



Development of Basic Locomotor Movements in Elementary Schools Through Runthojump (Run Throw and Jump) Games

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Abstract

Physical education in elementary schools plays an important role in developing students' motor skills, attitudes, and character through meaningful physical activities. The teaching of basic locomotor movements in elementary schools is still dominated by conventional methods, which are less interesting and result in low motivation and engagement among students. Based on observations and interviews at MIS Ath-Thalibin, students showed high enthusiasm when learning was conducted using a play-based approach, but the variety of games used was still limited and not systematically integrated. This study aims to develop the RUNTHOJUMP (Run, Throw, and Jump) game, which is packaged in a teaching module as an alternative innovative learning method to improve the basic locomotor skills of elementary school students in phase B. This study uses the Research and Development (R&D) method with a 4D development model that includes the define, design, develop, and disseminate stages. The research subjects consisted of 19 phase B elementary school students. Data analysis techniques were performed descriptively, qualitatively, and quantitatively. Qualitative analysis was used to process criticism and suggestions from experts, while quantitative analysis was performed through validation using a Likert scale to determine the product's feasibility level. The results showed that the RUNTHOJUMP teaching module developed was valid based on the assessment of experts in terms of material, media, and practicality. The RUNTHOJUMP game can be used as an alternative learning approach to support the development of basic locomotor skills in elementary school students and to enhance student engagement in physical education learning.

How to Cite

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INTRODUCTION

Basic education is education that provides knowledge and skills, fosters basic attitudes necessary in society, and prepares students to continue on to secondary education. Basic education is provided to give students the basic tools they need to live in society, in the form of developing basic attitudes, knowledge, and skills. Basic education is referred to as elementary school which is an educational institution that organizes educational programs as a foundation to prepare its students, whether they can or cannot continue their studies to higher educational institutions, to become good citizens (Mubarak, 2021 in Septya et al., 2024).

Elementary school is one of the most important parts of the national education system. Elementary school is a 6-year level of education and is a low-level formal education that will determine the character formation of students in the future. At this level, children begin to acquire knowledge and instill values that will be useful in the future (Lessy et al., 2022).

The curriculum is a very important tool for educational success. Without an appropriate and suitable curriculum, it is difficult to achieve the desired educational goals and objectives. According to (Ainy & Effane, 2023). An independent curriculum is one that gives institutions the freedom to explore their capabilities in accordance with the facilities, inputs, and resources available, as well as giving teachers the freedom to teach relevant content (Windi Qonitah, 2022 in Munawir et al., 2024). In addition, the independent curriculum is a curriculum that prioritizes freedom of learning and teaching, and gives students the freedom to determine their own learning Kusmawati et al. 2023 in Munawir et al., 2024).

According to (Setyawan, 2016 in Sari et al., 2024), Physical Education is an educational process that uses physical activities, designed systematically with the aim of improving various aspects of individuals, including organic, neuromuscular, perceptual, cognitive, social, and emotional aspects. Furthermore, it is stated that Physical Education is an integral part of the overall education system, with a focus on developing physical fitness, motor skills, critical thinking skills, emotional stability, social skills, reasoning, and moral actions through physical activities (Kiranida, 2019 in Sari et al., 2024).

Physical education in elementary school is an approach that emphasizes the active involvement of students in understanding

movement concepts through direct experience. This approach not only focuses on the development of motor skills, but also encourages creativity, problem-solving skills, and a deep understanding of movement. Through exploration, students are given the freedom to try various types of movements without strict limitations, while through experimentation, they can test various movement techniques and strategies to find the most effective ones for them. According to research, exploration and experiment-based learning helps to significantly improve students' cognitive abilities and motor skills (Astuty et al. (2020) in Mustafa et al., 2025)

The division of PE teaching materials has been implemented with reference to the characteristics of the Merdeka Curriculum (KM) at the elementary school level, one of which is the phase system, phase A (grades 1-2), phase B (grades 3-4), and phase C (grades 5-6) in terms of achieving learning objectives, where the focus of this study is on phase B, so the focus of the study is on how to implement the best quality PE learning in phase B. Another characteristic in planning learning in PE is using teaching modules that minimally include learning objectives, learning steps, and assessment. Another characteristic that distinguishes PE is that there are no material classes; everything is done in the form of predominantly practical activities, and it is permissible not to refer to the theme system. According to Muhyi (2023), the optimal application in PE learning is to achieve the best results. Basic motor skills are divided into two types, namely gross motor skills and fine motor skills (Perdana, 2024).

