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Teaching Games for Understanding (TGfU): An Effort to Foster Responsibility and Cooperation in Physical Education for Children with Disabilities

Saiful Anwar^{1,2*}, Wawan Sundawan Suherman² Hedi Ardiyanto Hermawan³

^{1, 2, 3}Universitas Negeri Yogyakarta. Indonesia

¹Universitas Pendidikan Muhammadiyah Sorong. Indonesia

*Corresponding Author: Saiful Anwar, e-mail: saifulanwar.2024@student.uny.ac.id¹

Received: xx Month 2023, Approved: xx Month 2023, Published: xx Month 2023

Abstract

Background. Physical education learning is still dominated by a teacher-centered approach that emphasizes mastery of technical skills, so that affective aspects such as responsibility and cooperation are often neglected. This situation results in students' low social skills in actively and collaboratively participating in learning activities. Therefore, an innovative, student-centered learning model is needed to address these issues.

Study purpose. The purpose of this study is to enhance the sense of responsibility and cooperation among students with disabilities in physical education classes through the Teaching Games for Understanding (TGfU) method.

Materials and methods. This study is a classroom action research project involving 28 eighth-grade students from SMP Pembangunan V Yapis Waena in Jayapura City (average age $\pm 13-14$ years), all of whom have disabilities. The study was conducted in two cycles, each consisting of planning, action, observation, and reflection. Data analysis was performed using SPSS 26.

Results. The results showed that in the pre-cycle, the average score for responsibility was 40, with 5 students (17.86%) meeting the standard; for cooperation, 3 students (10.71%) met the standard. In the first cycle, the average score was 66, with 13 students (46.42%) meeting the standard for responsibility and 12 students (42.85%) met the mastery criteria for cooperation. In the second cycle, the average score was 75, with 28 students (100%) meeting the mastery criteria. Thus, there was an increase from the first cycle to the second cycle, reaching 100%. Furthermore, 100% of the 28 students met the Minimum Mastery Criteria of 75.

Conclusions. In conclusion, the TGfU model is effective in enhancing responsibility and cooperation among students with disabilities in physical education. This study underscores the importance of implementing game-based learning models to holistically support the character development and social competencies of students with disabilities.

Keywords: TGFU, responsibility, physical education, classroom action research, affective domain, disabilities.

DOI: <https://doi.org/10.52188/ijpess.v3i1>

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Introduction

Education plays a vital role in enlightening the nation and helping Indonesian society become well-rounded individuals. Education is carried out consciously and intentionally to change human behavior and foster personal growth through teaching and training (Ebrahim & Hussein, 2025; Yusroni, 2024). In the context of Physical Education, developing individuals with high-quality skills and performance requires achieving good learning outcomes. Learning outcomes are the highest measure of achievement that students can attain after participating in the learning process over a specified period of time (Hussein, 2025). In an educational institution, learning outcomes serve as a key indicator for measuring the success of the learning process.

The scope of physical education in schools includes team sports, developmental activities, self-assessment activities or calisthenics, rhythmic activities, aquatic activities, outdoor education, and health. sports consist of track and field, baseball, soccer, badminton, basketball, volleyball, and martial arts, as well as other activities (Majed, 2022; Prabowo et al., 2023; Zulnadila et al., 2025). Based on a preliminary study conducted through interviews with the principal of Junior High School Pembangunan V YAPIS Waena, it was noted that lateness in attending classes is somewhat difficult to manage, resulting in a less conducive classroom environment, and some students still exhibit childish behavior. This frequently occurring issue also affects academic performance across all subjects, particularly in Physical Education (Abdul Gani et al., 2021). Previously, teachers predominantly used conventional methods and assignments in Physical Education game-based learning, which led students to merely play around and pay little attention to the values of cooperation and responsibility as a group, resulting in suboptimal learning objectives and outcomes (Caracuel-Cáliz et al., 2025; Chu et al., 2022).

Efforts to foster values of cooperation and responsibility among students include implementing a student-centered learning approach. The Teaching Games for Understanding (TGfU) approach focuses on physical education instruction on the tactics of playing (Hortigüela Alcalá & Hernando Garijo, 2017). TGfU also encourages children to develop tactical awareness of how to play a game to derive its benefits, enabling them to quickly make decisions about what to do and how to do it (Díaz-Cueto et al., 2010; Wang & Wang, 2018). This approach also positions the teacher as a skilled observer to encourage students' thinking processes during play, analyze the challenges students face while playing, and identify existing problems along with their solutions (Barquero-Ruiz et al., 2021; Doolittle, 1995).

