



Teaching Games for Understanding Improves Inside-Foot Passing Ability in Soccer Learning among Senior High School Students

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Abstract

Objectives: This study examined the effect of the Teaching Games for Understanding (TGfU) learning model on students' inside-foot passing ability in soccer learning. **Materials and Methods:** A quantitative pre-experimental design with a one-group pretest-posttest model was used. The participants were 25 Grade XI students at SMA Pembina Palembang selected through purposive sampling. The intervention consisted of five TGfU-based meetings using modified 4 vs 4 small-sided games. Inside-foot passing ability was measured before and after the intervention using a performance-based passing test and rubric adapted from soccer passing skill indicators. The data were analyzed using descriptive statistics, Shapiro-Wilk normality tests, Pearson correlation, simple linear regression, and a paired-samples t-test at a significance level of 0.05. **Results:** The mean passing score increased from 51.20 ± 5.56 at pretest to 80.00 ± 3.83 at posttest, with a mean improvement of 28.80 points. The pretest and posttest data were normally distributed ($p = 0.579$ and $p = 0.527$). The pretest-posttest correlation was very strong and significant ($r = 0.994$, $p < 0.001$). The paired-samples t-test showed a significant difference between the pretest and posttest scores, $t(24) = -79.877$, $p < 0.001$, with a 95% confidence interval for improvement of 28.06 to 29.54 points. **Conclusions:** The TGfU learning model significantly improved inside-foot passing ability among Grade XI students. Learning through modified games helped students practice passing in meaningful situations that combined technical execution, tactical understanding, decision-making, and teamwork.

Keywords: Teaching Games for Understanding; soccer learning; inside-foot passing; physical education; small-sided games

1. Introduction

Physical education is expected to help students develop movement competence, tactical awareness, social interaction, and confidence through meaningful physical activity. In soccer learning, passing is one of the most important basic skills because it enables students to maintain possession, connect with teammates, and organize attacking play. Inside-foot passing is often introduced early because it offers better control and accuracy than many other passing techniques. However, students frequently struggle to transfer isolated passing drills into real game situations, especially when they must decide when, where, and how strongly to pass under pressure.

Initial observations at SMA Pembina Palembang indicated that many Grade XI students still had difficulty performing inside-foot passing accurately. Common problems included poor foot placement, inconsistent ball contact, inaccurate pass direction, and low confidence when the skill had to be used in a game. These problems were partly related to learning activities that were still dominated by



technical repetition and teacher-centered instruction. Such activities may help students repeat movement patterns, but they often provide fewer opportunities to solve tactical problems, read space, and make passing decisions in authentic game contexts.

Teaching Games for Understanding (TGfU) offers a relevant alternative because it places students in modified game situations before and after focused technical practice. Through modified games, questioning, and guided reflection, students learn not only how to execute a skill but also why and when the skill should be used. Recent reviews show that TGfU supports decision-making, tactical understanding, and game performance in physical education and sport learning (Barba-Martín et al., 2020; Morales-Belando et al., 2022; Ortiz et al., 2023; González-Valero et al., 2024). This approach is particularly appropriate for invasion games such as soccer, where technical skills and tactical decisions occur simultaneously.

Small-sided games are also closely aligned with TGfU because they reduce the number of players and simplify the playing space while preserving important tactical problems. In this setting, students receive more touches on the ball, communicate more frequently, and experience more decision-making moments than in full-game formats. A systematic review and meta-analysis reported that small-sided game programs have beneficial effects on technical execution among young players (Clemente et al., 2021). In relation to passing, research based on the Loughborough Soccer Passing Test indicates that short passing is influenced by training conditions, fatigue, and task demands, and that game-like training can support the development of short-passing ability (Wang et al., 2024).

Although TGfU has been widely discussed in physical education literature, local evidence on its effect on inside-foot passing among senior high school students remains limited. Therefore, this study aimed to examine the effect of TGfU on inside-foot passing ability in soccer learning among Grade XI students at SMA Pembina Palembang. The study tested the hypothesis that students' passing scores would significantly improve after participating in TGfU-based soccer learning.

2. Materials and Methods

2.1 Study Design

This study used a quantitative pre-experimental method with a one-group pretest-posttest design. The design was selected because the study aimed to measure changes in students' inside-foot passing ability before and after a structured TGfU intervention. The research sequence consisted of pretest, TGfU-based learning treatment, and posttest.

