

# Traditional Game based Learning Model to Improve Elementary School Students' Motor Abilities

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**Abstract:** The research intended to produce a good, effective and fun traditional game- based learning model to improve the elementary school students' motor ability. The development of this research went through several steps: (1) initial product development and expert validation, (2) small-scale trial and revision, (3) large-scale trial and revision, (4) operational or effectiveness test, (5) production of the final product and dissemination. The instruments used to collect the data included (1) interview recorders; (2) value scale; (3) observation sheets of the model draft; (4) observation sheets of the model effectiveness. The data were then analyzed in descriptive quantitative and qualitative ways. This research resulted in a traditional game- based learning model consisting of five games, namely: (1) fortified, (2) cat and mouse, (3) like a snake, (4) sack race, and (5) shell stilts running race, equipped by their manual or guideline forms. All those items were packed in the form of a series of activities

## 1 INTRODUCTION

Learning process which requires the students' motor ability in elementary school has become a concern for many people. The concern included one of the barriers of motor learning activities in elementary schools that is the physical education teachers' lack of knowledge in applying proper model for motor learning activities. This phenomenon is caused by limited references or reading resources available for the teachers about how they are supposed to apply appropriate motor learning model to support the achievement of desired learning outcomes.

Planning on good physical activities is very helpful for children to optimize their ability to move especially the ability of gross motor and loco motor motions (Aryamanesh & Sayyah, 2014). Regular exercise is a way to encourage children to be active and develop their motor skills, all of which can play important roles in their life (Santrock, 2007).

A relevant research related to gross motor skills is about the difference of children's gross motor skills between two types of preschools conducted by Chow & Lobo (2013). This research focused on educational goals that influence the types of preschool (public vs. private) in the development of motor skills of boys and girls aged 3 to 6.5 years. On

that research, the schools' teachers provided several tests which formed the basis of the students' motor skills. Finally, based on the analysis conducted, it indicated that students who came from private preschools showed better loco motor skills than those who came from public preschools did.

The next relevant study was entitled "The Obese Students' Mastery of Gross Motor Skills in Preschools and Early Elementary Schools" (Nafiseh & Saidon, 2014). This study aimed at determining the obese children's need for gross motor skills in preschools and early elementary schools and showing the differences between the two groups. The data analysis methods used were two-way analysis (ANOVA) and descriptive in which statistical criteria were significantly effective. The results of the research conducted showed a significant difference between the implementation of gross motor skills for obese children in preschools and early elementary schools. It could be concluded that the low-fat children's gross motor skills were worse compared to the others with the normal fat.

Indonesia has abundant cultures including its traditional games. Playing traditional games is the process of doing activities which make children delighted by using simple tools based on the conditions or circumstances and is the result of

exploring local culture according to ideas and lectures from the ancestors (Arlina, 2008).

Traditional games are believed to have better impact on the development of children's potential; if modern games prioritize individualization, traditional games provide more opportunities for children to socialize and collaborate in groups. This is also reinforced by Bordova & Leong (2003) that young children spend less time playing with their peers and tend to spend their playing time alone, moving on from educational toys to video and computer games.

In the learning process, one way to make children more interested and enthusiastic in participating is to have variations. Variation in learning process is a change in the process of activities which aim at increasing students' learning motivation, as well as reducing boredom and saturation (Mulyasa, 2010).

Therefore, in this research, to make motor skill learning activities interesting and challenging for children, some traditional games which have been developed according to the rules and used tools were utilized. In this case, it is believed that traditional games involve physical activities which can improve the players' motor skills.

