



Improving Floor Exercise Learning Outcomes through the Problem Based Learning Model for Class VI Students

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Abstract

The low achievement of students in floor exercise learning was identified as a major problem in Class VI A at State Elementary School 1 Landasan Ulin Selatan. Previous studies have reported positive effects of Problem Based Learning (PBL) in Physical Education; however, limited evidence has explained how PBL can be adapted to elementary-school floor exercise learning that requires balance, flexibility, confidence, and peer-supported correction. This study aimed to improve students' learning outcomes in floor exercise through the implementation of a PBL-based classroom action strategy. This study employed Classroom Action Research (CAR) consisting of two cycles, with each cycle involving planning, action, observation, and reflection stages. The participants were 22 sixth-grade students enrolled in the second semester of the 2025/2026 academic year. Participants were selected purposively based on preliminary observations indicating low learning outcomes in floor exercise. Data were collected through performance tests, observation sheets, and documentation. The instruments were reviewed by experts prior to implementation, and the collected data were analyzed using descriptive quantitative and qualitative techniques. The findings showed continuous improvement across the research cycles. Learning mastery increased from 22.73% in the pre-cycle stage to 63.64% in Cycle I and reached 86.36% in Cycle II. Similarly, the class average score improved from 52.3 to 68.4 and further increased to 81.2. Improvements were also observed in the cognitive, psychomotor, and affective domains, indicating positive development in students' understanding, movement performance, participation, cooperation, and confidence. The findings suggest that a structured learning approach integrating Problem Based Learning, collaborative practice, peer correction, drill activities, repeated movement practice, and teacher guidance may support improved floor exercise learning outcomes among elementary-school students. However, the results are limited to a single classroom context and should be interpreted cautiously.

Keywords: Problem Based Learning; Physical Education Learning Outcomes; Floor Exercise.

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INTRODUCTION

Education plays an essential role in preparing individuals with adequate knowledge, practical skills, and positive character values. Within Physical Education, Sports, and Health subjects, students are encouraged not only to develop physical movement abilities but also to recognize the importance of regular physical activity in maintaining health and physical fitness. One of the materials taught at the elementary school level is floor exercise, which aims to develop balance, body coordination, flexibility, courage, and self-confidence through structured physical activities.

Observations conducted in Class VI A at State Elementary School 1 Landasan Ulin Selatan revealed that students' performance in floor exercise learning had not yet achieved the expected outcomes. Many students still experienced difficulties in performing forward roll, candle stand, and bridge movements correctly. During practice sessions, several students appeared hesitant and lacked confidence because they were afraid of falling or making mistakes while performing the movements. In addition, classroom instruction was still dominated by teacher demonstrations, resulting in limited student participation and reducing opportunities for students to identify and correct movement errors independently.

The results of the preliminary evaluation showed that only 5 of the 22 students (22.73%) achieved learning mastery, while 17 students (77.27%) had not yet reached the Minimum Criteria for Learning Objective Attainment (KKTP) score of 75. The class average score was

only 52.3, indicating that students' learning outcomes in floor exercise remained relatively low. These findings suggest the need for a learning approach that can actively engage students while improving their cognitive understanding, movement skills, and confidence during the learning process.

Problem Based Learning (PBL) is one learning model that has the potential to address these challenges. PBL emphasizes student-centered learning through problem-solving activities, collaborative discussions, investigation, reflection, and direct learning experiences. In Physical Education, PBL is closely related to motor learning theory, which suggests that movement skills are developed more effectively when students actively engage in meaningful tasks, receive feedback, and reflect on their performance. Through collaborative problem-solving and peer interaction, students are encouraged to analyze movement errors, develop corrective strategies, and build confidence in performing physical activities. PBL also supports student-centered learning principles by promoting active participation, guided discovery, peer feedback, and experiential learning.

Previous studies have reported positive effects of Problem Based Learning on students' learning outcomes and participation in Physical Education. (Tanwisastra et al., 2023) found that the implementation of PBL significantly improved students' learning activities and learning outcomes in physical education settings. Similarly, (Rahmadi et al., 2023) reported that PBL enhanced students' collaboration skills, active participation, and engagement during Physical Education learning activities. In addition, (I Putu Harya Dana Kusuma Kusuma et al., 2025) demonstrated that the application of Problem Based Learning improved students' floor exercise learning outcomes by encouraging active involvement and independent problem-solving during movement practice.

