



Implementation of the Jigsaw Type Cooperative Learning Model to Improve Learning Outcomes of Outside Foot Passing in Soccer Games

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Abstract: This study aims to improve the learning outcomes of passing skills using the outside of the foot in soccer games through the application of the Jigsaw cooperative learning model. The study used the Classroom Action Research (CAR) method which was implemented in two cycles, including the planning stage, action implementation, observation, and reflection. The research subjects were 30 seventh-grade students of SMP Negeri 15 Ambon. Data were collected through skills tests, observation, and documentation, then analyzed descriptively based on the percentage of learning completion with a Minimum Completion Criteria (KKM) of 76. The results showed that the application of the Jigsaw cooperative learning model was able to improve student learning outcomes. The percentage of learning completion increased from 40% (12 students) in Cycle I to 100% (30 students) in Cycle II. In addition, there was an increase in student activity, cooperation, responsibility, and self-confidence during the learning process. This increase was followed by improvements in passing techniques using the outside of the foot, including body position, placement of the supporting foot, movement coordination, and accuracy of the ball direction. Thus, the Jigsaw type cooperative learning model is effective in improving learning outcomes of passing skills using the outside of the foot in soccer learning in junior high schools.

Keywords: Learning outcomes; Jigsaw; Cooperative learning; Outside foot passing; Soccer.

Introduction

Physical education is a concept formed from the combination of two elements: education and the physical. The term physical refers to aspects of the function and condition of the human body, including strength, endurance, fitness level, physical appearance, and health. Therefore, physical education focuses not only on movement activities but also on an educational process systematically designed to develop an individual's physical abilities through various forms of exercise and directed activities. More broadly, physical education can be understood as a learning process aimed at fostering and improving an individual's physical capacity through planned activities. This learning

program includes developing movement skills, improving physical fitness, maintaining physical health, and strengthening physical abilities so that individuals are able to carry out various activities optimally. Therefore, physical education plays a vital role in supporting the growth, development, and quality of life of humans as a whole (Zainal et al., 2025). Physical education is not only oriented towards improving motor skills, but also developing cognitive, affective, social, emotional aspects, as well as character building of students (Muhson et al., 2024; Purnomo et al., 2025). From the perspective of 21st-century education, physical education has a strategic role in developing critical thinking skills, communication, collaboration, creativity, and problem-solving abilities through active learning

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experiences (Casey & MacPhail, 2018). Therefore, physical education is no longer seen merely as a sporting activity, but as an educational vehicle capable of forming students' competencies holistically (Fenanlampir et al., 2021; Kumari & Sharma, 2025).

One of the core topics in physical education is the game of soccer. Soccer is a team sport that requires the integration of technical skills, tactics, physical fitness, and the ability to make quick decisions in dynamic game situations (Afonso et al., 2025). Football is a highly complex sport that requires the integration of physical, technical, and cognitive skills. In an open-skill sport like football, players must make quick and accurate decisions using optimal skills in a dynamically changing environment (Ramírez Lucas et al., 2025). In addition to improving physical fitness, soccer learning also contributes to the development of students' social skills through activities of cooperation, communication, leadership, sportsmanship, and responsibility in groups (Li & Shao, 2022). Therefore, soccer learning in schools should not only focus on match results, but also on mastering the basic skills that are the foundation of the game (Akbar et al., 2025).

Among the various basic soccer techniques, passing is the most fundamental skill every player must master. Passing serves as a means of maintaining possession, building attacks, creating scoring opportunities, and maintaining the team's rhythm (Carlsson et al., 2025). Mastering good passing techniques allows players to distribute the ball accurately, effectively, and efficiently, thereby improving the overall quality of play. One important passing variation to learn is passing using the outside of the foot (Siregar et al., 2026). This technique is often used to quickly change the direction of the ball, deceive opponents, or divert attacks in tight spaces. However, passing with the outside of the foot is more complex than passing with the inside of the foot because it requires coordination, body balance, shooting accuracy, ball control, and good synchronization of movements (Vembiarto & Lismadiana, 2019).

