

The development of game-based motor skills learning model for 9-10 year-old elementary school children

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Abstract:

The purpose of this research is to produce a game-based motor skills learning model appropriate for the 9-10 year-old elementary school children and capable to develop the aspects of affective (attitude), cognitive (knowledge), and psychomotor (skills). This research used the Research and Development (R & D) method, adapting the research and development according to Borg & Gall. The technique and instruments used in collecting data were: (1) interview and observation, (2) observation sheet of the model draft, (3) observation sheet of students' activities, (4) student questionnaire. The data were analyzed using descriptive percentage. This research resulted in a game-based motor skills learning model, containing 8 games activities, among others; (1) Korero Kiri (2) Half and half Relay's, (3) Rob the Nest, (4) Mousetrap, (5) Catching with a Partner, (6) Shuttle Passes, (7) Moving Target, (8) Wandering Ball. Based on the results of the research, it can be concluded that the game-based motor skills learning model is appropriate for the 9-10 year-old elementary school children and very good to develop the aspects of affective (attitude), cognitive (knowledge), and psychomotor (skills).

Keywords: learning model, motor skills, game

INTRODUCTION

Education is essentially one of the basic human needs in order to improve the quality of human resources in order to achieve the more advanced and prosperous life of the nation. The 1945 constitution mandates the importance of education for all citizens, as stated in Article 28 b paragraph 1 that every person has the right to develop him/herself through the fulfillment of his/her basic needs, is entitled to obtain benefits of science and technology, arts and culture, to increase the quality of his/her life for the welfare of mankind. Article 32 paragraph 1 of the 1945 constitution stipulates that every citizen has a right to an education. Law Number 20 of 2003 Article 1 paragraph 1 regarding the national education system stipulates that education is a conscious and planned effort to create the learning atmosphere and learning process so that the learners are actively developing their potential to have the spiritual power of religion, self-control, personality, intelligence, noble character and skills for themselves, society, nation and country.

In order to realize the objectives of education mandated by the 1945 constitution and the law regarding the national education system, the government explains it in the system development program of basic education to higher education as well as formal education. Article 17 paragraph 2 of Law No. 20 of 2003 of the Republic of Indonesia regarding National Education System stipulates the forms of Basic Education are Elementary School (SD) and Madrasah Ibtidaiyah/Islamic Elementary School (MI) or other equivalent forms and Junior High School (SMP) and Madrasah Tsanafiyah/Islamic Junior High School (MTs), or

other equivalent forms. Basic education in Indonesia is aimed to grow the interest, improve the ability to think, and physical and mental works. The achievement of the objectives of the basic education is, one of them, by giving physical, sports, and health education.

Physical education is an integral part of the overall education system. Education as a process of human development lasts forever, has a very important role to give an opportunity to the students to be directly involved in various learning experiences through physical activities. Rosdiani (2012: 21) states that physical education is a medium to encourage the development of motor skills, physical abilities, knowledge, reasoning, living the values (attitude, mental, emotional, and social values), and habituation to a healthy lifestyle that is aimed to stimulate balanced growth and development. Physical education has its own uniqueness compared to other educations, which gives an opportunity to develop social character and nature which are more likely to be realized in teaching practices.

The regulation of the Minister of Education and Culture Number 67 of 2013 regarding the conceptual framework and the structure of the curriculum for Elementary School/Islamic Elementary School states that one of the characteristics of the curriculum is that it is designed to develop attitude (affective), knowledge (cognitive) and skills (psychomotor) as well as to apply it in various situations at schools and society. The current structure and curriculum of physical education in elementary schools now have some characteristics that consist of basic technical skills of several sports. The basic technical skills will be mastered when someone has previously mastered the basic motor skills.

Motor development is the growth process of motor skills of a person. Any movement performed by the children is the result of a complex interaction pattern of the various parts and systems in the body controlled by the brain. According to Oxendine in Nugroho (2005: 9), motor skill is the terminology used in various skills that leads to the mastery of basic motor skills of physical activities. Motor skills consist of gross and fine motor skills. Leaner and Kline (2006: 233) state that the gross motor skills involve large muscles, such as neck, arms, and legs. Gross motor skills include walking, running, catching and jumping. Since the motor learning in elementary schools will affect some aspects of students' lives, such as: (1) through the motor learning, the children will get some entertainment and fun, (2) the children can move from weak condition towards an independent state, (3) children can adapt themselves to the environment, (4) it will support the children's skills in various ways, and (5) it will encourage the children to be independent, so that they can solve any problem they face (Decaprio, 2013: 24).

