

Development of a Simple Game-Based PJOK Learning Model to Improve Locomotor Basic Movements and Cooperation of Lower Grade Elementary School Students



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ABSTRACT: This study aims to determine the correlation between the Problem-Based Learning learning model and the Discovery Learning model with students' creativity and learning motivation. This research uses a quantitative approach of correlation type. The sample in this study used purposive sampling, namely grade 6 with a total of 40 students, consisting of 19 students at SD Negeri Awu Awu and 21 students at SD Negeri Wingkoharjo. Data collection using observation sheets and questionnaire statements. Data analysis in this study used Product moment Correlation Test and t-Independent Test.

The results of this study indicate that there is a significant correlation between the application of the Problem-Based Learning learning model and the learning creativity of students at SD Negeri Awu Awu with a pearson correlation value = 0.660 and a p-value (sig-2tailed) of 0.002. There is a significant correlation between the application of the Problem-Based Learning learning model and student learning motivation at SD Negeri Awu Awu with a pearson correlation value = 0.834 and a p-value (sig-2tailed) of 0.000. There is a significant correlation between the application of the Discovery Learning learning model and students' learning creativity at SD Negeri Wingkoharjo with a pearson correlation value = 0.660 and a p-value (sig-2tailed) of 0.001. There is a significant correlation between the application of the Discovery Learning learning model and student learning motivation at SD Negeri Wingkoharjo with a pearson correlation value = 0.501 and a p-value (sig-2tailed) of 0.021. There is no significant difference between creativity and motivation of students in the application of both learning models with a significance value of 0.064 for learning creativity and with a significance value of 0.477 for learning motivation.

KEYWORDS: Discovery Learning, Learning Creativity, Learning Motivation, Problem-Based Learning.

I. INTRODUCTION

Education is essentially one of the basic human needs in order to improve the quality of human resources for the achievement of an increasingly advanced and prosperous level of national life. Achieving quality education is one of the factors that influence the success of students in the future. Schools have an important role as a place for learners to process to develop the knowledge, skills and competencies needed for their development in adulthood in order to have a positive contribution to life in society. Through the scope of the school will provide learning experiences that are not obtained at home.

Sagala (2013, p. 42) "education is a process of training students designed in the form of learning experiences to develop knowledge, skills and competencies that can be used as capital to meet the needs of their lives and their families". While Muchlisin (2017, p. 49) "early childhood education should have an educational philosophy that touches on all child development and is supported by learning that is tailored to the world of early childhood. Children will develop properly if they get good attention and stimulation from schools".

Suherman (2004, p. 23) "physical education is a learning process carried out through physical activity, which is designed to improve physical fitness, develop motor skills, develop knowledge and behavior of a healthy and active life, develop sportive attitudes, and emotional intelligence of students". Meanwhile, according to Rosdiani (2012, p. 21) "physical education is a medium to encourage the development of motor skills, physical abilities, knowledge, reasoning, appreciation of values (attitudes, mental, emotional, and social) and habituation of a healthy lifestyle which leads to stimulating balanced growth and development".

Childhood is an excellent opportunity for learning, namely optimizing the development of basic locomotor movements and cooperation. It is during this period that children get more movement experience by playing both individually and in groups

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according to their age characteristics. Motor development is the process of growth and development of a person's ability to move. Every movement a child makes is the result of a complex pattern of interactions from various parts and systems in the body controlled by the brain.

Motor skills consist of gross motor skills and fine motor skills. According to Rejeki (2021, p. 2) "basic movement has an important role in learning physical education, basic movement skills can be applied in various games, sports, and physical activities carried out daily". Basic movement skills consist of locomotor movements, non-locomotor movements and manipulative movements. Gross motor skills include walking, running, jumping and jumping. Through motor learning in elementary school, it will affect several aspects of students' lives such as: (1) through motor learning children get entertainment and get pleasure, (2) through motor learning children can move from a weak condition to a weak condition independent conditions, (3) through motor learning children can adjust to the environment, (4) through motor learning will support children's skills in various ways, (5) through motor learning will encourage children to be independent, so they can solve all the problems they face (Decaprio, 2013, p. 24).

