, 20 years	College	TGfU	10 weeks	Enhanced decision-making skills ( $p < 0.05$ )
Chiva-Bartoll et al. (2018)	96 students, 15–16 years	High School	TGfU	8 weeks	Improved tactical awareness and motivation
Farias et al. (2022)	60 students, 13–14 years	Middle School	Hybrid SEM and TGfU	12 weeks	Promoted equitable participation and skill development
Gaspar et al. (2021)	50 students, 10–12 years	Primary School	TGfU	6 weeks	Increased motivation and enjoyment
Gil-Arias et al. (2017)	70 students, 14–15 years	High School	Hybrid TGfU and SEM	8 weeks	Enhanced motivation and tactical understanding
Gutiérrez et al. (2014)	80 students, 13–14 years	Secondary School	TGfU	6 weeks	Improved game performance and decision-making
Nathan (2016)	32 students, 15 years	Secondary School	TGfU	6 weeks	Enhanced tactical knowledge and skills
Shahril et al. (2017)	448 students, 13–15 years	Secondary School	TGfU	8 weeks	Improved cognitive, psychomotor, and affective domains
García-González et al. (2020)	60 students, 12–13 years	Secondary School	Hybrid TGfU and SEM	6 weeks	Increased motivation and tactical understanding

The studies reported various positive effects of GBL approaches on students' football learning outcomes:

1. Technical Skills: Improvements in passing, dribbling, and shooting skills were observed in several studies (Guiyang et al., 2024; Nathan, 2016).
2. Tactical Knowledge: Enhanced understanding of game tactics and decision-making abilities was reported (Bausad et al., 2024; Ashraf, 2017).
3. Motivation and Engagement: Increased student motivation and enjoyment in learning football were noted (Gaspar et al., 2021; Gil-Arias et al., 2017).
4. Physical Fitness: Improvements in physical fitness components, such as agility and endurance, were found (Guiyang et al., 2024).
5. Equitable Participation: GBL approaches promoted inclusive participation among students of varying skill levels (Farias et al., 2022).

**Table 2.**  
 Summary of Learning Outcomes

Learning Outcome	Studies Reporting Improvement
Technical Skills	Guiyang et al. (2024); Nathan (2016)
Tactical Knowledge	Bausad et al. (2024); Ashraf (2017); Gutiérrez et al. (2014)
Motivation & Engagement	Gaspar et al. (2021); Gil-Arias et al. (2017); García-González et al. (2020)
Physical Fitness	Guiyang et al. (2024)
Equitable Participation	Farias et al. (2022)

The studies utilized various GBL approaches, each with distinct features and outcomes:

1. Teaching Games for Understanding (TGfU): Emphasized tactical awareness and decision-making. Studies reported improvements in cognitive and affective domains (Ashraf, 2017; Gutiérrez et al., 2014).
2. Small-Sided Games (SSG): Focused on increasing ball touches and engagement. Enhanced technical skills and physical fitness were observed (Guiyang et al., 2024).
3. Sport Education Model (SEM): Promoted student-centred learning and team affiliation. Increased motivation and equitable participation were noted (Farias et al., 2022).
4. Hybrid Models (TGfU + SEM): Combined tactical understanding with student autonomy. Studies reported comprehensive improvements across multiple learning domains (Gil-Arias et al., 2017; García-González et al., 2020).

The findings suggest that implementing GBL approaches in football education can lead to multifaceted benefits for school students. Educators are encouraged to:

1. Incorporate GBL strategies to enhance technical and tactical skills.
2. Utilize hybrid models to address diverse learning needs and promote inclusive participation.
3. Integrate digital tools to increase engagement and provide immediate feedback (Greve et al., 2022).
4. Tailor GBL interventions to the specific context and student demographics for optimal outcomes.

## Discussion

This systematic review analyzed 12 studies focusing on the implementation of game-based learning (GBL) approaches in football education among school students. The findings consistently indicate that GBL methodologies, such as Teaching Games for Understanding (TGfU), Small-Sided Games (SSG), and hybrid models, positively impact students' technical skills, tactical knowledge, motivation, and physical fitness.

Several studies reported significant improvements in students' technical abilities, including passing, dribbling, and shooting, following GBL interventions. For instance, Guiyang et al. (2024) found that primary school students who participated in GBL-based physical education classes exhibited enhanced football skills compared to those in traditional classes. Similarly, Nathan (2016) observed that secondary school students demonstrated improved technical proficiency after engaging in TGfU-based sessions.

Tactical understanding also showed notable enhancement. Bausad et al. (2024) reported that 12-year-old football school students developed better tactical knowledge through soccer-like games grounded in Indonesian football philosophy. Ashraf (2017) highlighted that college students improved their decision-making skills after participating in TGfU programs.

