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Manipulative Movement Based on Information Technology Games for School Children Aged 10-12 Years

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Abstract

Manipulative movements are a series of movements that involve members of the body as a form of action to control an object using energy so that they can engage in movement activities that have a target or goal. Games are movement activities that are loved by all groups of children. Which involves feeling happy, carefree or happy. Information technology is a set of hardware and software that is important in improving the quality of information quickly and with quality. Therefore it is very good and effective if the development of information technology is implemented in the world of sports, one of which is in the form of games for schoolchildren aged 10-12 years so as to facilitate the stages of the learning process in carrying out a variety of good and correct basic motion activities. The purpose of this study is to determine the basic manipulative movement skills in games and the effectiveness of available information technology. This research method uses Borg & Gall research and development with qualitative and quantitative approaches for One-Group Pretest-Posttest Design. So the results obtained through Information Technology in the game will be able to improve basic movement skills that are good and right. It was concluded that the model developed in an information technology-based game can enhance symmetrical manipulation of multilateral basic movements, good and right, especially at the age of 10-12 years and the formation of emotional maturity, a sense of togetherness and effective communication among others and efficiently.

Keywords: *Manipulative Basic Motion Skills, Games, Information Technology.*

Introduction

Learning motion skills is one part of physical education learning in schools aimed to achieve learning goals so that children have adequate movement skills and the ability of movement as a provision in their daily lives[1]. Physical education is an integral part of the education system as a whole. Education as a process of human development in lifetime[2], has a very important role by which it provides opportunity to students to be directly involved in various learning experiences through physical activity. Remembering the importance of motion patterns that form the basis of a movement in student education, various movements which are more attractive and encouraging students need to be developed. Then, the advancement of information technology in all aspects can be utilized to develop education[3]. The basic movement is a level of quality mastery in carrying out body movements as the foundation of a movement process which involves coordinating several body parts or all parts of the body to function properly[4,5]. The degree of coordination of the body parts needed to carry out movements is relatively high. To reach a basic level of motion, it takes a learning process and practice for a certain period of time. As a teacher or educator of physical education and health, they should understand and mastery science both in the form of theory, concepts, and principles from the scientific foundation to carry out

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scientific tasks especially with regard to basic motion[6]. The benefits of motion skills are to: (1) the development of motion for children's health in increasing muscle tone, strengthening bones, maintaining healthy blood pressure, increasing heart performance, introducing healthy lifestyle[7] (2) development of motion in children's motor growth; increase muscle strength, flexibility, body coordination, balance, increase body awareness, develop more complex movements such as running, jumping, throwing (3) cognitive development of children, increasing brain connections, stimulating the ability to spend, improving memory and concentration, increasing creativity and ability to overcome problems, improve abstract thinking (4) developments in children's social abilities; encourage cooperation, establish friendships, enhance learning consequences of behavior. (5) development of children's emotions; build self-confidence, overcome depression and anxiety, improve discipline and self-control, reduce aggressive habits and be able to express feelings well[8].

Through playing activities, it is appropriate to develop basic children's movement skills in elementary school, because basically children's world are to play. Games are one type of activity that is very popular to children[9]. The game provides greater pleasure, according to Patty (2008) there are six types of games, namely: (1) introductory games, (2) individual games, (3) team games, (4) games at party ceremonies, (5) in-game water, (6) scout games.

Therefore, in learning activities, it is not surprising that there are some students who do not participate in learning for a number of reasons as: bored, tired, don't like learning material. It turns out that elementary school students experience obstacles or difficulties, because in childhood locomotor motion abilities development.

Literature Review: The development research is an attempt to develop an effective product in schools[10]. This model is one of the most popular models of education research and development which explains educational research and development [11] is a the process used to develop and validate educational production[12]. Then, the reasons of researchers in closing the model from [13]are as follows: able to overcome real needs through developing solutions to a problem while producing knowledge that can be used in the future and able to produce a product model that has a high validation value because through a series of field trials and validated by experts;[14]. Based on the results of research (Wahyuningtias Puspitorini, James Tangkudung, 2017) similar research results: Through water games in Learning basic motion skills for Children 5-6 years

proven to improve basic movement skills and help build confidence and courage. Followed by other research results, (Hidayat, 2017) with the similarity of research results: an activity in a game can improve the basic locomotor, non-motomotor and manipulative motion techniques. Strengthened from the results of the study (Aji Zaenal Mutaqin, Sufyar Mudjianto, 2017) with the similarity of research results: through the game like games can improve the basic motion patterns in throwing the ball.

