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Implementation of the Teaching Games for Understanding Approach to Improve Basketball Playing Skills Among Elementary School Students

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ABSTRACT

This study aimed to examine the effect of the Teaching Games for Understanding (TGfU) approach on improving basketball playing skills among elementary school students. The study employed an experimental method using a Pretest-Posttest Control Group Design. The population consisted of 41 students, with 24 students aged 8-11 years selected through purposive sampling. Participants were divided into an experimental group receiving the TGfU approach and a control group receiving conventional instruction. The study was conducted over 16 sessions, including 14 treatment sessions, a pre-test, and a post-test. The instrument used was the Game Performance Assessment Instrument (GPAI) to measure students' basketball playing skills in game situations. Data were analyzed using an independent sample t-test. The results showed that the experimental group improved from 0.6665 to 0.7246, while the control group decreased from 0.6500 to 0.6200. Statistical analysis revealed a significant difference between the two groups, with $t(22) = 5.20$ and $p < 0.05$. These findings indicate that the TGfU approach is effective in improving basketball playing skills among elementary school students. Future research is recommended to investigate the effectiveness of the TGfU approach across different sports and educational levels, using larger sample sizes.

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INTRODUCTION

Basketball is a competitive, dynamic team sport that demands the coordinated application of technical proficiency, tactical reasoning, and interpersonal collaboration. Within elementary school physical education programmes, basketball instruction contributes not only to students' motor development but also to their cognitive and social growth through structured game-based activity. At institutions such as SDS Dian Kencana in Bandung City, basketball serves as an important vehicle for cultivating playing competence from an early age. Preliminary observations at this school, however, indicated that students' overall basketball playing skills had not yet reached a satisfactory level, suggesting that the prevailing instructional approach had not been fully effective in developing the integrated technical, tactical, and physical capacities required for competent gameplay.

The difficulties documented in the field can be categorised into three interrelated domains. First, students exhibited underdeveloped fundamental technical skills, characterised by poorly controlled dribbling, inaccurate passing, and low shooting success rates. Second, tactical understanding was limited, with students demonstrating incorrect court positioning and delayed decision-making during game play. Third, the prevailing instructional format was dominated by decontextualised drill-based exercises, which afforded students little opportunity to encounter or respond to the situational demands of authentic game scenarios. These deficiencies collectively impeded students' capacity to integrate technical execution with the tactical requirements of live competition. Prior studies have demonstrated that strength and power-focused training regimens, including core conditioning and plyometric programmes, can yield measurable gains in foundational basketball techniques such as dribbling, passing, shooting, and balance maintenance (Luo et al., 2023; Ramirez-Campillo et al., 2022). Similarly, game-centred formats such as small-sided games have been shown to accelerate skill acquisition by situating practice within contextually representative conditions (Luo et al., 2023). However, the majority of these investigations prioritised physical conditioning and technical refinement in relative isolation, without comprehensively examining the simultaneous integration of technical execution, tactical comprehension, and decision-making within elementary school learning settings.

The body of evidence surrounding drill-based approaches consistently indicates their limited efficacy in promoting tactical reasoning and adaptive decision-making in sport (González-Valero et al., 2024). Instructional alternatives grounded in game-centred pedagogy, such as the Tactical Games Approach and small-sided game formats, have demonstrated superior outcomes in the concurrent development of technical skills, tactical behaviour, and decision-making quality (Breed et al., 2025; de Souza et al., 2025). Contextually embedded learning environments have additionally been associated with stronger student motivation and deeper engagement in physical education (Jones et al., 2019). Nevertheless, most of these studies were conducted within different sport contexts and across varied educational levels, leaving open the question of whether game-based approaches, specifically the Teaching Games for Understanding (TGfU) model, produce comparable benefits in elementary school basketball settings.

