

Method and Motivation in Teaching Elementary School Students to Throw and Catch the Ball

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ABSTRACT

This study aimed to discover the effect of the learning method and learning motivation on the improvement of throwing and catching the ball for elementary school students. The study samples were 60 elementary school students acquired using the treatment by level 2x2 study design with the *tukey* test using a $\alpha=0.05$ level. The study results show 1) groups A₁ and A₂ obtained $F_h > F_t$, i.e., $17.9 > 4.15$; therefore, there is an effect between group learning method and individual learning method on ball throw-catch skills, with $Q_h = 8.54$ dan $Q_t = 3.83$. 2) Then, it obtained $F_h > F_1$, i.e., $26.61 > 4.15$; therefore, it concludes that the ball throw-catch skill learning outcome. 3) The *tukey* test on groups A₁B₁ and A₂B₁ obtained $Q_h = 18.95$ and $Q_t = 2.99$, in which the results conclude that ball throw-catch skill learning outcome with high motoric taught using the group learning method is better than the individual learning method. 4) $Q_h = 1.84$ and $Q_t = 2.99$, concluding that ball throw-catch skill learning outcome with low motoric taught using the individual learning method is better than the group learning method.

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1. INTRODUCTION

Physical education (PE) is an educational process utilizing physical activities and systematically planned to improve individuals organically, neuromuscularly, perceptually, cognitively, socially, and emotionally. Two of PE objectives (McKenzie & Lounsbery, 2014) are (1) developing self-management skills in improving and maintaining physical fitness and lifestyle through various physical activities and (2) developing movement abilities and skills in various games and sports. Burstiando (2015) stated that education has a primary objective to improve individuals from affective, cognitive, and psychometric aspects. Based on those objectives, physical education can be used as a medium to achieve the goal.

Mustafa & Dwiyoogo (2020) explained that physical education is an integral part of the overall education system, focusing on physical fitness, movement skills, critical thinking skills, emotional stability, social skills, reasoning, and moral actions through physical activities systematically designed to

improve individuals organically, neuromuscularly, perceptually, cognitively, socially, and emotionally. McKenzie & Lounsbery (2014) asserted that one of the physical education objectives in elementary school is improving basic movement skills and abilities. Rosita (2014) revealed several activities to improve rough motor skills for children, particularly on extremity coordination. It includes running, jumping, hanging, throwing, catching or kicking a ball, and maintaining balance. Motor skill improvement follows the coordination of eyes, hands, and legs (Rahmah, Yasbiati, Nur, & Kastrena, 2019). Fundamentally, basic human movements are walking, running, jumping, and throwing (Cahyani & Mustadi, 2021). Elementary school students often encounter challenges or difficulties following physical education that demands manipulative movement abilities. Samsudin & Nugraha (2015) suggested that manipulative abilities are developed when children are mastering various objects. Manipulative movement abilities such as pushing movements (throwing, hitting, and kicking) and receiving the movements (catching) are vital to training. Moerianto, Valianto, & Dewi (2020) asserted that manipulative abilities are developed when children are mastering various objects.

One of the games leading to manipulative movements is the ball throw-catch game. This game is often played by elementary school students. The ball throw-catch game can deliver benefits to improve child growth. This game is closely related to the intellectual, social, and character development of children. This game also trains the self-control aspect, i.e., child abilities to delay satisfaction, be patient, not easily offended, be confident, not give up, and others (Hanief & Sugito, 2015).

Based on several experts' opinions, it is concluded that manipulative abilities are developed when children are mastering various objects. Manipulative abilities primarily involve eyes-legs; however, other body parts are also involved. The forms of manipulative exercises consist of throwing, hitting, kicking, catching, bouncing, dribbling, or stopping a ball. Therefore, the researcher used ball throw-catch activities to improve manipulative movements. The low manipulative basic movement abilities at the third grade of elementary school are caused by several factors, i.e., (1) Students are not paying attention to physical education, (2) students are not enthusiastic in performing movements, (3) teachers are not creative in delivering the learning method, (4) teachers struggle in discovering an appropriate learning model to improve manipulative abilities of students, (5) teachers tend to give a ball or exercise instruments then leave the students without teaching the manipulative movements well. The lack of competent teachers to teach physical education impacts student motivation to try and love physical education (Samsudin & Nugraha, 2015). It follows a study by Syamsuar & Zen (2021) which discovers that the poor learning method and learning motivation of elementary school students can decrease student abilities in performing physical activities.