Research in motor learning and Physical Education also highlights the importance of feedback and collaborative learning in developing movement competence. (Treschman et al., 2024) explained that effective feedback enables students to identify movement errors, improve performance, and achieve better learning outcomes in Physical Education. Furthermore, (Han et al., 2022) concluded that feedback and guided practice are important factors influencing motor skill acquisition and movement performance among students.

However, despite the positive findings reported in previous studies, several gaps remain. Limited evidence has explained how Problem Based Learning can be specifically adapted for elementary-school floor exercise learning, particularly for movements requiring balance, flexibility, courage, and peer-supported correction. Previous studies have also tended to emphasize general learning outcomes without clearly integrating psychomotor, affective, and collaborative indicators within the learning process. Furthermore, limited research has examined the use of structured PBL activities that combine group discussion, peer correction, movement-sequence tasks, drill exercises, and guided practice to improve students' mastery of floor exercise skills.

Therefore, this study addresses these gaps by implementing a structured Problem Based Learning strategy in elementary-school floor exercise learning. The novelty of this study lies in the integration of PBL with peer correction, movement-sequence activities, drill exercises, and collaborative problem-solving tasks designed specifically for forward roll, candle stand, and bridge movements. Through this approach, students are encouraged not only to improve their movement performance but also to develop confidence, cooperation, and active participation during the learning process.

Based on these considerations, this study aimed to improve the learning outcomes of sixth-grade students at State Elementary School 1 Landasan Ulin Selatan in floor exercise learning through the implementation of the Problem Based Learning model. The study is expected to contribute to the development of more effective and student-centered Physical Education learning practices, particularly in elementary-school floor exercise instruction.

METHOD

This study employed a Classroom Action Research (CAR) design to address instructional problems identified in floor exercise learning and to improve students' learning outcomes through the implementation of the Problem Based Learning (PBL) model. Classroom Action Research is a reflective and cyclical process that enables teachers to identify learning problems, implement instructional improvements, observe the outcomes of

the intervention, and continuously enhance the quality of classroom learning. In Physical Education, Classroom Action Research is widely used to improve student participation, collaboration, and learning outcomes through systematic instructional innovation (Rohmah et al., 2024; Setyo Kriswanto & Fajar Pambudi, n.d.). The study focused on classroom improvement rather than broad generalization of findings.

The participants were 22 students of Class VI A at State Elementary School 1 Landasan Ulin Selatan during the second semester of the 2025/2026 academic year, consisting of 9 male students and 13 female students. Participants were selected purposively based on preliminary observations indicating low learning outcomes in floor exercise material and the large number of students who had not achieved the Minimum Criteria for Learning Objective Attainment (KKTP).

The research was conducted in two action cycles, with each cycle consisting of planning, action, observation, and reflection stages. Prior to the implementation of the action cycles, a pre-cycle assessment was conducted to identify students' initial learning outcomes.

Table 1. Structure of the Classroom Action Research Intervention

Stage	Learning Activities
Pre-Cycle	Learning was conducted through teacher demonstrations and individual practice. Students received limited opportunities for discussion, peer feedback, and problem-solving activities.
Cycle I	Implementation of Problem Based Learning through problem identification, group discussion, collaborative practice, peer correction, reflection, and presentation of solutions.
Cycle II	Improvement of Cycle I by adding drill exercises, repeated practice, movement-sequence activities, structured peer correction, and more intensive teacher guidance while maintaining the Problem Based Learning stages.

At the planning stage, the researcher prepared teaching modules, learning videos, observation sheets, assessment rubrics, and floor exercise equipment. During the action stage, learning activities were conducted using the Problem Based Learning model through collaborative discussions, movement practice, problem-solving activities, and reflective learning. Observation was conducted systematically by the researcher and a collaborating teacher to monitor students' participation and learning progress. Reflection was used to evaluate the effectiveness of each cycle and determine improvements for subsequent actions (Miftakhul Huda et al., 2026).

Data were collected through performance tests, observation sheets, and documentation. Performance tests assessed students' achievement in cognitive, psychomotor, and affective domains related to forward roll, candle stand, and bridge movements. Observation sheets were used to assess students' participation, cooperation, confidence, and discipline during learning activities. Documentation included photographs, videos, score records, and field notes collected throughout the study (Widyastuti et al., 2022).

