

Game-Based Warm-Up Activities to Enhance Learning Motivation in Physical Education for Elementary School Students

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ABSTRACT: Warm-up activities in physical education classes are often conducted in repetitive and less engaging ways, which may reduce students' enthusiasm before entering the main lesson. This study aimed to develop and evaluate a gamebased warm-up model designed specifically for elementary school students. The research employed a Research and Development (R&D) approach using the 4D model (Define, Design, Develop, Disseminate).

The development process began with a needs analysis through classroom observation and interviews with teachers and students. The product was then designed and validated by experts before being tested in small- and large-scale trials involving 61 elementary students. Data were collected through observation sheets, interviews, expert validation forms, and student questionnaires. The instrument reliability coefficient reached 0.85 (Cronbach's Alpha), indicating high internal consistency.

The final product consisted of six traditional game-based warm-up activities. Expert validation and field testing results indicated that the model met feasibility standards, with overall ratings categorized as "Good" to "Very Good." The findings suggest that integrating structured traditional games into warm-up sessions can increase students' motivation, participation, and readiness for physical education learning.

KEYWORDS: game-based learning, warm-up activities, physical education, 4D model, elementary school

INTRODUCTION

Education plays a central role in shaping human development and social progress. Within the formal education system, Physical Education, Sports, and Health (PJOK) contributes not only to students' physical fitness but also to their social, emotional, and cognitive development. Through structured physical activity, students develop motor skills, cooperation, discipline, and healthy lifestyle habits.

In practice, physical education classes generally begin with warm-up activities. Warm-ups are intended to prepare students physically and psychologically before engaging in more intensive movements. Physiologically, warm-up activities increase muscle elasticity, improve joint mobility, and reduce the risk of injury. Psychologically, they help students transition from passive classroom learning to active physical participation.

However, preliminary observations conducted at SDN 2 Sukajaya indicated that warm-up sessions were often delivered in a conventional and repetitive manner. Students performed similar stretching routines each week with minimal variation. During midday classes, fatigue from previous academic lessons and hot weather conditions further reduced student engagement. Some students appeared less enthusiastic and participated only partially.

Considering that elementary school students naturally enjoy play-based activities, integrating structured games into warm-up sessions may offer a more suitable alternative. Game-based warm-ups have the potential to maintain physiological objectives while simultaneously increasing enjoyment and intrinsic motivation. Therefore, this study aimed to develop and assess a traditional game-based warm-up model tailored to the characteristics of elementary school learners.

METHODS

Research Design

This study employed a Research and Development (R&D) approach using the 4D model, which consists of four stages: Define, Design, Develop, and Disseminate. The model was selected due to its systematic structure in developing instructional products.

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Participants and Setting

The study was conducted between August and September 2025 in Sukajaya Village, Garut Regency. Participants included two physical education teachers and 61 students from grades IV and V of an elementary school. Both male and female students were involved in the trials.

Development Procedure

1. Define Stage

A needs analysis was conducted through classroom observation and interviews with teachers and students to identify challenges in implementing warm-up activities.

2. Design Stage

Based on the findings, a conceptual framework for game-based warm-up activities was developed. Initial prototypes of six traditional games were structured to align with warm-up principles.

3. Develop Stage

The product underwent expert validation involving subject-matter and language experts. Revisions were made according to feedback. The revised model was then tested in a small-scale trial (Grade IV) and a largerscale field trial (Grade V).

4. Disseminate Stage

The finalized model was introduced to physical education teachers as an initial implementation step.

Data Collection

Data were gathered using:

1. Observation sheets
2. Semi-structured interviews
3. Expert validation forms
4. Student response questionnaires

The questionnaire reliability was tested using Cronbach's Alpha, yielding a coefficient of 0.85, indicating high reliability.

Data Analysis

Quantitative data from validation and questionnaires were analyzed using descriptive statistics and categorized into five levels (Very Good, Good, Fair, Poor, Very Poor). Qualitative feedback from experts and students was analyzed descriptively and used to refine the product.

The product was considered feasible if it achieved at least a "Fair" category in overall evaluation results.

RESULTS

The development process resulted in six traditional game-based warm-up activities:

1. Oray-Orayan
2. Perepet Jengkol
3. Lompat Katak
4. Boy-boyan
5. Sorodot Gaplok
6. Lempar Tikus

These games were modified to maintain the physiological objectives of warm-up while emphasizing safety, simplicity, and student engagement.

Expert validation indicated that the content and instructional design met pedagogical standards. The material aspect received an average rating in the "Good" category, while the design component reached the "Very Good" category.

Small-scale testing demonstrated positive student responses, particularly in enjoyment and clarity of instructions. In the larger-scale trial, the model showed improved engagement levels and higher student participation compared to conventional warm-up sessions.

Overall evaluation results placed the product within the "Good" feasibility category.

DISCUSSION

The findings indicate that incorporating traditional games into structured warm-up activities can enhance students' motivation and active participation. Unlike conventional stretching routines, game-based warm-ups provide contextual movement experiences that align with children's natural tendency to play.

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From a physiological perspective, the designed games still fulfilled essential warm-up criteria, including gradual intensity increase and activation of major muscle groups. From a psychological perspective, the playful format appeared to reduce boredom and increase enthusiasm at the beginning of the lesson.

These results are consistent with previous studies suggesting that game-based physical education strategies improve student engagement and readiness. By integrating cultural elements such as traditional games, the model also supports contextual learning and cultural preservation.

Practically, the developed guidebook can assist physical education teachers in implementing more varied and engaging warm-up activities. Theoretically, this study supports the view that instructional innovation in physical education does not require complex technology but can be achieved through structured adaptation of traditional activities.

CONCLUSION

The study developed a feasible and effective game-based warm-up model for elementary school physical education. The six traditional games incorporated into the model were validated and tested, showing positive impacts on student motivation and participation.

The findings suggest that warm-up sessions can be redesigned to be both physiologically appropriate and pedagogically engaging. Future research may examine long-term impacts on physical fitness and learning outcomes across broader educational contexts.

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