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Active and Play-Based Physical Education Approaches: A Comparative Study in Indonesia and Thailand

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ABSTRACT

Purpose of the study: This study aims to compare active and play-based physical education approaches implemented in Indonesia and Thailand in enhancing elementary school students' motivation, participation, and squat long jump performance. The study also examines differences in instructional strategies, learning environments, and pedagogical characteristics across both educational contexts.

Methodology: Methodology: This study employed a comparative classroom action research design with descriptive mixed-methods analysis across two elementary schools: State Elementary School Kentingan 03, Surakarta, Indonesia (n = 28) and Ban Nok Mueang School, Phatthalung, Thailand (n = 30). Data were collected through observations, interviews, questionnaires, and documentation across three phases and analysed using qualitative and quantitative descriptive procedures.

Main Findings: Both countries improved instructional quality, student motivation, participation, and squat long jump performance through active and play-based approaches. Indonesian students increased their mean jumping distance by 29.9 cm (+25.3%) through the Active, Innovative, Creative, Effective, and Enjoyable Learning approach, while Thai students improved by 27.7 cm (+22.2%) through structured movement stations and cooperative circuits. These approaches created distinct learning environments that enhanced engagement, confidence, and movement competence.

Novelty/Originality of this study: This study provides a comparative analysis of active and play-based squat long jump learning practices between Indonesia and Thailand, which has rarely been explored in previous physical education research. The study highlights the integration of Indonesia's low-resource instructional creativity and Thailand's structured movement-based pedagogy as complementary approaches for improving elementary physical education learning quality in Southeast Asian educational contexts.

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1. INTRODUCTION

Physical education at the elementary school level plays an essential role in supporting children's physical, cognitive, emotional, and social development [1]-[3]. Through physical education, students not only develop movement skills and physical fitness, but also build self-confidence, discipline, cooperation, creativity, and lifelong healthy habits [4]-[6]. In many developing countries, including Indonesia and Thailand, physical education has increasingly been recognised as an important educational component for improving students' quality of life and overall educational outcomes. Elementary school represents a critical developmental stage in which students begin forming attitudes toward physical activity and sports participation that may continue into adolescence and adulthood [7]-[9].

Among various athletics materials taught in elementary schools, squat long jump learning occupies an important position because it develops coordination, balance, speed, leg power, and body control simultaneously [10]-[12]. The squat long jump also introduces students to fundamental athletics movement patterns that become the basis for more advanced sports skills in the future [13]-[15]. However, despite its importance, squat long jump instruction in elementary schools is often perceived by students as difficult, repetitive, monotonous, and physically demanding. Conventional teaching methods that rely heavily on direct instruction, repetitive drills, and teacher-centred demonstrations frequently reduce student enthusiasm and active participation during physical education lessons [16]-[18].

In Indonesia, elementary physical education learning still commonly faces various pedagogical and infrastructural challenges. Many schools operate with limited sports facilities, insufficient learning media, and minimal variation in instructional strategies [19]-[21]. As a result, teachers often depend on conventional approaches that emphasize technical mastery rather than enjoyable learning experiences. Students tend to become passive participants, particularly those who lack confidence in their physical abilities. In athletics learning contexts such as squat long jump, these conditions frequently result in low motivation, limited engagement, and unsatisfactory learning outcomes [22]-[24]. Consequently, innovative and student-centred instructional approaches are needed to create more enjoyable and meaningful learning experiences for elementary school students [25]-[27].

One instructional approach that has gained considerable attention in Indonesia is Pembelajaran Aktif, Inovatif, Kreatif, Efektif, dan Menyenangkan (PAIKEM), which may be translated as Active, Innovative, Creative, Effective, and Enjoyable Learning. This student-centred approach promotes participation, creativity, collaboration, and enjoyable learning experiences [28], [29]. In physical education contexts, PAIKEM allows students to learn movement skills through play-based activities, modified games, peer interaction, and creative movement challenges, which is consistent with evidence from recent systematic reviews showing that game-based physical education interventions significantly enhance student enjoyment, motivation, and engagement [30]. This approach is considered highly suitable for elementary school children because it aligns with their developmental characteristics, which naturally favour play, exploration, and social interaction. Through active and enjoyable activities, students are expected to become more motivated and engaged in learning athletics skills.

Meanwhile, Thailand has demonstrated significant progress in the development of active learning approaches within elementary physical education [28]-[30]. Thai physical education programs increasingly integrate movement-based learning, game-centred instruction, collaborative activities, and sport science principles into classroom practice. Physical education instruction in Thailand generally places greater emphasis on student participation, movement exploration, cooperative learning, and progressive skill development [31]-[33]. Teachers frequently use relay games, movement stations, partner-based tasks, and activity circuits to increase student engagement and physical activity levels during lessons [34]-[36]. Compared to Indonesia, Thailand's educational approach in physical education tends to be more systematically structured and strongly supported by modern pedagogical frameworks.

