

# Development of Manipulative Models Based on Play and Games in Physical Education for Elementary School in Ambon City

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## ABSTRACT

This research aims to development of manipulative model based on play and games in physical education for elementary school in Ambon city. Respondents in this study fifth grade elementary school students in Ambon City. The method used in this study is the development with Borg and Gall models. To see the effectiveness of the model three tests were carried out namely; 1-1 tests, small group tests, and field tests with indicators of student learning outcomes. The results showed that manipulative models based on play and games can improve learning outcomes with a t test value of 7,81. Based on the results of this study it can be concluded model manipulative based on play and game effective to improve learning outcome for student elementary school in Ambon city

**Keywords:** *Manipulative Model, Play Games, and Learning Outcomes*

## 1. INTRODUCTION

Play and game is the highest form of physical education research. An important development task in elementary school age includes learning physical with games, forming healthy attitudes as living organisms. Physical development consists of four aspects, namely; (1) neural intelligence system, (2) muscles, which influence the development of motor strength and skills, (3) edoktrin glands that influence the emergence of various new behaviors, and (4) physical / body structure which includes height, weight, and proportion[1]. The results of research on physical education conducted in elementary school shows that it has not been implemented as it should be. The problems are the low competencies of teachers in planning, implementing, and evaluating learning that are not used as a basis for changes in learning. Student learn more when they are depressed, feel fast, feel tired and frustrated. For Maluku, elementary school teachers physical education subjects have an average of 30 % S1, 50 % D2, and 20% have graduated from high school. This number, of course, is not in accordance with the Academic Qualification Standards. The teacher requires that all teachers of primary and secondary education up to the end of December 2015 have S1 qualifications and not many teachers have an educator certificate which has an impact on the implementation of low learning. Based on the results of observations in several schools related to the learning outcomes of fifth grade students, the highest average score was 6.9. In connection with the above problems, this study tries to develop a manipulative model based Play and Games in elementary school in Ambon city.

Manipulative is a movement to act in a more skillful form of movement from the members of the body, such as: kicking, throwing and doing with control. Manipulative ability to control and make contact with objects accurately in their environment[2]. Manipulative motion skills include both gross and fine motor skills, with range of throwing, catching, etc. The implementation of manipulative movements should be adjusted to the characteristics of elementary school age children. Elementary school age is the basis for shaping physical and motoric abilities as well as psychological and child[3]. In pre-adolescence ages 9-11, they are stronger and higher. As their motor skills improve, they are able to sit still and focus for quite a long time. through explaining 6 areas of motion activity in physical education for elementary school age children namely; games, gymnastics, dancing, swimming, outdoor sports and adventure activities, and athletics[4]. The activities carried out were fun activities and did not use a lot of activity equipment including: (1) games performed by children in the playground, (2) variations in the game of pat, and (3) games in groups[5]. Most activities are very active involving running games and applying avoidance techniques that are suitable for fifth grade or aged children middle 6-12 (years). Age affects the tasks that must be achieved at the level of development. Children are not adults in small or miniature versions of adults[6]. The aspects developed in the manipulative model as part of the educational process are locomotor motion. Locomotor motion is the motion of the entire body through a certain room or distance such as walking, running, jumping and so on. Locomotor

motion such as running, skipping, jumping, turning walking, tiptoeing and so on. which includes movements that are used to move the body from one place to another, such as: walking, stepping, sliding, skip, jump, hop, crawling, rolling, congklang, and hatchling.

Based on the results of research and theoretical studies that are relevant to manipulative motion in the context of research into manipulative basic motion studies are; throw and catch. Throwing and catching here is part of the learning material of class v students.

Play and games have contributed significantly to informal and formal learning. Plato explains that humans are playing creatures (*homo ludens*). In connection with this it is not strange if we find elementary school age children love to play. Playing offers opportunities for learning and development not present in play among those close in age[7] Children, who are likely to play above their typical level, and for older children, who expand their understanding by teaching younger children. Moreover, within the context of play children learn, develop, and practice innovative behaviours and social competencies. Playing is a human nature, both children and adults[8], [9], [10]. The desire to play is a stimulus to achieve a certain satisfaction. The game is a laboratory where children can apply new skills that are learned in the right way. Connection with this it can be concluded that the learning process of children should consider playing activities. The functions of the game for children are: (1) developing children's imagination and creations, (2) improving understanding of forms by being able to associate with other forms, (3) developing children's social sense and tolerance, and (4) honing children's aesthetic abilities. Physical Education is the process through which sport, outdoor education, dance, gymnastics, aquatics and games are used by physical educators to teach students motor skills and fitness skills as well as assisting with the school's responsibility to develop personal and social skills in students.

