



The Effect of Teaching Games for Understanding on Volleyball Playing Skills of Junior High School Students

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Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh yang signifikan dari model pembelajaran *Teaching Games for Understanding* (TGfU) terhadap peningkatan keterampilan bermain bola voli siswa kelas VIII di SMP Negeri 1 Majalaya, Kabupaten Karawang. Metode penelitian yang digunakan adalah metode eksperimen kuantitatif dengan desain *Randomized Control Group Pretest-Posttest*. Penelitian ini melibatkan 68 siswa yang dibagi menjadi dua kelompok, yaitu kelompok eksperimen dan kelompok kontrol. Intervensi pembelajaran dilaksanakan selama 8 kali pertemuan. Data dikumpulkan menggunakan *Game Performance Assessment Instrument* (GPAI) dan dianalisis menggunakan statistik deskriptif, uji normalitas, uji homogenitas, *paired samples t-test*, *independent samples t-test*, serta perhitungan *N-Gain Score* dengan taraf signifikansi $\alpha = 0,05$ menggunakan SPSS versi 25. Hasil penelitian menunjukkan adanya peningkatan yang sangat signifikan pada kelompok eksperimen, dengan nilai rata-rata pretest sebesar 6,01 meningkat menjadi 8,11 pada posttest, sedangkan kelompok kontrol hanya mengalami peningkatan minimal, yaitu dari 5,84 menjadi 5,86. Hasil *independent samples t-test* menunjukkan adanya perbedaan yang sangat signifikan antara nilai rata-rata posttest kelompok eksperimen dan kelompok kontrol ($p = 0,000$), dengan selisih rata-rata sebesar 2,25 poin. Nilai *N-Gain Score* pada kelompok eksperimen berada dalam kategori tinggi (0,72), sedangkan kelompok kontrol berada dalam kategori rendah (0,05). Dengan demikian, model pembelajaran TGfU terbukti secara empiris lebih efektif dan signifikan dalam meningkatkan keterampilan bermain bola voli dibandingkan dengan model pembelajaran *Direct Instruction* pada siswa sekolah menengah pertama.

Kata Kunci: *Teaching Games for Understanding* (TGfU), keterampilan bermain bola voli, pembelajaran pendidikan jasmani, GPAI (*Game Performance Assessment Instrument*), sekolah menengah pertama.

Abstract

This study aims to determine the significant effect of the Teaching Games for Understanding (TGfU) learning model on improving volleyball playing skills of eighth-grade students at State Junior High School 1 (SMPN 1) Majalaya, Karawang Regency. The research method employed was quantitative experimental design using The Randomized Control Group Pretest-Posttest design. The study involved 68 students divided into two groups: an experimental group and a control group. The learning intervention was implemented over 8 meetings. Data were collected using the Game Performance Assessment Instrument (GPAI) and analyzed using descriptive statistics, normality tests, homogeneity tests, paired samples t-test, independent samples t-test, and N-Gain Score calculations with a significance level of $\alpha = 0.05$ using SPSS version 25. The research results revealed a very significant increase in the experimental group, with the mean pretest score of 6.01 increasing to a posttest score of 8.11, while the control group experienced only minimal improvement from 5.84 to 5.86. The independent samples t-test demonstrated a very significant difference between the mean posttest scores



of the experimental and control groups ($p=0.000$) with a mean difference of 2.25 points. The N-Gain Score value in the experimental group was in the high category (0.72), while the control group was in the low category (0.05). In conclusion, the TGfU learning model has been proven empirically to be more effective and significant in improving volleyball playing skills compared to the Direct Instruction learning model in junior high school students.

Keywords: Teaching Games for Understanding (TGfU), volleyball playing skills, physical education learning, GPAI (Game Performance Assessment Instrument), junior high school

INTRODUCTION

Physical Education, Sports, and Health (PJOK) Is an integral component of Indonesia's national education system that plays a strategic role in the development of students' motor skills, physical fitness, and character building. According to (Rahayu, 2016), physical education is a phase of the overall education program that contributes, through movement experiences, to the holistic growth and development of every student. Through systematic and measurable physical activities, Physical Education (PJOK) not only develops students' psychomotor aspects but also their cognitive and affective aspects holistically. Recent research by (Manninen & Campbell, 2022) indicates that the importance of Physical Education (PJOK) in the formal education curriculum has been widely recognized, given that learning through movement activities has a significant impact on the development of students' social skills, self-confidence, and teamwork abilities.

