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Locomotor basic motion learning model based on traditional game for basic school students

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Abstract. The aim of this research and development is to produce basic locomotor movements learning model based on traditional games for elementary school students. Research and development is carried out in order to obtain information about the development and application of basic locomotor movements learning model based traditional games for elementary school students as well as to determine the effectiveness of the resulting model. This study uses the Research & Development (R & D) from Borg and Gall. Subjects in this study were third grade elementary school students who were 30 students. The stages of this research are: needs analysis, expert evaluation (initial product evaluation), testing a small group, and large group trials (field testing). Test the effectiveness of the model using basic locomotor movement skills tests are used to determine the level of students' abilities before and after treatment developed learning model. After being treated by using a traditional game-based learning model there was an increase in locomotor ability from the initial test to the final test. This the basic locomotor movements learning model based on the traditional game effectively to improve locomotor movement capabilities for primary school students.

1. Introduction

Physical education and sports in elementary schools have a central role for the growth and development of students in preparing themselves for the coming future. One of the tasks and functions of physical education is to develop quality and quantity of students' basic movements. If we review and transform it extensively, physical education at the elementary school level is expected to facilitate the need for students’ movement as a basis for the development of very psychomotor aspects which are useful for their growth and development. For example, the locomotor basic movements learning process in physical education are aimed for the development of students’ movement quality and quantity in order to make them able to move optimally, such as walking, running, jumping and other activities that students often do in playing activities and use in everyday life. It is required a hard and smart work from the physical education teachers in producing creativity, innovation and the methods, strategies, and models application that suits what students need to create good basic movement skills. Hands stated The importance of fundamental movement skills Children with a high level of competence in a range of FMS are able to confidently participate in a wide variety of activities [1].
They also benefit from many physical, social and emotional health outcomes in both the short and long term.

Generally, as a matter of fact there are still many elementary schools that have not been touched by physical education teachers, both in learning quantity and quality. This was mentioned by the General Director of Teachers and Education Staff of the Ministry of Education and Culture, Sumarna Surapranata, who stated that the highest requirement was for the class teacher group which reached 92,277 people, then followed by education teacher group (physical education) as many as 64,203 people and local content teachers (mulok) in total of 26,525 people. These deficit predictions are only for public elementary schools. Particularly, the deficit of physical education teachers are also occurred in Majalengka district, West Java province, based on the observations of the elementary school students number which reached 142,114, while the primary school physical education teachers are 846. If it is calculated, one teacher teaches 167 students and this is not ideal for the learning process. Furthermore, the quality was reviewed from the education qualifications of the teacher at the elementary school level on average of (0.77%) masters, (87.11%) bachelors, (0.23%) diploma 3 graduates, (8.391%) diploma 2 graduates, and (3.54%) high school or equal graduates. These numbers of course has not fulfilled the guidelines of government regulation number 19, 2005 concerning the National Education Standards and the Minister of National Education Regulation number 16, 2007 concerning the Academic Qualification Standards of Teachers which requires all levels of teacher education at least undergraduate (S1). As a result of these shortcomings, the learning process of physical education that held in elementary schools did not go well and the goal of physical education were not maximally achieved. Tompsett steted Physical education goals are well defined and aim to improve a childs movement abillity and confidence to support a physically active, fulfilling lifestyle [2].

Based on these facts, researchers conducted observations and interviews at Jatiraga I and Babajarang elementary school in Jaitutujh sub-district, Majalengka. The observation on the third class students founded that there were many students with low basic locomotor movement skills which were shown when they were not moved optimally, such as frequent falls without any reason when walking or running, stiff in jumping, and difficult to move sideways. Furthermore during the interview, an information about the lack of creativity and innovation of the teachers in developing locomotor movement learnings was found, which made it tend to be monotonous and boring, so that the students were not active in learning process and the learning goals were not achieved, Chen stated Participation in regular physical activity is essential for youth to improve physical, mental, and social health [3]. Researchers reported a positive relationship between motor skill proficiency and physical activity participation and a negative relationship between motor skill proficiency and sedentary activity in children.