Students' success in mastering motor skills is greatly influenced by the quality of the learning process implemented by the teacher. Learning sports skills requires sufficient practical experience, continuous feedback, interaction between students, and opportunities for repeated practice in a variety of situations. According to Motor Learning theory, motor skills develop through an active practice process that allows students to gradually build movement representations through meaningful learning experiences (Pohma et al., 2026). Therefore, the use of learning models that are still dominated by lectures and teacher demonstrations tends to limit student activity, resulting in less than optimal motor skill development.

Initial observations of students in the classroom showed that their ability to pass using the outside of the foot was still relatively low. Most students were unable to achieve the correct starting position, their foot placement was still not precise, their footwork coordination was suboptimal, and the ball often missed the target. This condition resulted in low student learning outcomes in the material on passing using the outside of the foot. Furthermore, the learning process was still dominated by the teacher, so students' opportunities for discussion, collaboration, and feedback on movement techniques were still very limited. As a result, learning became less engaging, student participation was low, and most students did not achieve the minimum completion criteria. This condition indicated the need for learning innovations that could increase active student engagement during the learning process.

One learning approach that aligns with the characteristics of physical education is the jigsaw cooperative learning model. This model places students at the center of learning through group learning activities, where each member is responsible for learning a portion of the material before teaching it back to the members of their original group. This ensures that all group members have a positive interdependence in achieving learning objectives (Leasa et al., 2019). Jigsaw learning encourages students to actively seek information, discuss, communicate, provide explanations, and build shared understanding through social interaction (Tarhan et al., 2013; Baken et al., 2022). The Jigsaw technique is a cooperative learning technique in which students with different abilities join a group called a core group. Each member in the core group is responsible for studying a different topic and then moves to a new group with the same topic, called an expert group. When the expert group has successfully worked together, they will return to their original group, namely their core group, to convey the knowledge gained from the discussion from the expert group to summarize it for the core group, the teacher tests and gives grades (Safkolam et al., 2023).

Various studies show that cooperative learning has a positive impact on improving learning outcomes, learning motivation, communication skills, critical thinking, emotional intelligence and social skills of students (Leasa & Martina Eralisa Wuarlela, 2023; Wang et al., 2024; Setiawan et al., 2025). Cooperative learning consistently improves learning outcomes compared to conventional learning at various levels of education (Slavin, 1980; André et al., 2011; Fenanlampir et al., 2024). Likewise, research Hannon & Ratliffe (2004) reported that the application of cooperative learning models in physical education can improve motor skills, learning participation, social responsibility, and intrinsic

motivation of students. Interaction between group members allows students to obtain direct feedback during practical activities, thereby accelerating mastery of motor skills. However, research on the application of the Jigsaw cooperative learning model in soccer learning is still dominated by improving general learning outcomes, while research specifically examining passing skills using the outside of the foot in junior high school students is still relatively limited. Most previous studies also focus more on cognitive aspects or general learning outcomes than on specific psychomotor skills that require complex motor coordination. Based on this description, this study aims to analyze the effectiveness of the application of the Jigsaw cooperative learning model in improving learning outcomes of passing using the outside of the foot in soccer games.

Method

This study uses a Classroom Action Research (CAR) approach that aims to improve learning outcomes in passing skills using the outside of the foot in soccer through the application of the Jigsaw cooperative learning model. Classroom action research was chosen because it provides teachers with the opportunity to systematically improve the learning process through a series of actions that are planned, implemented, observed, and reflected upon repeatedly. The research design refers to the Model Kemmis et al. (2014) which consists of four stages: planning, action, observation, and reflection. The research was conducted in two cycles, each of which served as a basis for improving learning in the following cycle until the research's success indicators were achieved.