The uniqueness of this study lies in its exploration of the mechanisms through which the TGfU model facilitates the internalization of the values of responsibility and cooperation among children with disabilities through a game-based approach. Unlike previous studies that focused on improving tactical performance and motor skills, this study examines the affective dimension as the primary outcome and links it to social interaction in authentic game situations (Harianto et al., 2023; Samodra et al., 2023; Suryadi et al., 2024). Based on the objectives of physical education and these issues, the researcher sought to investigate the effect of physical education instruction using the TGfU approach on improving responsibility and cooperation among students with disabilities.

7 Materials and methods

Study participants

This study was conducted at SMP Pembangunan V YAPIS Waena in January 2021. The study participants consisted of 28 eighth-grade students with disabilities (average age $\pm 13-14$ years) who were selected using a simple random sampling method from the available population of eighth-grade students. All participants voluntarily took part in this study with the school's approval.

Study organization

This study employed a Classroom Action Research (CAR) design based on the cyclical model of (Kemmis et al., 2019), comprising for 5 main stages: planning, acting, observing, and reflecting. The intervention implemented was the Teaching Games for Understanding (TGfU) model, designed to enhance students' responsibility and cooperation in physical education learning. The study was conducted in two cycles, with each cycle consisting of several game-based learning sessions.

Each cycle included:

1. Planning of TGfU-based learning scenarios
2. Implementation of game activities emphasizing tactical understanding
3. Observation of students' responsibility and cooperation behaviors
4. Reflection to evaluate and improve actions in the next cycle

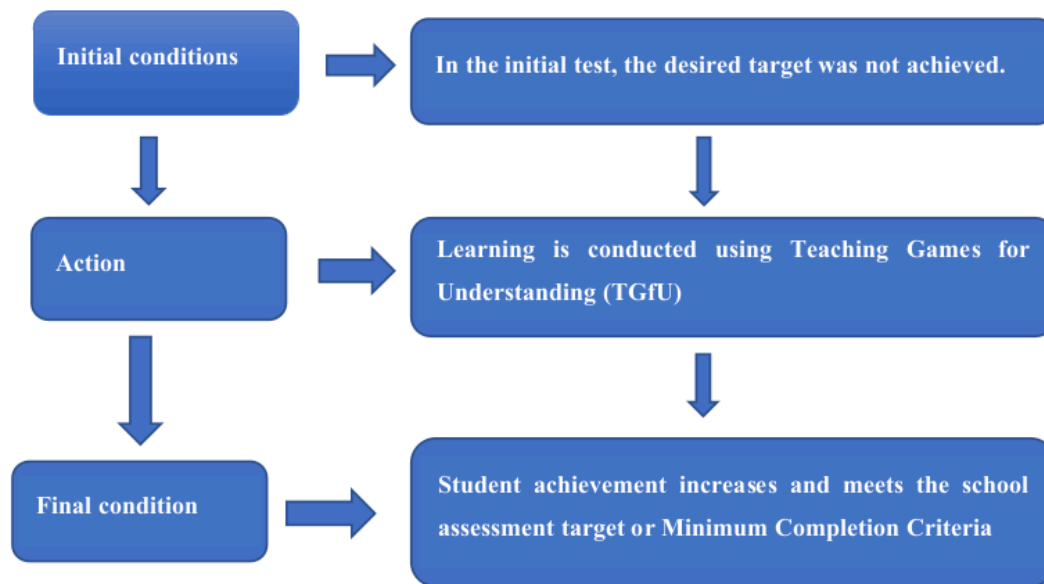


Figure 1. Flowchart of Classroom Action Research

Statistical analysis

The collected data were analyzed using the interactive framework developed by Miles and Huberman, which consists of three interconnected stages: data reduction, data presentation, and conclusion drawing with verification. These analytical activities were performed continuously throughout the study, beginning with the initial data collection and continuing until the completion of the research. Observation records and field notes were systematically coded and organized into categories to identify patterns reflecting changes in students' responsibility and cooperation during the implementation of the Teaching Games for

Understanding (TGfU) model. Quantitative data were processed using IBM SPSS Statistics version 26 to support the analysis.