The characteristics of children's motor development vary greatly. According to Burhein (2017, p. 57) "the characteristics of elementary school-age children love to play, move, group, and practice directly". The current situation with the health conditions of school-age children, which exist today in the world, is associated with motor activities in the world that need games to improve motor skills (Kashuba, et al., p. 2018). Therefore, related to these activities adapted to the development of manipulative movements and cooperation. Thus, through appropriate physical activity and according to the expected period, it will have an impact on locomotor development and cooperation.

The movement experience gained in physical activity is manifested in physical education learning. One aspect of character that children have is cooperation. Nancy Stevenson (2013, p. 45) "cooperation is an attitude that understands that the power of many people working together will be greater than individual abilities". Cooperation is one of the values that is often trained by sports coaches, especially game sports that require more than one player. Cooperation is also an important factor in achieving an achievement goal.

From the explanation above, it can be concluded that cooperation is the value of a character that identifies that togetherness is superior to individuals in achieving goals in a group. From the observations so far, children are often selfish when in the field. Therefore it is very necessary to provide a game model to children so that children have a soul or character of cooperation among friends. In physical education, the value of cooperation is also very much needed in PE learning, considering that PE learning often uses groups in every lesson. For example: big ball game material, small ball, traditional games, outdoor activities, and so on.

Through this physical education learning, besides we can find out the locomotor and cooperation of students. Of course, we can find out the physical development of the child. Rohmatin (2019, p. 22) states that "the physical development of children is not the same as one another, even though they are relatively the same age or the same school level".

Given that the growth of children from various ethnicities and races also shows differences. This is delayed. Therefore, motor stimulus must be developed because children who receive directed and regular stimulus will develop faster than children who do not / lack stimulus.

Games are physical activities that provide fun as well as learning. The game should not be monotonous so that students do not quickly feel bored. In the game students will get and improve their physical fitness skills, the game is also based on the abilities and characteristics of students so that their achievements are in accordance with the expected physical education goals.

The form of the game designed refers to the locomotor development and cooperation of students.

Games that provide opportunities for students to socialize and cooperate, with the socialization between children will create a relationship or inner bond about togetherness tolerance mutual respect and many more good values that will be created and do not miss the value of cooperation will also be created well.

Based on the 2013 Curriculum in the core competencies and basic competencies of physical education, sports, and health for grade 3 elementary school students, students can achieve and practice physical fitness activities in various forms of simple games. As well as applying the values of sportsmanship, honesty, cooperation, never giving up, responsibility, discipline and others.

According to Rosdiani (2012, p. 22) "in the process of learning physical education teachers are expected to teach a variety of basic movement skills, techniques and strategies of games and sports, internalization of values (sportsmanship, honesty, cooperation etc.) and habituation to healthy living". In this case, games can be used as a medium in improving students' multilateral skills which include physical fitness activities and cooperation. The importance of developing physical activity in physical education. So the researcher wants to try to make a game model to improve basic locomotor movements and

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cooperation in lower grade students. The research was conducted on lower grade elementary school students, especially in grade 3 students.

In developing game model activities to improve locomotor and cooperation of lower grade students, it still integrates the realm of education which includes cognitive aspects, affective aspects and psychomotor aspects. With this game model, it is hoped that it can increase the teacher's knowledge in applying new variations for learning that are not monotonous and help students to be actively involved with a sense of pleasure, confidence, and can achieve the desired learning objectives.

Researchers found that social values such as compassion, empathy, helpfulness, generosity, and sharing and tolerance begin to develop in elementary school-age children. These social values are part of prosocial behavior that is important for children's socio-emotional development. One form of prosocial behavior that can be developed in elementary school children is cooperation skills.

Based on the results of observations and interviews with 4 PE teachers in elementary schools in Muntilan sub-district, Magelang district, the problem is that teachers have not maximized elementary school physical education learning using various games, therefore researchers are asked to develop various games, especially on locomotor material.

Therefore, researchers want to create a game model activity to improve basic locomotor movements and children's cooperation for lower grade elementary school students with the aim that students can improve multilateral skills and master basic motor development skills first so that it can be used as a provision for students in recognizing and understanding their motor development to the next level of education.