The research was conducted at SMP Negeri 15 Ambon. The subjects were all 30 students in grades VII-5, consisting of 14 male students and 16 female students. All students in the class were selected because, based on initial observations, most students still experienced difficulties in mastering the basic technique of passing using the outside of the foot, resulting in learning outcomes that had not yet reached the minimum completion criteria. The research was conducted collaboratively between the researcher and the physical education, sports, and health subject teacher. The teacher acted as the implementer of the learning actions, while the researcher acted as an observer who recorded the entire learning process and evaluated the results of the actions in each cycle. In the planning stage, the researcher prepared learning tools in the form of teaching modules, learning assessments, observation sheets, and prepared the facilities and infrastructure needed for learning. The implementation stage of the actions was carried out by applying the Jigsaw cooperative learning model to the material on basic

passing techniques using the outside of the foot. Next, observations were conducted to observe teacher activities, student activities, and the development of learning outcomes during the learning process. The results of the observations were then analyzed in the reflection stage to identify any weaknesses that still occurred so that improvements could be made in the next cycle.

The research instruments used included a teaching module, an assessment sheet for passing skills using the outside of the foot, observation sheets for teacher and student activities, and documentation in the form of photographs of learning activities during the research. These instruments were used to obtain information regarding the implementation of the learning model, student activities during the learning process, and the level of learning achievement in each research cycle. Data collection was carried out through testing, observation, and documentation techniques. Tests were used to measure student learning outcomes after participating in learning in each cycle through an assessment of passing skills using the outside of the foot. Observations were conducted to obtain data regarding student activities, teacher activities, and the implementation of the Jigsaw cooperative learning model during the learning process. Meanwhile, documentation was used as supporting data in the form of photographs of learning activities and various documents related to the implementation of the research.

The research data were analyzed descriptively quantitatively by calculating the average value of learning outcomes and the percentage of student learning completion in each cycle. Learning completion was determined based on the achievement of the minimum completion criteria of 76. The percentage of completion was calculated by comparing the number of students who obtained scores equal to or greater than the minimum completion criteria to the total number of students, then multiplied by 100%. The results of the analysis from each subsequent cycle were compared to determine the improvement in learning outcomes after the implementation of the Jigsaw type cooperative learning model. The research was declared successful if at least 80% of students had achieved scores according to or above the KKM so that the action did not need to be continued to the next cycle.

Results and Discussion

This classroom action research was conducted in two cycles with the aim of improving learning outcomes in passing skills using the outside of the foot in soccer through the application of the Jigsaw cooperative learning model. Each cycle consists of planning, action

implementation, observation, and reflection. The success of the action is determined based on the percentage of student learning completion that reaches the Minimum Completion Criteria (KKM) of 76. The application of the Jigsaw cooperative learning model showed an increase in student learning outcomes from Cycle I to Cycle II. At the beginning of the model implementation, students began to adapt to the Jigsaw learning stages, namely the formation of home groups, expert groups, discussion of the material, delivery of discussion results to the home group, and practice of passing skills using the outside of the foot. During the learning process in Cycle I, most students have shown involvement in group activities, but discussion and cooperation activities have not been optimal. Some students still have difficulty in understanding their respective roles, lack confidence when explaining the material to group members, and have not been able to practice passing techniques correctly. Observation results showed that the most frequently found technical errors include incorrect positioning of the supporting foot, less than optimal leg swing, unstable body balance, and the direction of the ball that is not in accordance with the target. This condition has an impact on low student learning outcomes. Based on the evaluation results at the end of Cycle I, 12 students (40%) had achieved scores above the Minimum Competency (KKM), while 18 students (60%) had not yet achieved learning completion. These results indicate that the research success indicators have not been achieved, so improvements are needed in the next cycle. Based on the results of the Cycle I reflection, several improvements were made in Cycle II, including clarifying the division of tasks within groups, increasing teacher guidance during expert group and home group activities, providing more systematic demonstrations of passing techniques, increasing practice opportunities, and providing direct feedback on student movement errors. These improvements aim to improve conceptual understanding and mastery of passing skills using the outside of the foot.