## 2. METHOD

The method used in this study was research and development by Borg & Gall model. This model was chosen because the work steps were more systematic, clear, repeated trials caused the results of the development to be more tested. The steps to develop the Borg and Gall model in this study are as follows:

Preliminary research is conducted to get an overview of the implementation of sports and recreational physical education learning. The steps used for this study are conducting observations, interviews with interview formats, and documentation. Based on the results of observations and reviews of learning outcomes are still low, children feel bored quickly, the

emergence of feeling lazy. Doing the most irregular movements.

The development of this manipulative basic motion model based on play and game is based on the results of the analysis of the motion coordination capabilities of elementary school. The design of this study; (a) formulate the performance of manipulative basic motion models; (b) develop manipulative basic motion models in the form of play and games; and (c) implement manipulative basic motion models, and (d) evaluate learning outcomes.

Expert validation test. The initial model of the manipulative basic motion model based on play and games was developed and tested with expert validation tests with material experts, design experts and media experts. After the expert test a 1-1 test was carried out, this model was tested on one teacher. The trial here is to look at the product and ask the opinion of the teacher about the model that has been developed. After testing 1-1 products are revised again.

A small group trial with five students, after the next revised model was to try out the model of manipulative basic motion based on play and games and then revised it again. The next test was an experimental test on class V students at SDN 64, SDN 05 dan SDN 76 Ambon City.

## 3. RESULTS AND DISCUSSION

The results of the study show the development of Play and Games based manipulative models can improve student learning outcomes. A manipulative model based on play and this game is used by teachers together with students. This manipulative model based on play and game is done with the Borg and Gall model as follows:

Conducting preliminary research by observing the implementation of physical education in school. The results of the observation show that the learning model used by penjasorkes teachers is lectures, demonstrations, and assignments. The conclusion of the model used by the teacher in implementing penjasorkes learning is a conventional learning model. This conventional learning model tends to be dominated by teachers, teachers are more active compared to students. This is very contrary to constructivist theory which explains that students are knowledge builders who are active in the function of teachers in learning only to develop basic knowledge that is in students. The impact of this learning on development is; lack of motivation, laziness, fast bored and feeling lazy. Furthermore, if it is associated with learning outcomes it also tends to be low. Based on the results of this initial research, a manipulative model was then developed.

Draft 1 manipulative model based on Play and Games. Outputs from this draft 1 model are: Syllabus, lesson plan, and teaching material. This play and

games-based manipulative model includes conceptual which contains work steps that will be carried out by the teacher and students. The development of play and games based manipulative models is adapted to supporting theories, namely; model, manipulative, play and games that are tailored to the characteristics of elementary. After this draft1, the expert validation test is made.

Expert validation is done by showing and evaluating products by material experts, and media-design experts. Material experts assess product models starting from syllabus, lesson plans, and teaching materials. While design-media experts start from the form of syllabus, RPP, cover design, content, continuity of content, color, use of animation, images, etc. The results of this expert validation test are; material experts 83 and 82, motion experts 81 and 83, and design experts 84 and 82. Summary of the results of expert validation on the-based manipulative base motion models play and game is as follows:

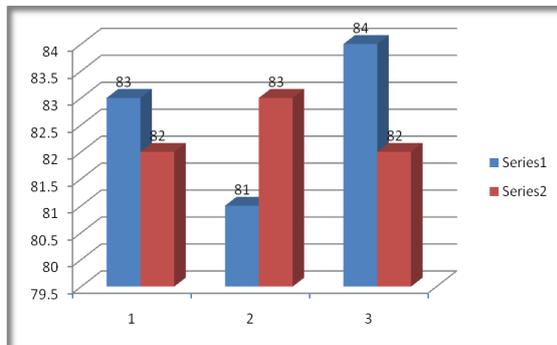


Figure 1. Results of expert Validation.

Note: 1 = material expert, 2 = motion expert, and 3 = media

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| <p><b>Material Expert</b></p> <ul style="list-style-type: none"> <li>- Revision of learning objectives</li> <li>- Locomotor abilities of children</li> <li>- Reduce material</li> <li>- Specific forms of play and games</li> </ul> <p><b>Motion Expert</b></p> <ul style="list-style-type: none"> <li>- Choose a simple motion</li> <li>- The game is more directed</li> <li>- Play and game match with tools and materials</li> </ul> <p><b>Media Expert</b></p> <ul style="list-style-type: none"> <li>- Lay Out</li> <li>- Pictures, font size</li> <li>- color</li> <li>- Readability</li> <li>- Reduce material that is too dense.</li> </ul> |
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Expert Material experts provide an assessment of the content of the material being developed. Material experts provide assessments that are not much different

from the average value of 82.5. For the motion experts, assessing the specific content related to the motion developed is also not much different from the average value of 82. Likewise, the media experts provide an assessment with an average of 83.