This condition is unfavorable in the learning process because students should be enthusiastic about physical education since it is closely related to body movement activities. Therefore, the students are passionate about the physical education learning process that boosts their learning motivation and interest. If students do not have motivation, they tend to be lazy in the learning process. The success of mastering skill movements is supported by several important factors, including the proper learning method. Putri & Suparno (2020) defined the learning method as a medium or pattern to arrange the learning process. Learning methods are divided into group and individual learning methods. Runasari & Isdaryono (2018) explained that the advantages and disadvantages of the group and individual learning methods in Table 1:

Table 1. Advantages and Disadvantages of Group and Individual Learning Methods

| Individual Learning Method | Group Learning Method |
|--|---|
| Advantages | Advantages |
| a) Foster a sense of cooperation, b) the exercise is fun since it is performed together, c) healthy competition, d) does not require many tools. | a) Students have more learning intensity, b) does not require a spacious room, and c) students are more concentrated on their learning. |

Disadvantages

- a) The presence of personal characteristics to stand out, b) if the members' skills are unbalanced, it obstructs the exercise or the exercise is dominated by a person, c) students have a few portions in learning, d) require a spacious room.

Disadvantages

- a) Possible boredom in students, b) no interaction with friends, c) require many tools

The proper learning method selection affects elementary school students' abilities in understanding basic movement skills. Also, motivation is closely related to improving elementary school students' abilities in performing movement skills in physical education. Highly motivated students will possibly achieve a high learning outcome. It indicates that the higher the motivation and the more intensity and efforts projected in learning, the higher the learning outcome will be. Students put effort to improve learning success to achieve their expectations. Besides, motivation also supports efforts and maintains the learning process. It forces students to study hard (Degree, Education, & Office, 2007). Learning motivation arises every time one studies. This is likely that learning outcomes will increase over time (Degree et al., 2007). Rosita (2014) defines motivation as energy transformation in oneself marked by the existence of feelings and reactions to achieve goals. Motive can be declared as the driving force within subjects to conduct certain activities to achieve a goal (Pandanharum et al., 2017). Mustafa & Dwiyogo (2020) stated that motivation is defined as power sustaining individual activities. Based on the experts' opinions, it is concluded that motivation consists of three elementary components, i.e., driving, diverting, and sustaining human behaviors.

Understanding that learning quality improvement is necessary to improve student motivation and the improvement effort is implementing the learning method, the researcher, with teachers, implemented a learning method to have a joyful learning atmosphere since it will trigger motivation. This study is therefore conducted to investigate the learning method implementation which is expected to improve learning motivation of physical education on the ball throw-catch material in the elementary school setting.

2. METHODS

This study employed the experimental design of factorial 2x2. Then, it compared the effect of the learning method and learning motivation on the improvement of manipulative basic movement skills. Learning method and learning motivation were the independent variables requiring an experiment group. Meanwhile, the learning motivation, such as high and low motivation, was the mediating variable. The result is a ball throw-catch skill learning outcome. The variables examined in this study comprise learning method, learning motivation, and ball throw-catch skill learning outcomes.

Table 2. Study Experiment Framework 2x2

| Learning Method | Group (A1) | Individual (A2) |
|-----------------|---------------------|------------------|
| Motivation | | |
| High (B1) | A1 B1 8 students | A2 B1 8 orang |
| Low (B2) | A1 B2 8 orang | A2 B2 8 orang |

The sampling technique used in this study was *cluster-random sampling*. As mentioned by Sugiyono (2010), "cluster-random sampling does not select individuals but an area or group, which then called as a cluster." Sampling was performed randomly. Each class leader took the drawing. The

samples were grouped based on the drawing outcome, amounting to 60 students, comprising 30 students in Class IIIA and 30 students in Class IIIB. After ranking and arranging the samples from biggest-smallest, it was categorized into high and low motivation groups by 27% for Class IIIA, which consisted of eight highly motivated and eight low motivated students, and 27% for Class IIIB, which consisted of eight highly motivated and eight low motivated students.