II. METHOD

This research uses the 4D research and development model, 4D stands for Define, Design, Development, Dissemination. Define is a stage of analyzing the needs carried out through literature studies and through research and a stage of determining what products are developed and their specifications. Design is a stage of designing a product that has been determined, development is a stage of making designs into products and testing the validity of products repeatedly so as to produce products that have been determined, Dissemination is an activity to disseminate products that have been produced based on expert validation tests.

The type of data obtained from the development of qualitative and quantitative data. Qualitative data is obtained from: (1) input data and suggestions from experts for product improvement, (2) data from trial assessment results from observations of the model from material experts, (3) data from observations of the effectiveness of the model from experts. These data are used to evaluate the game model for the development of basic locomotor movements and cooperation of elementary school students.

Time and Place of Research

This research was conducted in November 2023 3 elementary schools, namely: SD Muhammadiyah Gunungpring, SD Muhammadiyah 1 Muntilan, SD Muhammadiyah Tamanagung.

Population and Research Sample

The population in this study were 3rd grade students at SD Muhammadiyah 1 Muntilan, SD Muhammadiyah Gunungpring, and SD Muhammadiyah Tamanagung.

The type of data obtained from the development of qualitative and quantitative data. Qualitative data were obtained from: (1) input data and suggestions from experts for product improvement, (2) trial assessment data from observations of the model from material experts, (3) observation assessment data from the effectiveness of the model from experts. These data are used to evaluate the game model for the development of basic locomotor movements and cooperation of elementary school students.

Research Instruments and Data Collection Techniques

1. Data Collection Technique

Data collection techniques are the means used to obtain data. Qualitative data collection techniques are obtained during literature studies, field studies (field observations), interviews. Quantitative data is obtained using a questionnaire or assessment questionnaire used by experts or experts to assess the model developed in order to provide suggestions and criticisms. The effectiveness test uses observations using a rubric for assessing learning outcomes to obtain data. Furthermore, the data collection technique used aims to measure the achievement of student learning outcomes and student responses to the game model.

2. Data Collection Instruments

The data collection instruments in this study were general guidelines for interviews and field notes from questionnaires.

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Research Data Analysis Technique

The data analysis technique used in the research is quantitative and qualitative descriptive data analysis research. Quantitative descriptive data analysis techniques were carried out on: (1) results validation assessment with a scale of material expert scores on the game model before the trial; (2) data on the assessment of trial results; (3) data on the results of the effectiveness of the basic locomotor and cooperation game model for elementary school students in the learning process. According to Sugiyono (2018: 147) "Descriptive statistics are statistics used to analyze information by describing the information that has been collected as it is with no intention of making generalizations. Calculating all the average total scores of the assessment components carried out using the formula:

$X = \sum X/n$ Description: X = Average score $\sum X$ = number of average scores n = number of assessors. Quantitative data from the validation of material experts, learning experts and teacher respondents are then converted into 5-scale quantitative data using Sukarjo's conversion reference (2006: 52) in the following table:

No	Criteria	Score Formula
1	Very Good	$X > X_i + 1,80 S_{bi}$
2	Good	$X_i + 0,60 S_{bi} < X \leq X_i + 1,8 - S_{bi}$
3	Quite Good	$X_i - 0,60 S_{bi} < X \leq X_i + 0,60 S_{bi}$
4	Less Good	$X_i - 1,80 S_{bi} < X \leq X_i - 1,80 S_{bi}$
5	Very Less Good	$X \leq X_i - 1,80 S_{bi}$

Based on the results of the score conversion to the final score, the value of the product that has been developed will be obtained. From this value, it can be seen whether the product is suitable for use or not.