Although both Indonesia and Thailand have implemented active and enjoyable learning approaches in physical education, important differences remain in terms of instructional characteristics, learning environments, activity design, and motivational strategies. Indonesia tends to emphasize creativity and contextual learning using simple and low-cost media [40], while Thailand demonstrates stronger integration of structured movement education and sport science principles [41]. These differences create an interesting opportunity for comparative analysis in order to identify effective instructional strategies that can improve student motivation and participation in squat long jump learning [42].

Previous studies have mostly focused on examining the effectiveness of active learning or play-based learning within a single country context. Research in Indonesia has largely concentrated on the implementation of active and modified game-based approaches to improve student motivation and learning participation, whereas studies in other Asian contexts have commonly explored structured movement-based instruction and student

engagement strategies in physical education [45], [46]. However, comparative studies examining similarities and differences between Indonesian and Thai physical education practices, particularly in squat long jump learning at the elementary school level, remain very limited. Existing literature also rarely discusses how differences in pedagogical orientation, learning media, and instructional strategies influence student motivation across different educational contexts in Southeast Asia.

This condition reveals an important research gap. There is still limited empirical discussion regarding comparative active learning practices between Indonesia and Thailand in elementary physical education, especially concerning play-based squat long jump instruction. Most previous research has analysed learning models separately within national contexts without exploring cross-country pedagogical comparisons [47]. As a result, there remains insufficient understanding regarding the strengths, weaknesses, and instructional characteristics of each country's approach in enhancing student motivation and learning engagement.

The urgency of this study lies in the increasing need for innovative, low-cost, student-centred, and motivating instructional strategies in elementary physical education. Many schools in developing countries continue to experience limited sports facilities and restricted access to sophisticated learning equipment [48]. Therefore, identifying effective and adaptable learning approaches from different national contexts becomes highly important for improving the quality of physical education instruction. Comparative analysis between Indonesia and Thailand may provide valuable insights for teachers, curriculum developers, and educational policymakers in designing more engaging and developmentally appropriate athletics learning programs for elementary school students.

The novelty of this study is reflected in its comparative analysis of active and play-based squat long jump learning practices between Indonesia and Thailand. Unlike previous studies that only examined instructional effectiveness within a single educational setting, this study specifically compares the pedagogical characteristics, motivational strategies, learning activities, and instructional environments implemented in both countries. Furthermore, this study highlights how low-resource creativity in Indonesia and structured movement-based learning in Thailand can contribute complementary perspectives for improving elementary physical education practices in Southeast Asia.

Therefore, the purpose of this study is to compare active and play-based physical education learning approaches implemented in Indonesia and Thailand in enhancing elementary students' motivation during squat long jump instruction. Specifically, this study aims to: (1) analyse the characteristics of squat long jump learning in Indonesian elementary schools; (2) analyse active learning practices in Thai elementary physical education; (3) compare motivational and instructional strategies used in both countries; and (4) identify the strengths, challenges, and educational implications of play-based learning approaches for improving student engagement and learning quality in elementary physical education.

2. RESEARCH METHOD

2.1 Type of Research

This study employed a comparative Classroom Action Research (CAR) design, in which action research cycles were implemented in parallel across two national educational contexts Indonesia and Thailand, and subsequently compared to identify similarities, differences, and complementary instructional strengths. A qualitative descriptive approach was adopted to explore how active and play-based instructional approaches were implemented in elementary squat long jump learning in both countries. The comparative CAR design was considered appropriate because it enables systematic examination of instructional improvement processes within authentic classroom settings while allowing cross-country pedagogical comparison [39]-[41]. The research framework is illustrated in Figure 1.

Indonesia represented the implementation of the PAIKEM (Pembelajaran Aktif, Inovatif, Kreatif, Efektif, dan Menyenangkan) instructional model, while Thailand represented active movement-based learning (AMBL) commonly applied in Thai elementary physical education. The study was conducted between March and May 2025 at selected elementary schools in both countries. Each setting followed a three-phase structure: baseline observation, Cycle 1 implementation, and Cycle 2 implementation with instructional revision based on reflective evaluation between cycles.

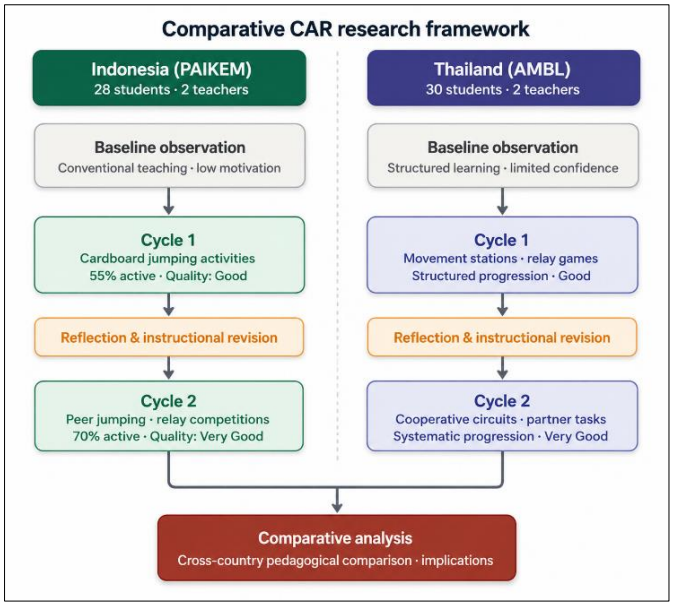

Figure 1. Comparative CAR Research Framework

2.2 Population and Sample

The population of this study consisted of elementary school physical education learning practices related to squat long jump instruction in Indonesia and Thailand. Participants were selected purposively based on the relevance of their learning practices to active and play-based instructional approaches. The selection criteria required that: (a) the schools actively implemented student-centred physical education learning; (b) squat long jump material was included in the athletics curriculum; and (c) teachers utilized play-based or active learning activities during instruction. The participant profile is presented in Table 1.