Table 1. Guidelines for levels of responsibility and cooperation

No	Value	Category	Predicate
1	90–100	Excellent	Completed
2	70–89	Good	Completed
3	50–69	Fair	Incomplete
4	30–49	Insufficient	Incomplete
5	10–29	Very low	Incomplete

Results

The research results show a significant increase in student responsibility across each cycle. The completion rate increased from 17.86% in the pre-cycle to 46.42% in Cycle I, and reached 100% in Cycle II. This indicates that the implementation of the TGfU model is effective in enhancing student responsibility in physical education. The results are presented in Table 2.

Table 2. Responsibility Outcomes Across Cycles

Cycle	Category	n	Percentage (%)
Pre-cycle	Achieved	5	17.86
	Not achieved	23	82.14
Cycle I	Achieved	13	46.42
	Not achieved	15	53.57
Cycle II	Achieved	28	100.00
	Not achieved	0	0.00

Improvements were also observed in student collaboration. The completion rate increased from 10.71% in the pre-cycle to 42.85% in Cycle I, and reached 100% in Cycle II. These findings indicate that the game-based approach in the TGfU model effectively fosters social interaction and collaboration among students. The results are shown in Table 3.

Table 3. Cooperation Outcomes Across Cycles

Cycle	Category	n	Percentage (%)
Pre-cycle	Achieved	3	10.71
	Not achieved	25	89.29
Cycle I	Achieved	12	42.85

Cycle II	Not achieved	16	57.14
	Achieved	28	100.00
	Not achieved	0	0.00

Table 4. Summary of Improvement (Responsibility vs. Cooperation)

Variable	Pre-cycle (%)	Cycle I (%)	Cycle II (%)	Total Improvement (%)
Responsibility	17.86	46.42	100.00	+82.14
Cooperation	10.71	42.85	100.00	+89.29

Both variables showed a consistent upward trend in each cycle. The cooperation variable showed a slightly higher increase (+89.29%) compared to the responsibility variable (+82.14%). This indicates that the TGfU model has a strong influence, particularly in enhancing students' social aspects, such as teamwork. The results are shown in Table 5.

Table 5. Difference Test (Pre-cycle vs Cycle II)

Variable	Pre-cycle Achieved (n)	Cycle II Achieved (n)	Gain (n)	Gain (%)
Responsibility	5	28	+23	+82.14
Cooperation	3	28	+25	+89.29

The results of the difference test indicate a significant increase from the pre-cycle to Cycle II for both variables. The number of students who achieved mastery in the cooperation aspect increased by 25 students, while in the responsibility aspect, it increased by 23 students. The results can be seen in Table 5.

Discussion

This study aimed to strengthen responsibility and cooperation among students with disabilities during physical education through the Teaching Games for Understanding (TGfU) approach. The findings demonstrate that TGfU consistently improved both responsibility and cooperation across each learning cycle. These results suggest that a game-based learning approach contributes not only to the development of motor competence but also to the enhancement of the affective domain, particularly students' social responsibility and collaborative behavior (Harvey et al., 2020; Morales-Belando et al., 2022). These findings reinforce the view that physical education should not only be oriented toward physical performance but also toward the development of essential social values (Aryanti, 2022; Wang & Wang, 2018).

Conceptually, the increase in student responsibility can be explained through the key characteristics of TGfU, which places students at the center of learning (Morales-Belando et al., 2022). In this model, students are presented with game-based situations that require them to understand the rules, make decisions, and take responsibility for their respective roles within the team. This process naturally fosters the internalization of the value of responsibility through

direct experience (Sari et al., 2024; Supriatna et al., 2023). This aligns with constructivist theory, which states that knowledge and values are formed through an individual's active interaction with their environment (Díaz-Cueto et al., 2010; Doolittle, 1995; Mariati et al., 2024; Pebriyandi et al., 2025; Yusroni, 2024).

