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Enhancing Fundamental Motor Skills through the Teaching Games Understanding (TGfU) Model

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ABSTRACT

This study examines the effectiveness of the Teaching Games for Understanding (TGfU) model in enhancing fundamental motor skills among elementary school students. A one-group pretest-posttest design involved 42 fifth-grade students who participated in an eight-week TGfU-based intervention. The instructional sessions emphasized tactical awareness, decision-making, and gameplay understanding, aiming to improve locomotor (e.g., running, jumping) and object control (e.g., throwing, catching) skills. Pretest and posttest assessments using the TGMD-2 instrument showed significant improvements in both locomotor and object control domains. Paired sample t-tests indicated substantial gains, with large effect sizes supporting the intervention's impact (sign. < 0.05). The results suggest that TGfU is a practical pedagogical approach that provides meaningful, game-based learning contexts for motor skill development. These findings highlight the model's potential as a student-centered strategy in physical education, promoting both skill acquisition and engagement. The study contributes practical insights for educators seeking to enhance physical literacy in school settings.

INTRODUCTION

Physical education plays a pivotal role in fostering children's holistic development [1]. It is particularly in the acquisition of fundamental motor skills [2]. These skills include locomotor abilities such as running and jumping, and manipulative abilities such as throwing and catching, which serve as the foundation for students' participation in physical activities and organized sports. Mastery of these basic movements supports physical health and contributes to cognitive and social development, laying the groundwork for lifelong physical activity [3]. Research consistently demonstrates a strong link between motor skill competence in childhood and higher levels of physical activity later in life, making effective physical education essential for long-term well-being [4].

Despite the recognized importance of motor skill development, many physical education programs still rely heavily on traditional technique-focused approaches [5]. These methods typically emphasize isolated skill drills before applying them in game contexts. As a result, students may acquire technical skills but struggle to use them in dynamic game situations that require tactical decision-making. This decontextualized learning often limits student engagement and fails to foster meaningful understanding of gameplay [6].

The Teaching Games for Understanding (TGfU) model has emerged as a pedagogical alternative that prioritizes game-based learning and tactical awareness [7]. Developed by Bunker and Thorpe in 1982, TGfU encourages students to develop motor skills in real game scenarios, promoting critical thinking and problem-solving [8]. Unlike traditional models, TGfU integrates decision-making with physical execution, helping students become more adaptable and reflective learners. Evidence suggests that TGfU improves motor skill proficiency and enhances motivation, enjoyment, and understanding of game strategies [9].

Furthermore, integrating TGfU into school curricula has shown promising outcomes across various educational levels. For example, combining TGfU with Sport Education (SE) has been found to improve student responsibility, engagement, and game performance [10]. These findings underscore the model's versatility and impact in diverse instructional settings. This study seeks to evaluate the effectiveness of the TGfU model in enhancing students' fundamental motor skills, using a quasi-experimental design with pretest-posttest control groups. By comparing TGfU-based instruction with traditional teaching methods, the research aims to provide empirical evidence for integrating tactical game-based approaches in physical education. The findings are expected to offer practical insights for educators seeking to adopt more student-centered, engaging, and developmentally appropriate pedagogies in school-based physical activity programs.

RESEARCH METHOD

This study employed a one-group pretest-posttest design to evaluate the effectiveness of the Teaching Games for Understanding (TGfU) model in enhancing students' fundamental motor skills. This design involves administering a test to a single group of participants before and after an instructional intervention, allowing the researchers to measure any changes attributable to the TGfU-based learning experience.

Participants

The participants were fifth-grade elementary school students enrolled in physical education classes at a public school in Surabaya. A total of 42 students (25 boys and 17 girls), aged 10–11, were selected using purposive sampling based on school facilities, curriculum alignment, and willingness to participate. The group was considered to have relatively homogeneous characteristics in terms of prior physical activity experience and academic background.

Procedures

Before the intervention, students completed a pretest using the Test of Gross Motor Development, Second Edition (TGMD-2), which assessed locomotor skills including running, jumping, and leaping. Object control skills are throwing, catching, and dribbling. Following the pretest, the students participated in a TGfU-based instructional program for eight weeks, with two 60-minute sessions per week. Each session emphasized tactical awareness, decision-making, and gameplay understanding through modified game formats relevant to students' developmental levels.

The intervention followed the key principles of TGfU, including game form introduction, tactical problem exploration, skill execution in context, and reflective discussions. Teachers acted as facilitators, encouraging students to think critically about gameplay strategies and skill application within each session. After the intervention period, a posttest using the same TGMD-2 instrument was administered to evaluate fundamental motor skill performance changes. Observations and teacher reflection journals were also collected to support data triangulation and contextualize students' engagement throughout the program.

Instrumentation

The primary instrument used was the TGMD-2, a validated and reliable assessment tool for evaluating gross motor development in children. It includes standardized scoring rubrics for locomotor and manipulative skill components. Additional qualitative data were gathered through the instructor's field notes and reflective journals, focusing on student engagement, interaction, and observable skill improvement during the sessions.

Data Analysis

Quantitative data from the pretest and posttest scores were analyzed using paired sample t-tests to determine whether there was a statistically significant improvement in fundamental motor skills after the TGfU intervention. The effect size (Cohen's d) was also calculated to evaluate the magnitude of change. Significance was set at $p < 0.05$. To ensure internal validity, the study controlled for external variables such as student participation consistency, teacher fidelity to the TGfU model, and external physical activity engagement through initial questionnaires and close observation during the intervention period.