From the problems that discovered after the observation, researchers planned to do a research by making traditional game-based locomotor movement learning models, with the expectations that the implementation of traditional games in the learning process can provide a stimulus that stimulates students’ curiosity and challenging that can stimulate students’ learning activevess. Furthermore, the rules and the way the game played can be adjusted, and the tools used are local genius, easy to find and can be used by both teachers and students. The integration between the traditional games and the learning requirements seems to be appropriate and give a positive contribution in improving students’ basic locomotor movement skills. Akbari stated The findings of this study demonstrate that traditional game program is more effective than daily activity in order to develop object control, locomotor and fundamental skills [4]. This study found that gross motor skills can be influenced by an appropriate movement program.

The research and development was directed at making effective products through the requirement analysis stage, and then developing products and testing products. In the development process, the researcher did an initial observation, continued by manufacturing products to testing products and producing new products. According to Sugiyono, the research and development method is “a research method that used to produce new product designs, test the effectiveness of existing products, and
develop and create new products.). Research and development is "a research that used to create new products and/or develop existing products based on the requirement analysis in the field (observation, interview, initial requirement questionnaire). Based on several theories above, research and development can be described as an endeavor conducted to produce new products that are more effective and efficient. Francesco steted Although the product-oriented approaches are easier to administer and requires few time for interpreting the results (i.e., product or outcome of the performance), the process-oriented approaches, which try to assess the pattern and the technique of the movement, are used the most in school setting. In this context, the assessment results are essential to plan efficient and effective educational programs with the aim to focus specifically the delay in FMSs development of each child.

In this study, researchers used traditional games as the models that were modified and adapted to the needs of the locomotor movement learning process. This is in accordance with Hasana who mentioned that traditional games are games that passed down verbally from one generation to the next [5]. These games usually use simple rules which have been agreed upon and use simple tools which are objects that usually can be found around children, such as playing dakons, ropes, logos and engkleks. Furthermore, Rahmawati stated that in the implementation of traditional games, any kind of protesting attitude, violating rules, and resentment among the parties who play the games were hardly found so it is not surprising that these type of games are liked by a lot of enthusiasts [6]. Surely the traditional games are very closely related to social life where the players will always interact among each other and this will be very useful for students’ growth and development. According to Mulyani during the interactions in the game, children practice the roles they will do in the future [7]. Children who play will be able to release the pressure so that they can overcome problems in their life. The game allows the children to release excessive physical energy and relieve hidden feelings. Furthermore according to Husdarta and Kusmaedi 1) Children are in the age that happy to repeat, therefore they happily repeat an activity until they are skilled at doing it; 2) children are brave so they are not afraid of being hampered by fear if they experience pain or teased by his friends which usually feared by bigger children; 3) young children learn easily and quickly because of their body are very flexible and they only have a few skills so that the new skills they recently mastered do not interfere with the existing skills; 4) children have a great tendency to understand something new; 5) children do not have many tasks and responsibilities yet. Based on several theories that have been discussed earlier, it feels very possible that using the traditional game learning models will be very helpful to improve the basic locomotor movement skills for the elementary school students [8].

2. Methods
The research approaches and methods in this traditional game-based locomotor movement learning models study were using Research and Development from Borg and Gall (1983) with the following stages: (1) Research and information collecting, (2) Planning, (3) Development of the preliminary form of product, (4) Preliminary field testing, (5) Main product revision, (6) Main field testing, (7) Operational product revision, (8) Operational field testing, (9) Final product revision, (10) Dissemination and implementation [9].

2.1. Characteristics of the developed model

2.1.1. Research objectives. Users who are targeted in this traditional game-based locomotor movement learning models study are third grade elementary school students with the following characteristics: students who are physically and mentally healthy, students who do not have any physical and mental limitations, students’ age have not entered the formal operational stage and willing to take part in the research process with their parents permission.