The data analysis technique utilized was variance analysis (ANOVA). Hypothesis testing was performed on a significance level of 5%. If the ANOVA result has an interaction between learning method and learning motivation on ball throw-catch skill learning outcome, it is followed by further testing. If the number of samples for each cell is equal (n-equal), further testing is followed by the *Tukey* test. As an analysis requirement test, a normality test was performed using the Lilliefors test. After the normality test, the homogeneity test was carried out using the F-test and Barlett test.

3. FINDINGS AND DISCUSSION

The current study has three variables. The dependent variable is the ball throw-catch skill learning outcome. The independent variables are group and individual learning methods. The mediating variable is learning motivation (high and low). After following a set of the programmed learning process by dividing students into two groups, i.e., students taught using the group learning method and students taught by the individual learning method, obtained a result of ball throw-catch skill learning outcome as a score used and analyzed from the average of three evaluators' assessments. Each group has highly motivated and poorly motivated students. Student motivation was measured by a test.

Table 3. ANOVA Factorial 2x2

| Learning Method Motivation | Group Learning Method (A1) | Individual (A2) |
|-------------------------------|---|--|
| High (B1) | $\sum x = 565$ $\sum x^2 = 39921$ $\bar{x} = 70.00$ SD = 1.598 N = 8 | $\sum x = 380$ $\sum x^2 = 18912$ $\bar{x} = 47.50$ SD = 6.88 n = 8 |
| Low (B2) | $\sum x = 502$ $\sum x^2 = 31832$ $\bar{x} = 62.75$ SD = 6.88 n = 8 | $\sum x = 520$ $\sum x^2 = 33944$ $\bar{x} = 65$ SD = 4.536 N = 8 |
| Total | $\sum x = 1067$ $\sum x^2 = 71753$ $\bar{x} = 66.687$ SD = 6.311 n = 16 | $\sum x = 900$ $\sum x^2 = 52856$ $\bar{x} = 56.25$ SD = 12.196 N = 16 |

Analysis Requirement Test.

Before conducting the variance analysis (ANOVA), the analysis requirement tests were performed, i.e., (1) normality test and (2) population homogeneity test.

Normality Test.

The normality test used the Lilliefors analysis technique, a non-parametric requirement test analysis technique. Based on a random sample, the null hypothesis is tested that the sample comes from a normally distributed population and the counter hypothesis that the population is not normally distributed. Based on this hypothesis, the group results of the normality analysis can be explained in the table as follows:

Table 4. Summary of Sample Normality Test Results

| Group | N | L ₀ | L _t | Conclusion |
|-------------------------------|----|----------------|----------------|------------|
| A ₁ B ₁ | 8 | 0.195 | 0.285 | NORMAL |
| A ₁ B ₂ | 8 | 0.182 | 0.285 | NORMAL |
| A ₂ B ₁ | 8 | 0.218 | 0.285 | NORMAL |
| A ₂ B ₂ | 8 | 0.129 | 0.285 | NORMAL |
| A ₁ B | 16 | 0.207 | 0.213 | NORMAL |

Based on Table 4, L₀ for all sample groups was smaller than L_t. Thus, it can be concluded that the sample comes from a normally distributed population. The results imply that parametric statics analysis can be used to test the hypotheses proposed in this study; hence, the first requirements for testing have been met.

Homogeneity Test.

The variance homogeneity test for each data group of manipulative movement basic-skill learning outcomes used the Barlett test on a significance level of $\alpha = 0.05$.

Homogeneity Test of 4 Groups.

Table 5. Summary of Homogeneity Results of 4 Groups

| Group | N | X ² _b | X ² _t | Conclusion |
|-------------------------------|---|-----------------------------|-----------------------------|-------------|
| A ₁ B ₁ | 8 | 0.326 | 7.81 | Homogeneous |
| A ₁ B ₂ | 8 | | | |
| A ₂ B ₁ | 8 | | | |
| A ₂ B ₂ | 8 | | | |

Homogeneity Test of 2 Groups.

Table 6. Summary of Homogeneity Results of 2 Groups

| Group | N | X ² _b | X ² _t | Conclusion |
|------------------|----|-----------------------------|-----------------------------|-------------|
| A ₁ B | 16 | | | |
| A ₁ B | 16 | 1.28 | 3.84 | Homogeneous |

Based on the results of the homogeneity test analysis, it can be concluded that the sample group comes from a population that has a homogeneous variance. Hypothesis testing of the study used the two-way technical analysis of variance (ANOVA), as presented in the appendix. Then, the test result is explained as follows:

Group Playing Method is better than Individual Playing Method in the Ball Throw-Catch Skills Learning.