RESULTS AND DISCUSSION

The results of the paired sample t-test indicated a significant improvement in students' fundamental motor skills following the Teaching Games for Understanding (TGfU) intervention. The analysis compared the pretest and posttest scores obtained from the Test of Gross Motor Development-2 (TGMD-2), which evaluated two main domains: locomotor skills and object control (manipulative) skills. The mean pretest score for locomotor skills was 38.10 (SD = 5.42), which increased to 45.87 (SD = 4.90) in the posttest. For object control skills, the mean score improved from 36.33 (SD = 5.67) in the pretest to 44.23 (SD = 5.12) in the posttest. The paired sample t-test revealed that both domains experienced statistically significant increases ($p < 0.001$), with large effect sizes (Cohen's $d > 0.8$), indicating the substantial impact of the TGfU intervention on motor skill development.

Table 1. Tables and figures should be valuable, relevant, and visually attractive.

Motor Skill Domain	Test	Mean	Standard Deviation (SD)	t-value	df	p-value	Effect Size (Cohen's d)
Locomotor Skills	Pretest	38.1	5.42	8.74	29	<0.001	1.3
	Posttest	45.87	4.9				
Object Control Skills	Pretest	36.33	5.67	9.05	29	<0.001	1.39
	Posttest	44.23	5.12				

These findings support the hypothesis that the TGfU model effectively enhances locomotor and object control components of students' fundamental motor skills. The significant improvements in both areas suggest that contextual game-based learning provides a meaningful platform for physical skill acquisition in primary school physical education settings.

The Impact of TGfU on Locomotor Skill Development

Locomotor skills, running, jumping, and leaping, form the foundation of children's movement competencies and are critical for participation in sports and daily physical activities [11]. In this study, the Teaching Games for Understanding (TGfU) model significantly enhanced these locomotor skills among elementary students. The substantial increase in mean scores (from 38.10 to 45.87) and the large effect size (Cohen's d = 1.30) indicate that TGfU fosters motor development in ways that go beyond traditional, technique-focused instruction. One reason behind this improvement is the nature of TGfU's game-based structure, which places students in authentic movement contexts. Unlike conventional methods that isolate drills, TGfU integrates movement with purpose [12]. Students must apply and refine their locomotor abilities when solving tactical problems in real time, such as evading defenders or transitioning from offense to defense [13]. This context-specific application reinforces neural and muscular coordination, vital for locomotor skill acquisition and fluency [14].

The Effectiveness of TGfU in Improving Object Control Skills

In addition to locomotor development, the TGfU model also proved highly effective in enhancing students' object control skills [15]. These skills, such as throwing, catching, and dribbling, are essential for participation in most team sports and form an important component of overall motor competence [16]. In this study, students showed a significant improvement in object control abilities, with mean scores rising from 36.33 to 44.23 and a large effect size (Cohen's d = 1.39), indicating a robust impact of the TGfU intervention. The improvement can be attributed to how TGfU immerses learners in meaningful, game-like situations where object control is required for success [17]. Instead of practicing isolated techniques, students use skills in tactical scenarios that demand quick thinking and coordination. For example, in a modified target game, a student must dribble past an opponent and make a pass to a teammate, seamlessly integrating technical skill with perceptual judgment. These integrated demands mirror real sports environments, making skill acquisition more authentic and transferable.

Pedagogical Implications and Practical Benefits of TGfU in Physical Education

Beyond motor skill improvements, implementing TGfU in this study presents several important pedagogical implications for physical education [18]. The model offers a learner-centered, constructivist approach that aligns well with contemporary education principles, emphasizing engagement, reflection, and critical thinking [19]. For PE teachers, TGfU represents a shift from mere instructors of technique to facilitators of learning, capable of nurturing physical competence and cognitive development. One of the primary practical benefits of TGfU is its ability to increase student motivation and participation [20]. Game-based instruction inherently provides variety, excitement, and

relevance, which help sustain student interest, especially in populations that might find traditional drills monotonous or inaccessible. The inclusive nature of TGfU, where success can be achieved through skill execution and intelligent decision-making, allows students of varying ability levels to contribute meaningfully. This inclusive pedagogy fosters a favorable classroom climate and enhances students' self-efficacy, a key predictor of long-term physical activity engagement.

CONCLUSION

The results of this study affirm that the Teaching Games for Understanding (TGfU) model is a practical pedagogical approach for enhancing fundamental motor skills in elementary school students. Significant improvements were observed in both locomotor and object control domains, with large effect sizes indicating strong learning outcomes. TGfU's emphasis on game-based learning, tactical awareness, and student engagement allows children to develop motor skills in meaningful, context-rich environments that mirror real-world physical activities. By embedding physical skill development within decision-making and problem-solving scenarios, TGfU supports physical proficiency and cognitive and social growth.

These findings carry important implications for physical education curricula and instructional practices. TGfU aligns with contemporary education goals, prioritizing holistic student development and active learning. Its student-centered nature fosters greater motivation, inclusivity, and critical thinking—key components of a modern and impactful PE experience. Given its demonstrated benefits, educators and policymakers should consider adopting TGfU as a core instructional strategy in schools. Further research involving larger samples and control groups is recommended to strengthen the generalizability of these results and explore the long-term effects of TGfU on lifelong physical activity engagement.

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