Motor skills learning in elementary schools is currently getting a lot of attention. However, there is an obstacle in motor learning in elementary schools that is the limited knowledge possessed by the teachers of physical, sports and health education in applying the right model in the motor learning process. It is caused by a lack of knowledge due to limited reading references or sources regarding the appropriate ways of teaching for the physical, sports and health education teacher in teaching the motor learning model in order to support the achievement of the desired learning outcomes. The determination of which learning model that will be used in learning activities should consider the followings: (a) the objectives to be achieved, (b) learning materials, (c) learners, and (d) other non-technical considerations (Rusman, 2011: 133).

The efforts made to develop the potentials of motor skills and development of elementary school children, overall, need some services in the form of practices or play approach in order to improve the gross motor skills through the appropriate handling based on the characteristics and abilities possessed by the elementary school children. Learning model is a method or strategy performed by a teacher in order to conduct the learning process for the students to achieve a the systematically-designed objectives. Sudjana (Sugihartono et al, 2007: 74) states that learning model is any deliberate effort made by the educators that can

make the learners perform learning activities. According to Gagne (Wena, 2009: 10), an effective learning must be performed in various ways and using various instructional media.

One of the forms of physical education activities that make children actively moving is game. Games activities are expected to be able to develop the students based on the educational objectives to be achieved since playing does not only prioritize physical activities, but also has some values that must be met and practiced in daily life. Playing is a very important thing that can affect the cognitive, physical, emotional, and social development, and provides the primary place for social participation (Behr, Rodger, and Mickan, 2013: 198). Therefore, playing and games have similar functions and purposes. All individual functions in children will be trained, both physically and spiritually, during playing.

Learning model that will be developed is the game-based motor skills learning model, which will be developed in accordance with the Basic Competency (KD) of 2013 Curriculum in physical, sports and health education education for the 9-10 year-old elementary school. The development of this model is expected to be a good, effective, and fun learning and attracts students' enthusiasm in learning motor skills, so that they can achieve the learning objectives of physical, sports and health education that develop the aspects of attitude (affective), knowledge (cognitive), and skills (psychomotor).

RESEARCH METHOD

This research used the Research and Development (R & D) method, adapting the research and development according to Borg & Gall with the following steps: (1) collecting information on the field, (2) conducting analysis towards the collected information, (3) developing the initial product, (4) expert validation and revision, (5) small-scaled field experiment, (6) revision, (7) big-scaled field experiment, (8) final revision, (9) final product making, and (10) dissemination and implementation of final product. The small-scaled experiment was conducted towards 22 students of SD Negeri 3 Jatirejo, the big-scaled experiment was conducted towards 24 students of SD Negeri 1 and 2 Jatirejo. The technique and instruments used in collecting data were: (1) interview and observation, (2) observation sheet of the model draft, (3) observation sheet of students' activities, (4) student questionnaire. The data analysis technique used in this research was the qualitative analysis technique in the form of narratives for the qualitative data collected. The quantitative data collected from the questionnaires and observation were analyzed using the percentage descriptive analysis. The collected data were then able to be interpreted based on the guidelines in data classification arranged based on the following table:

Table №1. Percentage Classification

Percentage	Classification
0,00 - 20 %	Very Poor
20,01 - 40 %	Poor
40,01 - 60 %	Fair
60,01 - 80 %	Good
80,01 - 100 %	Very Good

RESULTS OF RESEARCH

The development of this learning model product was started by conducting needs analysis based on the observation and interview conducted the elementary schools (SD) and on the literature review. After determining the product to be developed in the form of the

development of game-based motor skills learning model, the next stage conducted is creating the product that will be developed. After going through the designing process, the initial product of the development of game-based motor skills learning model is created, among others; (1) Korero Kiri (2) Half and half Relay's, (3) Rob the Nest, (4) Mousetrap, (5) Catching with a Partner, (6) Shuttle Passes, (7) Moving Target, (8) Wandering Ball.

The expert validation was conducted to find out the research of game-based motor skills learning model, both in terms of materials, construction, and language. The researcher asked for help from 2 academicians of physical, sports, and health education to fill the data collection instrument which have been constructed to assess the initial model draft.

