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## Model of game-based intelligence of game based on game for elementary school students

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### Abstract

The aim of this research and development is to produce a game-based kinesthetic intelligence learning model for elementary school students. This research uses the Research & Development Development (R & D) method of Borg and Gall. There are 30 learning models that are feasible to use for elementary school students. There are a result of k elompok small with an average of 74.03 and large groups with an average of 81.83. The difference in the average results of the experimental group and the pre-test and post-test control groups was the pretest experimental group 73.19, and the post-test 83.58, while the control group at the pretest was 74.29 while the posttest was 78.06. Based on the appendix table 1 in the values in the distribution of t, if  $dk = 39$ , for a one-party test with an error level of 5%, the price of  $t_{table} = 1,68$ . If the price of  $t_{arithmetic}$  falls in the area of acceptance of  $H_{a}$ , then  $H_{a}$  which states that there is an increase in the effectiveness of applying the model with play accepted. Based on the calculation, it turns out that  $t_{count} 4.26$  falls on the area of acceptance of  $H_{a}$  or rejection of  $H_{o}$ . or  $t_{count} > t_{table}$ . Then it can be concluded that the model of learning skills based on kinesthetic intelligence is effective for elementary school students.

**Keywords:** Learning model, elementary school, kinesthetic intelligence

### Introduction

#### Preliminary

Physical Education is the process of education through physical activities, games or sports selected to achieve educational goals (Mahendra, 2014). (Amelia, Sumpena, & Indonesia, 2017, 2) <sup>[1]</sup>. The scope of physical education is the formation of motion, which includes the desire to move, live time and shape including the feeling of rhythm, recognize the possibility of self-movement, have confidence in the movement and feelings of attitude (kinesthetic) and enrich the ability to move (Saputra, 2000). (Hidayat, 2017,23) <sup>[4]</sup> Kinesthetic-based physical education is one of the choices in the learning process, because the motion process requires coordination between nerves and muscles so that it is able to communicate messages through the beauty of motion. (Sutapa, Yogyakarta, Sutapa, & Yogyakarta, 2001, 144) <sup>[9]</sup> Kinesthetic intelligence is a sport that requires a sense of movement where conscious of the position of the body so that body movement can be controlled. A kinesthetic sense in which knowledge about the position of the body in space to fulfill or feel a movement correctly (Hernawan, 2017) <sup>[3]</sup>. The ability of children who can control their movements or process their body movements well then their kinesthetic intelligence is good. Primary schools generally learn kinesthetic intelligence in the form of locomotor, non locomotor, and manipulative basic motion, for that elementary school students can practice in motion in the form of games.

### Theoretical Framework

#### Learning model

The learning process needs a model to develop learning in schools. The term learning model has four special characteristics that are not possessed by learning strategies or methods: (1) Logical theoretical rationales compiled by educators, (2) Learning objectives to be achieved, (3) The teaching steps needed for the learning model to be able implemented optimally, (4) The learning environment needed for learning objectives can be achieved. (Husdarta, 2013, 2-3)

## Kinesthetic Intelligence

Kinesthetic intelligence is an intelligence related to the ability to perform body movements skillfully and well. In line with this opinion Prasetyo and Andriani (2009) explained that "kinesthetic-bodily intelligence is the capacity to coordinate the movement of all members of the body" (p.62). (Prasetyo, Kamsiyati, & Budiharto, 2014, 2) [7]

## Game

Games, games or equivalent words in English are called *games* (nouns), *to play* (verbs), *toys* (nouns) are derived from the word play. Game or game is a system that has certain rules where the player will feel involved in an activity (Poerwanto and Firdiansyah, 2019) [6] problems so that it can produce a measurable result that is win and lose. (Firmansyah, 2018, 146) [2] Games are also something that is played with certain rules which are commonly used for pleasure purposes and can also be for educational purposes. (Adhanisa, Kridalukmana, & Martono, 2016)

## Research Methods

The research model of game-based kinesthetic intelligence learning uses research and development model (*Research and Development*) from Borg and Gall (2009: 775) which consists of ten steps including: (1) Research and information collecting (2) Planning (3) Development of the preliminary form of products (4) Preliminary field testing (5) Main product revision (6) Main field test. (7) Operational product revision (8) Operational field testing. (9) Final products (10) Disseminati.

This development research adapted the Borg and Gall model with ten steps. The steps of the development model are not fully conducted by researchers according to their needs. The design of the product development forms of kinesthetic learning is taken from the Borg and Gall development model which has the following steps:

## Research Results and Discussion

### Model Development Results

The game-based kinesthetic intelligence learning model for elementary schools is written in the form of a script that presents the forms of the kinesthetic intelligence learning model in learning with a modified form of learning with the game variation model approach .

### Model Feasibility

After conducting the stages of data collection and drafting a kinesthetic intelligence learning model for elementary schools the next step is to conduct an expert test with the aim of obtaining the feasibility or validation of the model created by direct assessment from the expert. The researcher presents 3 experts in the assessment of the feasibility of the model and 1 the feasibility of the learning instrument test made. 1 expert works as a Kinesthetic Intelligence Lecturer, 1 works as a Physical Education Lecturer and 1 Motoric Learning Lecturer. The conclusions of the expert tests conducted are summarized in the following table: namely Phase II trials . After that there are revisions based on evaluations and suggestions from kinesthetic intelligence lecturers there are 30 kinesthetic intelligence games to improve locomotor, non-locomotor and manipulative basic motion intelligence.