Methodology/Materials

This research methodology stage uses development research.

Results and Findings:

Table 1. Preliminary Research Results to Sports Teachers

No	Schools	Grade	Score	Completeness (%)	Classification
1	School A	4	12	80	Good
2	School B	5	10	67	Enough
3	School C	6	10	67	Enough
4	School D	4	11	73	Enough
5	School E	5	10	67	Enough
6	School F	6	9	60	Less
7	School G	6	12	80	Good
8	School H	4	11	73	Enough
9	School I	5	11	73	Enough
10	School J	4	10	67	Enough

Total	**49**	**106**	**706,63**	
Average	4,9	10,6	70,663	Enough
Min	4	9		
Max	6	12		
Very Good	0			
Good	2			
Enough	7			
Less	1			
Very Less	0			

From the results of the analysis as a preliminary study conducted that: the minimum value obtained is 9 while for a maximum value of 12 so the total number of each school with an average value of 70,663% is categorized enough.

Table 2. Results of Analysis of Needs for Students During Learning Physical Education

No	**Teachers**	**Grade**	**Score**	**Completeness (%)**	**Classification**
1	A1	4	264	80,00	Good
2	A2	5	199	60,30	Enough
3	A3	6	217	65,75	Enough
4	A4	4	243	73,63	Good
5	A5	5	201	60,90	Enough
6	A6	6	135	40,90	Very Less
7	A7	6	242	73,33	Good
8	A8	4	177	53,63	Less
9	A9	5	199	60,30	Enough
10	A10	4	155	46,96	Very Less

Total	**49**	**2769**	**709,95**	
Average	4,9	276,9	71,00	Enough
Min	4	237		
Max	6	312		
Very Good	0			
Good	2			
Enough	7			
Less	1			
Very Less	0			

From the results of preliminary data analysis to the 10 teachers above, it can be concluded that the minimum score obtained is 237, while for a maximum score of 312, the total number of each school with an average score of 71% is categorized as sufficient.

Table 3. Pretest and Post Test Descriptive Statistics Analysis

Manipulative Statistics							
		Pre Test					Different
		Throw And Catch		Different	Up Down From Chair		
		Experimental Group	Control Group		Experimental Group	Control Group	
N	Valid	22	22	0	22	22	0
	Missing	0	0	0	0	0	0
Mean		22.36	22.32	.04	22.55	21.86	.69
Median		22.00	22.50	.50	23.00	22.00	1
Std. Deviation		.902	1.323	.421	1.101	1.207	.106
Range		4	5	1	5	5	0
Minimum		21	20	1	20	20	0
Maximum		25	25	0	25	25	0
Sum		492	496	4	491	481	10
Manipulative Statistics							
		Posttest					Different
		Throw And Catch		Different	Up Down From Chair		
		Experimental Group	Control Group		Experimental Group	Control Group	
N	Valid	22	22	0	22	22	0
	Missing	0	0	0	0	0	0
Mean		23.91	23.36	.055	23.91	23.14	.47
Median		24.00	24.00	0	24.00	23.00	1
Std. Deviation		1.342	1.177	.165	1.342	.990	.352
Range		6	5	1	6	4	2
Minimum		20	20	0	20	21	1
Maximum		26	25	1	26	25	1
Sum		526	514	12	526	509	17

Based on the results of the 22 pretest and posttest samples, it can be interpreted that there are significant differences and values increase.

Based on the results of the 22 pretest and posttest samples, it can be interpreted that there are significant differences and increases in value after receiving treatment.

Table 4. Score Distribution Frequency of Tennis Ball Throw and Catch (Pretest and post test)

No.	Interval Score	Category	Pretest		Control	
			Absolut Frequency	Relative Frequency (%)	Absolute Frequency	Relative Frequency (%)
1	20.00-21.25	Very good	0	0	0	0.00
2	21.26-22.50	Good	12	54.55	11	50.00
3	22.51-23.75	Moderate	10	45.45	11	50.00
4	23.76-25.00	Less	0	0	0	0.00
	Total		**22**	**100**	**22**	**100**

No.	Interval Score		Posttest		Control	
			Absolut Frequency	Relative Frequency (%)	Absolut Frequency	Relative Frequency (%)
1	20.00-21.25	Very good	1	4.5455	0	0.00
2	21.26-22.50	Good	19	86.364	19	86.364
3	22.51-23.75	Moderate	2	9.0909	3	13.64
4	23.76-25.00	Less	0	0	0	0.00
	Total		**22**	**100**	**22**	**100**

Based on the results of the Distribution of the Frequency of Tennis Ball Throw and Catch that there is a comparison of the results of the Relative Frequency value between pretest and control of 1 person with a good category of 4.55% while for the Moderate category of 4.55%.