Table 1. Research Participant Profile

Category	Indonesia	Thailand
School	Kentingan 03 Elementary School, Surakarta	Ban Nok Mueang School, Phatthalung
Province/City	Surakarta, Central Java	Phatthalung, Southern Thailand
Grade level	Grade V (upper elementary)	Grade V (upper elementary)
Number of students	28 students	30 students
PE teachers involved	2 teachers	2 teachers
Learning model	PAIKEM (Pembelajaran Aktif, Inovatif, Kreatif, Efektif, dan Menyenangkan)	Active Movement-Based Learning (AMBL)
Research cycles	Baseline + Cycle 1 + Cycle 2	Baseline + Cycle 1 + Cycle 2
Data collection period	March–May 2025	March–May 2025

Note. Total participants: 58 students and 4 PE teachers across both countries. Schools were selected purposively based on active implementation of student-centred physical education learning.

As shown in Table 1, the participant sample was deliberately structured to represent two contrasting national approaches to active physical education learning at the upper elementary level, while maintaining comparable grade levels, subject matter, and instructional cycles to support valid cross-country comparison.

2.3 Data Collection Technique

Data collection employed four complementary techniques to obtain comprehensive and triangulated information regarding the implementation of active and play-based squat long jump learning in both countries. The instruments and their coverage are summarized in Table 2.

First, classroom observations were conducted during each instructional cycle to examine learning activities, teacher strategies, student participation, classroom atmosphere, learning media, and play-based activities implemented during physical education lessons. Observations focused on identifying how active and enjoyable learning approaches were applied and how students responded across cycles. Second, semi-structured interviews were conducted with physical education teachers to obtain deeper information regarding instructional planning, learning objectives, challenges in teaching squat long jump, motivational strategies, and perceptions toward active learning implementation. The semi-structured format allowed participants to explain their teaching practices more freely and comprehensively. Third, questionnaires were administered to students to assess instructional quality

perceptions, motivation levels, and learning enjoyment at each phase of the study. Questionnaire responses were analysed using accumulated percentage scores per response category. Fourth, documentation analysis was employed to support and verify findings from the other instruments. Documents included lesson plans, instructional materials, school curriculum documents, learning activity photographs, and student performance records.

Table 2. Data Collection Instruments and Coverage

Instrument	Data source	Focus areas	Applied in
Classroom observation	PE lessons (all cycles)	Teacher strategies, student participation, learning atmosphere, activity design	Both countries
Semi-structured interview	PE teachers (n = 4)	Instructional planning, motivational strategies, learning challenges, PAIKEM/AMBL implementation	Both countries
Questionnaire	Students (n = 58)	Instructional quality perception, student motivation, learning enjoyment	Both countries
Documentation analysis	Lesson plans, curriculum documents, activity photos, performance records	Instructional design, learning media, curriculum alignment	Both countries

Note. Triangulation was conducted by comparing data across all four instruments at each measurement phase. Questionnaire responses were analysed using accumulated percentage scores per category.

As presented in Table 2, the four instruments served distinct but mutually reinforcing functions. Observations provided direct evidence of classroom dynamics and student engagement; interviews generated teacher perspectives on instructional intent and challenges; questionnaires captured student perceptions systematically; and documentation analysis verified and contextualised findings from the other three sources. The integration of these instruments through triangulation strengthened the credibility and confirmability of the study's findings.

2.4 Data Analysis Technique

Data were analysed using descriptive mixed-methods analysis combining qualitative and quantitative descriptive procedures, following five sequential stages, as illustrated in Figure 2. The qualitative track and quantitative descriptive track were conducted in parallel before being integrated at the comparative analysis stage.

In the qualitative track, the first stage involved data reduction, in which interview transcripts, observational field notes, and documentary evidence were systematically coded, categorized, and organized according to relevant themes including instructional approach, learning media, play-based activities, teacher roles, student engagement, and learning challenges [52], [53]. The second stage involved data display, in which the organized qualitative information was presented in the form of descriptive narratives and comparative thematic tables to facilitate systematic cross-country comparison. The third stage involved interpretation, in which recurring patterns, pedagogical characteristics, and contextual meanings were identified within each national educational context.

In the quantitative descriptive track, the first stage involved computation of descriptive statistics from student questionnaire responses and physical performance measurements, including mean scores, accumulated percentage scores per response category, and performance category classifications. The second stage involved data display through performance summary tables and score distribution charts. The third stage involved interpretation of numerical trends, improvement trajectories, and passing rate outcomes across baseline, Cycle 1, and Cycle 2 phases.