In addition, improved student cooperation is evident in the intensity of interaction and communication during game activities. TGfU emphasizes tactical understanding and collective problem-solving, requiring students to collaborate in achieving the game's objectives (Almond, 2015; Barquero-Ruiz et al., 2021). These conditions create a learning environment that supports the development of social skills such as mutual respect, sharing roles, and team coordination. Thus, TGfU functions not only as a model for technical learning but also as a means of strengthening social competencies (Harvey, 2003; Qohhar & Pazriansyah, 2019).

The findings of this study are consistent with various previous studies showing that game-based approaches significantly contribute to increased student engagement, decision-making, and social interaction (Morales-Belando et al., 2022). Previous research also confirms that TGfU is more effective than traditional approaches in improving tactical understanding while fostering positive social attitudes (Hortigüela Alcalá & Hernando Garijo, 2017). However, this study makes an additional contribution by specifically emphasizing the aspects of responsibility and cooperation, which have been relatively under-explored in the context of physical education, particularly within the classroom action research setting.

From a practical perspective, the findings of this study have important implications for physical education teachers. The implementation of TGfU can serve as an alternative teaching strategy capable of creating a more active, enjoyable, and meaningful learning environment (Ciptadi et al., 2025). Teachers no longer act as the center of information but rather as facilitators who guide students through the process of exploration and reflection. Thus, learning becomes more contextual and relevant to students' overall developmental needs.

Research Limitations

Despite the positive findings, several limitations should be acknowledged. First, the classroom action research design was implemented in a single educational setting with a relatively small number of participants, which limits the transferability of the findings to other contexts. Second, responsibility and cooperation were assessed primarily through classroom observations, making the results susceptible to observer bias despite the use of structured observation procedures. Future studies should employ experimental or quasi-experimental designs involving larger and more diverse samples. The use of validated assessment instruments and multiple sources of evidence is also recommended to improve the reliability and objectivity of the findings.

Conclusions

This study concludes that the application of the Teaching Games for Understanding (TGfU) model is effective in enhancing students' sense of responsibility and cooperation in physical education. The implementation of TGfU through a game-based approach has been shown to encourage active participation, decision-making, and constructive social interaction among students. In terms of its contribution, this study provides empirical evidence that game-based learning models not only impact cognitive and psychomotor aspects but also significantly strengthen the affective domain, particularly in the development of students' social character. Furthermore, this study enriches the physical education literature by highlighting the importance of integrating the values of responsibility and cooperation into the learning process. Practically, the findings of this study can serve as a reference for physical education teachers in developing more innovative, interactive, and student-centered learning strategies. Recommendations for future research include testing the effectiveness of TGfU across various

educational levels and different sports disciplines, as well as combining it with other approaches to optimize learning outcomes. Thus, the implementation of TGfU is expected to serve as one solution in realizing holistic physical education that is oriented toward the development of students' character.

Acknowledgment

The author would like to thank all parties who have helped, especially Universitas Muhammadiyah Sorong.

15 Conflict of interest

The author declares no conflicts of interest related to the design, conduct, analysis, or publication of this study. The research was carried out independently, and no personal, commercial, financial, or institutional interests influenced the study design, data interpretation, or reporting of the findings.

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Information about the authors:

Saiful Anwar, M.Pd: saifulanwar.2024@student.uny.ac.id, saiful@unimudasorong.ac.id, <https://orcid.org/0009-0008-0721-5350>, Department of Sport Science, Universitas Negeri Yogyakarta and Department Of Physical Education, Universitas Pendidikan Muhammadiyah Sorong, Indonesia

Prof. Dr. Wawan Sundawan Suherman, M.Ed: wawansuherman@uny.ac.id, <https://orcid.org/0000-0002-5565-0751>, Department of Sport Science, Universitas Negeri Yogyakarta, Indonesia

Dr. Hedi Ardiyanto Hermawan, M.Or.: hedi_ardiyanto@uny.ac.id, <https://orcid.org/0009-0002-7744-3005>, Department of Sport Science, Universitas Negeri Yogyakarta, Indonesia

Cite this article as:

Anwar, S. *et al.* (2026). Teaching Games for Understanding (TGfU): An Effort to Foster Responsibility and Cooperation in Physical Education for Children with Disabilities. *Indonesian Journal of Physical Education and Sport Science (IJPESS)*, 6(3), xx-xx. Doi

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