Based on the research results of the data analysis, there are differences between the learning strategies of the group and individual playing methods. It means that the group playing method is better in achieving the learning objectives of throwing and catching ball skills when compared to the individual-playing method learning strategy. Lubans et al. (2010) said that manipulative movement skills (throwing and catching the ball) are skills that involve manipulating movements or controlling objects. Moreover, they continued that throwing is a complex gross motor skill in which there is involvement between different parts of the body, which are coordinated with other parts of the body to drive the biomechanical principles that result in the transfer of forces to the ball. Samsudin & Nugraha (2015) said that throwing can be done from under the hands, above the head, beyond the head or arms, and from the side. Based on some opinions above, it can be concluded that throwing is a coordinated movement of swinging the arms, fingers, sticks, and feet to release objects or something in a certain direction.

Furthermore, Ericsson & Karlsson (2014) stated that catching is a manipulative skill where catching aims to restrain the object. Samsudin & Nugraha (2015) explained that it is a basic manipulation movement that involves stopping the momentum of an object and controlling it using both hands. Students at first will find it easier to catch scrolling objects when compared to catching the bouncing objects. Thus, the catching ability of the bouncing objects develops after the child can catch the rolled objects. Based on some opinions that have been expressed by the experts above, it can be concluded that catching is a hand movement to restrain objects around the students by using both hands in the right time estimate. A study was conducted by Runasari & Isdaryono (2018) related to improving social development through collaborative play methods. This study used two methods (group and individual method). The results of data analysis identified that students who used the group play method had higher abilities than students who were given the individual play method.

Based on the discussion, there is an effect on the learning outcomes of throwing and catching ball skills between the group and the individual playing methods. With the implementation of mastery of throwing and catching skills, the benefits of manipulative skills are enormous. It is necessary to do it well because of the ball throw-catch skills.

The Interaction between Learning Strategies and Motivation on Learning Outcomes of the Ball Throw-Catch Skills

Meanwhile, in testing the second hypothesis, it shows an interaction between learning methods and motivation on the learning outcomes of Ball Throw-Catch Skills. Thus, it can be concluded that there is an interaction between learning strategies and motivation on learning outcomes of the Ball Throw-Catch Skills. The game method is an activity that can cause fun for those who play it. In learning, games are not always interpreted as games should be but can be designed to help students understand the learning process, such as providing opportunities for students to manipulate concrete objects related to learning. Research related to throwing and catching skills (Siregar et al., 2019) shows differences between students who are given treatment and those who are not. The game of throwing and catching the ball turned out to affect the manipulative abilities of elementary school students. Then, based on research, it stated that the existence of playing throw and catch in learning affects the gross motor skills of elementary school students.

Meanwhile, interactive games can be interpreted as games carried out by the active interaction between class members who participate in learning. In line with what has been stated by McKenzie & Lounsbury (2014) that through play activities, it is appropriate to develop children's basic movement skills in elementary school because basically, children are the world of play. Group games are games when each participant must be part of a team. Group games prioritize cohesiveness and cooperation between team members or groups. It should be realized that each game has advantages and disadvantages, as explained by Runasari & Isdaryono (2018).

The game method is an activity that can cause fun for those who play it. In learning, games are not always interpreted as games should be but can be designed to help students understand learning, such as providing the students' opportunities to manipulate concrete objects related to learning. The playing method in this study is divided into two ways, namely the group play method, and the individual play method. These two playing methods will be useful and work well for teaching manipulative-basic movements if they are supported by motivation since it is the basic potential that they possess as their basic skills to learn a movement skill. Every student has motivation. To be successful in learning basic movements, the proper method is also needed, namely the group playing method and the individual playing method.

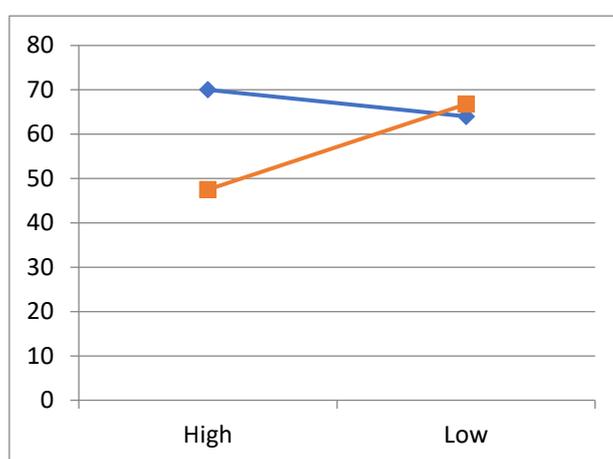


Figure 1. The interaction diagram in the research

Thus, it is closely related to the potential for manipulative basic movements and willingness that can be displayed by students. So, it can be expected that there will be an interaction between the group playing method and the individual playing method on the learning outcomes of throwing and catching skills.