The implementation of learning in Cycle II showed quite significant changes compared to Cycle I. Students appeared more active in participating in group discussions, were more responsible for their respective tasks, and were more confident when delivering material to members of their original groups. Interaction between students also took place more effectively so that the process of helping each other in understanding the material and improving movement techniques was more optimal. During practice, most students were able to pass using the outside of the foot with better body position, more precise movement coordination, more directed leg swings, and increasing passing accuracy. The improvement in the quality of the learning process had an impact on improving student learning outcomes.

The evaluation results at the end of Cycle II showed that all students (30 people or 100%) had achieved scores above the KKM so that there were no more students who had not completed. Thus, learning completeness increased from 40% in Cycle I to 100% in Cycle II, while the percentage of students who had not completed decreased from 60% to 0%. These results indicate that the implementation of the Jigsaw type of cooperative learning model was able to improve learning outcomes in passing skills using the outside of the foot in grade VII students of SMP Negeri 15 Ambon. In addition to improving learning outcomes, observations during the learning process also showed positive changes in student learning activities. Students became more active in participating in lessons, expressed their opinions more confidently, collaborated with group members, and demonstrated greater responsibility in completing group assignments. Mutual explanations of material and feedback on movement practices were also more effective, making learning more interactive and student-centered.

This study shows that the implementation of the Jigsaw cooperative learning model significantly improves learning outcomes for passing techniques using the outside of the foot in soccer. Learning completion increased from 40% in Cycle I to 100% in Cycle II, indicating that the learning improvement measures had a positive impact on students' skill mastery. This improvement indicates that the success of motor skill learning is influenced not only by the frequency of practice but also by the quality of learning interactions built during the learning process. In Cycle II, students had the opportunity to discuss, teach each other the material in expert groups, receive feedback from peers and teachers, and then practice the skills they had learned. This process resulted in a more active learning experience than conventional teacher-centered learning. This finding is in line with Vygotsky's social constructivism theory, which explains that knowledge is built through social interaction and collaboration between students. In Jigsaw learning, each group member has the responsibility as an "expert" who must explain the material to members of their original group. This activity causes students to carry out a deeper knowledge elaboration process so that conceptual understanding and practical skills develop simultaneously. This condition is evident in this study, where students not only experienced an increase in grades, but also showed changes in activeness, communication, and cooperation during the learning process.

From a motor learning perspective, the results of this study support Motor Learning theory, where mastery of motor skills occurs through deliberate practice, feedback, and meaningful learning experiences.

In the Jigsaw model, these three components occur simultaneously. Students receive technique demonstrations from the teacher, practice with expert groups, receive correction from peers, and then repeat the movements when explaining to their original group (Button et al., 2021). This learning pattern accelerates the development of motor coordination, resulting in more accurate and consistent passing techniques. The results of this study are also consistent with various studies on the effectiveness of cooperative learning. Cooperative learning significantly improves academic achievement compared to competitive or individual learning because it increases intrinsic motivation, responsibility for learning, and the quality of interactions between students (Slavin, 2015). Study Slavin (2014) also emphasized that the success of the cooperative learning

model is primarily influenced by individual accountability and positive interdependence. These two characteristics are at the core of the Jigsaw model. Each student is responsible for mastering a specific section of the material, so the group's success depends on each individual's contribution. This situation increases learning motivation because each student feels they have a vital role in the group's success. A similar situation was observed throughout the study, when students became more active in asking questions, discussing, and helping their peers understand the technique of passing using the outside of the foot. In terms of psychomotor aspects, the improvement in learning outcomes indicates that the Jigsaw model provides students with more opportunities for active practice.