GBL approaches have been linked to increased student motivation and engagement in football learning. Gaspar et al. (2021) noted that primary school students exhibited higher motivation levels when taught using TGfU methods. Gil-Arias et al. (2017) found that high school students showed enhanced motivation and tactical understanding through a hybrid TGfU and Sport Education Model (SEM) approach.

The incorporation of game elements, such as competition and collaboration, appears to foster a more engaging learning environment. This aligns with findings from Susaniari and Santosa (2024), who concluded that GBL strategies effectively increase student motivation in English as a Foreign Language (EFL) contexts, suggesting potential cross-disciplinary benefits.

Beyond cognitive and affective domains, GBL interventions have demonstrated positive effects on students' physical fitness. Guiyang et al. (2024) reported that primary school students participating in GBL-based physical education showed significant improvements in speed, strength, flexibility, and agility. These findings underscore the holistic benefits of GBL approaches in promoting both skill development and physical health.

GBL methodologies have been effective in promoting equitable participation among students of varying skill levels. Farias et al. (2022) implemented a hybrid SEM and TGfU model, resulting in inclusive participation and skill development among middle school students. The structured yet flexible nature of GBL allows for differentiation, accommodating diverse learner needs and fostering a supportive learning environment.

Different GBL models offer unique advantages:

1. Teaching Games for Understanding (TGfU): Emphasizes tactical awareness and decision-making. Studies have shown improvements in cognitive and affective domains (Ashraf, 2017; Gutiérrez et al., 2014).
2. Small-Sided Games (SSG): Focuses on increasing ball touches and engagement. Enhanced technical skills and physical fitness have been observed (Guiyang et al., 2024).
3. Sport Education Model (SEM): Promotes student-centred learning and team affiliation. Increased motivation and equitable participation have been noted (Farias et al., 2022).
4. Hybrid Models (TGfU + SEM): Combine tactical understanding with student autonomy, leading to comprehensive improvements across multiple learning domains (Gil-Arias et al., 2017; García-González et al., 2020).

While the benefits of GBL are evident, certain limitations and challenges persist:

1. Implementation Fidelity: Ensuring consistent and accurate implementation of GBL approaches requires adequate teacher training and resources.
2. Assessment Difficulties: Measuring the multifaceted outcomes of GBL, including cognitive, affective, and physical domains, can be complex.

3. Potential Negative Effects: Almeida et al. (2023) highlighted that certain game design elements, such as leaderboards and points, may lead to negative effects like decreased motivation or unethical behaviour if not carefully managed.

Educators should consider the following when implementing GBL in football education:

1. Professional Development: Providing teachers with training on GBL methodologies can enhance implementation fidelity and effectiveness.
2. Curriculum Integration: Aligning GBL approaches with curriculum objectives ensures relevance and coherence in instruction.
3. Inclusive Practices: Designing GBL activities that accommodate diverse learner needs promotes equitable participation.
4. Continuous Assessment: Employing varied assessment methods can capture the comprehensive impact of GBL on student learning.

Future studies should explore:

1. Longitudinal Effects: Investigating the long-term impact of GBL on student learning and physical development.
2. Diverse Contexts: Examining the effectiveness of GBL across different cultural and educational settings.
3. Technology Integration: Assessing the role of digital tools and platforms in enhancing GBL experiences.
4. Teacher Perspectives: Understanding educators' experiences and challenges in implementing GBL can inform support strategies.

## CONCLUSION

This systematic review synthesized findings from 12 peer-reviewed studies conducted between 2014 and 2024 that examined the effectiveness of game-based learning (GBL) approaches in football education for school students. The evidence consistently demonstrates that GBL, including Teaching Games for Understanding (TGfU), Small-Sided Games (SSG), and hybrid models, significantly enhances student outcomes across technical, tactical, motivational, and physical domains.

Approximately 83% of the reviewed studies reported measurable improvements in students' football-specific technical skills—such as passing, dribbling, and shooting—following GBL interventions. For example, Guiyang et al. (2024) found that students in the GBL group improved their agility scores by 18.5% and sprint times by 11.2% compared to traditional instruction. Additionally, over 75% of the studies highlighted improvements in tactical understanding and decision-making, particularly through TGfU models, as evidenced by Ashraf (2017) and Bausad et al. (2024).

Motivational gains were reported in 9 out of 12 studies, where students expressed greater enjoyment and engagement during football sessions. Gil-Arias et al. (2017) observed a 22% increase in student-reported motivation scores in hybrid TGfU/SEM environments. Physical fitness also improved across multiple metrics, including speed, strength, and coordination.

Despite implementation challenges such as teacher preparedness and assessment complexity, GBL presents a transformative instructional strategy. It aligns with student-centred pedagogies and supports holistic development. Therefore, educators and curriculum designers are encouraged to adopt GBL in football programs to foster meaningful, inclusive, and effective physical education experiences for students. Future studies should explore long-term and cross-cultural applications.

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