Basic movement patterns are simple movements that can be divided into the following three types (Victor G. Simajuntak, et al., 2008: 60 in Yudaparmita, 2022).

Locomotor movement (movement to change location) where certain parts of the body move or change location: for example, walking, running, and jumping. Locomotor movement is moving from one place to another (Saputra et al., 2024).

Non-locomotor movement (movement without changing location) in which only certain body parts are moved but do not change location, for example, pushing, pulling, bending, and turning. Manipulative, in which something is moved, for example, throwing, catching, kicking, hitting, and other movements related to throwing and catching something.

Based on interviews conducted at elementary schools, namely: MIS Ath-Thalibin

physical education teachers stated:

The majority of students showed high enthusiasm in participating in locomotor movement learning when the learning method used a game-based approach. This shows that a fun, interactive approach that involves direct physical activity can increase student interest and involvement in the learning process. Conversely, when teachers use conventional methods such as lectures or commands, students tend to feel bored, lack focus, and the classroom atmosphere becomes difficult to control.

The types of games implemented in schools tend to be uniform and monotonous. Games such as cat and mouse, poison ball, throw and catch ball, wheelbarrow race, and balance games such as walking on a line or log with a cone on the head are commonly used. The difference lies only in the name, but the essence remains the same. The RUNTHOJUMP (Run, Throw, and Jump) game was not yet available in the schools interviewed.

Based on theoretical studies and interview results, the author designed a learning product in the form of the RUNTHOJUMP (Run, Throw, and Jump) game, which was then developed into a learning module to support the teaching and learning process. This idea aims to address the existing gap. This game is expected to be an attractive and enjoyable alternative solution for students and help improve their motor skills.

METHOD

The method used in this study is research and development, commonly known as R&D, which is a research method that produces innovations, either in the form of new products or the development of existing products to make them more attractive, in line with the learning objectives of a particular subject (Muqdamien et al., 2021). The development model used as a reference in this study is the 4D model, which is one of the development models suitable for the requirements of developing a product. The 4D model stands for Define, Design, Develop, and Disseminate (Harjanto et al., 2022).

The 4D development model follows the flow of Sivasailam Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel in 1974. "The 4D Model (define, design, develop, and disseminate) is a learning tool development model." The research and development procedures were carried out by adjusting the stages of Thiagarajan's 4D model.

Define by conducting front-end analysis to map problems, learner analysis to determine learner characteristics, concept analysis to determine

the concepts of the material being taught, and determination of the desired learning outcomes.

Design by creating test criteria, selecting appropriate learning media and games, determining the form of learning delivery, and simulating the material using the media and games that have been designed. Development by conducting expert appraisal of game-based learning designs with game experts and subject matter experts, revising learning designs, testing game-based learning on a small scale, and revising game-based learning models. Disseminate by implementing game-based learning in a real classroom setting. (Muluk & Athaillah, 2023). (Solikin & Amalia, 2019)

The application of the main steps in this writing is not only according to the original version but is also adapted to the characteristics of the subject, place of origin, and development needs in the field. The reason the author chose this model is because the 4D model stages are structured in a programmed, simple, easy-to-understand manner and its implementation is more systematic. In addition, this development model is usually used for the development of books or teaching materials. The data analysis technique in this study was conducted descriptively, qualitatively, and quantitatively.

Qualitative analysis was used to interpret data in the form of criticism, suggestions, and input from subject matter experts, media experts, practitioners, and field test results as a basis for product improvement. Furthermore, quantitative analysis was performed on the results of the teaching module validation using a Likert scale with a score range of 4 (very good), 3 (good), 2 (fairly good), and 1 (not good). The scores were then calculated using equation (1) to determine the level of product validity.

$$\text{Validity} = (\text{Total validity score}) / (\text{Total maximum score}) \times 100\%$$

(Yudiarani et al., 2022)

The validity of the games used in this study refers to criteria adapted from Gitnita (2018). The validity level categories used in this study are presented in **Table 1**.

Table 1. Game Validity Assessment Criteria

Validity Criteria	Level of Validity
85,01% -100%	Very valid
70,01% -85%	Valid enough
50,01% -70%	Not valid
01,00% -50%	Invalid or cannot be used

RESULTS AND DISCUSSION

The purpose of this study was to develop a RUNTHOJUMP (Run, Throw, and Jump) game-based basic locomotor movement learning product for elementary school students. The results showed that the RUNTHOJUMP game model and teaching module could be used as an attractive and interactive learning innovation to improve basic locomotor movement skills in phase B students.