The fourth stage, cross-country comparison, integrated findings from both tracks, in which the instructional characteristics, motivational strategies, and performance outcomes of Indonesia and Thailand were compared to identify similarities, differences, strengths, and challenges within each educational context. The fifth stage involved conclusion drawing and formulation of educational implications and recommendations for improving elementary physical education practices in Southeast Asia.

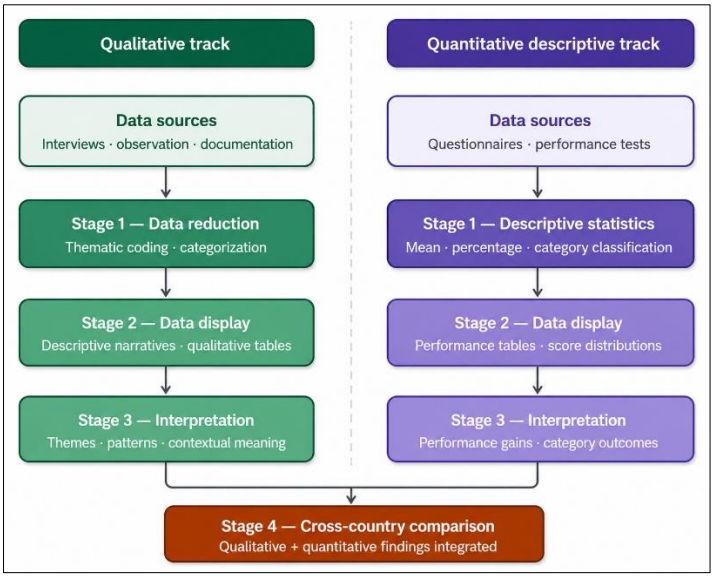

Figure 2. Mixed-methods data analysis procedure

2.5 Research Procedure

This study followed the Classroom Action Research procedural framework consisting of four stages, planning, acting, observing, and reflecting, implemented across two cycles at each research site. The procedure was conducted in parallel at Kentingan 03 Elementary School, Surakarta (Indonesia) and Ban Nok Mueang School, Phatthalung (Thailand) between March and May 2025, with each site following the same cyclical structure to enable valid cross-country comparison.

During the planning stage of each cycle, the research team collaboratively developed lesson plans, prepared learning media, and designed instructional activities aligned with the respective learning models, PAIKEM in Indonesia and AMBL in Thailand. Observation instruments, interview guides, and questionnaires were reviewed and finalized prior to each cycle's implementation. In Indonesia, Cycle 1 planning focused on the preparation of cardboard jumping media and peer-based movement challenges, while Cycle 2 planning incorporated revisions based on Cycle 1 reflection findings, introducing relay competitions and collaborative group activities. In Thailand, Cycle 1 planning centred on the design of structured movement stations and progressive jumping circuits, while Cycle 2 planning extended these into more advanced cooperative movement circuits and partner-based relay tasks.

During the acting stage, physical education teachers at each site implemented the planned instructional activities across the designated lesson periods. Lessons were conducted in accordance with the prepared lesson plans, with teachers encouraged to apply creative adaptations within the boundaries of the respective learning model frameworks. In Indonesia, teachers implemented play-based cardboard jumping activities during Cycle 1 and peer jumping relay activities during Cycle 2. In Thailand, teachers facilitated structured movement station rotations during Cycle 1 and cooperative circuit activities during Cycle 2.

During the observing stage, researchers and collaborating teachers systematically documented learning processes, student responses, instructional quality, and classroom atmosphere using structured observation instruments. Student questionnaires were administered at the end of each cycle to capture perceptions of instructional quality, motivation, and enjoyment. Squat long jump performance measurements were conducted at the end of each cycle using standardised assessment protocols, with each student performing three attempts and the best result recorded.

During the reflecting stage, findings from observation records, questionnaire responses, and performance data were reviewed and discussed collaboratively by the research team. Strengths, weaknesses, and areas requiring instructional improvement were identified, and revisions were formulated to inform the subsequent cycle's planning. Following the completion of Cycle 2 at both sites, cross-country comparative analysis was conducted by integrating qualitative and quantitative descriptive findings from Indonesia and Thailand.

2.6 Trustworthiness and Ethical Considerations

The trustworthiness of the findings was established through methodological triangulation, comparing data from classroom observations, teacher interviews, student questionnaires, and documentary sources, and member checking, in which key findings were confirmed with participating teachers prior to final analysis. For the quantitative descriptive component, consistency was ensured by applying standardised measurement protocols for squat long jump assessment across both countries, with each student performing three attempts under researcher supervision.