III. RESEARCH RESULT

At this stage researchers designed the initial stage of developing a game method that could be used to improve locomotor basic movements and cooperation of lower grade elementary school students. Small-scale trials in this study were conducted in only one school, namely 1 teacher. The results of the small-scale trial can be seen in the table below:

a. Small Scale Teacher Trial Table

Grain	Game Model		
	Poison Ball	Wristband Relay	Picture Search
1	5	5	4
2	4	5	4
3	5	5	5
4	5	4	4
5	4	5	5
6	5	3	4
7	4	5	5
8	5	4	4
9	4	3	4
10	5	4	5
11	5	5	5
12	5	5	4
Total	57	53	53
Average	4,75	4,42	4,42
%	95	88,33	88,33
Category	Very Good	Very Good	Very Good

Based on the results of the small-scale trial from the teacher, it shows that the poison ball game model is in the excellent category, the bracelet relay game model is in the excellent category and the image search game model is in the excellent category.

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b. Small Scale Learner Trial Table

Grain	Game Model		
	Poison Ball	Wristband Relay	Picture Search
1	5	5	4
2	5	5	5
3	4	5	5
4	5	4	5
5	5	5	4
6	5	5	5
7	5	5	5
8	5	5	5
9	5	4	4
10	4	4	5
11	5	5	4
12	5	4	4
Total	58	56	56
Average	4,83	4,67	4,67
%	96,67	93,33	93,33
Category	Very Good	Very Good	Very Good

The results of the small-scale trial of students show that the poison ball game model is in the excellent category, the bracelet relay game model is in the excellent category and the image search game model is in the excellent category.

c. Large Scale Trial Results

The large-scale trial stage was conducted in 3 schools, namely SD Muhammadiyah, SD Gunungpring and SD Tamanagung. This large-scale trial was conducted with teachers and students. the results of the large-scale trial can be described as follows:

A. Teacher Assessment

1. Toxic Ball Game

The results of the assessment from teachers at Muhammadiyah Elementary Schools in Muntilan District on the Poison Ball Game can be seen in the table below:

Items	Teacher		
	Muhammadiyah Elementary School	Gunungpiring Elementary School	Taman Agung Elementary School
1	5	5	5
2	5	5	5
3	4	4	4
4	5	5	5
5	5	5	4
6	4	4	5
7	5	5	5
8	5	5	5
9	4	4	4
10	4	4	4
11	5	5	5
12	5	5	5
Total	57	55	58
Average	4,75	4,58	4,83
%	95	91,67	96,67

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Category	Very Good	Very Good	Very Good
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Based on the results of the teacher's assessment above, it shows that the toxic ball game model developed to improve locomotor movements and cooperation is very good.

2. Bracelet relay game

The results of the assessment from teachers at Muhammadiyah Elementary Schools in Muntilan District on the bracelet relay game can be seen in the table below:

Items	Teacher		
	Muhammadiyah Elementary School	Gunungpiring Elementary School	Taman Agung Elementary School
1	5	5	5
2	5	5	5
3	5	5	5
4	5	5	4
5	5	5	5
6	5	5	5
7	5	5	5
8	5	5	5
9	4	4	4
10	4	4	4
11	5	5	5
12	5	5	4
Total	58	58	56
Average	4,83	4,83	4,67
%	96,67	96,67	93,33
Category	Very Good	Very Good	Very Good

Based on the results of the teacher assessment above, it shows that the toxic ball game model developed to improve locomotor movements and cooperation is mostly stated as very good.

3. Mencar Game (Looking for Pictures)

The results of the assessment from teachers at Muhammadiyah Elementary Schools in Muntilan Sub-district on the scatter game (looking for pictures) can be seen in the table below:

Items	Teacher		
	Muhammadiyah Elementary School	Gunungpiring Elementary School	Taman Agung Elementary School
1	4	4	4
2	4	5	5
3	5	5	5
4	5	5	5
5	4	4	4
6	5	5	5
7	5	5	5
8	5	5	5
9	5	5	5
10	4	5	5
11	4	4	4
12	4	4	4
Total	54	55	56

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Average	4,5	4,67	4,67
%	90	93,33	93,33
Category	Very Good	Very Good	Very Good

Based on the results of the teacher assessment above, it shows that the scatter game model (looking for pictures) developed to improve locomotor movements and cooperation is mostly stated as very good.