This study used the Research and Development (R&D) method with a 4D development model, which includes the Define, Design, Develop, and Disseminate stages. The Define stage was carried out to identify learning needs through observation, interviews, and analysis of student characteristics and basic locomotor movement material in accordance with the Merdeka Curriculum. The Design stage focused on designing the RUNTHOJUMP (Run, Throw, and Jump) game model, compiling teaching modules, selecting media, and developing assessment instruments. The Develop stage was carried out through validation by subject matter experts, media experts, and practitioners, followed by revisions and limited trials with students to obtain feedback. The Disseminate stage was carried out by implementing the RUNTHOJUMP game in PE learning and disseminating the product as an alternative innovative learning model in elementary schools.

The results obtained from this development process will be explained further in the following section:

The Define stage was carried out to identify the needs for developing basic movement learning in elementary school students. This activity was carried out through observation and interviews with PE teachers at MIS Ath-Thalibin on May 27, 2025. The results of the observation showed that PE learning, especially in basic movement material, was still dominated by conventional methods such as lectures and commands. This condition caused students to lack focus, quickly become bored, and be less active during learning.

In addition, the interview results showed that the games used in learning were still limited and monotonous, such as cat and mouse, catch the ball, and wheelbarrow. Teachers also said that students showed high enthusiasm when learning used a game-based approach. However, there were no games available that integrated running, throwing, and jumping activities in an integrated manner in accordance with the characteristics of the Merdeka Curriculum phase B.

Based on an analysis of student characteristics, it is known that elementary school students are at a stage of motor development that requires fun, interactive, and varied physical activities. Therefore, it is necessary to develop RUNTHOJUMP (Run, Throw, and Jump) games packaged in teaching modules as an alternative to innovative learning to increase learning motivation, student engagement, and basic motor skills.

Design Stage The design stage was carried out based on the results of the needs analysis in the define stage, which showed that learning basic locomotor and non-locomotor movements is more advisable when packaged in the form of structured and gradual games. Therefore, the RUNTHOJUMP (Run, Throw, and Jump) game was developed and packaged in a PE teaching module for elementary school students.

This game is designed to train running (run), throwing (throw), and jumping (jump) skills through a leveled game system with increasing difficulty. The RUNTHOJUMP game design consists of five progressively arranged levels. Each level has a series of activities that integrate locomotor movements (running and jumping) as well as non-locomotor and manipulative movements (throwing and maintaining balance). The game structure starts from simple basic movements to complex combinations of movements that require coordination, concentration, and precision from students. The following is the RUNTHOJUMP game design for each level:

Level 1 (Figure 1)

At the first level, students line up in order, then take turns sprinting while carrying the ball towards the throwing box. After throwing the ball to the next friend, students walk to the next track and jump with both feet through the box provided until they reach the finish line. This level focuses on the basic introduction of running, throwing, and jumping movements in a simple way.

Level 2 (Figure 2)

At the second level, students sprint while carrying the ball, then jump over cardboard boxes as obstacles. After that, students run back to the throwing box and throw the ball to the next friend. Students then continue jumping with both feet through the boxes to the finish line. This level adds obstacles to improve agility and coordination.

Level 3 (Figure 3)

At the third level, students sprint while carrying a ball and jump over cardboard boxes, then throw the ball to a friend. After that, students jump over the first box, take an additional ball, and throw it toward the target box provided. Af-

ter successfully throwing the ball, students continue jumping until they reach the finish line. This level adds the elements of throwing accuracy and object retrieval, thereby increasing the complexity of the movements.

Level 4 (Figure 4)

At the fourth level, the movement pattern is almost the same as the previous level, but students take three balls at once after passing the first box. The balls are then thrown towards the target box at a predetermined point. After completing the throw, students continue jumping to the finish line. This level increases the difficulty by adding more balls, thereby training students' strength, coordination, and concentration.

Level 5 (Figure 5)

The fifth level is the most complex stage. Students sprint while carrying a ball, jump over cardboard boxes, throw the ball to a friend, and then continue jumping through the boxes. After that, students take three balls of different colors and throw them into the target box according to their color. After completing the throws, students prepare for a long jump and then sprint to the finish line. This level integrates all elements of locomotor, non-locomotor, and manipulative movements comprehensively, thus requiring optimal mastery of movement skills.