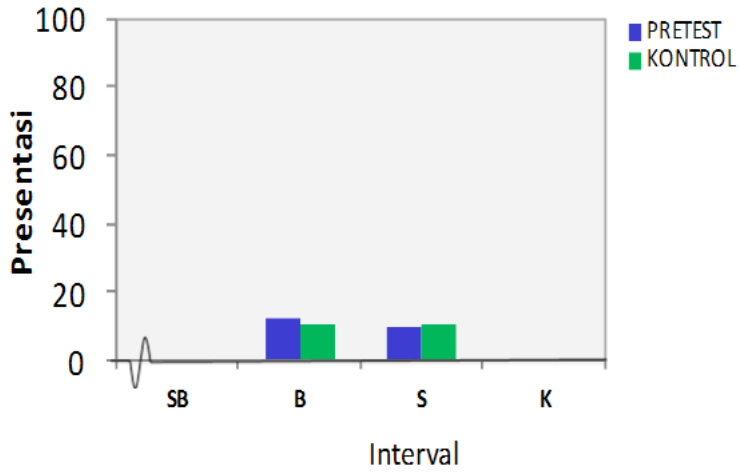

Chart 1. Score Distribution Frequency of Tennis Ball Throw and Catch

Based on the results of the Distribution Frequency Distribution Value of Throwing Tennis Ball that there is a comparison of the results of the Relative Frequency value between the posttest with control of 1 person with a very good category of 4.54% while for the good category of 19 people both from the posttest and control groups or the same, while for Moderate category as much as 1 person is 4.54%.

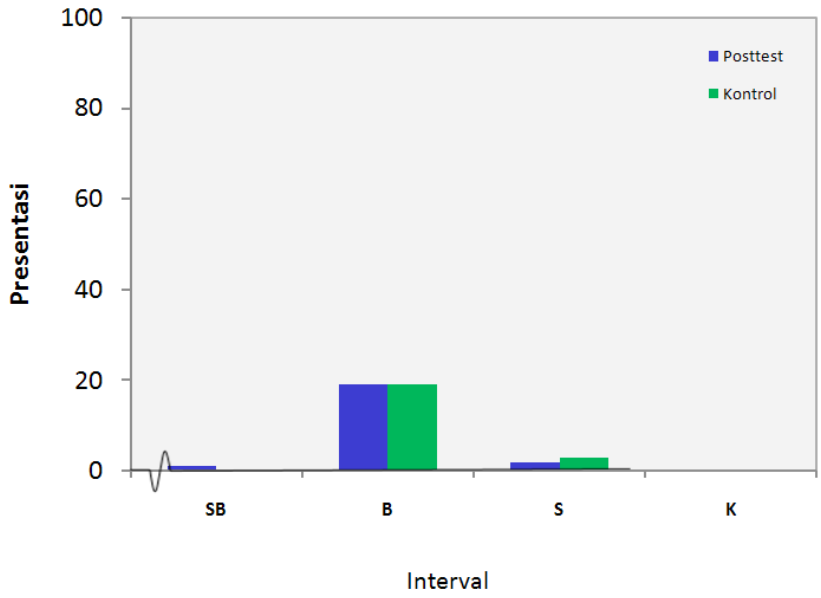

Chart 2. Frequency Distribution Value of Throwing Tennis Ball

Discussion

This effectiveness of the test was the results of a concept that was developed and could be generalized, especially in games for children aged 10-12 years, which could improve multilateral skills of manipulative basic motion. Therefore it is also quite clear that by reinforcing the results of research (Arif Hidayat, 2017) results of the research conducted are able to increase activity, ability and locomotor, non-locomotor and manipulative basic technical skills of students at State Primary School using the game model. While the results of research from (Wahyuningtias Puspitorini, 2017) results in the effectiveness of a fundamentally oriented learning model with games for children 5-6 years.

Conclusion

The results of the concept model developed in a multilateral game based on information technology can support the process of improving the results of basic movements of manipulative harmonious (symmetrical), good and right and the formation of an emotional maturity, sense together and communicate with each other effectively and efficiently.

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