B. Students

1. Poison Ball Game

The results of the assessment of students at Muhammadiyah Elementary Schools in Muntilan District on the Poison Ball Game can be seen in the table below:

Items	Student		
	Muhammadiyah Elementary School	Gunungpiring Elementary School	Taman Agung Elementary School
1	4	4	5
2	4	4	4
3	5	5	5
4	4	4	5
5	4	4	4
6	4	4	5
7	4	4	4
8	5	5	5
9	5	4	4
10	5	5	5
11	5	5	5
12	4	5	5
Total	54	53	56
Average	4,5	4,47	4,67
%	90	88,33	93,33
Category	Very Good	Very Good	Very Good

Based on the results of the assessment of the students above, it shows that the Toxic Ball game model developed to improve locomotor movements and cooperation mostly states that it is very good.

2. Bracelet relay game

The results of the assessment of students in Muhammadiyah Elementary Schools in Muntilan District on the bracelet relay game can be seen in the table below:

Items	Student		
	Muhammadiyah Elementary School	Gunungpiring Elementary School	Taman Agung Elementary School
1	5	5	5
2	5	5	5
3	5	5	5
4	4	4	4
5	5	5	5
6	4	4	4
7	5	5	5
8	5	4	4
9	5	5	5

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10	4	4	4
11	5	5	5
12	5	5	5
Total	57	56	56
Average	4,75	4,67	4,67
%	95	93,33	93,33
Category	Very Good	Very Good	Very Good

Based on the results of the assessment of students above, it shows that the Bracelet Estafet Game model developed to improve locomotor movements and cooperation mostly states that it is very good.

3. Scatter Game

The results of the assessment of students in Muhammadiyah Elementary Schools in Muntilan District on the Scatter Game (Looking for Pictures) can be seen in the table below:

Items	Student		
	Muhammadiyah Elementary School	Gunungpiring Elementary School	Taman Agung Elementary School
1	4	4	4
2	4	4	4
3	5	5	5
4	4	4	4
5	5	5	5
6	4	5	5
7	5	5	5
8	4	4	4
9	4	4	4
10	5	5	5
11	5	5	5
12	4	4	4
Total	53	54	54
Average	4,42	4,5	4,5
%	88,33	90	90
Category	Very Good	Very Good	Very Good

Based on the results of the assessment of students above, it shows that the scatter game model (looking for pictures) developed to improve locomotor movements and cooperation, most of them stated that it was very good.

d. Large Scale Trial Analysis

At the large-scale trial analysis stage, researchers conducted a content validation test with Aiken'V. After creating a simple game-based PJOK learning model development product, a large-scale trial was conducted to determine the content validity with Aiken'V, the validation results can be seen in the table below:

No.	Desain items	Poison ball validity results	Relay bracelet validity results	Picture finding validity results
1	Items 1	0,917	1,00	0,75
2	Items 2	1,00	1,00	0,917
3	Items 3	0,75	1,00	1,00
4	Items 4	1,00	0,917	1,00
5	Items 5	1,00	1,00	0,75
6	Items 6	0,833	1,00	1,00
7	Items 7	0,75	1,00	1,00

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8	Items 8	1,00	1,00	1,00
9	Items 9	1,00	0,75	1,00
10	Items 10	0,833	0,75	0,916
11	Items 11	1,00	1,00	0,75
12	Items 12	1,00	1,00	0,75
Average		0,923	0,951	0,902
Description		Valid	Valid	Valid

Based on the results of the analysis above, it is known that the validation value for the poison ball game is 0.923, the validation for the relay bracelet is 0.951 and the validation for finding pictures is 0.902. While the reliability value can be seen in the table below:

Game	Reliability	Description
Poison Ball	0,754	Reliabel
Relay Bracelet	0,845	Reliabel
Picture Finding	0,845	Reliabel

e. Effectiveness Test

The results of the calculation and comparison of the average value between small scale and large scale will be able to know the effectiveness of the development of a simple game-based PJOK learning model. The results of the calculation of effectiveness in the development of a simple game-based PJOK learning model can be seen in the table below:

	Average		
	Small Scale	Large Scale	Effectiveness (%)
Poison Ball Game	4,5	4,72	4,88
Relay Bracelet	4,42	4,78	8,14
Picture Finding	4,42	4,61	4,30

From the results of the average calculation for the value of the small scale and large scale, it shows that the effectiveness of the poisonous ball game is 4.88% and in the bracelet relay game is 8.14% and the effectiveness of the picture finding game is 4.30%.