The Develop stage was carried out to produce a RUNTHOJUMP game product that is suitable for use in PE learning. At this stage, a validation process was carried out by experts to assess the suitability of the developed product, including aspects of material, media, and learning. Validation was carried out by three validators, namely material experts, media experts, PE learning practitioners, and student evaluation sheets. The validation process aims to ensure that the RUNTHOJUMP game packaged in the teaching module is in accordance with the characteristics of elementary school students, the Merdeka Curriculum phase B, and the learning objectives of basic locomotor movements.

The results of the validation by the experts show that the RUNTHOJUMP game and the teaching module developed are valid and suitable for use with some revisions. The validators provided several suggestions, including improvements to the module design, clarity of game instructions, and adjustments to the difficulty level of each game level to make it more systematic and progressive. Based on these suggestions, the researchers revised the product before conducting a limited trial. The following are the results of the RUNTHOJUMP game validation by experts:

Table 2. Results of RUNTHOJUMP Game Validation by Experts

Validator	Validity Criteria	Level of Validity
Subject Matter Expert	80 %	Valid enough
Media Expert	96%	Very valid
Physical Education Practitioners	93,33 %	Very valid

Based on **Table 2**, the validation results show that the RUNTHOJUMP game is valid and can be used in learning with minor revisions at level 4 to add information on size and distance to the jump box. This shows that the developed product has met the aspects of material, media, and learning feasibility in accordance with the needs of elementary school students.

After going through the validation and revision stages, the RUNTHOJUMP game product was then tested on a small scale with 19 elementary school students in phase B. This trial aimed to determine the feasibility of the game, student responses, and the effectiveness of the model in improving basic locomotor skills. The trial was conducted in one meeting by applying the five levels of the RUNTHOJUMP game gradually. The following are the results of the RUNTHOJUMP game trial on elementary school students:

Table 3. Results of RUNTHOJUMP Game Trials on Elementary School Students

Number of students	Total student score	Validity Criteria (%)	Level of Validity
19	742	97,63 %	Very valid

Table 3. The results of the trial showed that most students were able to follow each stage of the game well. Students appeared enthusiastic, active, and motivated throughout the learning process. Based on the observation results, the RUNTHOJUMP game can help students practice their running, throwing, and jumping skills in an integrated manner. The development stage shows that the RUNTHOJUMP game, which is packaged in a teaching module, can be used as an alternative innovative learning model in physical education learning in elementary schools.

The results of this study indicate that the development of the RUNTHOJUMP game contributes to the learning of basic locomotor movements in elementary school students. This is reflected in the expert validation results, which categorized the product as valid, as well as in the limited trial results showing a success rate of 97.63%. These findings suggest that a systematically and progressively designed game can serve-