After the model is revised, the next step is to do a test one-to-one with the teacher, small group test with five students, and class tests on class students at SDN 64, SDN 05, and SDN 76 Ambon City.

The test results of One to One illustrate that manipulative models based on play and games are good for physical education learning. The material is quite easy to understand and the availability of tools and materials greatly supports the learning process. Material development can be further developed in a simple form so that it will facilitate the delivery of material to students. Using images can help teachers in delivering material to students.

Small group trials with five students giving results; learning becomes more interesting. Students feel happy with the pattern of play, so students do not feel bored quickly with learning. Students feel more free in motor activities. Overall the model developed is quite good. The model provides direction for students. Instructions on locomotor and non-locomotor movements in game material are easy for students to follow.

Field trials or experiments was carried out on fifth grade students. In this final stage, evaluation is carried out to obtain comprehensive information about product quality. This is done to see the impact of play and game-based manipulative models developed on student learning outcomes. The results of the average difference test with the independent samples t-test obtained results  $t = 7.81$  with a significant  $0.049$  with the value of  $t$  table is  $1.66$ . So the conclusion is that  $t$  count  $>$   $t$  table is significant at  $0.95$ , it can be concluded that the manipulative basic motion model based on play and game can improve student learning outcomes with learning completeness levels almost  $92\%$  (71 students) complete learning well. While the remaining around (7 students) are given remedial. Thus learning completeness can be completed properly.

Empirically, manipulative models based on play and game this can improve student learning outcomes. Students become more confident. This confidence can be seen when students respond to learning. Students are able to collaborate with other students, discuss each other and have positive arguments when learning takes place especially when students find a case that they have to solve together.

#### 4. DISCUSSION

Development model manipulative basic play and game for elementary school students is based on the results of preliminary research which shows that the conventional learning model used by teachers in physical education so far has not been fully able to

solve educational problems. This has an impact on the achievement of maximum learning goals and low learning outcomes. In connection with this, it is necessary to innovate by developing manipulative learning models based on play and game.

Manipulative learning of playing and gaming model is a learning model that combines theories of motor development and characteristics of elementary school students with game and game patterns. The implementation of learning with this model is effective for improving student learning outcomes. This can be seen from the results of the average difference test with independent samples t-test results obtained  $t = 7.81$  with a significant 0.049 with the value of t table is 3.45. These results indicate the model has impact on learning objectives related to the ability to master basic motion patterns. Basic motion patterns that are mastered by students certainly lead more to the need for perfection of motor formation. This manipulative model is adjusted to the stage of development of elementary school age children.

Learning outcomes in learning physical sports education and health is a set of knowledge mastered by students after carrying out learning. Learning outcomes are an indicator for teachers in measuring whether their learning material has been achieved or not. Develop patterns of movement students should be better carried out through physical education activities [11]. In one of the purposes of physical education there is a goal called motion effectiveness. Thus students must be prepared towards these needs, one of which is to develop a learning model that fits the needs of students.

Physical education that uses physical activity as a medium in learning does not only focus on development of physical and motoric abilities, but also potentially becomes a medium for the development of other midwives. Manipulative learning model based on play and game is directed to provide direct experience to students, how to build competence, cooperation, respect other people in the contextual learning process. Students are active knowledge builders. Students have prior knowledge.

As for the conceptual results of the development of this manipulative model based on Play and Game, each student is basically happy with playing. Playing is a basic need for every student. By

playing students become more comfortable, happy, relaxed in learning. Playing can increase the spinal work of the brain. Students become more challenged and can master the material given more quickly. Unlike the conventional learning model students look less happy, less passionate, less creative. Striking differences in the learning process before and after the implementation of based learning models play and game are as follows:

<b>Before</b>	<b>After</b>
Conventional	Models Manipulative Model Based on Play and Game
Less active	Active and Creative
Tense, Rigid	Relax, Relax
Poor responsiveness	Responsive
Tend to be individual	Happy in groups,
Difficult in motion activities	More creative, emergence of reflex movements and endure,
Fast despair	always trying
Limited cognitive knowledge	Developing, emerging new ideas
Less social sense	More social, patient, and persistent
Slow receive material	Faster receive material
Low learning	outcomes Improved learning outcomes