DISCUSSION

a. Simple Game Model to Improve Locomotor Basic Movements of Lower Grade Elementary School Students.

Locomotor movement is a movement of moving places, where certain body parts move or move places. Locomotor basic movement is one of the domains of fundamental basic movement. Some forms of locomotor movement include walking, running, tiptoeing, jumping and jumping, galloping, creeping and climbing. This locomotor movement is a basic movement whose development has started at an early age. The importance of locomotor movements in a person can improve advanced movements in adulthood. Therefore, locomotor movements in children must be trained and developed from an early age. Most locomotor skills develop as a result of a certain level of maturity, but practice and experience are also important to achieve mature skills. Locomotor skills form the basis or foundation of gross skill coordination and involve large muscle movements. Locomotor movements are movements that go anywhere. This locomotor movement is then the basis for the development of coordination of movements involving large muscles (gross-muscles), muscle growth, endurance and stamina, in addition to being an exciting part of the child.

To improve locomotor movements in children, in this study, the development of a Simple Game-Based PJOK Learning Model was carried out as one of the learning models so that the learning process could run pleasantly. The Simple Game-Based PJOK Learning Model made by researchers is a product that aims to assist teachers or trainers in delivering locomotor basic motion learning material, improving locomotor basic motion skills, and as a reference for learning materials. This basic motion learning model is made based on the level of children's needs in physical education activities, especially in teaching and learning activities for basic locomotor movements for elementary school students.

b. Results of Teacher and Learner Assessment of Simple Games

a) Results of Teacher Assessment of Simple Games

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Based on research on the development of a simple game-based physical education learning model to improve locomotor basic movements and cooperation of lower grade elementary school students, the teacher gave an assessment of the Poison Ball Game in the excellent category with a percentage of 94.44%. The Bracelet Relay Game is in the excellent category with a percentage of 95.55% and the Looking for Pictures Game is in the excellent category with a percentage of 92.22%. So it can be concluded that the three simple games given get an assessment from the elementary school teacher in the excellent category.

b) Results of Student Assessment of Simple Games

Based on research on the Development of a Simple Game-Based PJOK Learning Model to Improve Locomotor Basic Movements and Cooperation of Lower Grade Elementary School Learners, students gave an assessment of the Poison Ball Game in the excellent category with a percentage of 90.55%. The Bracelet Relay Game is in the excellent category with a percentage of 93.88% and the Looking for Pictures Game is in the excellent category with a percentage of 89.44%. So it can be concluded that the three simple games given get an assessment from elementary school students in the excellent category.

V. CONCLUSIONS

Conclusions

Based on the analysis of descriptive data, testing of research results and discussion, it can be concluded that:

- a. The process of developing a simple game-based PJOK learning model for this study uses the 4D research and development model, namely Define, Design, Development, Dissemination.
- b. The results of the validity and reliability tests show that the simple game-based PJOK learning model developed is declared valid and reliable, so that the product is suitable for use in learning models.
- c. Based on the results of the assessment of teachers and students, it shows that the simple game-based PJOK learning model developed to improve locomotor movements and overall cooperation states that it is very good, with the results of the Teacher giving an assessment of the Toxic Ball Game with a percentage of 94.44%, the Bracelet Relay Game with a percentage of 95.55% and the Looking for Pictures Game with a percentage of 92.22%. While the Learners gave an assessment of the Toxic Ball Game with a percentage of 90.55%, the Bracelet Relay Game with a percentage of 93.88% and the Looking for Pictures Game with a percentage of 89.44%, it can be concluded that the game model can be used to develop locomotor movement skills and cooperation for elementary school students.

Suggestion

Based on the results of the research that has been conducted, there are several research suggestions as follows:

- a. For students to be able to improve their locomotor movements with a simple game model, this game can be done at home
- b. For teachers, the simple game-based PJOK learning model is an alternative to the learning process.
- c. For teachers to always monitor the development of their students, because lower grade elementary students are a potential period in their motor development.
- d. For further researchers can develop other media as an alternative to the PJOK learning model.

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