



Implementation Of A Game-Based Play Approach Using Modified Games To Increase Students' Learning Interest And Active Participation In Basic Locomotor, Non-Locomotor, And Manipulative Movement Combination Materials In Pe Class For 4th B At Sd Negeri Betet 3 Kediri City

Muhamad Ardiansyah Aradea¹, Abdian Asgi Sukmana¹, Moh. Aan Zainul Arifin²

¹ Pendidikan Profesi Guru, Pendidikan Jasmani Kesehatan dan Rekreasi, Universitas Nusantara PGRI Kediri, ² SD Negeri Betet 3, Kota Kediri, Indonesia.

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Correspondence:

Phone: +62 823-5265-0844

Abstract: This Classroom Action Research (CAR) aimed to enhance the learning interest and active participation of 27 fourth-grade students (Class IV B) at SD Negeri Betet 3, Kediri City, regarding the material on combinations of basic locomotor, non-locomotor, and manipulative movements. The study employed a play-based approach using modified games—specifically Modified *Goboy*, Modified *Kasti*, Modified Handball, and Modified Target Ball—across two cycles, each comprising two sessions. Data were collected using observation sheets assessing learning interest and active participation on a 1–4 scale. The results showed an increase in learning interest from 61.57% in the pre-cycle stage to 82.87% by the end of Cycle II, while active participation rose from 62.15% to 80.79%. By the end of the study, 23 out of the 27 students had reached the "high" or "very high" category for both variables. The implementation of the action achieved a 100% success rate. Thus, the application of a play-based approach using modified games led to increased student learning interest and active participation in Physical Education (PJOK) lessons.

Keywords: Classroom Action Research, Play-Based Approach, Modified Games, Learning Interest, Active Participation, Physical Education (PJOK)

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Introduction

Physical Education, Sports, and Health (PJOK) at the primary school level is directed not only toward the mastery of movement skills but also toward creating learning experiences that enable students to be actively engaged throughout the learning process. The nature of PJOK instruction positions physical activity as a learning experience involving movement, interaction with the environment, decision-making, and social interaction. In Phase B, students are expected to be able to practice variations and combinations of fundamental

movement patterns through games and sports activities. Therefore, PJOK instruction must provide opportunities for students to move, experiment, interact, and gain firsthand learning experiences (BSKAP, 2022).

This requirement becomes increasingly important when teaching combinations of fundamental locomotor, non-locomotor, and manipulative movements. Students are expected not only to perform a single type of movement but also to combine various

Email: ardiansyah200315@gmail.com

movement patterns within dynamic situations. Game-based activities provide a context that enables students to utilize locomotor, non-locomotor, and manipulative movements in a more functional manner. A study by Ihwanto and Mashud (2021) on game-based learning in Physical Education (PJOK) demonstrates that this approach aligns with the characteristics of primary school-aged students and supports both learning outcomes and participation motivation. Similarly, Klein and Beach (2023) explain that play-based learning in primary school physical education can be designed by creating a conducive learning environment and structuring play activities that remain aligned with learning objectives.

The use of games in Physical Education (PE) instruction is also supported by empirical evidence from previous studies. Sun and Chen (2024), through a systematic review and meta-analysis of 12 studies involving 1,608 students, found that sports-based game interventions led to superior development of fundamental movement skills compared to control groups (SMD = 0.30; $p < 0.0001$). Fizi et al. (2023) also developed a game-based model for primary school PE aimed at enhancing students' motor skills, cooperation, and discipline. Meanwhile, Aliriad et al. (2024) demonstrated that incorporating traditional games into physical education lessons can foster improvements in students' motor skills and learning motivation. These findings provide an empirical basis for using games as a context for PE instruction that links physical activity with student engagement.

In the context of Physical Education (PJOK) instruction, student engagement relates not only to the volume of physical activity but also to interest and participation throughout the learning process. In this study, learning interest is defined in terms of attention, appeal, enjoyment, enthusiasm, a desire to understand, and learning initiative. Research by Syakur and Nurhayati (2023) examines factors associated with the PJOK learning interest of elementary school students, while Rihatno et al. (2023) specifically developed instructional media to enhance PJOK learning interest among fourth-grade elementary students. Meanwhile, active participation encompasses physical involvement, the willingness to try, engagement in activities, cooperation, responsiveness to instructions, adherence to rules and safety protocols, sustained involvement, and support for peers. Stringfellow et al. (2024) emphasize the importance of distinguishing engagement from motivation, as engagement represents a student's active and purposeful interaction with the learning environment.