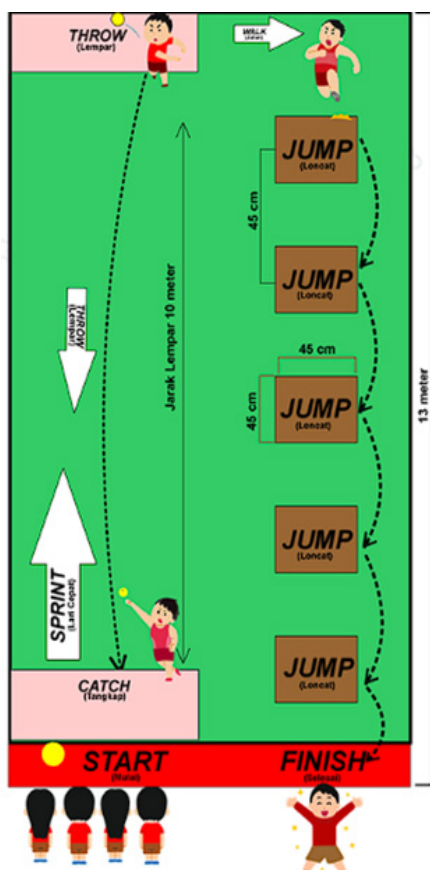


Figure 1. RUNTHOJUMP Level 1

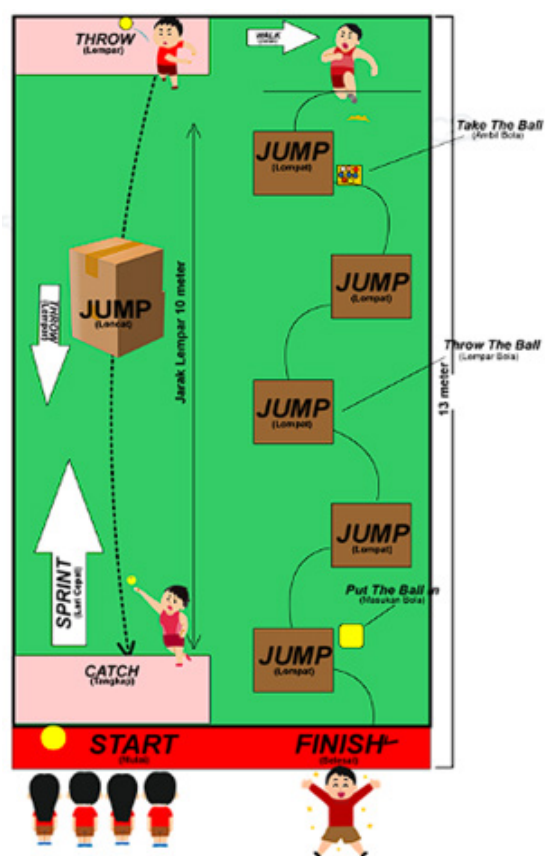


Figure 3. RUNTHOJUMP Level 3

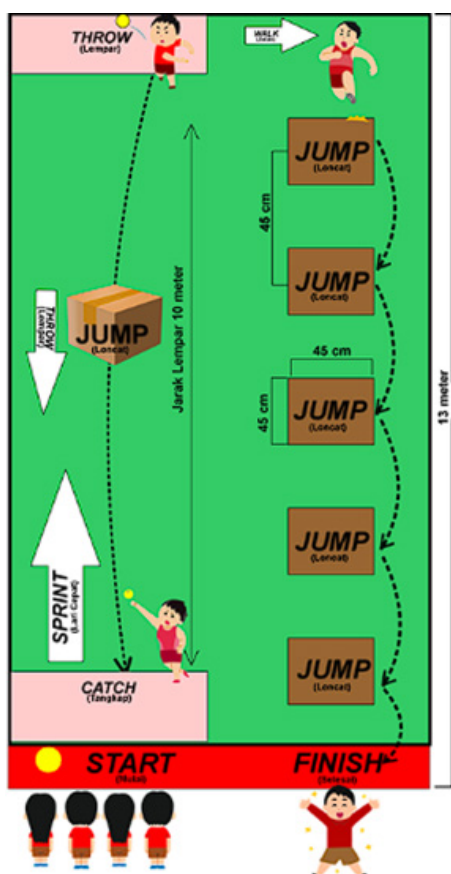


Figure 2. RUNTHOJUMP Level 2

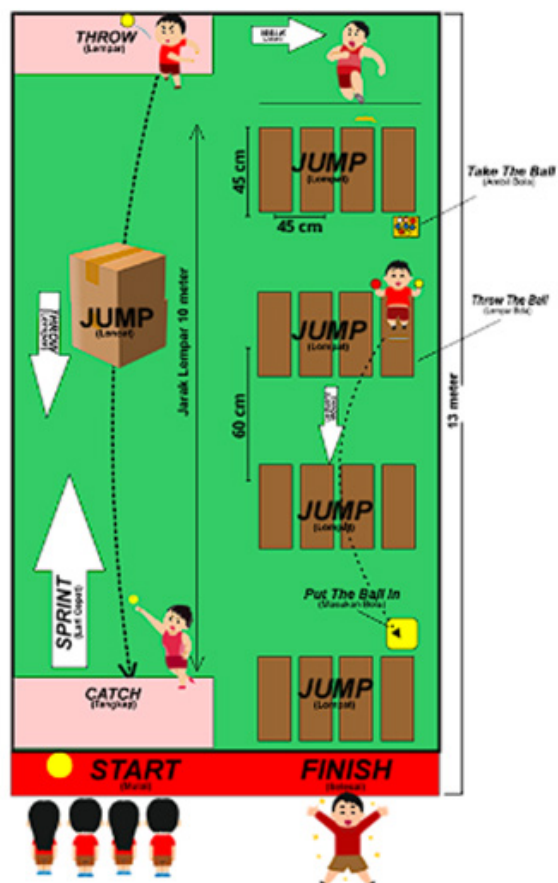


Figure 4. RUNTHOJUMP Level 4

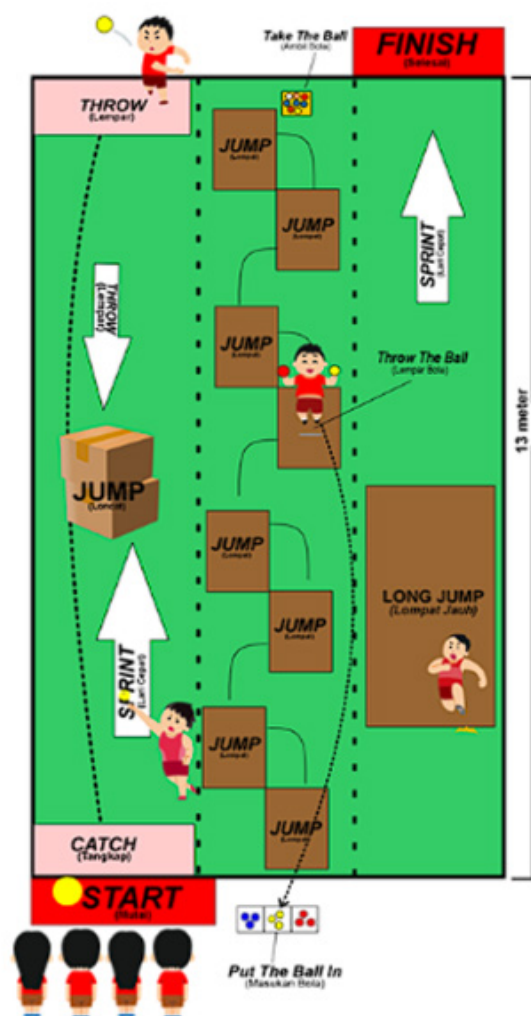


Figure 5. RUNTHOJUMP Level 5

as an alternative approach in physical education learning, particularly in enhancing student engagement and activity during the learning process. This finding is consistent with previous research indicating that game-based learning can increase active student participation in physical education (Bessa et al., 2021).

Furthermore the design of the RUNTHO-JUMP game, which integrates running, throwing, and jumping movements across several levels, enables students to learn various fundamental motor skills in an integrated manner. Based on the trial results, students were able to follow each stage of the game effectively and demonstrated high enthusiasm during the activities. This indicates that a structured and progressive game approach aligns with the developmental characteristics of elementary school students, who require varied and enjoyable physical activities. This finding is supported by studies suggesting that game-based activities play an important role in the development of fundamental motor skills

in children (Logan et al., 2020).

From an implementation perspective the availability of systematic instructional guidance facilitates teachers in applying the RUNTHO-JUMP game in classroom settings. Teachers are not only able to understand the game procedures but also have clear references for determining learning objectives and assessment. This suggests that the developed product functions not only as a game activity but also as a support tool for more structured and directed learning processes. This finding is in line with research indicating that well-structured instructional planning can improve the quality of physical education teaching practices (Hastie & Casey, 2021).

CONCLUSION

This study developed a basic locomotor movement learning product based on the RUNTHOJUMP (Run, Throw, and Jump) game, which is systematically packaged in a teaching module for elementary school students in phase B using the 4D development model. The findings indicate that the developed product is valid and feasible for implementation. The implementation of this game can increase student engagement, motivation, and activity during PE learning. The RUNTHOJUMP game has also been proven to be suitable for developing basic locomotor skills, particularly running, throwing, and jumping in an integrated manner through a systematic and gradual play approach.

This finding highlights that systematically designed game-based learning can address the limitations of conventional teaching methods, which tend to be monotonous and less engaging for students. RUNTHOJUMP teaching module contributes as an innovative instructional model aligned with the principles of the Merdeka Curriculum, especially in promoting student-centered, active, and meaningful learning experiences. In addition, this study reinforces the theoretical view that integrating locomotor, non-locomotor, and manipulative movements within a unified game structure can provide more comprehensive motor skill development compared to learning approaches that are implemented separately. This study is limited to a small-scale trial and a relatively short implementation duration. Therefore, further research is recommended to examine the application of the RUNTHOJUMP game on a larger scale, using experimental designs and longer intervention periods to obtain more comprehensive insights into students' motor skill development.

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