Table №2. The Results of Expert Judgment on the Initial Learning Model Draft

Validator	Σn	ΣN	ΣP (%)	Category
A 1	59	75	78.67	Good
A 2	60	75	80	Good
P 1	58	75	77.33	Good
P 2	61	75	81.33	Very Good
Σn				238
ΣN				300
ΣP (%)				79.33
Kategori				Good

Based on the recapitulation of the percentage of the questionnaire results regarding the evaluation of expert judgment above, it can be concluded that the initial learning model draft is good to be used in the learning process of physical, sports and health education for the 9-10 year-old elementary school children.

After the product of game-based motor skills learning model of validated by experts as well as done a revision, then on January 5, 2017 the product was tested on third and fourth graders of SD Negeri 3 Jatirejo which amounted to 22 students. The small-scaled experiment is aimed at finding and identifying some problems such as weaknesses, lacks or effectiveness of the product when it is used by the students. The data obtained from this experiment were used as the basis to make some revisions on the product before it is used in the big-scaled field experiment.

Table №3. The Analysis of the Results of Student Learning Achievement Data
Small-Scaled Experiment Stage

No	Aspect	Percentage	Category
1.	Psychomotor	81.25	Very Good
2.	Affective	82.73	Very Good
3.	Cognitive	86.81	Very Good
	Average	83.59	Very Good

The assessment of the achievement of the learning results of students on a small scale trial phase for the psychomotor aspect obtained 81.25% "very good", affective aspect obtained value 82.73%. "very good". Cognitive aspect obtained value 86.81% "very good". From the result of recapitulation percentage of achievement of student learning result of small

scale test phase above can be seen average from third aspect that is psychomotor aspect, affective aspect and cognitive aspect is 83.59% so based on predetermined criterion, hence result of mean value from third The acquired aspects are included in the "very good" category.

Table №4. Data of Expert Validation Results on the Game-Based Motor Skills Learning Model in Small-Scaled Experiment Stage

No	Game	Σn	ΣN	ΣP (%)	Category
1.	Korero Kiri	193	240	80.41	Very Good
2.	Half and Half Relays	190	240	79.16	Good
3.	Rob the Nest	189	240	78.75	Good
4.	Mousetrap	195	240	81.25	Very Good
5.	Catching with a Partner	200	240	83.33	Very Good
6.	Shuttle Passes	193	240	80.41	Very Good
7.	Moving Target	195	240	81.25	Very Good
8.	Wandering Ball	186	240	77.5	Good
Σn				1541	
ΣN				1920	
ΣP (%)				80.26	
Category				Very Good	

The result of the validation of skill game darft experts in small-scale trial stage for Left Korero Kiri game obtained value 80.41% "very good", Half and half Relay's game obtained value 79.16% "good", Rob the Nest game obtained value 78.75% "good" Mousetrap game obtained value 81.25% "very good", Catching with a Partner game obtained value 83.33% "very good", Shuttle Passes game obtained value 80.41% "very good", Moving Target game obtained value 81.25% "very good", Wandering Ball game obtained value 77.5% "good". From the results of the expert assessment of the overall darft of game-based motor skills learning model obtained value 80.26% percentage, then based on the percentage of achievement scale included in the category of "very good".

Once there is input and revision from the expert, then the next step is to make revisions to the darft of game-based motor skills learning model that have been made. Revisions were made to improve the product darft before being tested on a large scale. The steps taken in carrying out large-scale trials are not much different from what was done during small-scale trials. The only difference lies in the number of much more experimental subjects and place of trial. The trial subjects in large-scale trials were conducted involving 24 grade IV primary school students. This large-scale trial was conducted on January 15-25 at SD Negeri 1 and 2 Jatirejo. Learning on a large scale is a game-based motor skills learning that has been revised from a small-scale stage.

Table №5. The Analysis of the Results of Student Learning Achievement Data Big-Scaled Experiment Stage

No	Aspect	Percentage	Category
1.	Psychomotor	85.21	Very Good
2.	Affective	85.83	Very Good
3.	Cognitive	89.58	Very Good
Average		86.87	Very Good

Assessment of the achievement of student learning outcomes in the stage of large-scale testing for the psychomotor aspect obtained value 85.21% "very good", affective aspect obtained value 85.83%. "very good", cognitive aspect obtained value 89.58% "very good". From the result of recapitulation percentage of achievement of student learning result of big scale test phase above can be seen average from third aspect that is psychomotor aspect, affective aspect and cognitive aspect is 86.87% so based on predetermined criterion, hence result of mean value from third the acquired aspects are included in the category of "very good".