Although games have the potential to foster more active and engaging learning, their use does not automatically guarantee that all students have equal

opportunities to participate. Therefore, games need to be modified based on learning objectives, student characteristics, available facilities and equipment, the number of players, the size of the playing area, rules, duration, and difficulty level. Gustian et al. (2024), for instance, demonstrated the use of a modified version of *Kasti* (an Indonesian bat-and-ball game) that took into account school characteristics, student abilities, and ease of implementation for teachers. In this study, modifications were made by simplifying rules, using safe equipment, forming heterogeneous groups, configuring the playing area, rotating roles, and minimizing waiting times, thereby ensuring students maintained opportunities to move and perform their roles throughout the lesson.

The empirical issue underpinning this research was identified during Physical Education (PJOK) lessons for class IV B at SD Negeri 3 Betet, Kediri City. Pre-cycle observations of 27 students revealed that learning interest stood at only 61.57%, while active participation was 62.15%; both figures fall into the low category. Regarding learning interest, indicators showing low levels included curiosity about learning activities (55.56%) and the initiative to engage in the sequence of activities (58.33%). In terms of active participation, the courage to attempt tasks stood at 58.33%, and sustained engagement was 60.19%. These findings indicate that the instructional challenges involve not only physical movement but also the quality of student engagement throughout the lesson.

Given these conditions, this study employs a play-based approach using modified games as an instructional improvement strategy. The intervention is designed not around a single specific game, but rather as an approach implemented through various games tailored to learning objectives and learner characteristics. Modified *Goboy* and modified *Kasti* were used in Cycle I, while modified handball and modified target ball games were used in Cycle II. These four games represent different implementations of the same underlying intervention strategy. The process followed the stages of planning, implementation, observation, and reflection, ensuring that the results from each stage informed the execution of the intervention in the subsequent stage.

Thus, this study aims to address a practical need in elementary school Physical Education (PJOK) instruction, specifically regarding the implementation of a play-based approach that goes beyond mere game activity; it is designed to simultaneously enhance learning interest and active participation. The study seeks to boost students' learning interest and active participation by implementing a play-based approach utilizing modified games—focusing on combinations of locomotor, non-locomotor, and manipulative

movements – within the Grade IV B Physical Education curriculum at SD Negeri Betet 3, Kediri City.

Method

This study employs Classroom Action Research (CAR) because it aims to directly address issues identified in Physical Education (PJOK) instructional practices through a series of incremental actions. The research design comprises stages of planning, action implementation, observation, and reflection, carried out over two cycles. This approach enables the researcher to identify initial problems, implement interventions, observe resulting changes, and utilize reflection findings to refine actions for the subsequent cycle. A similar design has been used in Physical Education action research to observe gradual changes in student motivation and participation (Widyanto et al., 2025).

The study was conducted with 27 students from class IV B at SD Negeri Betet 3, Kediri City. It spanned two cycles, with each cycle comprising two sessions. The intervention involved a modified game-based approach applied to the topic of combining basic locomotor, non-locomotor, and manipulative movements. This approach was selected because games can be designed to create engaging learning contexts while remaining aligned with Physical Education learning objectives (Camacho-Sánchez et al., 2023; Dese et al., 2025). In this study, modified games were not treated as a standalone intervention but rather as a form of implementing a specific instructional approach. Modifications were made to rules, playing area dimensions, equipment, player numbers, duration, role allocation, scoring systems, and difficulty levels to ensure alignment with student characteristics and learning objectives (Fizi et al., 2023; Gustian et al., 2024).