2.1.2. Research subject. The subject retrieval technique used in this study is using purposive sampling technique. This technique is used as a step for the researchers to facilitate the research that adjusted to
the situation and conditions in the field and facilitate the researchers in developing the model that will be applied according to what students need.

3. Results

3.1. First stage result / small group test

The traditional game-based locomotor movement learning models for elementary school students have been evaluated by experts, 23 model items are in stage 1 evaluation which is done at Jatiraga II elementary school with as many as 20 subjects.

Based on the evaluation of the small group test, it can be concluded as follows:
- The application of all traditional game-based locomotor movement learning models for elementary school students can be done and played by students What needs to be considered are the order of the difficulty level of the game models starting from the easiest to the most difficult one, and the methods selection and application in accordance with teaching materials so that the learning process goes according to the planned learning goals.
- It is necessary to concern about the game area placement to ensure the students’ security and safety while playing.
- At the learning process, it is necessary to pay attention to the students’ participation and activeness in playing, because the activeness of students in learning will affect the improvement of learning outcomes.

3.2. Second stage results / large group test

After the small group test and revision of the traditional game-based locomotor movement learning models for elementary school students were done by the experts, the next stage was conducting the large group trials. Based on the results of small group trials that have been evaluated by the experts, the researchers revised the initial product and obtained 23 models that would be used in large group test.

The next step which would be done after the models undergo the stage 2 revision from the experts was testing the products with a large group consisted of 60 research subjects from Jatiraga 1 Elementary School, Jatitujuh 1 Elementary School 1 Elementary School, and Jatitujuh 2 Elementary School at Jatitujuh district, Majalengka district.

3.3. Effectiveness test results

The data from the assessment of 30 subjects on the effectiveness of the traditional game-based locomotor movement learning models for elementary school students are shown in the tabel 1:

| Table 1. Data of students assessment before treatment (pretest) and results after treatment (posttest). |
|-----------|-----------|-----|-----|
| No | Name | Pre-Test | Post-Test |
|---|---|---|---|
| 1 | Subject 1 | 19 | 24 |
| 2 | Subject 2 | 20 | 25 |
| 3 | Subject 3 | 18 | 23 |
| 4 | Subject 4 | 20 | 24 |
| 5 | Subject 5 | 23 | 28 |
| 6 | Subject 6 | 21 | 26 |
| 7 | Subject 7 | 22 | 27 |
| 8 | Subject 8 | 21 | 26 |
| 9 | Subject 9 | 22 | 27 |
| 10 | Subject 10 | 21 | 26 |
| 11 | Subject 11 | 20 | 25 |
| 12 | Subject 12 | 21 | 26 |
| 13 | Subject 13 | 23 | 28 |
| 14 | Subject 14 | 24 | 29 |
Table 1. Cont.

