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## FUNDAMENTAL MOVEMENT SKILLS (FMS) LEARNING MODEL FOR PRIMARY SCHOOL

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### Abstract

Learning fundamental skills movements can be done with a game approach and using simple tools. This study aims to develop a game-based basic motion learning model in elementary schools, and to see the effectiveness of the developed model. The subjects in this study amounted to 158 consisting of 5 elementary schools, experimental and control subjects were taken from a sample of 68 students. The research method used is Research and Development from Borg and Gall. Based on the results of the validation of physical education learning experts, movement learning experts and game experts declared valid for trials with locomotors obtaining percentages of 80.00% and 85.00%, non-locomotor basic movements obtained percentages of 80.26% and 82.89% and in The manipulative basic movement learning model obtained a percentage of 80.88% and 84.38%, respectively. The results of the small group trial state that the learning model developed can be implemented by students with a percentage of 79.79% and the large group at gets a percentage of 82.14%. The results of the effectiveness state that the developed model can improve the basic movement skills of walking, running, throwing, catching and jumping with a mean difference of  $t_0$  is 15,462 >  $t$ -table 1,668 degrees of freedom 66 = 0.05. The conclusion is that the developed model is valid and can be applied to physical education learning, and can improve the basic movement skills of elementary school students.

**Keywords:** Fundamental movement skills; physical education; mobile learning

### INTRODUCTION

Physical education is learning that can optimize and develop students' talents because there are psychomotor, cognitive, and affective elements in learning. Foundational for child development (movement education, cognitive growth, socializing functions, emotional development) (Petrie & Clarkin-Phillips, 2018). Fundamental Movement Skills (FMS) has the potential to be an early motor marker in children with autism spectrum disorders. Basic movements are the underlying elements of a series of movements (Gandotra et al., 2020). Teachers' lack of knowledge to organize systematic physical education learning can result in a lack of opportunities for students to move actively.

Evidence suggests that basic movement skills and physical activity are related. Developing basic movement patterns and ball skills reduces physical inactivity and health problems in early childhood (Yu et al., 2021). The ability to

perform a variety of basic movement skills increases the likelihood that children will participate in various physical activities throughout their lives. It is possible to develop the basic skills of junior high school students through physical education (Kalaja et al., 2012). Many children aged 9-12 years appear to have low levels of basic movement skills (FMS). Physical education is important because PE teachers can teach children various basic skills and can influence sports motivation. However, a decrease in the level of motivation in physical education learning was reported in the final grades of primary school. Therefore, more insight into the relationship between learning motivation and basic motor skills is needed.

Fundamental movement skills related to physical education learning either directly or indirectly represent skills that are generally practiced during physical education learning. Satisfaction of psychological needs seems important for children's PE motivation and for their skill development, both directly and indirectly in constructing a need-satisfying environment (Bruijn et al., 2021). Physical education lessons can facilitate greater improvements in the development of fundamental movement skills for children of all abilities compared to physical education lessons (Kelly et al., 2020). The development of basic movement skills in physical education is an important contributor to children's interest in and participation in physical activity. Physical education teachers and the curriculum they teach follow national standards and provide learning and teaching experiences that support students' skills. In general, elementary and middle school students acquire psychomotor skills, but they rarely engage in the cognitive learning associated with learning those skills.

Children aged 6-9 years have mastered the four basic movements identified by the physical education curriculum although they have the developmental potential to become fundamentally competent by six years old. (Duncan et al., 2019). These skills were distributed over the performance areas object control, stability and locomotion (Vandaele et al., 2011). Learning that suits the characteristics of elementary school children is the development of fundamental movement skills. Motor competence is hypothesized to have

potential to children and young people's physical activity (PA) levels with a potential consequential link to long-term health (Breslin et al., 2012). Children's FMS performance and their impact needs to be considered in any interventions to improve the FMS of children of primary school age (Jarvis et al., 2020). This FMS learning model is no less exciting than modern games because they also train imagination, thinking, and movement. Therefore, game-based FMS learning can help foster students' interest in developing basic movements and physical development.