The Teaching Games for Understanding model presents a theoretically robust pedagogical framework centred on learning through authentic game activity. Rather than isolating technique from context, TGfU positions students within modified game environments that demand simultaneous engagement with technical, tactical, and cognitive dimensions of play. A converging body of empirical evidence confirms that TGfU significantly advances playing competence, tactical awareness, and overall game performance across diverse physical education contexts (García-Ceberino et al., 2020; Harvey et al., 2020; Parkes & Hemphill,

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2023). Despite this accumulated evidence, research specifically examining TGfU's effectiveness in developing basketball playing skills among elementary school students within the Indonesian educational context remains scarce. To address this gap, the present study aimed to determine the effect of TGfU implementation on students' basketball playing skills at SDS Dian Kencana, Bandung City.

METHODS

A true experimental design incorporating a Pretest-Posttest Control Group structure was adopted to evaluate the effect of the TGfU approach on elementary school students' basketball playing skills. This design permits a rigorous comparison of pre- and post-intervention performance between an experimental and a control group, thereby enabling causal inferences about the instructional treatment. The pretest-posttest control group design is recognised as appropriate and widely applied in physical education research aimed at generating empirical evidence on the effectiveness of game-based learning models (Arantes et al., 2025).

Participants

The study population comprised all 41 students enrolled in basketball learning activities at SDS Dian Kencana, Bandung City. A sample of 24 students aged 8-11 years was selected through purposive sampling and subsequently divided into two groups of equal size: an experimental group (n = 12) and a control group (n = 12). Sample eligibility was determined by active participation in basketball learning, consistent attendance throughout the study period, and developmental alignment with the elementary school motor learning stage. Although the sample size was modest, this was attributable to the restricted pool of students meeting all inclusion criteria and consenting to complete the full intervention protocol. The sample size was nonetheless deemed sufficient for a small-scale, controlled experimental study of this nature (Pan et al., 2023). The selection of elementary school participants was grounded in the rapid trajectory of motor and cognitive development characteristic of this age group, rendering it a particularly responsive stage for game-based interventions targeting playing competence and in-game decision-making.

Sampling Procedures

Purposive sampling was employed in accordance with the following criteria: (1) active enrolment in school basketball activities; (2) age between 8 and 11 years; (3) a minimum attendance rate of 80% across all study sessions; and (4) informed willingness to participate in all research phases, including the pre-test, intervention sessions, and post-test. Following selection, participants were allocated to the experimental and control groups through random assignment stratified by pre-test performance, ensuring comparable baseline ability levels across conditions.

Materials and Apparatus

Basketball playing skills were assessed using the Game Performance Assessment Instrument (GPAI), which evaluates student performance within authentic game conditions across three behavioural dimensions: decision-making, skill execution, and off-ball support. The GPAI was selected because of its demonstrated capacity to capture contextual game performance from both technical and tactical vantage points (Lubay et al., 2021). Its application in prior investigations of TGfU effectiveness in basketball contexts further validates its suitability for the present study (Azahra et al., 2025; Sa'bani & Santoso, 2024).

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Content and construct validity were established through reference to prior validated applications of the instrument in analogous sport learning contexts. Measurement reliability was maintained through an inter-rater protocol, with two independent assessors scoring students' game performance simultaneously to ensure rating consistency throughout data collection. Physical equipment included youth-specification basketballs, cones delineating court boundaries, team identification vests, a whistle, and the school's regulation basketball court, all adapted to the physical dimensions and developmental capacities of elementary school-aged students.

Procedures

The study was delivered across 16 sessions: one pre-test session, 14 instructional treatment sessions, and one post-test session. At the outset, all participants completed the GPAI-based pre-test to establish individual baseline skill levels. The experimental group subsequently received TGfU-based instruction structured around six interconnected pedagogical stages: game form, game appreciation, tactical awareness, decision making, skill execution, and performance. Learning activities comprised modified small-sided game formats, including 3-versus-3 games, ball possession tasks, and attacking-zone scenarios, each designed to develop contextualised decision-making, tactical comprehension, and fundamental basketball skills within representative practice conditions. Teachers employed embedded tactical questioning throughout gameplay to prompt students to analyse unfolding game situations and formulate appropriate responses. The control group received conventional instruction centred on isolated, repetitive technical drills, including dribbling, passing, and shooting, administered outside of authentic game contexts. Upon completion of all 14 treatment sessions, both groups undertook the GPAI post-test to quantify changes in basketball playing skills relative to baseline.