The problem faced by Physical Education teachers in elementary schools is that children are less enthusiastic and reluctant to do active sports (involving gross motor skills), because of boring learning activities. Children are more interested in doing electronic games such as online games, play stations, and other electronic games. Children feel very comfortable to do those games without getting bored for a long period of time. On the other hand, the children themselves state that they only feel tired and bored with what has been taught by the teachers and do not like to do the activities of running and jumping. Games which are carried out for a long time ( $\geq 2$  hours) without being balanced with good physical activity will have a negative impact on children's physical and psychological health. Griffiths (2010) states boys and girls who used screen-entertainment for any duration but still participated in sports had fewer emotional and behavioral problems, but more pro-social behavior, compared to those who used screen-entertainment for 2 hours per day but did not participate in sport.

In this study, to attract and challenge children in learning motor skills, the process needs to utilize traditional games which have been developed according to the rules and used tools. These traditional games involve physical activities which can improve the perpetrators' motor skills. This is in

accordance with one of the objectives of Physical Education, which is to develop individuals organically; in the form of functional capacity, namely strength, agility, speed, and others. Many kinds of traditional games that can be used as tools to play include: *gobak sodor*, fortified, cricket, mouse and cat, jump rope and others. Those games are very suitable to improve motor skills of the children by stimulating them to move. Frequent movement will stimulate the children's organs to work and to adjust to the intensity of their movements, and this will affect his motor skills. However, many elementary students have not mastered the techniques and rules of traditional games, because they prefer to play more modern games. Therefore, children still make mistakes when playing the traditional games.

## 2 RESEARCH METHODS

### 2.1 Development Model

This type of research was Research and Development that was research type used to produce certain products, and test the effectiveness of the product (Sugiyono, 2014).

The research using the development model is a process used to develop or validate a process used in education and learning. The steps of the development research model according to (Borg & Gall, 2007) namely (1) conducting preliminary studies and information gathering (literature review, field observations, research frameworks), (2) planning (research objectives, order of learning, various forms of participation), (3) developing the initial product (preparing learning material, planning the initial draft of the product), (4) validating and revising product draft based on results from expert validation, (5) conducting initial trials (small scale tests) and revisions (6) conducting field trials (large scale tests) and revisions (7) carrying out operational test/ product effectiveness test (8) producing the final product which is a traditional game-based learning model to improve motor skills of the elementary school students.

### 2.2 Target/ Subject of Research

The small- scale trial stage was held at Gejayan State Elementary School involving 29 third grade students. The large- scale trial stage was conducted at Puren State Elementary School involving 32 first

grade students and at Ngringin State Elementary School involving 33 second grade students.

### 2.3 Research Instrument and Data Collection Technique

The research instruments included: (1) interview recorders, (2) observation sheets, (3) questionnaires for material experts, media experts, and trial subjects, and (4) instruments for observing model effectiveness.

### 2.4 Data Analysis Technique

The collected data were analyzed by descriptive quantitative and descriptive qualitative analysis. The descriptive quantitative analysis was employed to analyze the following (1) data obtained from the value scale as a result of the assessment of material experts on the initial draft of the model before trial implementation on the field, (2) data of observation result from material experts on field trials, (3) data of observation results of material experts' observations on the effectiveness of the model. While descriptive qualitative analysis was conducted on: (1) data from interviews with elementary school teachers during preliminary studies, (2) data deficiencies and inputs from material experts on the game model both before the trial and after the trial on the field.

## 3 RESEARCH RESULT

The learning model developed in this research was traditional game based learning model to improve the motor skills of elementary school students. This traditional game based learning model was developed based on potentials and problems, analysis of interview results and direct observations in the field. Observations were conducted at four schools, including SDN Gejayan, SDN Puren, SDN Ngringin, and SDN Sleman 4.

From the results of observations and interviews conducted on four Physical Education teachers in schools, the analysis of needs obtained are: (1) lack of understanding and creativity of teachers in developing varied and interesting traditional game-based learning models, (2) lack of facilities and infrastructure that can support the process of motor learning, (3) limited time owned by the teachers to provide a model of motor learning, (4) minimum ability of students to perform motor movements, (5)

less interesting and less enjoyable provided learning models, that children still look less enthusiastic and reluctant to do sports.