### Small Group Test Results

The kinesthetic intelligence learning model for elementary schools that has been evaluated by experts, then undergoes a

phase 1 revision, after the product draft is revised and then tested on a small group involving 30 research subjects.

### Small Revision

Based on the information above, the control group that did not use the kinesthetic intelligence learning model got an average value of 74.03 while the model group that applied the kinesthetic learning with the play approach got an average value of 79.03. The next step after the model underwent a phase II revision from the experts then proceed with testing the product trial in a large group (field group try out) using a study of 90 elementary school kinesthetic intelligence students at SDN Serdang 07 and SDN Serdang 011.

Based on the above information, the control group that did not use the kinesthetic intelligence learning model got an average value of 77.27 while the model group that applied the kinesthetic learning with the play approach got an average score of 81.83. The next step after the model has been revised stage II from the expert, it is continued by testing the product trial to find value in the effectiveness stage of the kinesthetic learning model with a play approach .

### Test the effectiveness

In this study, researchers used a study design true -eksperimen shaped d natural design of the two groups were selected at random, then given a pretest to determine the initial state is there a difference between the experimental and control groups . The following are the differences in the pretest between the experimental and control groups.

From the table above there are 2 groups between the experimental group and the control group that have different pretest and posttest results . The difference in the average of the experimental and control groups in applying the new learning method is explained by the diagram below. Based on the information above, it can be seen the average value of the experimental group gets 73.19 and the control group 74.29. From the table above there that value learning model intelligence kitesmetik for the experimental group had a much better value than the treatment model of learning in general in the control group .

### Model Effectiveness Test

Proving the significance of the difference between the old learning model and the new learning model, needs to be tested statistically with a correlated t-test. The formula used is as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2} - 2r \left( \frac{S_1}{\sqrt{n_1}} \right) \left( \frac{S_2}{\sqrt{n_2}} \right)}}$$

### Information

: Average subject 1 (Before application)

: Subject average 2 (After Deployment)

s<sub>1</sub> : Subject standard deviation 1 (Before application)

s<sub>2</sub> : Subject standard deviation 2 (After application)

s<sub>1</sub><sup>2</sup> : Subject variance 1

s<sub>2</sub><sup>2</sup> : Subject variance 2

r : Correlation between data of two groups

In this research the following hypothetical formula is used:

H<sub>0</sub> : The effectiveness of the model after application is smaller or equal before implementation

$H_a$  : There is an increase in the effectiveness of applying the model

$H_0$  :  $\mu_1 \leq \mu_2$

$H_a$  :  $\mu_1 > \mu_2$

the initial test (X1) and after using the learning model with the play approach or the final test (X2) are as follows:

**Table 1:** Comparison Results Data

Comparison Results					
No	Experiment Group	Control group	No	Experiment Group	Control group
1	88	81	16	84	81
2	88	73	17	86	84
3	86	80	18	83	81
4	84	77	19	86	72
5	81	75	20	81	80
6	85	81	21	83	81
7	85	80	22	80	77
8	86	75	23	83	77
9	83	75	24	81	80
10	88	80	25	83	75
11	86	75	26	80	75
12	80	80	27	83	72
13	83	81	28	83	80
14	80	81	29	80	75
15	83	81	30	81	77
average	83.58	78.06	average	83.58	78.06
Elementary school	2.52	3.17		2.52	3.17
sv	6.37				10.03
R	0.03				0.03

Significant comparison or not, then the price of  $t_{\text{arithmetic}}$  need to be compared with the price of  $t_{\text{table}}$  with  $dk \ n-2 = 31-2 = 39$ . Based annex II table in the values in the distribution of  $t$ , when  $df = 39$ , to test the one hand with an error level of 5%, then the price of  $t_{\text{table}} = 1,68$ . When the price  $t_{\text{count}}$  fell to the reception area  $H_a$ , then  $H_a$  which states that there is an increase in the effectiveness of the application of the model by playing. Based on the calculation, it turns out that  $t_{\text{count}} 4.26$  falls

on the area of acceptance of  $H_a$  or rejection of  $H_0$ . or  $t_{\text{count}} > t_{\text{table}}$ . Then it can be concluded that this permanent-based kinesthetic intelligence learning skill model is effective for elementary school students.

## Conclusions, Implications and Suggestions

### Conclusion

Based on the data that researchers obtained from the results of field trials and discussion of research results it can be concluded that:

1. The products with model game for elementary school special kinesthetic high class consists of 30 models kinesthetic game.
2. With model game kinesthetic for special primary school classes can increase the learners who lack motivation in learning kinesthetic intelligence as well as a more optimal and attractive to students in teaching physical education .

### Implication

The kinesthetic game model of elementary school students can make a positive contribution in supporting the achievement of learning, because it can improve the kinesthetic game model that is adjusted to the characteristics of students. Thus did not rule out this game model can also be

applied by teachers to improve kinesthetic learning in physical education.

### Suggestion

There are a number of suggestions that will be put forward by the researchers. Product relations is a learning model of kinesthetic intelligence based on games for high school special grade schools that can be used as a reference for both teachers and students. The use of kinesthetic game models can consider the situation, the conditions that occur, and the infrastructure owned.

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