|   | Subject 15 |   | Subject 16 |   | Subject 17 |   | Subject 18 |   | Subject 19 |   | Subject 20 |   | Subject 21 |   | Subject 22 |   | Subject 23 |   | Subject 24 |   | Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |
|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|------------|---|
| 15| 20         |   | 21         |   | 23         |   | 23         |   | 20         |   | 21         |   | 22         |   | 20         |   | 22         |   | 23         |   | 22         |   | 24         |   | 22         |   | 23         |   | 25         |   |
| 16| Subject 16 |   | Subject 17 |   | Subject 18 |   | Subject 19 |   | Subject 20 |   | Subject 21 |   | Subject 22 |   | Subject 23 |   | Subject 24 |   | Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |
| 17| 21         |   | 23         |   | 23         |   | 20         |   | 21         |   | 22         |   | 20         |   | 22         |   | 23         |   | 22         |   | 23         |   | 22         |   | 24         |   | 23         |   | 25         |   |
| 18| Subject 18 |   | Subject 19 |   | Subject 20 |   | Subject 21 |   | Subject 22 |   | Subject 23 |   | Subject 24 |   | Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |
| 19| 23         |   | 23         |   | 20         |   | 22         |   | 22         |   | 23         |   | 22         |   | 24         |   | 23         |   | 23         |   | 23         |   | 22         |   | 24         |   | 22         |   |
| 20| Subject 20 |   | Subject 21 |   | Subject 22 |   | Subject 23 |   | Subject 24 |   | Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |
| 21| 21         |   | 22         |   | 20         |   | 22         |   | 22         |   | 23         |   | 22         |   | 22         |   | 23         |   | 23         |   | 23         |   | 23         |   | 22         |   | 24         |   |
| 22| Subject 21 |   | Subject 22 |   | Subject 23 |   | Subject 24 |   | Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |
| 23| 22         |   | 23         |   | 22         |   | 23         |   | 22         |   | 22         |   | 23         |   | 22         |   | 23         |   | 23         |   | 23         |   | 23         |   | 22         |   | 23         |   |
| 24| Subject 22 |   | Subject 23 |   | Subject 24 |   | Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |
| 25| 23         |   | 23         |   | 22         |   | 23         |   | 22         |   | 23         |   | 22         |   | 23         |   | 23         |   | 23         |   | 23         |   | 23         |   | 22         |   | 23         |   |
| 26| Subject 23 |   | Subject 24 |   | Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |
| 27| 22         |   | 22         |   | 23         |   | 22         |   | 22         |   | 23         |   | 22         |   | 22         |   | 23         |   | 23         |   | 23         |   | 22         |   | 23         |   |
| 28| Subject 24 |   | Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |
| 29| 21         |   | 21         |   | 22         |   | 22         |   | 21         |   | 22         |   | 22         |   | 23         |   | 22         |   | 23         |   | 22         |   | 24         |   |
| 30| Subject 25 |   | Subject 26 |   | Subject 27 |   | Subject 28 |   | Subject 29 |   | Subject 30 |   |

The table 1 shows the results of the pre-test and post-test of students who have been given treatment. The pre-test was carried out after a small group revision. Pre-test was carried out before the implementation of 23 traditional game-based locomotor movement learning models for elementary school students. The tests were conducted to find out the results before they were treated. The average test result of 30 students was 21.43. Then, after the treatment of the traditional game-based locomotor movement learning models for elementary school students, 23 models were evaluated and validated and then pre-tested to 40 students to find out whether there was an increase in locomotor movement skills after they were being given the learning variation. After the test, it was discovered that the locomotors movement skills increased which was indicated by the increase in scores obtained by the students with an average of 26.43. Based on the description above, there is a difference in the results between the pre-test and post-test which means that the traditional game-based locomotor movement learning models for elementary school students is effective and can improve the basic locomotor movement skills of students.

3.4. Effectiveness test with basic locomotor movement skill test instrument

Table 2. Results of paired samples statistics (pre-test) and after being given treatment (post-test).

| Paired Samples Statistics | Mean | N | Std. Deviation | Std. Error Mean |
|---------------------------|------|---|----------------|-----------------|
| Pair 1                    | PRE_TEST | 21.43 | 30 | 1.547         | .282            |
| POST_TEST                 | 26.43 | 30 | 1.501         | .274            |

In the table 2, the average value of students before they were being given the learning models is 21.43 and the average value after being given the treatment model of dribbling learning is 26.43, which means that there are differences in the amount of scores generated from the pre-test and post-test.
Table 3. Result of paired samples correlation (pre-test) and (post-test).

| Paired Samples Correlations | N  | Correlation | Sig. |
|----------------------------|----|-------------|------|
| Pair 1 PRE_TEST & POST_TEST| 30 | .956        | .000 |

Based on the table 3 is discovered that the learning correlation coefficient before and after being given the treatment of traditional game models is .956 p-value 0.00 <0.05 so it can be concluded that there is a significant relationship.