## **METHOD**

This research method is Research and Development with a research approach, namely qualitative and quantitative. This research and development was carried out to develop standard guidelines for game-based basic movement learning models for elementary school students which were carried out through the stages of trial, validation, and revision until a model was obtained that had effectiveness and feasibility values. The research implementation time was 6 months, starting from the preliminary research process to product testing. The number of meetings during the trial was 8 meetings with a time of 105 minutes for each meeting.

This research was carried out in 5 elementary schools in East Jakarta. The characteristics of this game-based basic movement learning model are intended for elementary school students with an age range of 10-12 years who are randomly selected from grades 4 to 6. The average height of the students is 156.7 cm with an average weight of 45.6 kg. All students have agreed to participate in the research. Researchers and teachers apply a basic movement learning model by meeting 1 to 3 students to learn the activities that will be carried out starting from locomotor, non-locomotor, and manipulative movement learning models. Meetings of 4 to 8 students practice all model items.

The data collected was using instruments in the form of product development feasibility questionnaires and basic movement skills (psychomotor) test instruments from TGMD-3 assessment of gross motor performance for children (Ulrich, 2017). Data were analyzed using the t-test to determine whether

there was a significant effect from using the model that had been developed. The N-gain score test is carried out by calculating the difference between the pretest scores (test before applying a certain method (treatment)). By calculating the difference between the pretest and posttest or gain score, we will be able to find out whether the use or application of a particular method can be said to be effective or not.

## RESULT AND DISCUSSION

This small group trial was attended by observers with the aim of making direct observations with researchers regarding each item of the game-based basic movement learning model that has been developed. In the small group trial, there were 16 students participating. The results of this small-scale test showed that the product developed was attractive, safe, and easy for elementary school students to use. Apart from that, the games presented make students very enthusiastic, and happy and actively participate in learning.

Based on notes from a large group trial involving 78 elementary school students, revisions need to be made regarding the use or application in physical education learning with the aim of developing basic movement skills. So it can be concluded that all learning models that have been tested are feasible and can be used. In this way, the product development of a game-based basic movement learning model can be continued in effectiveness testing. Effectiveness test to compare the extent to which the product that has been developed is more effective in achieving the goal of improving elementary school students' basic movement skills with previous learning models. This effectiveness test involved 68 students who participated with the results in Table 1 and Table 2 analysis of mean differences. Table 3. discusses the pretest and posttest results of the experimental group, table 4. explains the mean differences, and Table 5. N-Gain Score.

**Table 1.** Control Group Pre-Test and Post-Test

No	Pre-Test	FA	FR (%)	Post-Test	FA	FR (%)
1	16	2	6,06	17	1	3,03
2	17	3	9,09	18	5	15,15
3	18	7	21,21	19	9	27,27

4	19	10	30,30	20	10	30,30
5	21	6	18,18	22	5	15,15
6	23	4	12,12	24	3	9,09
7	24	1	3,03			
Amount		33		Amount		33
Average		19,42	100	Average		20,00
Standard Deviation		2,12		Standard Deviation		1,82

**Table 2.** Control Group t-test analysis

		Mean	N	Std Deviation	Mean Difference	t-table
Pair 1	Pre-test	19,4242	33	2,122	4,211	1,694
	Post-test	20,0303	33	1,776		

**Table 3.** Experimental Group Pre-test and Post-test

No	Pre-Test	FA	FR (%)	Post-Test	FA	FR (%)
1	17	3	8,57	19	2	5,71
2	20	9	25,71	21	4	11,43
3	21	11	31,43	22	8	22,86
4	23	7	20,00	24	10	28,57
5	24	4	11,43	25	6	17,14
6	25	1	2,86	26	3	8,57
7				27	2	5,71
Amount		35		Amount		35
Average		21,26	100,00	Average		23,43
Standard Deviation		1,990		Standard Deviation		2,048

**Table 4.** Experimental Group t-test analysis

		Mean	N	Std Deviation	Mean Difference	t-table
Pair 1	Pre-Test	21,257	35	1,990	17,198	1,691
	Post-Test	23,429	35	2,048		