Instrument validity was established through expert judgment conducted by two Physical Education learning experts and one educational assessment expert. The validation process focused on content relevance, clarity of indicators, and suitability of the assessment criteria with the learning objectives. Revisions were made based on expert feedback before the instruments were implemented.

To enhance scoring reliability, assessment activities were conducted jointly by the researcher and the collaborating teacher using standardized scoring rubrics. Inter-rater agreement was established through scoring discussions and consistency checks before data collection. Any scoring differences were discussed until agreement was reached.

Table 2. Assessment Domains and Weighting

Domain	Indicators	Weight
Cognitive	Understanding of floor exercise concepts and movement procedures	20%
Psychomotor	Accuracy and performance of forward roll, candle stand, and bridge movements	60%
Affective	Confidence, cooperation, discipline, and participation	20%

The final learning outcome score was obtained by combining the weighted scores from the cognitive, psychomotor, and affective domains. The success criteria of the study were determined before the implementation of the action. The study was considered successful when (1) at least 80% of students achieved the Minimum Criteria for Learning Objective Attainment (KKTP) score of 75, (2) the class average score increased from the previous cycle, and (3) observation results indicated improvement in students' participation, cooperation, confidence, and discipline during learning activities.

Data analysis employed descriptive quantitative and qualitative techniques. Quantitative data were obtained from students' learning outcome scores and analyzed using learning mastery percentages, class average scores, minimum scores, maximum scores, and score distributions across cycles. The percentage of learning mastery was calculated using the following formula:

$$P = (F/N) \times 100\%$$

Information:

P = Percentage of learning mastery

F = Number of students achieving mastery

N = Total number of students

Qualitative data were obtained from observation sheets and field notes. The analysis involved data reduction, data presentation, interpretation of findings, and conclusion drawing. Observation results from each cycle were compared to identify changes in students' participation, confidence, cooperation, and engagement throughout the learning process.

Table 3. Criteria for Students' Learning Outcomes

Score Interval	Category
86–100	Very Good
76–85	Good
60–75	Fair
≤59	Poor

Students were considered to have achieved learning mastery if they obtained a minimum score of 75 in accordance with the predetermined Learning Objective Attainment Criteria (KKTP).

Table 4. Criteria for Learning Mastery Percentage

Percentage of Mastery	Category
81%–100%	Very High
61%–80%	High
41%–60%	Moderate
21%–40%	Low
0%–20%	Very Low

RESULTS AND DISCUSSION

Results

This Classroom Action Research (CAR) was conducted to improve students' learning outcomes in floor exercise through the implementation of the Problem Based Learning (PBL) model in Class VI A at State Elementary School 1 Landasan Ulin Selatan. The study was carried out in two cycles, with each cycle consisting of planning, action, observation, and reflection stages. Data were obtained from performance assessments and classroom observations conducted throughout the learning process.

Pre-Cycle Results

A pre-cycle assessment was conducted to determine students' initial learning outcomes before the implementation of the action.

Table 5. Pre-Cycle Learning Outcomes

Category	Number of Students	Percentage
Mastery	5	22.73%
Non-Mastery	17	77.27%
Total	22	100.00%

Class Average Score: 52.3

The pre-cycle results indicated that students' learning outcomes in floor exercise were still relatively low. Only 5 students (22.73%) achieved the learning mastery criterion, while 17 students (77.27%) had not yet achieved mastery. The class average score was 52.3.

Cycle I Results

Cycle I implemented the Problem Based Learning model through collaborative discussions, movement practice, peer correction, and reflective activities.

Table 6. Cycle I Learning Outcomes

Category	Number of Students	Percentage
Mastery	14	63.64%
Non-Mastery	8	36.36%
Total	22	100.00%

Class Average Score: 68.4

The results of Cycle I showed improvement compared with the pre-cycle stage. A total of 14 students (63.64%) achieved learning mastery, while 8 students (36.36%) remained below the mastery criterion. The class average score increased from 52.3 to 68.4. Classroom observation results also showed increased student participation during learning activities compared with the pre-cycle stage.

Cycle II Results

Cycle II was conducted based on the reflection results from Cycle I. Additional learning activities were incorporated while maintaining the Problem Based Learning approach.

Table 7. Cycle II Learning Outcomes

Category	Number of Students	Percentage
Mastery	19	86.36%
Non-Mastery	3	13.64%
Total	22	100.00%

Class Average Score: 81.2

The results of Cycle II demonstrated further improvement in students' learning outcomes. A total of 19 students (86.36%) achieved learning mastery, while only 3 students (13.64%) remained below the mastery criterion. The class average score increased to 81.2. Observation results indicated higher levels of student participation, confidence, cooperation, and engagement during the learning process compared with the previous cycle.