Among the various Physical Education (PJOK) learning materials in junior high school, volleyball is one of the team sports that plays a significant role in the curriculum. The game of volleyball requires a complex combination of solid technical skills, a deep tactical understanding, quick decision-making, and effective teamwork. According to (Keswando et al., 2022), the game of volleyball requires mastery of integrated basic techniques, including the serve, underhand and overhand passes, spiking, and blocking, as well as a strategic understanding of player positions, defensive formations, and offensive patterns in dynamic game situations. Furthermore, (Yudiana, 2022) emphasizes that optimal performance in volleyball is determined not only by mastery of individual techniques but also by a player's ability to read the game situation and make the right decisions in a very short amount of time. Therefore, volleyball instruction in junior high school must be designed to develop both of these aspects in a balanced and integrated manner.

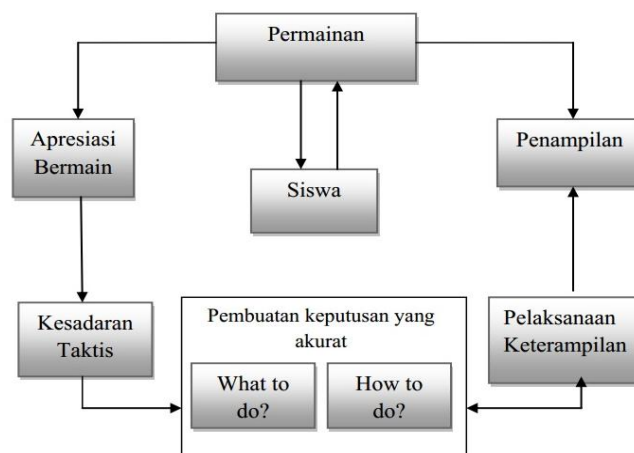
However, in school-based teaching practices, volleyball instruction still largely relies on conventional approaches, particularly the Direct Instruction model, which emphasizes the mastery of basic techniques in isolation and separate from the actual context of the game. A study (Akbaruddin et al., 2025) shows that although Direct Instruction is effective in teaching individual techniques mechanically, this model has proven to be less effective in improving students' overall playing skills, particularly in the aspects of tactical understanding and strategic decision-making. A meta-analysis by (Manninen & Campbell, 2022) found that students taught using Direct Instruction often master techniques but fail to apply them appropriately in actual game contexts, indicating a significant gap between technical mastery and actual playing ability. This issue indicates that traditional learning models have limitations in providing meaningful and practical learning experiences for students.

In response to the limitations of the Direct Instruction model, Teaching Games for Understanding (TGfU) emerged as an alternative, game-centered learning model that integrates technical learning with tactical understanding within the context of meaningful games. According to (Arantes et al., 2025), TGfU learning is designed to address the weaknesses of traditional learning by changing the structure of instruction. Compared to Direct Instruction, TGfU demonstrates superiority in enhancing student engagement and team skills through a game-centered learning approach. In the TGfU model, students are presented with real-world tactical problems that must be solved through exploration



and discussion, thereby making technical learning meaningful as students understand why those techniques are necessary in specific game situations. (Pan et al., 2023) Demonstrated in their meta-analysis that the TGfU approach is capable of improving students' tactical literacy and game intelligence, which are essential competencies for optimal performance in team sports. Their comparative study found that the TGfU model, particularly when integrated with Sport Education, significantly enhances student engagement and game performance through a situational and real-game-based learning approach. The TGfU framework is illustrated in the image below:

Figure 1. Steps in the Teaching Game for Understanding (TGfU) Model



Sumber: Bunker & Thorpe, Rethinking Game Teaching; dalam (Metzler, 2011)

(Rahayu et al., 2025) reported in their study that modern game-based learning models significantly increase student engagement and performance in team sports activities compared to traditional learning methods. Research on (Ortiz et al., 2023) among students in various countries demonstrated similar results, with TGfU having a positive impact on students' technical skills, tactical understanding, and attitudes toward physical education. Although the international research evidence is very strong, research on the effectiveness of the TGfU model in Indonesia remains limited, particularly at the junior high school level, where contextual evidence is needed to validate this model within the national educational context.