All participants were informed of the study's purpose and provided informed consent prior to data collection. For student participants, informed consent was obtained from parents or legal guardians in accordance with child research protection protocols. Participation was entirely voluntary, and participants were informed of their right to withdraw at any stage without consequence. Student anonymity was maintained throughout data analysis and reporting. Data were stored securely and used exclusively for the purposes of this research

3. RESULTS AND DISCUSSION

3.1 Comparative Baseline Conditions of Physical Education Learning in Indonesia and Thailand

The findings of this study revealed substantial differences in the initial implementation of squat long jump learning between Indonesia and Thailand, particularly in terms of instructional approach, classroom atmosphere, student participation, and teacher strategies. In Indonesia, baseline observations demonstrated that physical education instruction was still largely dominated by conventional teacher-centred approaches emphasizing repetitive technical drills, direct demonstration, and one-way instructional communication. Students were generally instructed to imitate movement techniques demonstrated by the teacher without sufficient opportunities for exploration, collaboration, or enjoyable movement experiences. As a result, many students perceived squat long jump learning as difficult, monotonous, and physically demanding. This condition negatively influenced students' motivation and participation during physical education lessons.

Questionnaire responses were analysed using accumulated percentage scores per response category, in which the total score is divided by the number of items to yield a mean category percentage; lower values indicate dominant "Disagree" or "Poor" responses, while higher values indicate dominant "Agree" or "Good" responses. Questionnaire findings in Indonesia showed that instructional model quality and student motivation were still categorized as "Poor." The accumulated percentage for instructional quality reached 299.33% (9.98%), while student motivation reached 690.02% (23.00%), indicating that dominant student responses were still concentrated in the "Disagree" category. Observation results further confirmed that students tended to become passive participants during lessons, particularly students who lacked confidence in their physical abilities. Many students hesitated to perform jumping movements because they were afraid of making mistakes or being embarrassed in front of classmates. Learning activities also lacked sufficient variation, causing students to lose concentration and enthusiasm during instruction. Furthermore, limited sports facilities and inadequate instructional media in Indonesian elementary schools often forced teachers to rely on traditional learning methods rather than innovative movement activities [21], [54].

In contrast, baseline conditions in Thailand demonstrated relatively more structured and systematic physical education learning environments. Thai elementary schools generally implemented active learning principles more consistently through movement stations, relay activities, collaborative games, and progressive skill practices [55]. Physical education teachers in Thailand appeared more accustomed to organizing student-centred learning activities that emphasized movement exploration, cooperative learning, and continuous student engagement. Students actively participated in group movement tasks and demonstrated better classroom discipline and readiness during physical education instruction. Nevertheless, despite the more organized instructional structure, some students in Thailand still experienced low confidence and anxiety when performing technically demanding squat long jump movements. Several students were still reluctant to take risks during jumping activities and occasionally depended heavily on teacher guidance.

These comparative findings indicated that Indonesia and Thailand shared similar educational challenges related to student confidence and motivation in athletics learning, although the instructional contexts differed substantially. Indonesia faced greater challenges regarding instructional variation, facility limitations, and student engagement, whereas Thailand demonstrated stronger classroom organization and movement-based learning structures. However, both countries recognized the necessity of implementing more enjoyable, active, and student-centred instructional approaches to improve learning quality and student participation in elementary physical education [56]. Table 3 presents a comparative profile of baseline characteristics across the two study sites.

Table 3. Comparative Baseline Characteristics of Squat Long Jump Learning

Aspect	Indonesia	Thailand
Instructional Orientation	Teacher-centred and technical drills	Structured active learning
Learning Atmosphere	Monotonous and formal	More organized and interactive
Student Participation	Relatively passive	Moderately active
Learning Media	Limited and conventional	More varied movement activities
Main Problem	Low motivation and boredom	Limited confidence in technical skills
Teacher Role	Dominant instructor	Facilitator and organizer

The baseline comparison clearly demonstrated that the two countries started from different pedagogical conditions. Indonesia relied heavily on teacher instruction and simple movement repetition, while Thailand had already integrated active learning elements into physical education instruction. However, both educational contexts

still required instructional innovation to improve student motivation, confidence, and engagement in squat long jump learning.

3.2 Comparative Improvement During Cycle 1: Active and Play-Based Learning Implementation

Following the implementation of active and play-based learning strategies in Cycle 1, both Indonesia and Thailand demonstrated significant improvements in instructional quality, student participation, and learning motivation. Nevertheless, the mechanisms and instructional characteristics underlying these improvements differed between the two countries.

In Indonesia, Cycle 1 focused on implementing the PAIKEM instructional model through cardboard box jumping activities. Teachers creatively modified simple and inexpensive materials into attractive learning media that encouraged students to participate more actively in squat long jump learning. Cardboard boxes of varying heights and distances were arranged into playful movement challenges that allowed students to practise jumping movements in a less formal and more enjoyable environment. Instead of focusing exclusively on technical perfection, students were encouraged to explore movement, compete with peers, and enjoy the learning process. As a result, instructional quality improved into the "Good" category with an accumulated percentage of 339.97% (11.33%), while student motivation also improved into the "Good" category with 670.01% (22.33%).

Observation findings showed that approximately 55% of Indonesian students actively participated during the learning process, while around 65% expressed enjoyment and happiness after completing the activities. Students appeared more enthusiastic and confident when learning through games and movement challenges compared to conventional instruction. The playful atmosphere reduced students' fear of failure and encouraged greater willingness to participate in jumping activities. Furthermore, group competitions and collaborative tasks strengthened peer interaction and social engagement during lessons.