Comparison of Learning Outcomes Across Research Cycles

Table 8. Comparison of Learning Outcomes Across Research Cycles

Stage	Students Achieving Mastery	Mastery Percentage	Class Average Score
Pre-Cycle	5	22.73%	52.3
Cycle I	14	63.64%	68.4
Cycle II	19	86.36%	81.2

Table 6 shows a continuous improvement in students' learning outcomes throughout the research cycles. The number of students achieving learning mastery increased from 5 students in the pre-cycle stage to 14 students in Cycle I and further increased to 19 students in Cycle II. Similarly, the class average score improved from 52.3 in the pre-cycle stage to 68.4 in Cycle I and reached 81.2 in Cycle II.

Learning Outcomes by Assessment Domain

In addition to learning mastery and class average scores, students' achievement was assessed through cognitive, psychomotor, and affective domains. The average scores for each domain across the research cycles are presented in Table 9.

Table 9. Average Scores of Learning Outcome Domains Across Research Cycles

Domain	Pre-Cycle	Cycle I	Cycle II
Cognitive	1.50	2.14	3.18
Psychomotor	1.95	2.86	3.18
Affective	1.73	2.36	3.45

Note: Scores were assessed using a four-point rubric (1 = Poor, 2 = Fair, 3 = Good, and 4 = Very Good).

Table 9 indicates improvement across all assessed domains throughout the research cycles. The average cognitive score increased from 1.50 in the pre-cycle stage to 2.14 in Cycle I and further improved to 3.18 in Cycle II. The psychomotor score increased from 1.95 to 2.86 and then to 3.18. Similarly, the affective score improved from 1.73 in the pre-cycle stage to 2.36 in Cycle I and reached 3.45 in Cycle II.

The largest improvement was observed in the affective domain, indicating positive changes in students' confidence, cooperation, participation, and discipline during learning activities. Improvements were also evident in the cognitive and psychomotor domains across the research cycles.

Overall, the results demonstrated continuous improvement in students' learning outcomes throughout the implementation of the classroom action research. Increases were observed in learning mastery, class average scores, and all assessment domains. The highest level of achievement was obtained in Cycle II, where 86.36% of students achieved learning mastery and the class average score reached 81.2.

Discussion

The results of this study indicate that students' learning outcomes in floor exercise improved progressively from the pre-cycle stage to Cycle I and Cycle II. The percentage of students achieving learning mastery increased from 22.73% in the pre-cycle stage to 63.64% in Cycle I and further increased to 86.36% in Cycle II. Similarly, the class average score improved from 52.3 to 68.4 and finally reached 81.2. Improvements were also observed across the cognitive, psychomotor, and affective domains, suggesting positive changes in students' understanding, movement performance, confidence, participation, and cooperation during the learning process.

The improvement observed in this study may be associated with the implementation of Problem Based Learning (PBL), which encouraged students to become actively involved in identifying movement difficulties, discussing possible solutions, practicing movements collaboratively, and reflecting on their performance. Unlike teacher-centered instruction, PBL places students at the center of the learning process and provides opportunities for exploration, problem-solving, and peer interaction. These characteristics are consistent with student-centered learning principles, which emphasize active engagement and meaningful learning experiences.

From the perspective of motor learning theory, students can develop movement skills more effectively when they are provided with opportunities to practice, receive feedback, observe correct demonstrations, and reflect on their performance. Through group discussions and peer-supported activities, students were able to identify movement errors, exchange ideas, and receive corrective feedback from both peers and teachers. Such experiences may contribute to improved understanding of movement techniques and increased confidence in performing floor exercise skills.

The findings also support social constructivist perspectives, which suggest that learning occurs through interaction, collaboration, and shared problem-solving experiences. During the implementation of PBL, students worked together to analyze movement difficulties, discuss solutions, and evaluate performance outcomes. This collaborative process may have contributed not only to cognitive development but also to affective outcomes such as confidence, cooperation, and active participation.