Traditional games developed were various traditional games that have been selected and in accordance with the characteristics of learning materials, and the characteristics of elementary school students, as well as the characteristics of motor skills components, so it was hoped that this traditional game-based learning model could attract the interest and attention of students to do so in order to improve their motor skills.

Based on the need analysis and observation results, it was concluded that in implementing Physical Education at schools, teachers needed a game model that could train students to improve their motor skills based on the applicable curriculum goals. Therefore, the development of traditional game-based learning models to improve students' motor skills was needed in elementary schools.

The final goal of this development research was to produce a product model of traditional game-based learning to improve the motor skills of elementary students. In addition, for the practicality, this learning model was also equipped by the manual or guideline. The purpose of making the manual was to explain more specifically about how to use this model, so that teachers as practitioners in the field and readers would understand and be able to use this model. Video games are packaged in the form of a DVD (Digital Video Disc) as a guide for the procedures for implementing the game, as for the product specifications developed, namely:

Materials, 1) the development of the contents and objectives of the game model was guided by the Basic Competences (KD) of lower grade students, and was adjusted to the characteristics of elementary school students with an age range of 7 to 9 years old; 2) The traditional game in the manual contains three parts, namely: (a) the initial activity which contains the implementation before the learning process begins from preparing students to warming up, (b) the core activity contains the implementation of the learning process of motor skills with five traditional game activities, namely: (1) fortified; (2) cat and mouse; (3) like a snake; (4) sack race; and (5) shell stilts running race games. Those five traditional game activities in this book can be used by the teachers for five meetings with different Basic Competences. The time used is 3x35 minutes/meeting, and the chosen material includes practicing physical activities for motor skills (balance, strength, agility, coordination, and speed) through simple games or traditional games; (c) closing activities

containing cooling down activities, evaluation of the implementation of traditional games, and reflection on the meaning of traditional games; 3) The manual contains the definition of traditional games, game objectives, needed tools, game procedures, game duration, assessment, safety standards, field drawings and field size, and learning domain assessments including (1) cognitive aspects related to understanding and knowledge; (2) psychomotor aspects related to motor skills; (3) affective aspects related to cooperative behaviour.

Learning equipment, the tools used in the learning process are common tools which are affordable, easy to obtain and safe to use, which can train to improve the motor skills of elementary students. Those tools include: plastic balls, ribbons, baskets, sacks, cones, shell stilts.

Development DVD, This game model uses DVD-R pieces plus GT-ProMulti Speed 16 X. The capacity of one DVD-R chip is 4.7 GB sp 120 min. The game development DVD can be used on all types of computers and laptops with a minimum specification of the operating system Windows XP or Mac OS, resolution 1024 x 800 pixels, Pentium IV processor 1.66 GHz, 512 Mb of RAM, VGA on board 32 Mb, and HDD 40. It also has a CD / DVD drive. The development DVDs of traditional game models to improve the motor skills of elementary students can also be used on DVD players of all types and brands.

The final product of the game consists of: (1) fortified; (2) cat and mouse; (3) like a snake; (4) sack race; and (5) shell stilts running race games, completely presented as follows.

### 3.1 Fortified Game

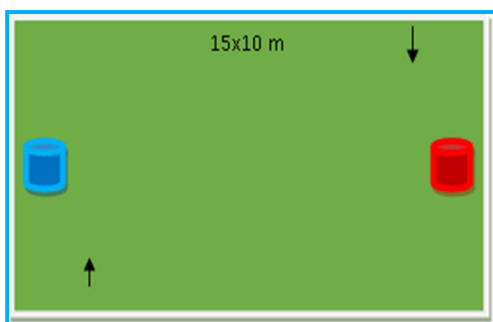


Figure 1: Fortified Game

1) Before the game starts, a draw is held, the winning team starts the game by exiting the castle to lure opponents; 2) Each team consists of at least 5 children or more; 3) Each player functions as an

angler and also as a pursuer or hunter. He/ she will be the chase of the opposing team if the opponent first leaves the fort, and he/ she will be the one pursued by the opponent when he/ she leaves the fort. 4) Affected members will be a prisoner from the opponent, the way to catch the opponent is simply to throw the ball against the opponent's lower leg.