Data Analysis

Pre-test and post-test data were analysed via an independent-samples t-test to determine whether statistically significant differences in skill improvement existed between the experimental and control groups. Prior to inferential testing, Shapiro-Wilk normality tests and Levene's test of homogeneity of variances were conducted to verify that parametric assumptions were satisfied. All analyses were performed at a significance level of $\alpha = 0.05$. This analytical approach is well-established in experimental physical education research examining between-group differences in learning outcomes (Sa'bani & Santoso, 2024).

RESULTS

Basketball playing skills were evaluated using the GPAI instrument at both pre-test and post-test assessment points. Descriptive statistics for both groups across measurement occasions are summarised in Table 1.

Table 1. Descriptive Statistics of Basketball Playing Skills

Group	Test	N	Mean	Std. Deviation	Min	Max
Experimental	Pretest	12	0.6665	0.0720	0.56	0.76
Experimental	Posttest	12	0.7246	0.0274	0.70	0.80
Control	Pretest	12	0.6500	0.0860	0.53	0.76
Control	Posttest	12	0.6200	0.0640	0.47	0.69

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As indicated in Table 1, the experimental group demonstrated a meaningful improvement in basketball playing skills following the TGfU intervention. The group mean increased from 0.6665 at pre-test to 0.7246 at post-test, representing a gain score of 0.0581. In contrast, the control group's mean score declined from 0.6500 to 0.6200 (difference = −0.0300) over the same period under conventional drill-based instruction.

This divergence in trajectories suggests that TGfU afforded qualitatively richer learning experiences by situating technical execution within tactical and contextual game demands. Students in the experimental group engaged actively with authentic game problems, enabling them to apply and refine technical skills in conditions that closely mirrored live competitive play. Students in the control group, conversely, remained confined to decontextualised technical repetition without exposure to the decision-making pressures of real game situations, a limitation that appears to have constrained holistic performance development.

A noteworthy additional finding was the reduction in post-test score variability within the experimental group (SD reduced from 0.0720 to 0.0274), indicating that the TGfU intervention produced not only higher average performance but also a more equitable distribution of skill gains across participants. Results of the inferential analysis are presented in Table 2.

Table 2. Independent-Samples t-Test Results

Variable	t	df	Sig. (2-tailed)
Basketball Playing Skills	5.20	22	0.000

The independent-samples t-test confirmed a statistically significant difference between groups, yielding t (22) = 5.20 and p = 0.000 (< 0.05). Accordingly, the null hypothesis (H_o) was rejected in favour of the alternative hypothesis (H_1). These results establish that TGfU produced significantly greater gains in basketball playing skills than conventional instruction, owing to its capacity to engage students simultaneously in technical skill refinement, tactical reasoning, and contextual decision-making within game-based activities.

DISCUSSION

TGfU and the Development of Integrated Basketball Competence

The results of this study confirm that the TGfU approach produced a statistically significant and practically meaningful enhancement in elementary school students' basketball playing skills, as evidenced by the superior post-test gains of the experimental group relative to the control condition. The improvements observed can be attributed to TGfU's foundational design principle: rather than treating technique and tactics as sequential, independent learning objectives, TGfU positions them as co-occurring and mutually reinforcing dimensions within authentic game contexts. Students were accordingly required not simply to execute discrete motor patterns but to select, adapt, and apply technical skills in response to evolving in-game conditions, a cognitively demanding process that simultaneously sharpens decision-making and tactical awareness.

These findings resonate with the empirical conclusions of Gil-Arias et al. (2020), who reported that TGfU-integrated models produced significantly greater improvements in game performance, perceived competence, and motivation than conventional direct instruction approaches. Similarly, García-Ceberino et al. (2020) demonstrated that game-based instructional designs generate positive concurrent development of technical and tactical competencies because students acquire skills through direct, contextualised participation

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rather than abstracted repetitive practice. The present study extends these conclusions to the elementary school basketball context, reinforcing the cross-disciplinary generalisability of game-centred pedagogy.