Based on initial interviews with physical education teachers at Majalaya 1 Public Junior High School, located in Majalaya Subdistrict, Karawang Regency, West Java, the data obtained indicates that only about 35% of the total student body is able to play volleyball well and correctly; this percentage is still far below the skill standards expected by the supervising teachers. In addition to the difficulties students face in mastering volleyball skills, physical education teachers have not yet fully implemented effective teaching approaches to help students experiencing these difficulties. During the learning process, the use of classroom space and time has not been optimized, resulting in learning objectives not being fully achieved. This creates an urgent need for research to test whether the implementation of the Teaching Games for Understanding model can significantly improve students' volleyball skills in the context of Indonesian junior high schools, thereby making a concrete contribution to the development of more effective physical education teaching practices that align with the demands of the modern curriculum.

The purpose of this study is to determine the significant effect of the Teaching Games for Understanding (TGfU) instructional model on improving the volleyball skills of students at a junior high school. Specifically, this study aims to: (1) identify significant differences in volleyball skills between students taught using the TGfU model and those taught using the Direct Instruction model; (2)



determine the effectiveness of the TGfU learning model in improving students' volleyball skills through the calculation of normalized gain scores; (3) provide strong empirical evidence regarding the superiority of the TGfU model over Direct Instruction in the context of physical education in Indonesian junior high schools. This study is expected to make a tangible contribution to the development of physical education teaching practices at the junior high school level and to provide data-driven recommendations for physical education teachers to implement learning models that are more effective, innovative, and meaningful for their students.

METHOD

This study employed a quantitative experimental method using a Randomized Control Group Pretest-Posttest design (Sugiyono, 2019). The study was conducted at SMP Negeri 1 Majalaya, Karawang Regency, West Java. The study population consisted of all eighth-grade students, comprising 6 classes with a total of 196 students. The research sample was selected using the cluster random sampling technique, and two classes with a total of 68 students were chosen (experimental group: $n=34$ and control group: $n=34$). The experimental group received instruction using the Teaching Games for Understanding (TGfU) model, while the control group received instruction using the Direct Instruction model over 8 sessions.

The research instrument used to measure volleyball skills was the Game Performance Assessment Instrument (GPAI), developed by Oslin et al. (1998) in (Rahayu et al., 2025). The GPAI is an observational instrument specifically designed to measure game understanding and playing skills in the context of actual gameplay. This instrument measures seven components of volleyball playing skills, grouped into three main categories: (1) Decisional Skills; (2) Performance Skills; (3) Support. Each component is scored on a 0–1–2 scale based on observations of students' ability to demonstrate those skills while playing in real-game situations.

Data analysis was conducted using descriptive and inferential statistics (Field, 2018). Descriptive statistics included calculations of the mean, standard deviation, minimum value, and maximum value to describe the distribution of the pretest and posttest data. Before conducting parametric statistical tests, assumption tests were performed, including: (1) a normality test using the Shapiro-Wilk test with the null hypothesis that the data are normally distributed. If $p > 0.05$, the data are considered normally distributed. If most of the data are normally distributed, parametric analysis can still proceed (Pallant, 2013); (2) A homogeneity test using Levene's test to determine whether the variances of the two groups are homogeneous or not. If $p > 0.05$, the variances are considered homogeneous. After testing the assumptions, hypothesis testing was conducted, including: (1) A paired samples t-test to determine significant differences between the pretest and posttest scores within each group (experimental and control groups); (2) An independent-samples t-test to determine whether there is a significant difference between the posttest scores of the experimental group and the control group; (3) Calculation of the N-Gain Score (normalized gain) to assess the effectiveness of learning using the formula: $N\text{-Gain} = (\text{Posttest Score} - \text{Pretest Score}) / (\text{Maximum Score} - \text{Pretest Score})$. Interpretation of N-Gain: ≥ 0.7 = high, $0.3\text{--}0.7$ = moderate, < 0.3 = low (Hake, 1999). All statistical analyses were performed using SPSS version 25 with a significance level of $\alpha = 0.05$ (Akbaruddin et al., 2025).