Table №6. Data of Expert Validation Results on the Game-Based Motor Skills Learning Model in Big-Scaled Experiment Stage

No	Game	Σn	ΣN	ΣP (%)	Category
1.	Korero Kiri	205	240	85.41	Very Good
2.	Half and Half Relays	197	240	82.08	Very Good
3.	Rob the Nest	206	240	85.83	Very Good
4.	Mousetrap	200	240	83.33	Very Good
5.	Catching with a Partner	209	240	87.08	Very Good
6.	Shuttle Passes	210	240	87.5	Very Good
7.	Moving Target	212	240	88.33	Very Good
8.	Wandering Ball	210	240	87.5	Very Good
Σn				1649	
ΣN				1920	
ΣP (%)				85.88	
Category				Very Good	

Experimental draft validation results of the game model at large scale trial stage for Left Korero Kiri game obtained value 85.41% "very good", Half and half Relay's game obtained value 82.08% "very good", Rob the nest game obtained value 85.83% "very good", Mousetrap game obtained value 83.33% "very good", Catching with a Partner game obtained value 87.08% "very good", Shuttle Passes game obtained value 87.5 % "very good", Moving Target game obtained value 88.33% "very good", Wandering Ball game obtained value 87.5 % "very good". From the results of expert assessment of the overall draft model of game-based motor skills learning gain percentage 85.88%, then based on the percentage of achievement scale included in the category of "very good".

After there are feedback and revision of the expert, the next step to do is perform a final revision in order to produce the final product, this step is perfecting a product which was developed so that the final product is more accurate. At this stage already obtained such a product in the form of guide books game-based motor skills learning model equipped with learning videos.

THE DISCUSSION OF THE PRODUCT

The purpose of this research is to produce a game-based motor skills learning model appropriate for the 9-10 year-old elementary school children and able to develop the aspects of affective (attitude), cognitive (knowledge), and psychomotor (skills). In addition, in order for the teacher it is easy to use this learning model packaged a Handbook of usage models. The purpose he had made use of the manual model is explained more specifically about how to use this model, and so the teacher as a practitioner in the field and the readers will understand and be able to use this model. Instructional videos are packaged in the form of

DVD (Digital Video Disc) as a guide to the implementation of the learning with games, as for the product specifications that are developed are:

1. Materials

- a. Development of the content and purpose of game-based learning model on Basic Competency (KD) and adapted to characteristics for the 9-10 year-old elementary school children.
- b. Some of the games in the handbook contains three parts: (1) inception work with on the implementation of the before learning that starts prepare students to warming , (2) core activities with on the implementation of the learning motor skills with an eight-games activities, among others: (a) Korero Kiri, (b) Half and Half Relay's, (c) Rob the Nest, (d) Mousetrap, (e) Catching with a Partner, (f) Shuttle Passes, (g) Moving Target, (h) Wandering Ball. (3) activities cover with activity cooling , an assessment on presentation weighting , and reflection benefit learning to the game done
- c. Handbook containing about some activity game to improve motor skills/ name is a game, the purpose of the game, an instrument used, the game, assessment, security standards, drawing the game and games variations

2. Learning the equipment

Learning the equipment used are tools that is easily obtained and safe to be used, and the costs affordable who can exercise increase motor skills for the 9-10 year-old elementary school children. An instrument used covering: whistle, cones, rope raphia, taskbar colors, a small ball plastic, a tennis ball / rounders, a large ball (plastic ball / volleyball), a circle / hoops, tenement foam.

3. DVD learning model development

This learning model using DVD-R plus GT-16 X Promulti-Speed. Capacity of a chip is DVD-R 4.7 GB 120 min. DVD the development of game-based learning model can be used on all types of computers and laptops with minimal specs operating system Windows XP or Mac OS, resolution 1024 x 800 pixels processor 1.66 Ghz Pentium IV, 512 Mb of RAM , VGA on board 32 Mb, HDD 40 Gb and it has a CD/DVD drive. DVD game-based learning model of development can also be used on the DVD Player all types and brands.

CONCLUSION

The development of game-based motor skills learning model in this research results in some conclusions based on the resulted product, as follows: (1) Based on the results of validation conducted by the experts, it is stated that the developed game-based motor skills learning model is suited for the 9-10 year-old elementary school children, (2) Based on the results of product test, it is stated that the game-based motor skills learning model is very good to develop the affective (attitude), cognitive (knowledge), and psychomotor (skills) aspects for the 9-10 year-old elementary school children.

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