The significant test of differences using SPSS 16 obtained mean = 5,000 that shows the difference between the results of pre-test and post-test results. The results of t-count = 60.208 df = 29 and p-value = 0.00 <0.05 which means there are significant differences between before and after being given the traditional game-based locomotor movement learning models treatment.

Based on these results it can be concluded that traditional game-based locomotor movement learning models for elementary school students can improve basic locomotor movement skills and have been developed to be significantly effective.

The comparison of the results of the average record time before and after being given the treatment of the traditional game-based locomotor movement learning models for elementary school students can be illustrated by figure 1:

![Figure 1. (Product feasibility test) circle.](image)

4. Discussion

4.1. Product improvement

From the test results obtained before and after being given treatment, it can be concluded that the traditional game models are feasible and effective in enhancing basic locomotor movement skills for elementary school students. In a significant test conducted using SPSS 16, the mean = 5,000 shows the difference in the time of the pre-test and post-test. The results of t-count = 60.208 df = 29 and p-value = 0.00 <0.05 indicate that there are significant differences between before and after being given the traditional game model treatment.

Based on the results of the research it can be concluded that the traditional game-based locomotor movement learning models, that have been developed, have a significant level of effectiveness.

Based on the deficiencies and advantages of the products, there are several inputs that researchers will explain in order to achieve the improvement of the products generated. The inputs that will be submitted are as follows: a. The basic locomotor movement learning models that are packaged in traditional games must be able to accommodate the students' movement needs by considering the learning objectives (the game starts from the easiest to the hardest). b. Implementation instructions and drawings on the models must be arranged and made clearly so that it is easy for students to understand. c. Facilities and tools should be in accordance with the learning objectives and consider
the safety and security of students. d. Videos and product books making should consider the elements of professionalism (by experts) so that the results of the products can be studied and practiced easily and clearly by the teachers and students.

4.2. Products discussion
This traditional game-based locomotor movement learning models for elementary school students was made by researchers to be a reference that can help the teacher in providing variations especially in basic locomotor movement learning. These models are based on the needs of students in learning.

After this product has been evaluated regarding several weaknesses and the product improvements have been made for better results, it can be said that some of the advantages of this product are as follows: a. This traditional game model product is effective in increasing basic locomotor movement skills of elementary school students. b. The resulting models have several variations from the easiest to the most difficult. c. The model products which are made with variety of games can increase students' interest and active participation in learning so that they will make positive impacts on increasing student learning outcomes. d. Modified traditional game-based learning models provide perspective and novelty that are very useful for developing basic locomotor movement learning in elementary school. e. These basic locomotor movement learning models can be used as teachers’ references to support the learning process of physical education in elementary school. f. Donations for education, especially in the field of physical education in elementary schools.

4.3. Product limitations
This research was carried out by researchers as perfect as possible in accordance with the capabilities that researchers have, but in this study there are still a lot limitations that researchers have to admit and put forward. These limitations are as follows: a. Not all product that has been made can be given in all classes in elementary school because it is closely related to the level of difficulty and easiness of students in playing, therefore the teacher can develop this product according to the needs of students, especially in elementary school. b. The process carried out by researchers when conducting the field testing should be carried out in a larger scope. c. The usage and utilization of facilities and infrastructure are inadequate and still limited. d. Products made are far from perfect. e. The explanation given on the traditional game images that are modified according to the needs of students is far from perfect.

5. Conclusion
Based on the data the researchers obtained from the results of field testing and discussions on the results of the study, it can be concluded that: producing the final product in the form of the traditional game-based locomotor movement learning models for elementary school students consisting of 23 items locomotor movement learning models that can be applied on the elementary school students. The usage of the traditional game-based locomotor movement learning models for elementary school students effectively increase students’ enthusiasm and prevent boredom, because model products were made with some game variations that can increase students' interest and active participation in learning so that it will make a positive impact on increasing student learning outcomes.

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