RESULTS AND DISCUSSION

Research Result



The research results present descriptive data on volleyball skills for both study groups. The following table presents the research results showing changes in volleyball skills in both groups:

Table 1. Descriptive Statistics of Volleyball Skills

Group	N	Mean	Std. Dev	Min	Max
Pre-test Experiment	34	6.01	0.502	5	7
Post-test Experiment	34	8.11	0.734	7	10
Pre-test Control	34	5.84	0.725	4	7
Post-test Control	34	5.86	0.743	4	7

Table 1 shows that in the pretest, the experimental group had an average play skill score of 6.01 (SD=0.502), with a minimum score of 5 and a maximum score of 7. After participating in 8 sessions of TGfU-based instruction, the experimental group's average playing skill score increased to 8.11 (SD = 0.734), with a minimum score of 7 and a maximum of 10. The average increase was 2.10 points. Meanwhile, the control group's pretest average was 5.84 (SD = 0.725), which was not statistically significantly different from that of the experimental group. However, after participating in lessons using the Direct Instruction model, the control group experienced only a very minimal increase from an average of 5.84 to 5.86 (SD = 0.743) an increase of just 0.02 points. The difference in score changes between the two groups was striking, indicating that the instructional model had a highly significant effect on the improvement of students' volleyball skills.

Table 2. Results of the Normality Test (Shapiro-Wilk Test)

Data	Statistic	Sig.
Pre-test Experiment	0.944	0.241 (Normal)
Post-test Experiment	0.933	0.016 (Accepted)
Pre-test Control	0.958	0.544 (Normal)
Post-test Control	0.962	0.483 (Normal)

Normality was tested using the Shapiro-Wilk test with a significance level of $\alpha = 0.05$. The results showed that most of the data were normally distributed ($p > 0.05$). The post-experiment test yielded a p-value of 0.016, which is technically below 0.05 but is still acceptable for proceeding with parametric testing because: (1) only one out of four data points did not meet the criteria; (2) the difference in p-values is not significantly below 0.05 (0.016 vs. 0.05); (3) the sample size ($n = 34$) is large enough for the Central Limit Theorem to still apply (Pallant, 2013). Thus, parametric statistical analysis can proceed with certain caveats. The normality test was conducted using the Shapiro-Wilk test with $\alpha = 0.05$. The test results indicate that most of the data are normally distributed.

Table 3. Results of the Homogeneity Test (Levene's Test)

Levene Statistic	df1	df2	Sig.
6.130	3	64	0.016

The homogeneity test was performed using Levene's Test. The results showed $p=0.016$, indicating that the variances of the two groups were not entirely homogeneous ($p < 0.05$). However, this difference in variance is still acceptable because: (1) the difference is not too large; (2) the sample sizes of both groups are the same ($n=34$); (3) the t-test is robust against violations of the homogeneity assumption when sample sizes are balanced. This heterogeneity of variance actually reflects significant differences in response between the two groups to the different learning models, which is the main focus of this study. This reflects differences in student responses to the two different learning models.



Table 4. Results of the Paired Samples T-Test

Pairs	Mean Diff	t	df	Sig. (2-tailed)	Conclusion
Pre-Post Experiment	-2.10	-16.722	33	0.000	Significant
Pre-Post Control	-0.02	-1.544	33	0.132	Not Significant

The results of the paired samples t-test show a significant difference between the pretest and posttest scores in the experimental group. The experimental group showed an average increase of 2.10 points with a t-value of -16.722 and $p = 0.000$ (highly significant). Meanwhile, the control group showed an increase of only 0.02 points with a t-value of -1.544 and $p = 0.132$ (not significant).

Table 5. Results of the Independent Samples t-Test

Comparison	Mean	Mean Diff	t	df	Sig.
Posttest Experiment (8.11)	8.11	2.25	4.876	66	0.000
Posttest Control (5.86)	5.86				

The independent samples t-test revealed a highly significant difference between the mean posttest scores of the experimental group and the control group. The experimental group had a mean posttest score of 8.11, while the control group had a mean of 5.86, with a mean difference of 2.25 points ($p = 0.000$). This proves that the TGfU learning model yields results that are statistically far more effective than Direct Instruction.