Table 1. Comparison of Learning Outcomes for Passing Using the Outside of the Foot

Cycle	Number of Students Completed	Percentage (%)	Number of Students Not Yet Complete	Percentage (%)
I	12	40.0	18	60.0
II	30	100.0	0	0.0

Overall, the research results show that the implementation of the Jigsaw cooperative learning model successfully increased student learning outcomes by 60 percentage points, from 40% in Cycle I to 100% in Cycle II. This finding indicates that the Jigsaw learning model is effective in teaching basic passing techniques using the outside of the foot in soccer. This is in accordance with research. Leary & Griggs (2010) which states that the Jigsaw learning model can improve students' cognitive and affective abilities through cooperative learning that emphasizes individual responsibility and group collaboration. However, this model is not yet effective in developing high-level psychomotor skills due to students' limited ability to demonstrate and provide feedback on complex movement skills. In addition, the cooperative learning model in physical education can improve motor skills, student engagement, communication, and the ability to work together compared to traditional learning. In this study, students not only practiced performing movements but also observed, provided corrections, and evaluated the movements of their groupmates, making the learning process more reflective. In addition to improving psychomotor aspects, this study also showed developments in affective and cognitive aspects. At the end of Cycle II, students were more disciplined, actively engaged in discussions, had a sense of responsibility towards the group, and had a better understanding of the stages of passing techniques. These results support the statement. Dyson & Casey (2016) which states that the cooperative learning model in physical education not only improves athletic skills but also develops social,

communication, leadership, and problem-solving skills. The success of this research can also be explained through the concept of active learning. During the learning process, students are the center of learning activities (student-centered learning), while the teacher acts as a facilitator who provides direction and feedback.

This situation creates a more conducive learning environment so that students have a greater opportunity to construct knowledge and correct their movement errors independently. As a result, mastery of passing techniques increases gradually until all students achieve learning completion. Overall, the results of this study strengthen empirical evidence that the Jigsaw cooperative learning model is an effective learning strategy in improving physical education learning outcomes, especially basic passing skills using the outside of the foot in soccer. The advantages of this model lie not only in improving cognitive and psychomotor learning outcomes, but also in its ability to build communication, collaboration, a sense of responsibility, and student self-confidence. Thus, the Jigsaw model is worthy of recommendation as one of the innovative learning models in physical education subjects at the junior high school level.

Conclusion

Classroom action research conducted in two cycles showed that the implementation of the Jigsaw cooperative learning model was effective in improving the learning outcomes of passing techniques using the outside of the foot in soccer games for seventh-grade

students at SMP Negeri 15 Ambon. The effectiveness of the model was demonstrated by an increase in the completion of learning outcomes from 40% (12 students) in Cycle I to 100% (30 students) in Cycle II after improvements were made to the learning process based on the results of reflections in each cycle. These results indicate that the Jigsaw model is able to create a more active, collaborative, and student-centered learning process, thus providing a positive impact on the achievement of learning competencies. Improved learning outcomes were not only seen in the completion aspect, but also in the development of students' abilities in mastering basic passing techniques using the outside of the foot according to predetermined indicators. In addition, the implementation of the Jigsaw model also increased students' understanding of learning concepts, activeness in discussions, ability to work together, individual and group responsibility, and self-confidence in practicing the skills learned. Thus, the Jigsaw cooperative learning model not only contributes to improving psychomotor aspects, but also supports the development of cognitive and affective aspects of students during the learning process. Based on these findings, the Jigsaw cooperative learning model is recommended as an alternative learning strategy that can be implemented by Physical Education, Sports, and Health (PJOK) teachers, especially in the material of basic soccer skills. Teachers need to design learning that provides opportunities for each student to participate actively, discuss, provide feedback to each other, and do repeated practice so that learning outcomes can be optimally improved. In addition, further research is recommended to involve a larger number of samples, different educational levels, or compare the Jigsaw model with other innovative learning models to obtain broader empirical evidence regarding the effectiveness of the cooperative learning model in improving learning outcomes of sports skills.

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