In Cycle I, the intervention was implemented using modified *Goboy* and modified *Kasti*, whereas Cycle II utilized modified handball and modified target-ball games. The design of these games took into account the equitable distribution of movement opportunities, role rotation, the reduction of waiting times, the use of safe equipment, rule simplicity, and opportunities for students to remain engaged even when not performing a primary role. Following each cycle, observation results were compared with the prior state to identify aspects that had improved and those still requiring refinement. For instance, reflections from Cycle I were used to improve the distribution of turns, access to equipment, the pace of role rotation, and the equitable provision of feedback in Cycle II.

Data collection was conducted through systematic observation, as learning interest and active participation in this study were operationalized through observable behaviors during the learning

process. Observations were carried out during the pre-cycle, Cycle I, and Cycle II stages. In addition to observing the students, the study utilized observations of action implementation, field notes, and documentation as supporting data to describe the learning process and facilitate reflection. Observation sheets and process notes were also employed in this Physical Education action research to document changes in student motivation and participation across cycles (Widyanto et al., 2025; Dese et al., 2025).

The research instruments consisted of a 12-item scale for learning interest and a 16-item scale for active participation, both utilizing a 1–4 rating scale. Learning interest was assessed based on attention, attraction, enjoyment, enthusiasm, a desire to understand, and learning initiative. Meanwhile, active participation was assessed based on physical involvement, willingness to try, engagement in activities, cooperation, responsiveness to instructions, adherence to rules and safety protocols, sustained engagement, and peer support. These constructs were used to distinguish between students' interest in the learning process and their behavioral engagement during Physical Education (PJOK) activities.

The content validity of the instrument was established through expert judgment by two validators, who assessed aspects such as relevance, clarity, observability, and suitability for the characteristics of fourth-grade students. Content validity was subsequently analyzed using Aiken's V coefficient based on the scores assigned by the two validators. The use of Aiken's V in this study was intended to provide quantitative evidence regarding the content suitability of the items based on expert assessment (Aiken, 1985). The validation results yielded an average Aiken's V value of 0.983 for the learning interest instrument, 0.992 for the active participation instrument, and 0.988 for the instrument as a whole. Based on these results, the instrument was deemed to possess very high content validity and was utilized without substantive revision.

The research data were analyzed using both quantitative and qualitative descriptive methods. Quantitative analysis was employed to describe changes in learning interest and active participation from the pre-cycle stage through Cycle I and Cycle II. Individual percentages were calculated by comparing obtained scores to the maximum possible scores, while class percentages were determined by comparing the total scores of all students to the maximum possible class score. The learning interest instrument had a maximum score of 48, whereas the active participation instrument had a maximum score of 64 per student. With a total of 27 students, the maximum class scores were 1,296 for learning interest and 1,728 for active participation.

The resulting observation percentages were subsequently categorized as very low (25.00–43.75%), low (>43.75–62.50%), high (>62.50–81.25%), and very high (>81.25–100%). Changes in results were analyzed by comparing achievements across stages and observing shifts in the number of students falling into the high or very high categories. Meanwhile, qualitative data—comprising field notes, the implementation of actions, student responses, and reflection outcomes—were used to explain the changes in the learning process underlying the variations in quantitative scores. This descriptive analysis approach aligns with the nature of Classroom Action Research (CAR), which emphasizes comparing conditions and instructional improvements across cycles (Widyanto et al., 2025).

The success of the intervention is determined by achieving a class-wide rate of at least 80% for each aspect—specifically learning interest and active participation—and ensuring that at least 22 out of the 27 students fall into the "high" or "very high" categories for each aspect. The implementation of the intervention and adherence to safety protocols also serve as components of process monitoring. These indicators provide the basis for determining whether the intervention requires refinement or has successfully met the established targets.

Result and Discussion

Result

The classroom action research was conducted in two cycles, with each cycle consisting of two sessions. The intervention involved a play-based approach using modified games to teach combinations of basic locomotor, non-locomotor, and manipulative movements. The games employed included modified versions of *Goboy*, *Kasti* (Indonesian rounders), handball, and target ball games. These four games represented the implementation of a single instructional strategy, featuring modifications to rules, equipment, playing areas, role allocation, rotation, and waiting times. Observation results indicate a gradual increase in learning interest and active participation from the pre-cycle stage through the end of Cycle II.