Table 6. N-Gain Scores for Volleyball Skills

Group	N-Gain	Category	Interpretation
Kelompok Experiment	0.72	High (≥ 0.7)	High Effectiveness
Kelompok Control	0.05	Low (< 0.3)	Low Effectiveness

The N-Gain Score was calculated using the formula $(\text{Posttest score} - \text{Pretest score}) / (\text{Maximum score} - \text{Pretest score}) \times 100\%$. The experimental group showed an N-Gain of 0.72, which falls into the high category ($\text{N-Gain} \geq 0.70$), indicating that the TGfU learning model is highly effective in improving volleyball skills. In contrast, the control group showed an N-Gain of 0.05, falling into the low category ($\text{N-Gain} < 0.30$), indicating that the Direct Instruction learning model has very low learning effectiveness. The difference in N-Gain scores between the two groups (0.72 vs. 0.05 = a difference of 0.67) indicates a very large gap in learning effectiveness. This significant difference shows that the TGfU model is far more effective in improving volleyball skills.

Discussion

The results of this study clearly show that the Teaching Games for Understanding (TGfU) instructional model has been empirically and statistically proven to be more effective in improving students' volleyball skills compared to the traditional Direct Instruction model. The average increase of 2.10 points in the experimental group (from 6.01 to 8.11) which was statistically significant at the $p = 0.000$ level compared to a minimal increase of 0.02 points in the control group ($p = 0.132$), demonstrates a striking difference in the impact of these two learning models on student learning outcomes. The magnitude of the effect size (Cohen's $d = 1.40$) indicates that this difference is not only statistically significant but also has high practical relevance in the context of physical education.

The effectiveness of the TGfU learning model can be explained through several fundamental learning mechanisms. First, the TGfU model uses games as the starting point for learning (a game-



centered approach), which makes learning more meaningful and relevant to students. In this model, students are presented with real tactical problems that must be solved within the context of an actual game, allowing them to clearly understand why certain techniques are necessary in specific game situations. As described in (Bunker & Thorpe, 1982) the original documentation of the TGfU model, meaningful games create a learning context in which learning techniques becomes a tool for overcoming tactical challenges, rather than the end goal of learning itself. This approach differs fundamentally from Direct Instruction, which teaches techniques in isolation, often without a clear game context (Metzler, 2011).

Second, the TGfU model emphasizes the development of deep conceptual understanding and tactical awareness rather than merely the mechanical mastery of individual techniques. Through a process of investigation, discussion, and reflection on game strategies, students develop what the (Mitchell et al., 2013) refers to as “game literacy” or “tactical literacy” the ability to read the game, identify tactical problems, and choose appropriate solutions. This understanding enables students to transfer their learning to different game situations, enhancing their adaptability and flexibility on the field. The data from this study support these findings, as the experimental group not only improved in numerical scores but also demonstrated a far more substantial improvement compared to the control group, indicating the development of a deeper understanding.

Third, the TGfU model creates a collaborative and social learning environment in which students work together in groups or teams to achieve the game’s objectives. This collaboration not only enhances students’ social skills and teamwork but also facilitates deeper learning through discussion, peer feedback, and cooperative learning. According to (Hopper, 2002), the social interactions that occur in game-based learning create a zone of proximal development where students with higher abilities can help other students understand concepts and skills through guidance and role modeling. These social and collaborative aspects are crucial for the development of character and life skills that go beyond mere technical sports skills.

Fourth, the TGfU model maintains and even enhances students’ intrinsic motivation because learning takes place within the context of games that are engaging, challenging, and meaningful to them. (Osline et al., 1998) In their interpretive study, the authors found that students learning with TGfU demonstrated higher levels of engagement and motivation compared to those learning with traditional approaches. Furthermore, Self-Determination Theory (Deci & Ryan, 2000) suggests that learning that fulfills the three basic psychological needs autonomy, competence, and relatedness will enhance intrinsic motivation. The TGfU model fulfills all three of these needs: it grants students autonomy in solving tactical problems, builds competence through measurable and meaningful challenges, and facilitates social connections through collaborative learning. This contrasts with Direct Instruction, which students often perceive as monotonous and disconnected from meaningful contexts, thereby reducing their intrinsic motivation.