Limitations of Drill-Based Instruction

The decline in mean scores recorded by the control group over the same intervention period warrants careful consideration. This performance regression is consistent with the structural limitations inherent in drill-based instruction: by isolating technical skills from their functional game context, conventional approaches fail to develop the transfer capacity students require to apply learned movements under the spatiotemporal pressures of live competition. Repeated engagement with decontextualised exercises may also reduce affective engagement over time, progressively diminishing the motivational investment that sustains skill development. These observations are corroborated by González-Valero et al. (2024), whose systematic review and meta-analysis established that traditional teaching approaches demonstrate consistently lower efficacy in developing tactical understanding and sport-specific decision-making.

Motivation, Engagement, and Learning Quality

A further dimension that likely contributed to the differential outcomes between groups was the affective and motivational quality of learning during the intervention. The TGfU sessions provided a dynamic, problem-centred environment in which students were required to collaborate, communicate, and exercise autonomous judgement within modified game structures. This format appears to have generated higher levels of intrinsic engagement, with students exhibiting increased enthusiasm, initiative, and willingness to take risks in game situations. By contrast, the repetitive, teacher-directed structure of conventional drill sessions is less conducive to autonomous participation, likely diminishing students' sense of competence and enjoyment over time. Jones et al. (2019) documented that contextually embedded, participatory learning frameworks can meaningfully enhance intrinsic motivation and voluntary engagement among youth participants. Elevated motivation, in turn, functions as a mediating variable that amplifies the quality and durability of physical skill acquisition.

Study Limitations and Future Directions

Several methodological constraints should be acknowledged in interpreting these findings. The sample was restricted to a single institution and comprised only 24 students, limiting the statistical power and generalisability of the results. The 14-session treatment window, while consistent with comparable experimental studies, may not be sufficient to capture the full developmental trajectory of TGfU-mediated skill gains. Furthermore, the investigation was confined to basketball playing skills as measured by the GPAI, without accounting for potentially confounding variables such as baseline physical fitness, motivation disposition, or pre-existing sport experience. Subsequent research should address these constraints by employing larger, multi-school samples, extending intervention durations, incorporating additional outcome measures, and examining TGfU effectiveness across a wider range of sports and educational levels to build a more generalisable evidence base.

CONCLUSION

The present study demonstrates that the implementation of the Teaching Games for Understanding approach produces a statistically significant improvement in basketball

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playing skills among elementary school students. Participants in the TGfU experimental group achieved substantially greater performance gains than their counterparts receiving conventional drill-based instruction, with the latter group recording an actual decline in mean GPAI scores. The superiority of TGfU can be attributed to its capacity to integrate technical skill development, tactical understanding, and contextual decision-making within a single, authentic game-based learning environment. The approach also appears to foster greater student motivation and active engagement than traditional instructional formats. These findings collectively support the adoption of TGfU as a primary pedagogical model within elementary school physical education, with particular relevance to sport contexts that demand the concurrent development of technical, tactical, and cognitive competencies.

IMPLICATION

The findings of this study carry meaningful implications for both instructional practice and the broader research literature in physical education. From a practical standpoint, physical education teachers should consider integrating TGfU as a structured alternative to conventional drill-based methods, particularly when instructional goals encompass the simultaneous development of technical, tactical, cognitive, and social dimensions of sporting competence. Modified small-sided games and contextual problem-solving activities, as employed in this study, represent accessible and adaptable tools for translating TGfU principles into classroom practice. Theoretically, this study contributes to the accumulating body of empirical evidence affirming the effectiveness of game-centred pedagogical approaches in elementary physical education, while extending this evidence base to the specific context of basketball instruction in Indonesia. Future studies are encouraged to investigate TGfU across a broader range of sports and educational stages, and to employ longitudinal designs that permit examination of the long-term retention and transfer of TGfU-mediated learning outcomes.

AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. The authors confirmed that the paper was free of plagiarism.

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