The Indonesian findings demonstrated that creativity in instructional design could successfully compensate for limited sports facilities and equipment. Teachers transformed simple cardboard materials into effective movement-learning media capable of increasing student enthusiasm and participation. This condition highlighted one of the major strengths of Indonesian physical education practice: the ability to adapt learning creatively within low-resource educational environments [57], [58].

Meanwhile, Thailand implemented Cycle 1 through structured movement stations, relay games, and progressive jumping circuits designed to improve coordination, balance, and movement confidence. Thai teachers divided students into several small groups rotating systematically through different movement tasks. Each station focused on a specific aspect of squat long jump movement, such as take-off coordination, landing balance, jumping rhythm, and body control. This structured organization allowed students to remain physically active throughout the lesson while gradually developing movement competence.

Compared to Indonesia, Thailand demonstrated stronger classroom organization and more systematic instructional progression. Teachers actively monitored student performance, provided immediate feedback, and maintained lesson structure carefully to ensure continuous participation. Students responded positively to these active learning strategies because the activities allowed them to move continuously, collaborate with peers, and experience progressive achievement during lessons. However, unlike Indonesia, where learning creativity emerged primarily from facility limitations, Thailand's instructional improvement was more strongly associated with pedagogical planning and movement education principles.

These findings indicated that although Indonesia and Thailand implemented different active learning strategies, both countries successfully improved student engagement and instructional quality during squat long jump learning. Indonesia emphasized joyful and creative learning experiences, while Thailand emphasized structured movement progression and systematic classroom organization. Both approaches effectively shifted learning from passive teacher-centred instruction into active student-centred participation.

3.3 Comparative Improvement During Cycle 2: Social Interaction and Collaborative Learning

The most substantial improvements in both countries occurred during Cycle 2 after instructional revisions and the introduction of more socially interactive learning activities. In Indonesia, peer jumping activities, relay competitions, and collaborative movement games significantly increased student participation, emotional engagement, and learning motivation [59]. Students no longer viewed squat long jump learning merely as an individual technical task but rather as a fun, cooperative, and socially engaging activity.

Instructional quality in Indonesia improved further into the "Very Good" category, reaching an accumulated percentage of 300.01% (10.00%), while student motivation also advanced into the "Very Good" category with 620.00% (20.67%). Observation findings revealed that approximately 70% of students actively participated throughout the entire lesson, compared to only 55% during Cycle 1. In addition, around 80% of students achieved satisfactory performance during group competition activities, while 85% expressed enjoyment and positive emotional responses after the lesson.

The introduction of peer jumping activities created a more dynamic and emotionally engaging learning atmosphere. Students interacted directly with classmates, worked collaboratively during relay tasks, and developed

greater trust and communication during movement activities. These social interactions significantly strengthened students' confidence and willingness to participate [60]. The learning environment became more supportive, enjoyable, and motivating because students no longer focused solely on individual performance outcomes.

In Thailand, Cycle 2 involved more advanced cooperative movement circuits, partner-based activities, and progressive relay competitions emphasizing teamwork, coordination, and movement fluency. Thai teachers incorporated increasingly complex movement sequences requiring students to cooperate actively with peers while maintaining movement accuracy and balance. Students demonstrated improved confidence, stronger coordination, and higher engagement levels during learning activities. Teachers continued to provide systematic feedback and carefully organized movement progression to ensure that all students remained actively involved throughout the lesson.

Although both countries demonstrated major improvements in Cycle 2, important pedagogical differences remained visible. Indonesia's success was strongly influenced by playful social interaction, peer enjoyment, and creative activity modification, whereas Thailand's success reflected systematic movement pedagogy and organized cooperative learning structures. Indonesia emphasized emotional engagement and learning enjoyment, while Thailand emphasized movement efficiency, coordination development, and structured progression. The comparative improvement across both cycles for key indicators is summarized in Table 4.

Table 4. Comparative Improvement Across Cycles: Indonesia and Thailand

Indicator	Indonesia Baseline	Indonesia Cycle 1	Indonesia Cycle 2	Thailand Baseline	Thailand Cycle 1	Thailand Cycle 2
Instructional quality	Poor (9.98%)	Good (11.33%)	Very Good (10.00%)	Moderate	Good	Very Good
Student motivation	Poor (23.00%)	Good (22.33%)	Very Good (20.67%)	Moderate	Good	Very Good
Active participation	—	55%	70%	Moderately active	Increased	High
Student enjoyment	—	65%	80–85%	—	Positive	High

Note. Indonesia values represent mean accumulated questionnaire percentage scores per category. Thailand improvement levels were assessed through classroom observation and teacher interview data.

As shown in Table 4, both countries progressed from Poor or Moderate baseline levels to Very Good by the end of Cycle 2, with Cycle 1 serving as an important intermediate improvement stage in both contexts. These differences illustrated how educational culture and pedagogical orientation influenced the implementation of active learning within elementary physical education. Nevertheless, both approaches successfully fulfilled students' psychological and developmental needs by creating learning environments characterized by movement exploration, social interaction, collaboration, and enjoyable challenges [61], [62].