Comparison of conventional learning models with manipulative learning models based on play and game in physical education learning gives a significant impact on comfort and safe to students in learning. This is in accordance with the human needs theory proposed by Maslow that security and comfort are needs that students need to get after their basic needs are met. If a sense of security and comfort is formed then the child will be able to actualize themselves spontaneously so that their self-confidence can be formed "self-actualization" is the culmination of human needs. This conceptual-based manipulative learning model play and game is as follows:

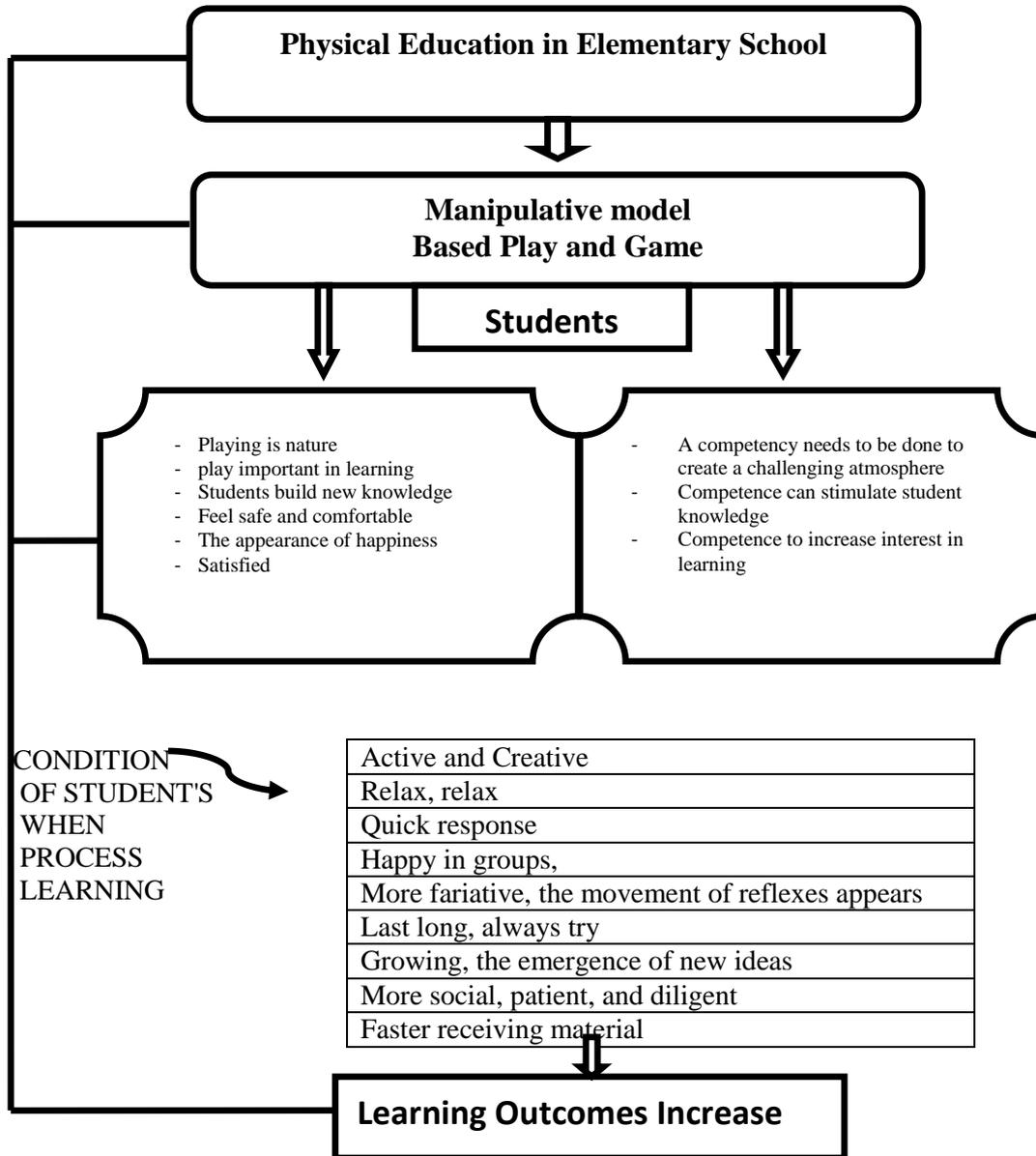


Figure 2. Manipulative Model Based on Play and Game.

Figure 2 show that conceptual from Play and Game based manipulative models. The conceptual model is a model that contains the steps of instruction that can be followed by the teacher in carrying out the learning process. Some instructions that must be understood by the teacher when making a learning plan are the first two that relate to Play the second is Game.