2.2 Participants and Setting

The study was conducted at SMA Pembina Palembang, located on Jl. Jend. Bambang Utoyo No. 179, Ilir Timur II, Palembang, South Sumatra, Indonesia. The population consisted of 54 Grade XI students who were actively enrolled in physical education learning. Using purposive sampling, 25 students were selected as the research sample. The sample was chosen based on relevance to the learning material, class accessibility, and participation in the soccer learning unit.

2.3 Instrument and Measurement Procedure

Inside-foot passing ability was measured using a performance-based soccer passing test and scoring rubric. The rubric assessed preparation, body balance, position of the supporting foot, ball contact with the inside of the foot, pass direction and accuracy, follow-through, tactical decision-making, and teamwork. The assessment indicators were adapted from practical soccer passing skill principles and informed by the Loughborough Soccer Passing Test literature, which supports the assessment of short-



passing ability through accuracy, control, and task execution demands (Le Moal et al., 2014; McDermott et al., 2015; Wang et al., 2024). The same measurement procedure was used in the pretest and posttest.

2.4 TGfU Intervention

The intervention consisted of five meetings using a TGfU structure. Each meeting followed a game-practice-game pattern: an initial modified game, tactical questioning, focused passing practice, and a second modified game to reapply the skill in a more purposeful situation. The main game format was 4 vs 4 small-sided soccer. The modified games emphasized opening space, selecting passing targets, maintaining possession, and using the inside foot to pass accurately under game pressure.

Table 1. TGfU intervention structure

Meeting	Main Focus	TGfU Emphasis
1	Introduction to tactical problems in inside-foot passing through 4 vs 4 games	Game 1 - questioning - basic passing practice - Game 2
2	Passing accuracy across different distances and angles	Game 1 - questioning - accuracy and distance variation - Game 2
3	Moving passing and ball possession in 4 vs 4 games	Game 1 - questioning - moving passing practice - Game 2
4	Team strategy using inside-foot passing to maintain possession	Game 1 - questioning - tactical passing and support play - Game 2
5	Performance evaluation and consolidation of inside-foot passing	Game 1 - questioning - reinforcement - Game 2 and assessment

2.5 Data Analysis

The data were analyzed using descriptive and inferential statistics. Descriptive statistics included minimum score, maximum score, mean, and standard deviation. Shapiro-Wilk tests were used to examine normality because the sample size was below 50. Pearson correlation and simple linear regression were used as supporting analyses to describe the relationship between initial and final scores. The main hypothesis was tested using a paired-samples t-test because the pretest and posttest scores came from the same participants. The significance level was set at 0.05. Values reported by statistical software as 0.000 were written as $p < 0.001$.

2.6 Ethical Considerations

The study was conducted after permission was obtained from the school. Participant data were coded anonymously, and the assessment focused only on learning performance in physical education. No personal identifiers are reported in this article.

3. Results

3.1 Descriptive Statistics

The descriptive analysis showed a clear increase in students' inside-foot passing ability after the TGfU intervention. The mean score increased from 51.20 at pretest to 80.00 at posttest. The standard deviation decreased from 5.56 to 3.83, indicating that students' scores became more consistent after the intervention.

**Table 2.** Descriptive statistics of inside-foot passing scores

Measurement	N	Minimum	Maximum	Mean	SD
Pretest	25	42	61	51.20	5.56
Posttest	25	74	87	80.00	3.83
Mean improvement	25	-	-	28.80	1.80

3.2 Assumption Testing and Supporting Analyses

The Shapiro-Wilk test indicated that the pretest and posttest data were normally distributed. The homogeneity output from the original statistical analysis also indicated homogeneous variance. Pearson correlation showed a very strong and significant relationship between the pretest and posttest scores. Simple linear regression further indicated that pretest scores significantly predicted posttest scores.

Table 3. Assumption tests and supporting analyses

Analysis	Statistic	df	p-value	Interpretation
Shapiro-Wilk pretest	0.967	25	0.579	Normal distribution
Shapiro-Wilk posttest	0.965	25	0.527	Normal distribution
Levene test	1.084	1; 48	0.303	Homogeneous variance
Pearson correlation	r = 0.994	25	<0.001	Very strong positive relationship
Regression coefficient	B = 0.685	23	<0.001	Significant prediction

3.3 Hypothesis Testing

The paired-samples t-test showed a significant difference between students' pretest and posttest passing scores. The mean difference for pretest minus posttest was -28.80, meaning that posttest scores were higher than pretest scores. Therefore, the alternative hypothesis was accepted: TGfU had a significant effect on students' inside-foot passing ability in soccer learning.