- 1) Prisoners collected in captive area can be free if their unattended members can release by touching their body parts.
- 2) Fortress of a team is declared to be burned if one of the team members can burn the opponent's fortress by throwing the opponent's fortress with the ball on target / entering the basket.
- 3) After one of the fortress teams is burned down, the game continued with a team that managed to burn to function as an angler.

### 3.2 Cat and Mouse Game



Figure 2: Cat and Mouse Game

- 1) Players must consist of at least 6 children or more.
- 2) Before the game is started, the lottery is conducted to determine whom to play roles as the cat and mouse. The one who loses the lottery plays as the cat, and the one who wins the lottery formed a circle, holding hands.
- 3) The mouse tries to avoid the cat throwing ball by entering through a circle surrounded by other children, while cat tries to catch the mouse by throwing the ball into the mouse's lower leg.
- 4) Children who form a circle are freed to block the movement of cat, by squatting with the hands cannot be separated.
- 5) The cat or mouse may not break the coupling hands.
- 6) If the mouse is caught, the mouse alternates to become the cat.

### 3.3 Like a Snake Game

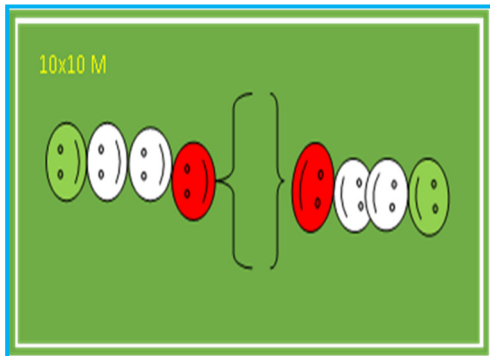


Figure 3: Like a Snake Game

- 1) Before the game begins, a lottery is held to divide the player into 2 groups.
- 2) Players must consist of at least 5 children or more for each team.
- 3) One of the players is selected to be the head of the snake, then the other students become the tail and march behind the head.
- 4) The game starts after the teacher blows the whistle.
- 5) Group members hold on to each other's waist, not to let the handle slip.
- 6) The group member who is the head of the snake tries to throw the member of the opponent's backmost group, by throwing the ball into the opponent's lower leg.
- 7) Group members who play the role as tail must be able to avoid throwing groups of opponents
- 8) If the last member of the group is hit, he/she must leave the playing field
- 9) The group whose members are out is the losing group.

### 3.4 Sack Race Game

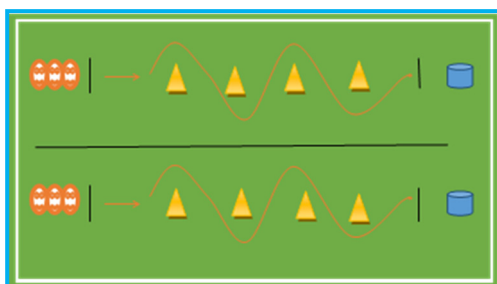


Figure 4: Sack Race Game

- 1) Players must consist of at least 4 children or more.
- 2) Players put their legs into the sacks.
- 3) Players get ready to wait for the whistle/ signal to start.
- 4) After hearing the whistle, the player jumps up and down with two legs inside the sacks from the start line to the finish line.
- 5) Players avoid barriers, by jumping zigzag.
- 6) Players can only jump up and down, not run and walk in sacks.
- 7) After passing through the barriers, the player throws the ball at the target.
- 8) After throwing the ball, the player returns to the starting position, by jumping up and down, then proceeds with the other players by high five.