Table 1. Development of Learning Interest, Active Participation, and Implementation of Actions

Stage	Game/Activity	Leraning Interest (%)	Active Participa tion (%)	Impleme ntation (%)
Pre-Cycle	Initial condition Goboy	61,57	62,15	–
Cycle 1 P1	Modificati ons	66,90	65,91	83,33

Stage	Game/Activity	Leraning Interest (%)	Active Participa tion (%)	Impleme ntation (%)
Cycle 1 P2	Kasti Modificati ons	73,07	71,01	91,67
Cycle 2 P1	Modified Handball	77,70	73,38	91,67
Cycle 2 P2	Modified Target Ball	82,87	80,79	100,00

Table 1 shows that learning interest increased from 61.57% in the pre-cycle stage to 82.87% by the end of Cycle II, an increase of 21.30 percentage points. Active participation rose from 62.15% to 80.79%, an increase of 18.63 percentage points. The number of students falling into the high or very high categories also increased; regarding learning interest, the figure rose from one student in the pre-cycle stage to 23 students by the end of Cycle II, while for active participation, it increased from four to 23 students.

The changes indicate a consistent upward trend throughout the series of actions. A visualization of the development of learning interest and active participation at each stage is presented in Figure 1.

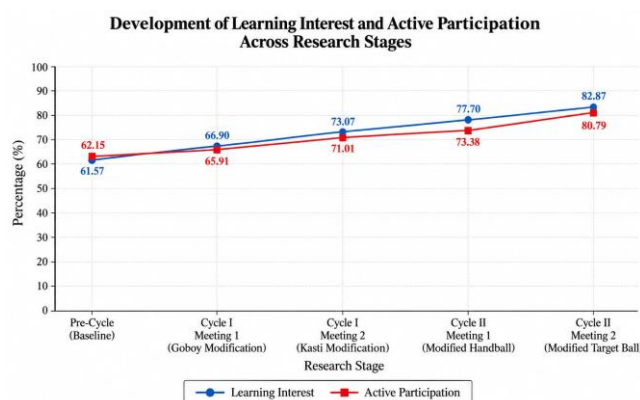


Figure 1. Changes in the Percentage of Learning Interest and Active Participation Across Stages.

Figure 1 illustrates an upward trend for both variables across all stages of the study. Learning interest increased gradually from 61.57% to 82.87%, while active participation rose from 62.15% to 80.79%. By the end of Cycle II, both variables had met the class success indicator of 80%. The implementation of the action also improved, rising from 83.33% in Cycle I, Meeting 1, to 100% in Cycle II, Meeting 2.

At the indicator level, the most notable change in learning interest was observed in curiosity. Item MB4 rose from 55.56% in the pre-cycle stage to 96.30% by the end of Cycle II. Regarding active participation, the willingness to try increased from 58.33% to 91.67%.

Sustained engagement also improved, supported by observational notes indicating that students more frequently asked for a turn, remained engaged while waiting, and offered support to their peers.

Discussion

The increase in learning interest observed in this study indicates a shift in students' learning behavior during Physical Education (PJOK) activities. Initially, learning interest was low, particularly regarding curiosity and initiative; students did not consistently demonstrate a desire to understand how to perform tasks or to continue with the activities. However, following the implementation of a modified game-based approach, interest increased progressively with each session. In Modified Goboy, improvements became evident through inquiries regarding objectives and scoring methods, as well as a newfound willingness among students who had previously hesitated to participate. In Modified Kasti, students focused increasingly on the flow of the game, with some showing a desire to try again. During Cycle II, Modified Handball and Modified Target Ball provided more structured activity experiences. By the final session, students grasped the game mechanics more quickly, requested their turns more frequently, and the majority demonstrated a desire to repeat the activities.

This shift can be understood through the characteristics of the games, which provide a hands-on learning experience. Students do not merely receive explanations regarding movements; instead, they have the opportunity to experiment, repeat actions, interact, and grasp the rules through active engagement. Modifications to rules, equipment, playing area dimensions, and turn-taking also make the activities easier to follow, accommodating specific classroom conditions. These findings align with Kurniawati et al. (2022) and Halawa et al. (2022), who demonstrated increased interest resulting from game modifications. Muhammad et al. (2024) also showed that games in physical education are linked to interest, activity levels, and learning participation.