Play or play is the nature of humans, from children born to adult, every human being tends to be happy with playing. Through the game students are directed to free expression. Planning the form of the game needs to be made together

with students the game should not be far from the student world. Thus students will more easily carry out motion and develop it. Through the game students are directed to build new knowledge. Such knowledge is a reflection of students' cognitive abilities. Students feel comfortable in conveying ideas to know opinions. Students feel happy with what they say. Feel satisfied with what is obtained during the learning process.

Games are activities that are shaped by challenging students, especially in finding new things. Competencies need to be done by the teacher to create a learning

atmosphere that challenges and increases student interest in learning. Students can look for answers given by the teacher in the form of collaboration and group discussion. The manipulative basic motion model based on play and game is to create a student-centered learning environment, prioritizing student characteristics, fun learning, purpose and fun. The basic principles of the use of-based manipulative models play and game are as follows:

First the teacher must place the characteristics of the reference students in planning to develop and implement learning. Some of the principles that must be learned by teachers including: (1) understanding the differences and characteristics of students who learn coordination skills both from interests, from where students come from etc. (2) teaching students in safe and comfortable situations means that students must be made to feel comfortable with coordination skills and make learning safe. (3) each student has the potential to develop knowledge about motion based on his experience. (4) learning activities connect students' knowledge with knowledge to be developed. example: the teacher asks students to do the moves that they have done and known[12]. Based on the initial motion the teacher gives and teaches motion openly, together with students. The learning preparation arranged by the teacher is: Tools and Materials. Preliminary, core and closing activities.

The implementation of Manipulative basic motion learning models based on play and game requires constructivist learning approaches, namely students construct their own knowledge and teachers only direct students to find further knowledge. Students learn to develop their knowledge based on their experience (direct experience). Students can develop knowledge anywhere and anytime. Student experience is the basis for developing knowledge, experience is the gate of science and seeing students is basically unique as expressed in constructivism and humanistic theory. Students can get direct experience and be trained to find their own knowledge according to Gestal psychology. Piaget emphasized that learning must be meaningful and oriented to the needs of students. Students are "subject matter", the key to Manipulative basic motion learning based on play and game. Learning strategies that are used are Contextual teaching learning, Problem Solving, Cooperative Learning Elementary School students build and develop students' coordination skills before implementing learning teachers identify basic knowledge that exists in students. Based on this initial knowledge the teacher makes the contextual activity as a builder of student knowledge. Thus students are more creative. The role of the teacher in the based manipulative basic motion model is play and game only as a facilitator, motivator and encourages students to be able to solve their own problems and group problems. This learning technique based on manipulative models play and game has a positive impact on student learning processes and outcomes.

To measure the level of performance of the manipulative model based on play and this game is the result of learning by doing coordination tests in the form of; throw catch and kick. In the physical education environment elementary school-aged children who have good coordination will find it easier to learn various types of movements compared to

children who coordinate their movements. The-based manipulative play and game model is a manipulative model that emphasizes that basically all children have the potential to do good coordination. This coordination includes manipulative, locomotor, and non-locomotor motion. The opinion of students after learning with a manipulative basic motion model on this coordination ability is that students feel more confident, more coordinated movements, ability to catch, and kick in a more coordinated manner. Students also feel to be more independent.

Manipulative learning models of playing and gaming improves motion learning more interesting, giving assignments clearer, easier to understand, faster in developing ideas and able to solve existing problems. Students feel more creative, responsive and able to cooperate in groups well. Students also feel happy because learning is also associated with various Ambon area games. Study of motion learning that is associated with children's experiences through the process of seeing, showing interest, imitation, and practice which was initially processed by the formation of knowledge or information obtained based on children's own experiences. For teachers who are giving monotone learning materials that are monotonous, it is not encouraging to be able to be transferred using-based manipulative learning models play and game to insert creative games to motivate students. The teacher can use 10-15 minutes to play, the material is adjusted to the theme of the physical education learning at that time.

## 5. CONCLUSION

Conclusion of this study is Playing and game based manipulative model is effective to improve the learning process and learning outcomes. This model helps elementary school students become more comfortable, happy, and creative in learning. This has an impact on improving the quality of the process and student learning outcomes. This-based manipulative model play and game is feasible because it has gone through a series of tests, ranging from expert validation tests namely material experts, motion experts, and media experts; 1-1 test, small group test which is always accompanied by revisions at each stage of development. Using this manipulative model based on play and game, almost 92 % of students complete learning and obtain learning outcomes with an average test score of 7,81. Thus there is a significant increase in learning outcomes due to the application ofbased manipulative models play and game.

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