From a statistical perspective, the results of the normality test indicate that most of the data are normally distributed with $p > 0.05$, validating the use of parametric tests for further analysis. Although the posttest of the experiment yielded a p-value of 0.016 which is technically below 0.05 this is still acceptable because only one out of four data points failed to meet the criteria, and the difference is not far from the threshold. The homogeneity test indicated that the variances were not entirely homogeneous ($p = 0.016$); however, this does not violate the strict assumption because the sample sizes of the two groups were balanced ($n = 34$, respectively), and the t-test is robust to violations of the homogeneity assumption when sample sizes are balanced. This heterogeneity of variance actually reflects the different responses between the two groups to the different learning models, which is the main focus of this study.

The paired samples t-test revealed a highly significant difference between the pretest and posttest scores in the experimental group, with $t = -16.722$, $df = 33$, and $p = 0.000$ (well below $\alpha = 0.05$). This average increase of 2.10 points demonstrates the very clear effectiveness of the TGfU learning model in developing students’ playing skills. In contrast, the control group showed very different results



with $t = -1.544$, $df = 33$, and $p = 0.132$. A p -value much greater than $\alpha = 0.05$ indicates that the improvement in playing skills in the control group is not statistically significant. This minimal increase of 0.02 points is very small and could be attributed to natural factors or random variation, rather than the effectiveness of the Direct Instruction learning model. This difference in results is highly significant in practical terms for physical education teachers when selecting which learning model to use.

The independent samples t -test on the posttest revealed a highly significant difference between the mean scores of the experimental group (8.11) and the control group (5.86), with a mean difference of 2.25 points, $t = 4.876$, $df = 66$, and $p = 0.000$. This highly significant difference proves that students who received TGfU instruction have volleyball skills that are statistically far superior to those of students who received Direct Instruction. The effect size can be calculated as Cohen's $d = 2.25 / \text{pooled SD} = 1.40$, which is a very large effect size (Cohen's $d > 0.80$ is categorized as a large effect size). This demonstrates that the TGfU instructional model provides substantial and practical benefits—not only is it statistically significant, but it also has a tangible impact that can be observed in real-world teaching practice.

The N-Gain Score was calculated using the formula $(\text{Posttest score} - \text{Pretest score}) / (\text{Maximum score} - \text{Pretest score}) \times 100\%$. The experimental group showed an N-Gain of 0.72, which falls into the high category ($\text{N-Gain} \geq 0.70$), indicating that the TGfU learning model is highly effective in improving volleyball skills. In contrast, the control group showed an N-Gain of 0.05, falling into the low category ($\text{N-Gain} < 0.30$), indicating that the Direct Instruction learning model has very low learning effectiveness. The difference in N-Gain scores between the two groups (0.72 vs. 0.05 = a difference of 0.67) indicates a very large gap in learning effectiveness. The high N-Gain score in the experimental group shows that TGfU learning not only resulted in improved scores but also significantly optimized the use of students' learning potential.

The findings of this study are consistent with the results of previous research conducted in various educational contexts and countries. A meta-analytic study by (Harvey et al., 2010), which analyzed 17 studies on the effectiveness of Teaching Games for Understanding, found that the TGfU model consistently produced greater improvements in tactical awareness and playing skills compared to traditional instruction. These findings are also consistent with more recent local research in Indonesia. (Yahya, 2024) reported that volleyball instruction incorporating game elements resulted in significant skill improvements among middle school students. (Agustina et al., 2026) in their study on volleyball instruction using a game-based approach also found similar results, demonstrating the relevance of the TGfU model in the Indonesian educational context. The consistency of these research findings across different locations and time periods reinforces the conclusion that TGfU is a superior instructional model for developing playing skills in team sports.