3.4 Comparative Improvement in Squat Long Jump Performance

In addition to motivational and instructional improvements, both Indonesia and Thailand demonstrated significant enhancement in students' squat long jump performance following the implementation of active and play-based learning approaches, as presented in Table 5 and Table 6.

Indonesian students showed progressive improvement across the two cycles. The mean jumping distance increased from 118.4 cm at baseline to 131.6 cm following Cycle 1, an improvement of 13.2 cm, and further to 148.3 cm following Cycle 2, representing a total gain of 29.9 cm (25.3%) over the intervention period (Haryanto et al., 2023; Kuncoro et al., 2026). Post-Cycle 2 performance assessment indicated that 71.4% of Indonesian students achieved the Good or Very Good performance category. Students showed progressive improvement in jumping distance after participating in cardboard jumping and peer-assisted movement activities. Students became more confident in performing take-off and landing movements because the learning process reduced fear and anxiety associated with athletics instruction [63].

Thai students similarly demonstrated consistent performance gains. Mean jumping distance increased from 124.7 cm at baseline to 136.9 cm after Cycle 1 and 152.4 cm after Cycle 2, representing a total improvement of 27.7 cm (22.2%). Post-Cycle 2 results showed that 80.0% of Thai students achieved the Good or Very Good category. Thai students demonstrated improvements in movement coordination, jumping mechanics, body control, and landing stability through systematic movement stations and progressive cooperative activities. The structured movement progression implemented in Thailand allowed students to develop technical competence gradually while maintaining high levels of participation and enjoyment.

Table 5. Comparative Squat Long Jump Performance: Mean Distance (cm) Across Measurement Phases

Measurement phase	Indonesia mean (cm)	Min	Max	Thailand mean (cm)	Min	Max

Baseline	118.4	94	142	124.7	102	151
Post-Cycle 1	131.6 (+13.2)	108	158	136.9 (+12.2)	114	162
Post-Cycle 2	148.3 (+16.7)	124	175	152.4 (+15.5)	130	181
Total improvement	+29.9 cm (+25.3%)	—	—	+27.7 cm (+22.2%)	—	—

Note. Each student performed three attempts; the best result was recorded. Measurements were conducted at the end of each cycle by the PE teacher under researcher supervision.

Table 5 confirms that both instructional approaches facilitated progressive motor development. The improvements across cycles suggest that continuous practice, active engagement, and structured learning experiences contributed to better squat long jump performance. To further examine students' achievement levels after the intervention, performance categories were analyzed based on the post-Cycle 2 assessment results.

Table 6. Student Performance Category Distribution: Post-Cycle 2

Performance category	Distance (cm)	Indonesia (n=28)	%	Thailand (n=30)	%
Very Good	≥ 160	8 students	28.6%	10 students	33.3%
Good	140–159	12 students	42.9%	14 students	46.7%
Sufficient	120–139	6 students	21.4%	5 students	16.7%
Needs improvement	< 120	2 students	7.1%	1 student	3.3%
Passing rate (≥ Good)		20 students	71.4%	24 students	80.0%

Note. Performance categories adapted from the Indonesian national PE assessment standard for Grade V athletics (squat long jump).

The distribution in Table 6 indicates that the majority of students reached satisfactory performance levels after the intervention. This finding reflects improvements not only in technical execution but also in students' confidence and participation during jumping activities.

As presented in Tables 5 and 6, both countries achieved minimum passing rates exceeding 70% by the end of Cycle 2. Thailand demonstrated a slightly higher passing rate (80.0% vs 71.4%), while Indonesia demonstrated a marginally larger absolute improvement in mean distance (+29.9 cm vs +27.7 cm), suggesting that PAIKEM's emphasis on joyful and low-pressure learning effectively compensates for the absence of structured movement progression by creating motivational conditions conducive to uninhibited physical exploration (Mangi et al., 2025; Haryanto et al., 2023). The comparative learning outcomes across both countries are summarized in Table 7.

Table 7. Comparative Characteristics of Learning Outcomes in Indonesia and Thailand

Aspect	Indonesia	Thailand
Main Learning Model	PAIKEM and play-based learning	Active movement-based learning
Main Activities	Cardboard jumping and peer games	Relay circuits and movement stations
Instructional Strength	Creativity and joyful atmosphere	Systematic movement progression
Student Response	Higher enthusiasm and confidence	Better movement organization
Social Interaction	Strong peer enjoyment and collaboration	Structured cooperative learning
Jump Performance Gain	+29.9 cm / +25.3%	+27.7 cm / +22.2%
Post-Cycle 2 Passing Rate	71.4%	80.0%
Learning Outcome	Improved motivation and jumping performance	Improved engagement and movement skills

Note. Data synthesized from classroom observation, student questionnaire, teacher interview, and performance measurement records.

Overall, the comparative findings demonstrated that active and play-based learning approaches significantly improved instructional quality, student motivation, classroom participation, and squat long jump performance in both Indonesia and Thailand. Although the two countries implemented different pedagogical strategies, both approaches successfully created more meaningful, enjoyable, and student-centred physical education learning environments. Indonesia demonstrated the importance of creativity and joyful learning within limited-resource settings, while Thailand highlighted the value of systematic movement progression and structured active learning. Combining the strengths of both educational approaches may provide a highly effective model for improving elementary physical education practices throughout Southeast Asia [22].