The group playing method is better than the individual playing-method strategy on learning outcomes of ball throwing skills with high motivation.

The proof results of the third hypothesis show that there is a significant difference between students who have high motivation and are taught using the group and individual playing methods on the learning outcomes of throwing and catching skills. Based on these findings, it can be concluded that the learning outcomes of throwing and catching the ball skills with high motivation taught using the group play method are better than the individual playing method. Playing methods that can affect student learning outcomes mastery of throwing and catching skills are influenced by learning motivation factors because learning motivation is one of the drivers for individuals to carry out the learning process given by the teacher to students (Webster, 2010). If the student has high learning motivation, they tend to be able to complete learning tasks well and the students with high learning motivation tend to attribute success to their abilities and failure to lack of effort. Based on these motives,

students will be more active in learning and thus will make it easier to master the skill of throwing and catching the ball.

To improve basic manipulative movement skills through throwing and catching the ball, the application of a teacher's teaching method is significant. Psychologically, these conditions will require a high learning motivation. It is because students are faced with a learning atmosphere by having to solve existing problems of how they can do the throwing and catching skills well. In the learning process, motivation is needed for those who do not have motivation in learning. If a student has a motivation, it will be easier to learn basic manipulative movement skills. Thus, it can be concluded that the learning outcomes of throwing and catching ball skills with high motivation taught using the group playing method are better than the individual playing method. It is in line with research conducted by van Aart et al. (2017), which explains that motivation greatly influences students' ability to perform movement skills.

Individual Playing Method is better than the Group Learning Method for Learning Outcomes of the Ball Throw-Catch Skills with Low Motivation

The proof results of the fourth hypothesis viewing from an average, show that the students' learning outcomes with low motivation and are taught by the group playing method are not better than the group playing method. If tested with a significant level, there are differences between students with low motivation and are taught with the group and individual playing methods on basic manipulative movement skills. When performing basic manipulative movement skills, motivation is needed. If students are not motivated, it will be difficult to teach students basic manipulative movement skills. Moreover, to cultivate motivation for elementary school students, it is very appropriate to develop children's basic manipulative movement skills in elementary school because basically, the world of children is the world of play. Thus, the role of the teacher in implementing this method is to provide instructors and monitor what students are doing.

Individual playing methods have advantages and disadvantages for individual games. Individual games are types of games that highlight individual activities. Students are given the freedom to make movements without help from friends or others (Runasari & Isdaryono, 2018). Characteristics of each game have qualities and are different from one another. This fact has the consequence that each individual has a different potential to succeed the certain movement-skill learning. Students who have low learning motivation and are following the learning process of swimming skills will be different from those with a higher level of learning motivation. It is due to the motivation factor arouse is low and causes a lack of motivation to do assignments. Moreover, students with low learning motivation tend to attribute their success to a lack of ability so that if they have a lack of attention, it will impact negatively on appearance, especially throwing and catching skills, which are manipulative basis movements. Therefore, it can be concluded that the learning outcomes of throwing and catching ball skills with low motivation taught using the individual playing method are better than the group playing method.

5. CONCLUSION

This study has answered the objectives and problems, which have been formulated and based on the results of data analysis, namely Analysis of Variance and Tukey Test. It concludes that the group playing method is better than the individual playing method on learning outcomes of manipulative basic movement skills and there is an interaction between the playing method and student motivation on learning outcomes of manipulative basic movement skills. Moreover, the group playing method is considered better than the individual playing method on the learning outcomes of manipulative basic movement skills in students with high motivation. Meanwhile, the individual playing method is better than the group playing method on the learning outcomes of manipulative basic movement skills in students who have low motivation. The current study does not represent the condition

comprehensively. Therefore, next researchers can add the respondents and follow up the analysis using qualitative approaches.

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