Active participation showed a similar pattern, yet the process of improvement possessed its own distinct characteristics. During the pre-cycle stage, weaknesses were primarily evident in the willingness to try and in sustained engagement; students did not always remain engaged when they had not yet had the opportunity to play a primary role. This situation began to improve in Cycle I through the allocation and rotation of roles. Students who were waiting did not merely act as spectators but could perform roles such as ball retriever, scorekeeper, observer, or supporter.

During the Modified *Goboy* activity, participation rose to 65.91%, though issues persisted

regarding delayed group rotations and student passivity when the ball was far from the active play area. Following reflection, the rotation system was refined for the Modified *Kasti* activity, resulting in an increase in participation to 71.01%. In Cycle II, opportunities to pass, change positions, and defend during the Modified Handball activity further expanded student engagement. Subsequently, for the Modified Target Ball activity, the start-run-throw-retrieve-return sequence was simplified, making it easier for students to understand when to move and when to prepare.

The most significant increase in participation occurred during Meeting 2 of Cycle II, rising by 7.41 percentage points compared to the previous meeting. At this stage, students who had previously tended to be passive began to request turns more frequently and offer support to their peers. These findings indicate that participation in Physical Education (PJOK) lessons is not solely linked to physical activity involving handling or playing with a ball, but also encompasses student engagement in fulfilling roles, collaborating, observing, assisting the group, and maintaining involvement throughout the activity. These results align with Putra et al. (2024), who demonstrated an increase in learning motivation among elementary school students through the use of modified balls. Adjil and Wibowo (2023) also showed that modified games can support movement learning through a gradual and repetitive process. Although the focus and variables of these studies differed, the findings provide relevant context indicating that game modification can serve as a means to tailor the learning experience to the characteristics and needs of the students.

Changes in research outcomes were also linked to improvements in the learning process across cycles. The implementation rate of the intervention rose from 83.33% in Cycle I, Meeting 1, to 91.67% in Meeting 2; it remained at 91.67% in Cycle II, Meeting 1, and reached 100% in Meeting 2. Reflection during Cycle I highlighted the need to improve group rotation and the equitable distribution of feedback. These improvements were subsequently implemented in the following cycle through more organized turn-taking, role allocation, reduced waiting times, and more balanced teacher attention.

Thus, the increase in learning interest and active participation was linked not only to the change in game types but also to how the games were managed within the learning process. Although the four games employed differed in form, they shared the same underlying principles: greater freedom of movement, simple rules, turn-taking, role allocation, the use of safe equipment, and student engagement during waiting periods. This demonstrates that the

quality of the learning experience design is a crucial factor in the implementation of the intervention.

Overall, the implementation of a modified game-based approach was followed by an increase in students' learning interest and active participation. Learning interest rose by 21.30 percentage points, while active participation increased by 18.63 percentage points. By the end of Cycle II, both class success indicators had been met, with 23 out of 27 students falling into the high or very high categories for each variable. However, since this study was conducted in a single class without a comparison group, the results are best understood as a pattern of change within the class following a series of action improvements, rather than as an estimate of an experimental effect.

Conclusion

Implementing a play-based approach using modified games in Physical Education (PJOK) lessons for Class IV B at SD Negeri Betet 3, Kediri City, resulted in increased learning interest and active student participation across two action cycles. Learning interest rose from 61.57% in the pre-cycle stage to 82.87% by the end of Cycle II, while active participation increased from 62.15% to 80.79%. By the study's conclusion, 23 out of 27 students had reached the "high" or "very high" category for both variables, thereby meeting the class success indicator of 80%.

This improvement coincided with better game management—specifically through simplified rules, adjustments to equipment and playing areas, role allocation, more organized rotation, reduced waiting times, and more equitable opportunities for movement. Consequently, the play-based approach using modified games serves as a viable alternative for creating Physical Education lessons that actively engage students and foster greater learning interest. As this study employed a Classroom Action Research (CAR) design without a control group, the findings reflect changes in classroom conditions following the implementation and gradual refinement of interventions, rather than an estimate of experimental effects.

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