The findings of this study contribute to addressing an important gap in the elementary physical education literature. Previous studies on active and play-based learning have predominantly examined instructional effectiveness within single national contexts, with research in Indonesia focusing largely on the implementation of Pembelajaran Aktif, Inovatif, Kreatif, Efektif, dan Menyenangkan (PAIKEM) and studies in Thailand emphasizing active movement-based instruction separately [31]. Comparative evidence examining pedagogical

similarities and differences across Southeast Asian contexts, particularly in athletics learning such as squat long jump, remains limited. By comparing active and play-based physical education approaches implemented in Indonesia and Thailand, this study extends existing knowledge through direct cross-country analysis of instructional practices, student engagement, and learning experiences.

The study also offers several original contributions to the field. First, it provides one of the earliest comparative analyses examining active and play-based squat long jump instruction between Indonesia and Thailand, contributing initial empirical evidence for future multi-country physical education research in Southeast Asia. Second, the findings demonstrate that low-resource instructional creativity implemented in Indonesia and structured movement-based pedagogy applied in Thailand should not be viewed as competing approaches but rather as complementary instructional orientations. This perspective expands current understanding of how active learning may be adapted according to local educational contexts and available resources [28]. Third, by integrating comparative learning outcomes with qualitative interpretation of instructional practices, this study contributes additional empirical support for the effectiveness of play-based approaches in elementary physical education settings [64].

From a practical perspective, the findings offer implications for educational stakeholders across different contexts. For elementary physical education teachers in Indonesia, the results indicate that limited facilities do not necessarily restrict instructional quality, as creative and low-cost learning media may successfully increase student participation and motivation [65]. For teachers in Thailand, the findings suggest that structured movement progression effectively supports technical skill development and may become even more engaging when combined with socially interactive and enjoyable activities [34]. More broadly, for curriculum developers and educational policymakers in Southeast Asia, the complementary strengths identified in both countries indicate opportunities to develop hybrid instructional frameworks that combine contextual creativity with systematic movement progression to improve elementary physical education quality across diverse educational environments.

Despite these contributions, several limitations should be acknowledged when interpreting the findings. The study involved only one elementary school in each country, limiting the transferability of findings to wider educational contexts. In addition, the relatively small sample sizes ($n = 28$ in Indonesia and $n = 30$ in Thailand) restrict interpretation to descriptive and comparative insights rather than broader generalization. The study also focused on two instructional cycles and therefore may not fully capture long-term changes in student motivation or movement performance. Furthermore, because no control group was included, improvements cannot be attributed exclusively to the active and play-based instructional approaches. Future research is encouraged to involve larger multi-school samples, incorporate comparison groups, extend implementation periods, and include additional Southeast Asian contexts to further examine the applicability and sustainability of the complementary pedagogical framework identified in this study.

4. CONCLUSION

Based on the comparative Classroom Action Research findings, active and play-based physical education learning approaches were effective in improving instructional quality, student motivation, participation, and squat long jump performance among Grade V elementary school students in both Indonesia and Thailand. Indonesian students improved mean jumping distance by 29.9 cm (+25.3%) through the implementation of PAIKEM (Pembelajaran Aktif, Inovatif, Kreatif, Efektif, dan Menyenangkan or Active, Innovative, Creative, Effective, and Enjoyable Learning), while Thai students improved by 27.7 cm (+22.2%) through AMBL (Active Movement-Based Learning), with post-intervention passing rates reaching 71.4% and 80.0% respectively. Although the two approaches differed in pedagogical orientation, with PAIKEM emphasizing low-resource creativity and joyful peer interaction and AMBL emphasizing structured movement progression and cooperative circuits, both successfully created student-centred learning environments that increased enthusiasm, confidence, social interaction, and movement competence.

The comparative findings confirm that effective elementary physical education does not depend on sophisticated facilities, but on the teacher's ability to design meaningful and developmentally appropriate movement experiences. The complementary strengths of PAIKEM and AMBL suggest that a hybrid pedagogical framework integrating Indonesian low-resource creativity with Thai structured movement progression could serve as a transferable model for improving elementary physical education quality across Southeast Asia. Future research should extend this framework to additional countries, employ larger multi-school designs, and adopt longitudinal approaches to assess long-term effects on students' physical fitness and sport participation.

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AUTHOR CONTRIBUTIONS

Conceptualization, K.D.J. and A.M.A.; Methodology, K.D.J., A.M.A., and T.S.; Validation, T.S. and P.H.; Formal Analysis, K.D.J. and T.S.; Investigation, K.D.J., A.M.A., and T.S.; Resources, A.M.A. and P.H.; Data Curation, K.D.J.; Writing – Original Draft Preparation, K.D.J. and A.M.A.; Writing – Review & Editing, T.S. and P.H.; Visualization, K.D.J.; Supervision, T.S. and P.H.; Project Administration, K.D.J.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

USE OF ARTIFICIAL INTELLIGENCE (AI)-ASSISTED TECHNOLOGY

Not applicable.

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