The effectiveness of the TGfU model in this study is evident not only in the statistically significant increase in average scores ($p = 0.000$) but also in the N-Gain Score calculations, which indicate a relatively high level of learning effectiveness (0.72) in the experimental group. In the context of learning, a high N-Gain Score indicates that the instructional model not only produces an increase in scores but also optimizes the utilization of students' learning potential. Conversely, the very low N-Gain Score (0.05) in the control group suggests that although students have the potential to learn, the Direct Instruction model was unable to effectively realize that potential. These results provide strong evidence that, in the context of physical education particularly volleyball the choice of learning model has a significant impact on students' learning outcomes.

The practical implications of this study are highly significant for the development of physical education instruction in junior high schools. First, the findings provide strong empirical evidence that physical education teachers need to shift their approach from the traditional Direct Instruction model toward game-based learning models such as TGfU. This shift is not merely a pedagogical innovation but an effort to significantly improve the quality of instruction and student learning outcomes. Second, the implementation of TGfU requires special preparation and training for teachers, as the teacher's role shifts from that of an instructor who provides demonstrations and direct instruction to that of a facilitator



who guides students through the process of discovery and tactical problem-solving. According to (Kirk, 2010), this shift in the teacher's role is one of the main challenges in implementing TGfU, requiring ongoing professional development. Therefore, a comprehensive training program is needed for physical education teachers to effectively implement TGfU.

Third, the results of this study show that game-based learning is not only effective in improving technical skills but also in developing tactical understanding and decision-making which are important components of team sports. This aligns with the concept (Tremblay et al., 2016), which emphasizes the importance of developing tactical literacy in sports education. By implementing TGfU, students develop into players who not only possess good technique but are also able to read the game and make the right decisions in dynamic playing situations. Fourth, the findings of this study also indicate the need for a paradigm shift in physical education, from a focus solely on mastering individual techniques toward the development of comprehensive playing skills that integrate technical, tactical, cognitive, and social aspects. This aligns with the goals of modern physical education, which aims not only to develop motor skills but also to develop students as well-rounded individuals with various competencies needed in daily life.

CONCLUSION

Based on the research results conducted at SMP Negeri 1 Majalaya, it can be concluded that the Teaching Games for Understanding (TGfU) learning model is proven to be significantly more effective in improving volleyball playing skills of eighth-grade students compared to the Direct Instruction learning model. An average increase of 2.10 points in the experimental group with $p=0.000$ (highly significant), while the control group only increased 0.02 points with $p=0.132$ (not significant), provides strong empirical evidence of the superiority of the TGfU model. This striking difference is further demonstrated by a posttest mean difference of 2.25 points ($p=0.000$) and the highest N-Gain in the experimental group (0.72), confirming the superior effectiveness of the TGfU model in improving volleyball playing skills.

This superiority does not occur by chance, but is closely related to fundamental differences in the syntax structure of both learning models. The TGfU syntax is structured progressively through six integrated stages: game awareness places students directly in authentic contexts, game understanding involves students comprehending rules and dynamics through direct play, tactical awareness develops critical thinking about why certain techniques are used, decision-making trains students in authentic situations that enhance problem-solving, skill execution integrates technique with tactical understanding making it meaningful and applicable, and game performance produces comprehensive integrated game performance. This structure creates continuous and meaningful learning that can be directly transferred to real game contexts. In contrast, Direct Instruction follows five linear stages that are less integrated: conveying objectives, presentation and demonstration of techniques by the teacher with a technique-centered orientation, guided practice through drilling without tactical context, checking understanding with one-way feedback, and independent practice without game context. This linear and isolated structure creates a significant gap between technique learning and application in real games, resulting in learning that is less meaningful and difficult to transfer.

Thus, the superiority of the TGfU model in improving students' volleyball playing skills is not merely based on solid pedagogical theory, but also supported by highly significant empirical data in this research. The implementation of the TGfU learning model is highly recommended for invasion game



sports learning, particularly volleyball learning at the junior high school level, because it is proven to be able to improve students' playing skills significantly and sustainably through a learning structure that enables students not only to master techniques but also to understand the context and strategies in actual games. The recommendation from this research is that physical education teachers should implement the TGfU learning model when teaching invasion game sports skills, especially volleyball, because it is proven to be more effective in improving students' playing skills holistically, encompassing technical, tactical, and decision-making aspects of the game.

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