### 3.5 Shell Stilts/ Egrang Batok Traditional Game

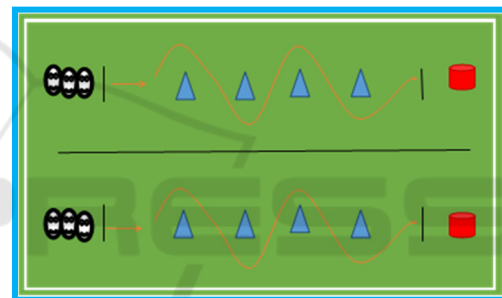


Figure 5: Shell Stilts/ Egrang Batok Traditional Game

- 1) Players are divided into two groups.
- 2) Players must consist of at least 4 or more children.
- 3) Players get ready on the shell with their legs clamped on the rope, and both hands hold the rope.
- 4) After hearing the whistle, the player tries to walk from one place to another.
- 5) Players try to avoid barriers/ cones, by way of zigzags.
- 6) Players may only walk, may not run and jump.
- 7) After passing the barriers/ cones, the player throws the ball to the target.
- 8) After throwing the ball, the player returns to the starting position by way of zigzags, then continued by other players by high five.

## 4 DISCUSSION

The ultimate goal of this development research is to produce a traditional game based learning model to improve elementary school students' motor skills. In addition, for the practicality, this learning model was also equipped by the manual or guideline. The purpose of making the manual was to explain more specifically about how to use this model, so that teachers as practitioners in the field and readers would understand and be able to use this model. Video games are packaged in the form of a DVD (Digital Video Disc) as a guide for the procedures for implementing the game.

Based on the effectiveness test conducted in Gondolayu State Elementary School and Sleman 4 Elementary School for four meetings with traditional games consisting of: (1) fortified; (2) cat and mouse; (3) like a snake; (4) sack race; and (5) shell stilts running race games, the implementation of this learning model can improve students' cognitive, affective, and psychomotor aspects. This is indicated by the completion of students' abilities in each aspect after being given traditional games for four meetings.

Capacity building occurs due to the association of knowledge obtained by children at previous meeting with new knowledge and association gets stronger when repeated. This is based on the law of exercise learning theory proposed by Thondrike (Rahyubi, 2014) that states "the principle of exercise law shows that the main principle in learning is repetition, the more often repeated subject matter will the easier it will be mastered". The research results are also supported by results of Hands & Martin (2003) finding that physical activity learning programs (fundamental movements) integrated with learning in schools can significantly improve children's cognitive, psychomotor, and affective abilities.

Furthermore, Strong (2005) states "Physical activity is important for all children because of the associated benefits to physical, social and psychological health". Physical activity is also very beneficial for children's health physically, socially and emotionally. This shows that doing physical activities is very beneficial to the development of children both cognitively, psychomotorically, and socially and the child gets health improvement by doing physical activities.

The statement regarding physical activity influences the development of the positive reinforced from the research results of Fedewa & Ahn (2011: 9) "The present study shows that

physical activity has a significantly positive impact on children's cognitive outcomes and academic achievement". Physical activity has a positive effect on improving cognitive abilities and increasing children's academic achievement. In addition, physical activity can also improve children's social abilities. This is as stated by Liu, Karp, & Davis (2010: 1) "Physical education is not only able to help children to develop psychomotor skills, but it can provide psychological benefits through the development of personal and social responsiveness and appropriate social behaviour.

The connection with the results of the study is that the traditional game learning model for elementary school students if done repeatedly will cause brain nerve connections and become permanent so that it further increases the ability to recognize letters, concepts and numbers (cognitive abilities), basic motor skills (motor skills) and the formation of active lifestyles and excitement (affective).

## 5 CONCLUSION

The model of this development research is in the form of traditional game based learning model guidebook to improve the elementary school students' motor skills. The game guidebook contains five traditional game models consisting of (1) fortified, (2) cat and mouse, (3) like a snake, (4) sack race and (5) shell stilts running race games.

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