**Table 5.** N-Gain Score

Experimental Group	Pretest Average	Posttest Average	Average Ideal Score	N-gain	N-Gain (%)	Information
	56,48	65,15	23,53	0,58	57,95	Fairly Effective

From the results of the pre-test and post-test, the mean difference test analysis in the control group was carried out,  $t_0$  was 4.211 and t-table was 1.694 with degrees of freedom of 32 and  $\alpha = 0.05$ . In the experimental group regarding

the effectiveness of the learning model developed, a mean difference test analysis was then carried out to obtain  $t_0$  of 17.198 and  $t$ -table of 1.691 with degrees of freedom of 34 and  $\alpha = 0.05$ . Meanwhile, the N-gain value is 0.58 in the moderate category, while the interpretation is 57.95% in the quite effective category. So that the learning model can be developed and is quite effective in basic movement skills material.

This research produced 17 (seventeen) game-based basic movement learning models in elementary schools, which were created in mobile learning to deliver material to students. Mobile learning application-based learning presents a type of game that is feasible and effective to use, and students can participate actively during physical education learning (Tya et al., 2021). The model product developed has gone through validation stages by experts including physical education learning experts, motor development experts, and game experts.

Children who have basic motor skills have physical activity outside school hours. This aligns with research showing that FMS is positively associated with health and participation in physical activity and sport (Eather et al., 2018). Girls' engagement in moderate to vigorous physical activity and jumping skill development activities during primary school education (Jaakkola et al., 2019). Types of games that improve physical and motor fitness (agility, speed, balance and reaction time) must be conveyed to the physical education teacher (Alli Gipit et al., 2017). Active games can show the involvement of physical activity in the development of basic movements.

Then the model product was tested in small and large groups and tested for effectiveness in several East Jakarta elementary schools. The results of the effectiveness test, it is proven to be effective in improving the basic movement skills of elementary school students. The results of this research are supported by research results from (Gustian, 2020) with "the results of the research carried out are able to prove that the modified game is able to increase the level of understanding, movement skills, and increase student enjoyment". Playing can maintain physical health, improve spiritual and mental conditions, and institutionalize cultural values (Dehkordi, 2017). The learning model is actually a

process toward aspects of physical education (Slade et al., 2019). Improved skills relate to expanded team membership and interpersonal adaptability of the game, the mediated nature of peer-teaching, and the design of the game form (Farias et al., 2019). Increased human relations between students in the classroom, and increased student socialization outside the classroom, after implementing the game (Kovačević & Opić, 2014).

Games have certain characteristics that are influenced by certain things that have been passed down from generation to generation (Permana & Irawan, 2019). In previous research, games have benefits that can build student character (Nur, 2013), improve social skills (Irmansyah et al., 2020), develop students' physical and motor skills (Hanief & Sugito, 2015), and controlling emotions (Lavega et al., 2014). The results achieved were due to the game being modified according to the developmental characteristics of elementary school students. Based on several aspects of development including; 1) aspects of movement skills that are adapted to fundamental movement skills which are the stages of movement development that occur in students. Trainers should also pay attention to the balance between theory and practice, as well as adopt the latest technologies and innovations to increase student learning and motivation (Pranata et al., 2023). 2) the fun aspect, because the game was developed with a play approach and activities designed to be challenging so that it can attract students' interest. 3) aspects of game modification are carried out by considering the principles and aspects of developing learning activities for elementary school students.

The disadvantages of implementing this learning model include: 1) it requires more resources and support, for example, teaching tools and materials, as well as school administration support. Difficult to implement in a classroom setting with a large number of students and limited facilities. Interactive methods and activities often require space and are suitable for small groups. More complex learning assessment, not only written exams but observation of student activities. Changing the mindset of teachers and students who are used to conventional methods requires good adaptation.



## CONCLUSION

Based on the data obtained from the results of expert validation, field trials, and effectiveness, research on game-based basic movement learning models at the elementary school level, it can be concluded that the product of game-based basic movement learning models for the elementary school level can be implemented well. The game-based basic movement learning model is effective in improving elementary school students' basic movement skills. One way to help teachers be more creative is to create a basic movement learning model using games. It also makes learning fun and activates students.

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