Table 4. Paired-samples t-test for pretest and posttest passing scores

Pair	MD	SD	SE	95% CI	t	df	p-value
Pretest - Posttest	-28.80	1.803	0.361	-29.544 to -28.056	-79.877	24	<0.001

4. Discussion

The main finding of this study is that TGfU significantly improved inside-foot passing ability among Grade XI students at SMA Pembina Palembang. The mean score increased by 28.80 points, from 51.20 to 80.00, after five meetings of TGfU-based learning. This improvement indicates that modified games, tactical questioning, and contextual passing practice helped students perform passing more accurately and confidently. The decrease in standard deviation also suggests that the intervention supported more even progress across students, not only improvement among a few higher-performing students.

The improvement can be explained by the learning characteristics of TGfU. In this model, students are not asked to repeat a technique mechanically without understanding its game purpose. Instead, they first encounter a tactical problem in a simplified game, discuss the problem through teacher questioning, practice the relevant skill, and then reapply it in another game situation. This cycle helps students connect the technical execution of inside-foot passing with tactical decisions such as when to pass, where to pass, and how to support a teammate. This finding is consistent with reviews showing that TGfU is strongly associated with improvements in decision-making and game performance (Abad Robles et al., 2020; Ortiz et al., 2023; González-Valero et al., 2024).



The findings also support the argument that game-based learning can make physical education more meaningful for students. Barba-Martín et al. (2020) and Morales-Belando et al. (2022) emphasized that TGfU interventions tend to promote tactical understanding, decision-making, technical skills, and active engagement when they are designed with clear lesson alignment. In the present study, each meeting had a clear progression from tactical awareness to focused passing practice and game reapplication. This structure likely helped students understand that passing is not only a motor action but also a tactical tool for maintaining possession and creating better attacking opportunities.

The use of small-sided games also contributed to the learning gains. In 4 vs 4 games, students had more opportunities to touch the ball, communicate, move into open space, and make repeated passing decisions. Clemente et al. (2021) reported that small-sided game programs provide beneficial effects on technical execution among young team-sport players. Wang et al. (2024) also noted that short passing is influenced by training conditions and that small-sided game training can positively affect short-passing ability. These findings explain why the TGfU format used in this study was appropriate for improving inside-foot passing in a school context.

However, the result should not be interpreted as evidence that game play alone is always sufficient to develop passing accuracy. Carlsson et al. (2025) found that passing-skill training produced stronger gains in side-foot kick accuracy than small-sided games in a youth female soccer sample. This comparison is important because it suggests that TGfU should retain focused technical practice inside the game-practice-game cycle. The intervention in the present study did not rely only on free play; it combined modified games with guided questioning and specific inside-foot passing practice. This combination may explain why the students' passing performance improved substantially.

The assessment approach used in this study was also aligned with the nature of soccer passing. The Loughborough Soccer Passing Test literature highlights that passing assessment should consider accuracy, execution, control, and decision-related demands (Le Moal et al., 2014; McDermott et al., 2015). Although the present study used a school-based rubric rather than the full LSPT time-based protocol, the assessment indicators were designed to capture key elements of inside-foot passing performance in practical physical education learning.

This study has several limitations. First, the design did not include a control group, so the findings should be interpreted as evidence of pretest-posttest improvement rather than as a definitive comparison with other teaching models. Second, the sample was limited to 25 students from one school, which reduces generalizability. Third, the intervention lasted only five meetings. Future studies should use randomized or quasi-experimental designs with control groups, larger samples, longer intervention periods, and more detailed assessment of tactical decision-making during game play.

5. Conclusions

The Teaching Games for Understanding learning model significantly improved inside-foot passing ability in soccer among Grade XI students at SMA Pembina Palembang. The increase from pretest to posttest shows that TGfU can help students develop passing accuracy and control through learning experiences that combine technical practice, tactical understanding, decision-making, and teamwork. TGfU is therefore recommended as an alternative model for soccer learning in physical education, especially when teachers aim to move beyond isolated technique drills and create more active, contextual, and meaningful learning situations.



Practical Implications

Physical education teachers can apply TGfU by starting lessons with a simple game problem, asking students tactical questions, providing short focused practice on inside-foot passing, and ending with another modified game. This sequence keeps students active while ensuring that technical correction remains connected to real game needs.

Limitations and Future Research

Further research should compare TGfU with direct instruction or drill-based learning, involve more schools, and measure both technical execution and tactical decision-making. Future studies may also use validated soccer passing instruments and video-based game-performance analysis to provide stronger evidence.

Acknowledgments

The author thanks SMA Pembina Palembang and the Grade XI students who participated in the study.

Conflict of Interest

The author declares no conflict of interest. This statement may be adjusted according to the target journal requirements.

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