The results obtained in Cycle I demonstrated meaningful progress compared with the pre-cycle stage. Students became more actively involved in discussions and movement practice, and improvements were observed in learning mastery and average scores. These findings are consistent with previous studies reporting that Problem Based Learning can increase student participation and learning outcomes in Physical Education settings (Purwanto et al., 2024). However, several students still experienced difficulties in maintaining balance, coordinating movements, and performing certain floor exercise skills independently. This indicates that active problem-solving alone may not be sufficient for all learners, particularly when learning motor skills that require repeated physical practice and technical refinement.

An important finding emerged in Cycle II, where additional instructional supports were introduced, including drill exercises, repeated practice sessions, structured movement-sequence activities, and more intensive teacher guidance. Therefore, the improvement observed in Cycle II should not be interpreted as the isolated effect of PBL. Rather, the findings suggest that PBL integrated with repeated practice, peer collaboration, structured movement tasks, and teacher-guided correction was associated with improved floor exercise learning outcomes. The combination of these instructional components appears to have provided students with greater opportunities to refine movement techniques, overcome difficulties, and build confidence in performing floor exercise skills.

The present findings are generally consistent with previous studies showing that problem-based learning can enhance participation, movement skills, and learning outcomes in Physical Education (Fitriani & Irawan, 2018; Purwanto et al., 2024). However, this study extends previous research by demonstrating how PBL can be adapted to elementary-school floor exercise learning through the integration of peer correction, structured movement-sequence activities, and guided motor practice. In addition, the study evaluated learning outcomes across cognitive, psychomotor, and affective domains, providing a more comprehensive picture of student development during the learning process.

Despite these positive findings, several limitations should be acknowledged. First, the study involved only one class consisting of 22 students, which limits the generalizability of the findings. Second, the study did not include a control group; therefore, causal conclusions regarding the effectiveness of PBL cannot be established with certainty. Third, the analysis relied primarily on descriptive statistics, including mastery percentages and average scores, without inferential statistical testing. Fourth, because the researcher was directly involved in the intervention process, the possibility of observer bias cannot be completely eliminated. Finally, evidence regarding instrument reliability was limited to scoring procedures and collaboration between raters.

Future studies are encouraged to involve larger samples, multiple schools, comparison groups, and more rigorous statistical analyses. Additional research may also investigate the specific contribution of individual instructional components, such as drill exercises, peer feedback, and teacher guidance, in supporting the effectiveness of PBL for motor-skill learning.

Overall, the findings suggest that a learning approach combining Problem Based Learning, guided motor practice, peer-supported correction, and structured movement activities can support improvements in students' floor exercise learning outcomes. These findings provide practical implications for Physical Education teachers seeking to create more active, collaborative, and meaningful learning experiences in elementary-school settings.

CONCLUSION

Based on two cycles of Classroom Action Research (CAR), the integration of Problem Based Learning (PBL) with collaborative discussions, peer correction, drill activities, repeated movement practice, structured movement-sequence tasks, and teacher guidance was associated with improved floor exercise learning outcomes among Class VI A students at State Elementary School 1 Landasan Ulin Selatan.

The findings showed a substantial increase in student achievement throughout the research cycles. Learning mastery improved from 22.73% in the pre-cycle stage to 63.64% in Cycle I and further increased to 86.36% in Cycle II. Similarly, the class average score increased from 52.3 in the pre-cycle stage to 68.4 in Cycle I and reached 81.2 in Cycle II. Improvements were also observed in the cognitive, psychomotor, and affective domains, indicating positive development in students' understanding of floor exercise concepts, movement performance, confidence, cooperation, participation, and discipline during the learning process.

These findings suggest that a structured student-centered learning approach that combines problem-solving activities with guided motor practice and peer-supported learning can support students' mastery of forward roll, candle stand, and bridge movements in elementary-school Physical Education. The study also provides practical implications for teachers by highlighting the importance of integrating active learning strategies, collaborative practice, and continuous feedback when teaching floor exercise skills.

However, the findings should be interpreted cautiously because the study was conducted in a single classroom involving 22 students and did not include a comparison group. In addition, the analysis relied primarily on descriptive statistics, and evidence regarding instrument reliability was limited. Therefore, the results should be viewed as evidence of classroom-specific improvement rather than broad proof of effectiveness.

RECOMMENDATIONS

Future research is recommended to involve larger samples, multiple schools, clearer performance assessment rubrics, inter-rater reliability analysis, and comparative or experimental research designs to further examine the contribution of Problem Based Learning and other instructional supports to students' motor-skill development and learning outcomes in Physical Education.

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